



FTCAP
FISCHER & TAUSCHE
CAPACITORS

FTCAP IS NOW MERSEN




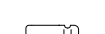
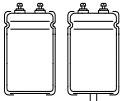
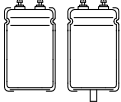
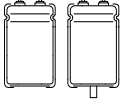
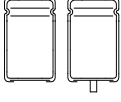
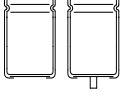



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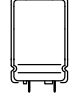
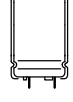
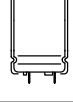






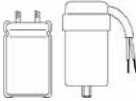
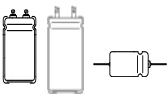
ELECTROLYTIC CAPACITORS

PRODUCT RANGE



Aluminium Electrolytic Capacitors

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| Series | Design | Application | Page |
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This brochure replaces the previous edition. Updated information may be published on [ftcap website](http://ftcap.com). This brochure describes typical product characteristics that shall not be considered as guaranteed values. Although the text is accurate to the best of our knowledge when printed, we reserve the right to make change without prior notice.

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Aluminium Electrolytic Capacitors

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Aluminium Electrolytic Capacitors

■ GENERAL INFORMATION

FTCap GmbH, Fischer und Tausche Capacitors has been a manufacturer of capacitors since 1948. Many years of experience, continuous research & development and the latest state of the art production machinery guarantees products of the highest quality.

■ ALUMINIUM ELECTROLYTIC CAPACITORS

Polarized capacitors

- general industrial
- inverter
- telecommunications
- switch mode power supplies
- photovoltaic
- wind power plants
- medical
- smoothing and filtering
- welding and photo flash applications

Non polarized capacitors

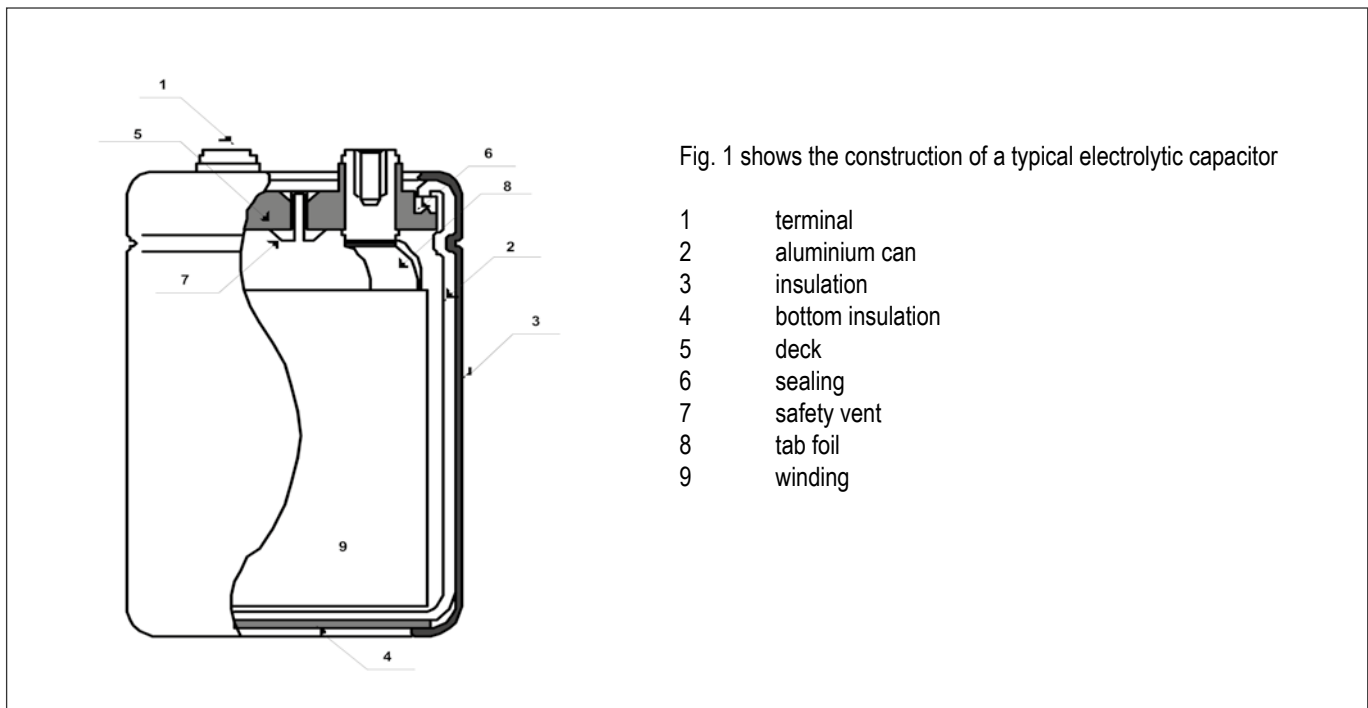
- audio-video applications

Charging capacitors for photo flash capacitor banks

- single phase motor starting

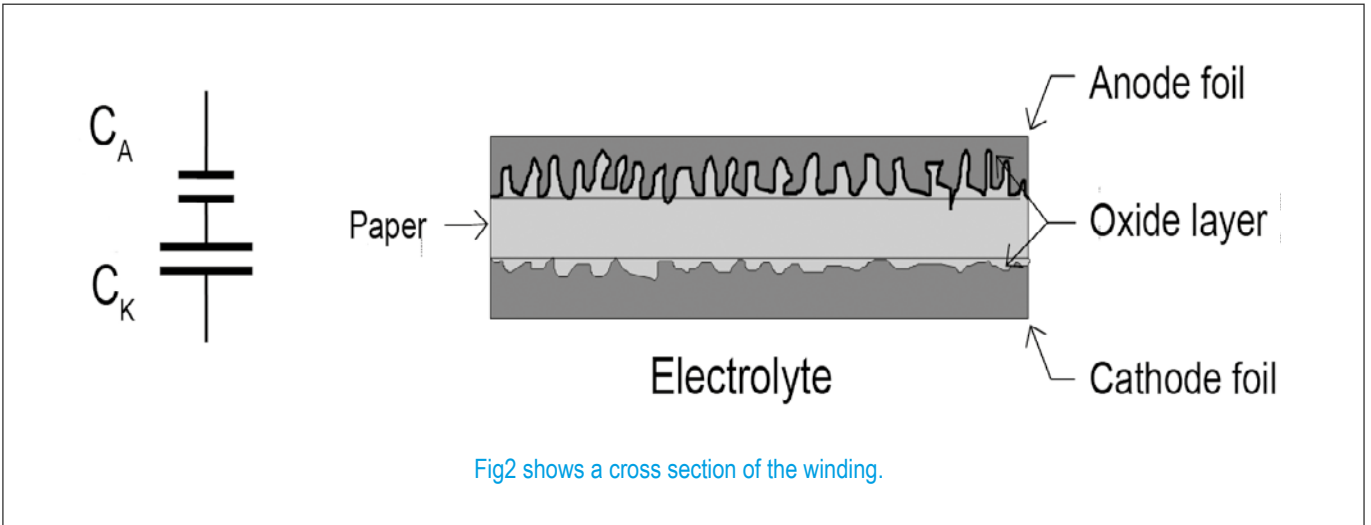
■ 1. CONSTRUCTION OF ALUMINIUM ELECTROLYTIC CAPACITORS

High gain etched anode foil with the thick oxide layer, which is produced by the forming-process, is shown at the top of figure 2. The cathode foil with a much thinner oxide layer is arranged at the bottom. Layers of papers are separating both foils. The electrolyte fills up the pores of the aluminium foils and contacts the anode and cathode surface to establish the capacitance. The dielectric consists of the oxide layers of the anode foil respectively the cathode foil. This construction builds two capacitances: the anode and the cathode capacitances. Because of the thicker oxide layer the anode capacitance is normally much smaller than the cathode capacitance.



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Aluminium Electrolytic Capacitors



If two capacitors are connected in series, the total capacitance results from the relationship

$$C_G = \frac{C_A \cdot C_K}{C_A + C_K}$$

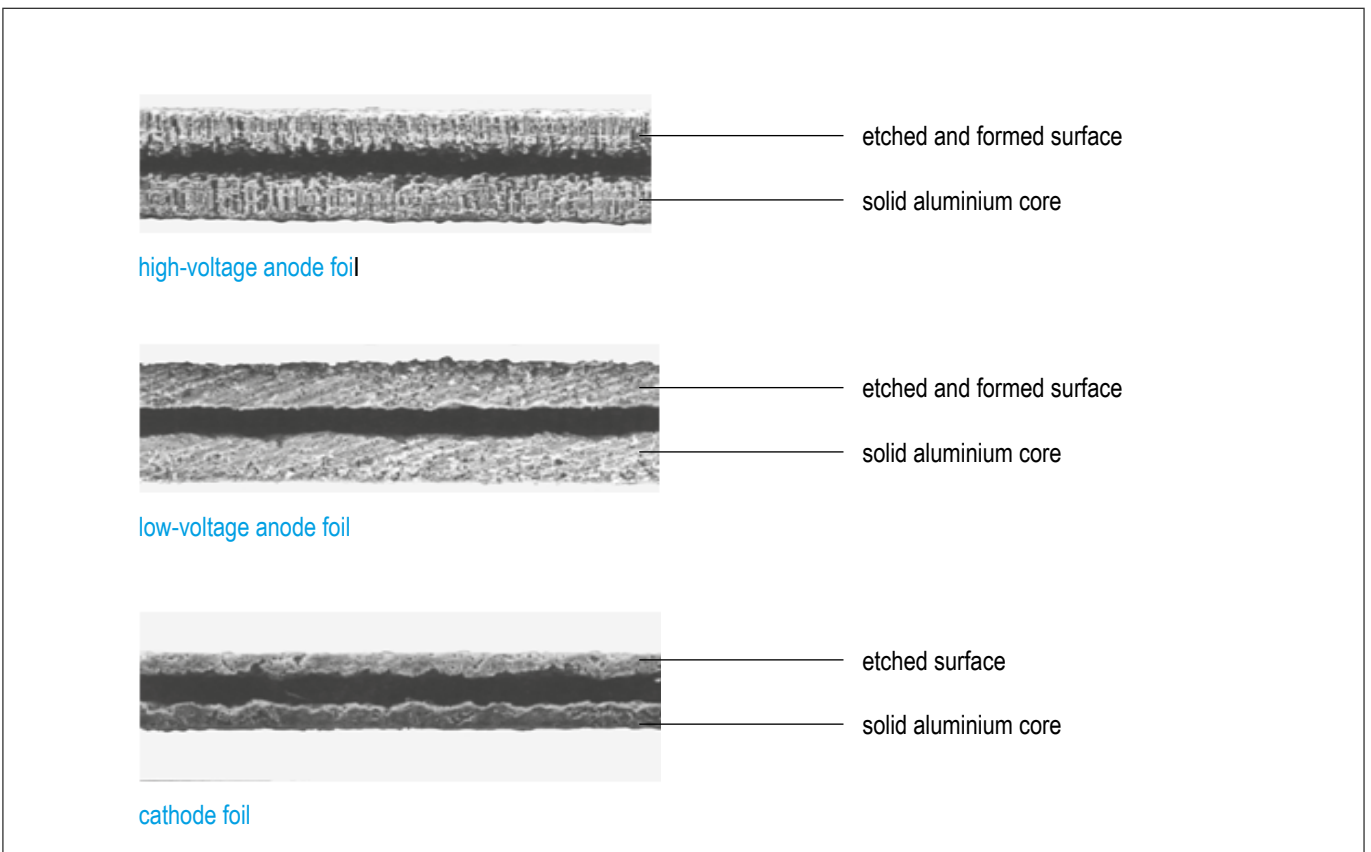
If $C_A \ll C_K$ it follows $C_G \approx C_A$. (aspired normal case)

This means the anode capacitance determines the capacitance of the whole capacitor (the cathode foil slightly decreases the capacitance). To accomplish that, highly etched cathode foils are necessary.

Nonpolarized electrolytic capacitors use the same foil for anode and cathode ($C_A = C_K$) Therefore the capacitance of these capacitors are given by $C_G = 0,5 \cdot C_A$.

It is obvious that a nonpolarized electrolytic capacitor needs two times the space of a polarized capacitor.

2. DIFFERENT TYPES OF FOIL



Aluminium Electrolytic Capacitors

3. PARAMETER

3.1. RATED VOLTAGE

The rated voltage (UR) is the voltage the capacitor is designed for. This voltage may be applied continuously to the capacitor over the full temperature range.

3.2. RIPPLE VOLTAGE

In many applications the voltage applied to capacitors is a combination of direct and alternating voltage. Pay attention to the following points:

- The superposition of AC and DC must not exceed the rated voltage
- Reverse voltage is not allowed
- The applied ripple current must not exceed the rated ripple current

1.4. MAXIMUM REVERSE VOLTAGE

The Aluminium Electrolytic Capacitor is a polar component. Diodes with a max. conducting state voltage of 0.8 V could be used to prevent reverse polarity voltage. Single short time reverse polarity of $V < 1.5 V$ for $t < 1 s$ is tolerated.

1.5. RATED CAPACITANCE

The rated capacitance is usually determined at 100 Hz and 20 °C . In general the rated capacitance is marked on the capacitor in μF .

1.6. DC AND AC CAPACITANCE

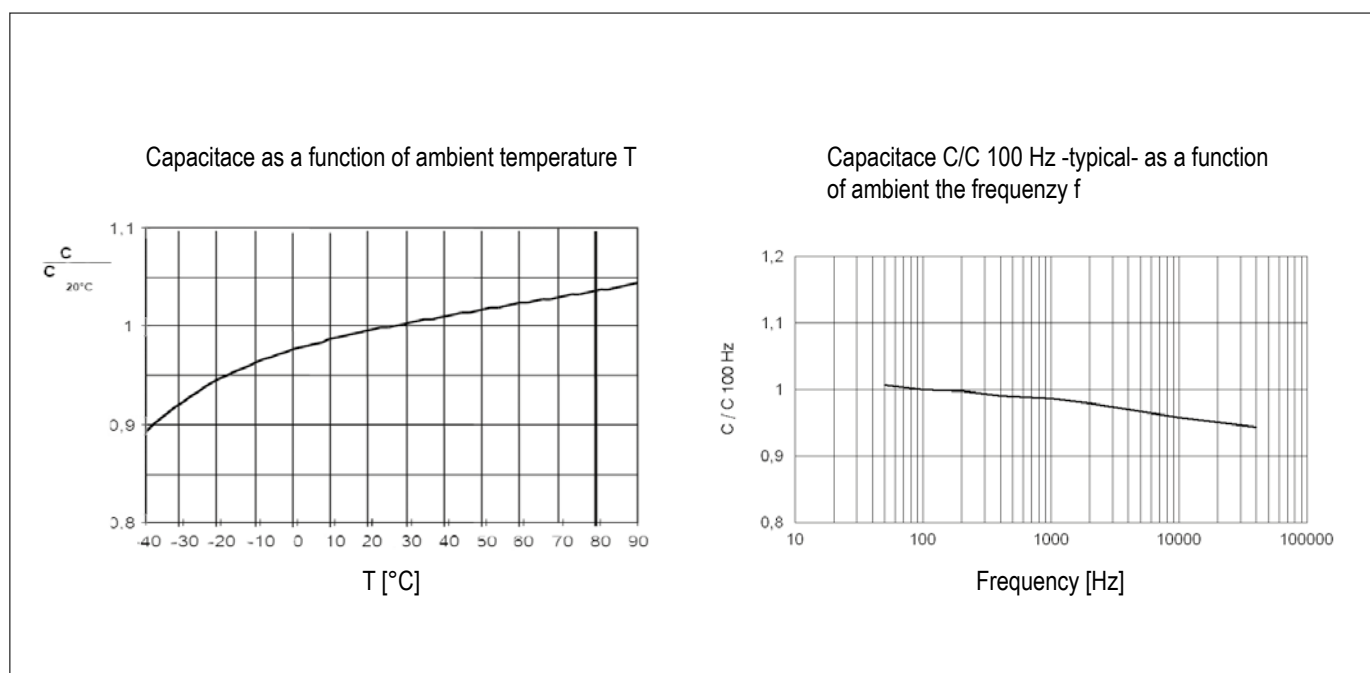
The capacitance determined by AC measurements is smaller than the capacitance determined by charge / discharge measurements. In most applications the capacitor is applied to an alternating voltage so in general the capacitance is measured with the AC method.

1.7. CAPACITANCE VS TEMPERATURE AND FREQUENCY

The capacitance varies with temperature and frequency

- The capacitance increases with increasing temperature
- The capacitance decreases with increasing frequency

The following diagrams illustrate these interdependent relationships.



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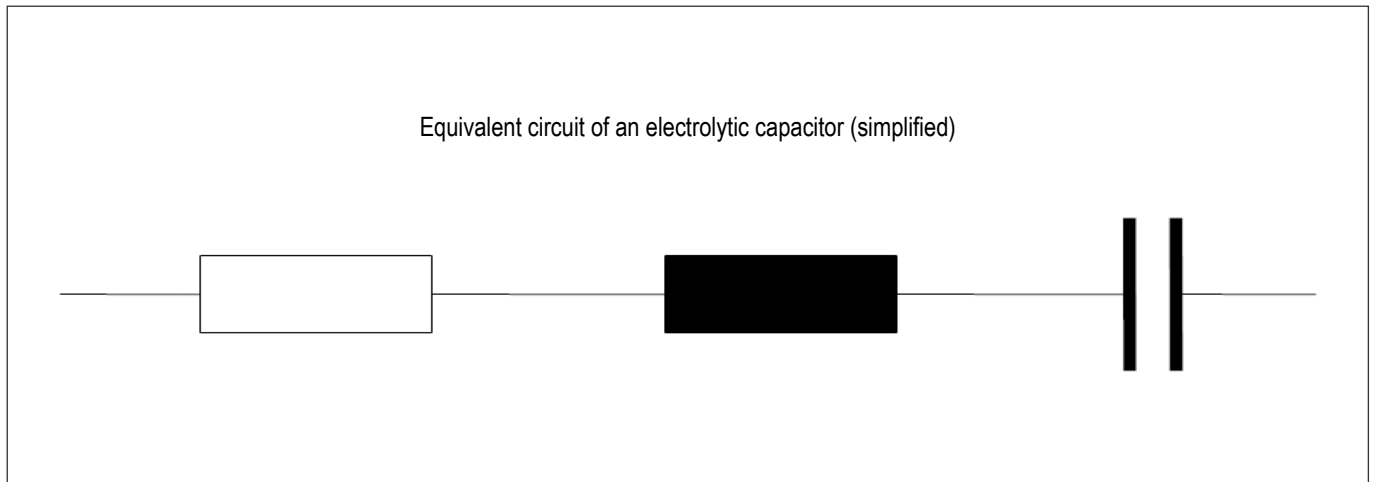
Aluminium Electrolytic Capacitors

3.8. ESR

The equivalent series resistance represents the losses of a capacitor (the resistance of the foil, electrolyte, terminals). The ESR depends on frequency and temperature.

3.9. ESL

The equivalent series inductance represents the inductive part of the capacitor (leads, foil). The ESL depends mainly on the frequency.



3.10. DISSIPATION FACTOR TAN Δ (DF)

The dissipation factor is defined as the power loss of the capacitor divided by the reactive power of the capacitor.

$$\tan \delta = ESR \cdot \omega \cdot CS$$

In general the DF is measured at 100 Hz and 20 °C.

3.11. IMPEDANCE Z

The impedance of the capacitor is given by the ESR, ESL and the capacitance.

The impedance depends on the temperature and the frequency. The impedance is normally measured at 10 kHz.

4. MOUNTING

Position for screw terminal capacitors

Upright position is recommended to prevent electrolyte leakage in case of vent opening.

Horizontal mounting is also possible but the vent must face upwards.

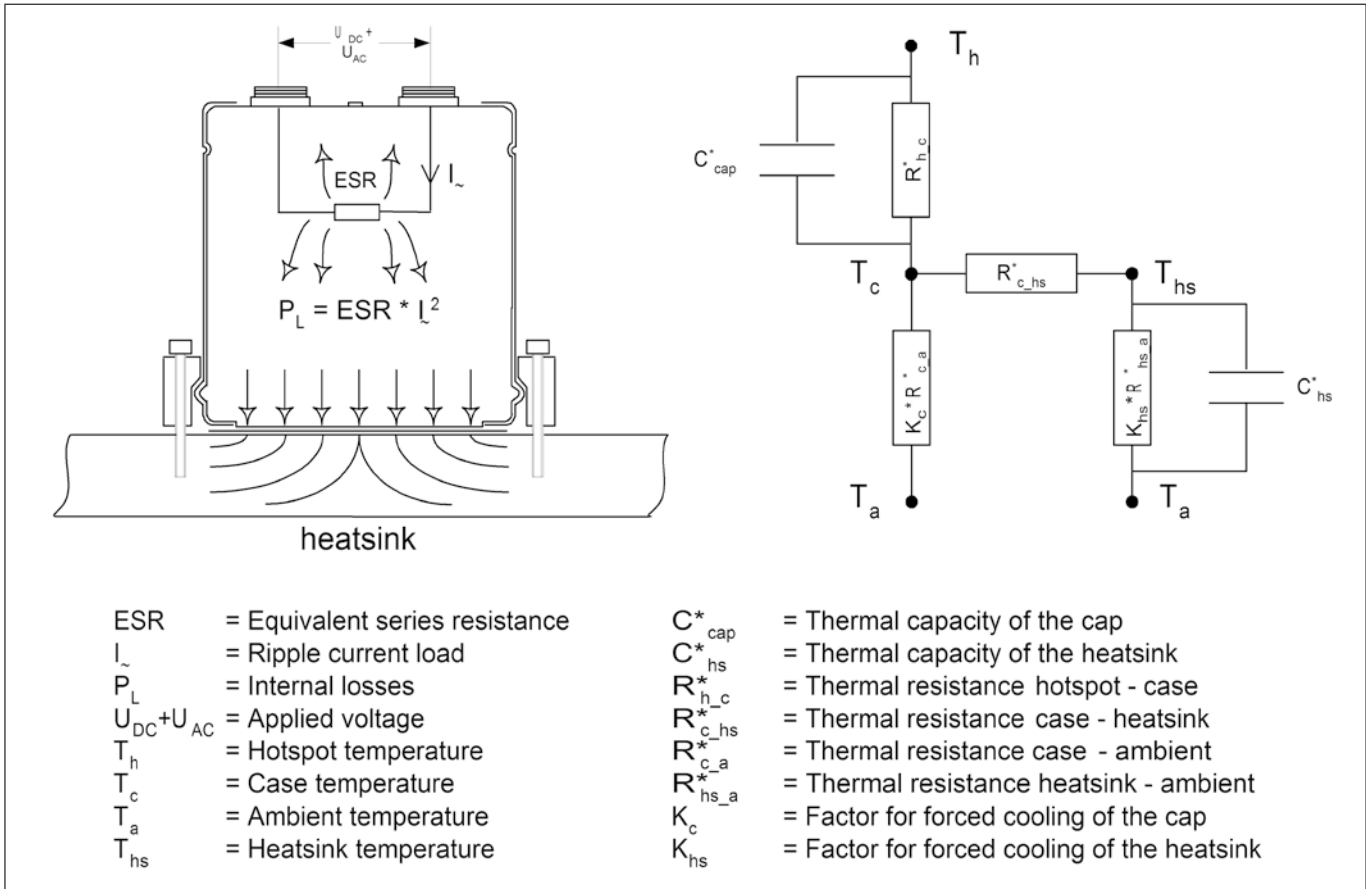
TERMINALS / MOUNTING STUD

These maximum torque values should not be exceeded.

| Screw thread | Maximum torque in Nm |
|--------------|----------------------|
| M4 | 2,0 |
| M5 | 2,0 |
| M6 | 2,5 |
| M8 | 4,0 |
| M12 | 10,0 |

Aluminum Electrolytic Capacitors

5. THERMAL MODEL



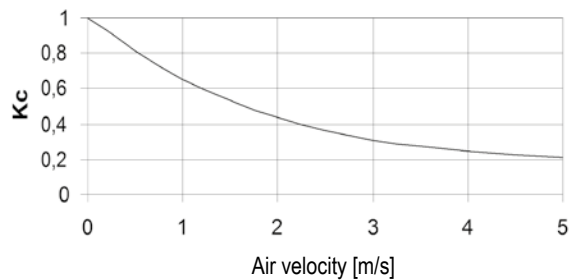
INTERNAL LOSSES

$$P_L = ESR * I_{\sim}^2$$

THERMAL RESISTANCE HOTSPOT-AMBIENT

$$R_{h_a}^* = R_{h_c}^* \frac{K_c * R_{c_a}^* * R_{c_{hs}}^*}{K_c * R_{c_a}^*} + \frac{K_{hs} * R_{hs_a}^*}{K_{hs} * R_{hs_a}^*}$$

FACTOR KC FOR FORCED COOLING OF THE CAP



VALUES FOR SERIE GW

| | Ca 50 * 69 | Ca 75 * 69 | Can 90 * 69 | Can 90 * 98 |
|-------------|------------|------------|-------------|-------------|
| $R_{h_c}^*$ | 0,6 / W | 0,6 / W | 0,6 / W | 0,7 / W |
| $R_{c_a}^*$ | 5,3 / W | 3,3 / W | 2,6 / W | 2,2 / W |

HOTSPOT TEMPERATURE OVER TIME (CURRENTSTEP FUNCTION)

$$T_{h(t)} = T_{h(t_0)} + P_L * R_{h_a}^* * (1 - e^{-\frac{t}{th}})$$

with

$$th = R_{h_a}^* * C_{cap}^* + C_{hs}^*$$

if $R_{c_{hs}}^* = 0$

P_L Transient losses

Aluminum Electrolytic Capacitors

■ 6. QUALITY

■ 6.1. CERTIFICATION

Quality is the main reason of our success. Without ignoring the importance of price of course, customers choose and remain with Fischer & Tausche Capacitors to satisfy their needs for top quality capacitors. It is therefore our pledge to continue producing and delivering top quality capacitors as efficiently as possible.

In addition to our commitment to quality, we are also committed to a healthy environment. That is why each and every one of our employees, from top management down to the workshop, accepts his or her environmental responsibilities and strives to work as effectively and efficiently as possible.

Intermediate testing is carried out through the entire production process in addition to the 100% final testing of each capacitor before shipment. All of our employees know that quality is the top priority for our customers. Workers participate in the process of continued improvement, quite often by anticipating. The result is uninterrupted flow production. Fischer & Tausche Capacitors are certified 9001:2008. The company certificate is available on the Fischer & Tausche Capacitors website www.ftcap.de.

■ 7. SAFETY

■ 7.1. CHARGED CAPACITORS

Electrolytic capacitors may store high amounts of energy (especially photo flash and high voltage capacitors). To avoid electrical shocks and sparks always discharge electrolytic capacitors before handling. For higher voltage it is recommended to shorten the terminals during handling.

■ 7.2. DANGER OF USE AND ABUSE

Explosions of electrolytic capacitors may occur if the capacitor is exposed to

- reverse voltage above specified limit
- voltage above specified limit
- ripple currents above specified limit
- ambient temperatures above specified limit
- high mechanical impact

■ 7.3. OPERATING ELECTROLYTES

Principally operating electrolytes used in Fischer & Tausche Capacitors products do not contain dangerous substances. However, in rare exceptional cases it is necessary to use certain substances to achieve certain physical chemical or electrical properties. In these cases the concentration is reduced to an absolute minimum.

Generally the following safety hints should be respected using operating electrolytes:

Avoid skin and eye contact. Should the electrolyte come into contact with skin, immediately rinse with abundant amounts of fresh water. Eyes must be rinsed at least 15 min under flowing cold water. Consult your doctor immediately with complaints. Inhaling electrolyte steams or vapors must be avoided. Work area must be well ventilated. Clothes coming into contact with electrolyte should be washed and cleaned.

■ 7.4. ROHS

All Fischer & Tausche Capacitors products are fully compliant with the RoHS Directive 2005/618/EC.

■ 7.5. DISPOSAL

Aluminium Electrolytic Capacitors can be disposed or recycled. The disposal rules are governed by the national and local authorities and have to be taken into consideration. The European Waste Code No. is 160214



AXIAL TERMINALS

LOW MOUNTING HEIGHT

HIGH CV PRODUCT

LONG LIFE 5000 H @ 85 °C

■ FEATURES

- All contacts welded
- High CV product
- Welded axial leads
- High reliability

■ APPLICATIONS

- HiFi
- Industrial
- Tube amplifier

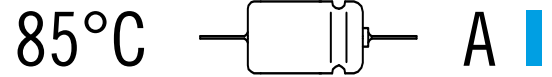
RoHS compliant
REACH compliant

■ GENERAL SPECIFICATIONS

| Items | Characteristics |
|--|---|
| Rated capacitance range C_R | 4,7... 82.000 μF |
| Capacitance tolerance | $\pm 20\%$ |
| Rated voltage range U | 16 ... 500 V |
| Surge voltage U_S | $U_R \leq 315 \text{ V}: U_S = 1,15 U_R$; $U_R > 315 \text{ V}: U_S = 1,10 U_R$ |
| Max. reverse voltage | 2 V |
| Category temperature range | - 40°C ... + 85 °C |
| Leakage current I_L after 5 min @ U_R | $\leq 0,008 * C_R [\mu\text{F}] * U_R [\text{V}] + 6 \mu\text{A} [\mu\text{A}]$ |
| Useful life 5000 h @ 85 °C ; U_R ; I_R | Requirements $\Delta C/C \leq 30 \%$ of initial value ; ESR $\leq 300 \%$ of specified ; limit $I_L \leq$ specified limit |
| Endurance test 2000 h @ 85 °C , U_R | Requirements $\Delta C/C \leq 20 \%$ of initial value ; ESR $\leq 130 \%$ of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 40/085/56 |
| Voltage proof of the external insulation | D $\leq 25 \text{ mm}: \geq 1000 \text{ V AC}$; D > 25 mm: $\geq 2500 \text{ V AC}$ |
| Sectional specification | IEC 60384-4 |
| \emptyset leads | Up to 25 mm \emptyset : 0,8 mm ; more than 25 mm \emptyset : 1,0 mm |

Different voltages and capacitance combinations are available on request. Also in small lots.

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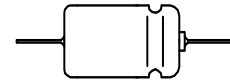
ELECTRICAL DATA AND ORDERING CODE FOR SERIES A

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code A... |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|--------------------|
| 16 | 2200 | 10x30 | 203 | 0,6 | 22201610030 |
| | 3300 | 12x30 | 135 | 0,8 | 33201612030 |
| | 4700t | 14x30 | 95 | 1,0 | 47201614030 |
| | 4700 | 14x37 | 95 | 1,1 | 47201614037 |
| | 5600 | 16x30 | 80 | 1,2 | 56201616030 |
| | 8200 | 16x39 | 54 | 1,7 | 82201616039 |
| | 8200 | 18x30 | 54 | 1,6 | 82201618030 |
| | 10000 | 18x39 | 45 | 2,0 | 10301618039 |
| | 12000 | 21x36 | 37 | 2,3 | 12301621036 |
| | 18000 | 25x38 | 25 | 3,1 | 18301625038 |
| | 33000 | 25x49 | 14 | 4,6 | 33301625049 |
| | 47000 | 30x50 | 9 | 6,0 | 47301630050 |
| | 56000 | 35x50 | 8 | 7,2 | 56301635050 |
| | 82000 | 35x66 | 6 | 9,6 | 82301635066 |
| 25 | 1200 | 10x30 | 372 | 0,4 | 12202510030 |
| | 1800 | 12x30 | 248 | 0,6 | 18202512030 |
| | 2700 | 14x30 | 165 | 0,8 | 27202514030 |
| | 3300 | 14x37 | 135 | 0,9 | 33202514037 |
| | 3300 | 16x30 | 135 | 0,9 | 33202516030 |
| | 4700 | 16x39 | 95 | 1,3 | 47202516039 |
| | 4700 | 18x30 | 95 | 1,2 | 47202518030 |
| | 5600 | 18x39 | 80 | 1,5 | 56202518039 |
| | 6800 | 21x36 | 66 | 1,7 | 68202521036 |
| | 10000 | 25x38 | 45 | 2,3 | 10302525038 |
| | 18000 | 25x49 | 25 | 3,4 | 18302525049 |
| | 27000 | 30x50 | 17 | 4,6 | 27302530050 |
| | 33000 | 35x50 | 14 | 5,5 | 33302535050 |
| | 47000 | 35x66 | 10 | 7,2 | 47302535066 |
| 40 | 560 | 10x30 | 682 | 0,3 | 56104010030 |
| | 1000 | 12x30 | 382 | 0,5 | 10204012030 |
| | 1500 | 14x30 | 255 | 0,6 | 15204014030 |
| | 1800 | 14x37 | 212 | 0,8 | 18204014037 |
| | 1800 | 16x30 | 212 | 0,8 | 18204016030 |
| | 2200 | 16x39 | 174 | 0,9 | 22204016039 |
| | 2200 | 18x30 | 174 | 0,9 | 22204018030 |
| | 3300 | 18x39 | 116 | 1,2 | 33204018039 |
| | 3900 | 21x36 | 98 | 1,4 | 39204021036 |
| | 5600 | 25x38 | 68 | 1,9 | 56204025038 |
| | 10000 | 25x49 | 38 | 2,7 | 10304025049 |
| | 15000 | 30x50 | 25 | 3,7 | 15304030050 |
| | 22000 | 35x50 | 17 | 4,9 | 22304035050 |
| | 27000 | 35x66 | 14 | 6,0 | 27304035066 |
| 63 | 330 | 10x30 | 869 | 0,3 | 33106310030 |
| | 470 | 12x30 | 610 | 0,4 | 47106312030 |
| | 680 | 14x30 | 422 | 0,5 | 68106314030 |
| | 820 | 14x37 | 350 | 0,6 | 82106314037 |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code A... | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|--------------------|-------------|
| 63 | 1000 | 16x30 | 287 | 0,6 | 10206316030 | |
| | 1200 | 16x39 | 239 | 0,8 | 12206316039 | |
| | 1200 | 18x30 | 239 | 0,8 | 12206318030 | |
| | 1500 | 18x39 | 191 | 0,9 | 15206318039 | |
| | 2200 | 21x36 | 130 | 1,2 | 22206321036 | |
| | 3300 | 25x38 | 87 | 1,6 | 33206325038 | |
| | 5600 | 25x49 | 51 | 2,4 | 56206325049 | |
| | 8200 | 30x50 | 35 | 3,1 | 82206330050 | |
| | 10000 | 30x50 | 29 | 3,6 | 10306330050 | |
| | 12000 | 35x50 | 24 | 4,2 | 12306335050 | |
| | 15000 | 35x66 | 19 | 5,2 | 15306335066 | |
| | 80 | 220 | 10x30 | 1448 | 0,2 | 22108010030 |
| | | 330tt | 12x30 | 965 | 0,3 | 33108012030 |
| | | 470 | 14x30 | 678 | 0,4 | 47108014030 |
| 680 | | 14x37 | 468 | 0,5 | 68108014037 | |
| 680 | | 16x30 | 468 | 0,5 | 68108016030 | |
| 1000 | | 16x39 | 318 | 0,7 | 10208016039 | |
| 1000 | | 18x30 | 318 | 0,7 | 10208018030 | |
| 1200 | | 18x39 | 265 | 0,8 | 12208018039 | |
| 1500 | | 21x36 | 212 | 1,0 | 15208021036 | |
| 2200 | | 25x38 | 145 | 1,3 | 22208025038 | |
| 3900 | | 25x49 | 82 | 1,9 | 39208025049 | |
| 5600 | | 30x50 | 57 | 2,5 | 56208030050 | |
| 8200 | | 35x50 | 39 | 3,3 | 82208035050 | |
| 12000 | | 35x66 | 27 | 4,4 | 12308035066 | |
| 100 | 150 | 10x30 | 1062 | 0,3 | 15110010030 | |
| | 220 | 12x30 | 724 | 0,4 | 22110012030 | |
| | 330 | 14x30 | 483 | 0,5 | 33110014030 | |
| | 390 | 14x37 | 408 | 0,5 | 39110014037 | |
| | 470 | 16x30 | 339 | 0,6 | 47110016030 | |
| | 560 | 16x39 | 284 | 0,7 | 56110016039 | |
| | 560 | 18x30 | 284 | 0,7 | 56110018030 | |
| | 680 | 18x39 | 234 | 0,9 | 68110018039 | |
| | 1000 | 21x36 | 159 | 1,1 | 10210021036 | |
| | 1500 | 25x38 | 106 | 1,5 | 15210025038 | |
| | 2200 | 25x49 | 72 | 2,0 | 22210025049 | |
| | 3300 | 30x50 | 48 | 2,7 | 33210030050 | |
| | 4700 | 35x50 | 34 | 3,5 | 47210035050 | |
| | 6800 | 35x66 | 23 | 4,7 | 68210035066 | |
| 160 | 56 | 10x30 | 1990 | 0,2 | 56016010030 | |
| | 100 | 12x30 | 1115 | 0,3 | 10116012030 | |
| | 120 | 14x30 | 929 | 0,3 | 12116014030 | |
| | 150 | 14x37 | 743 | 0,4 | 15116014037 | |
| | 150 | 16x30 | 743 | 0,4 | 15116016030 | |
| | 220 | 16x39 | 507 | 0,5 | 22116016039 | |
| 220 | 18x30 | 507 | 0,5 | 22116018030 | | |

Stand: 12/2019

85°C

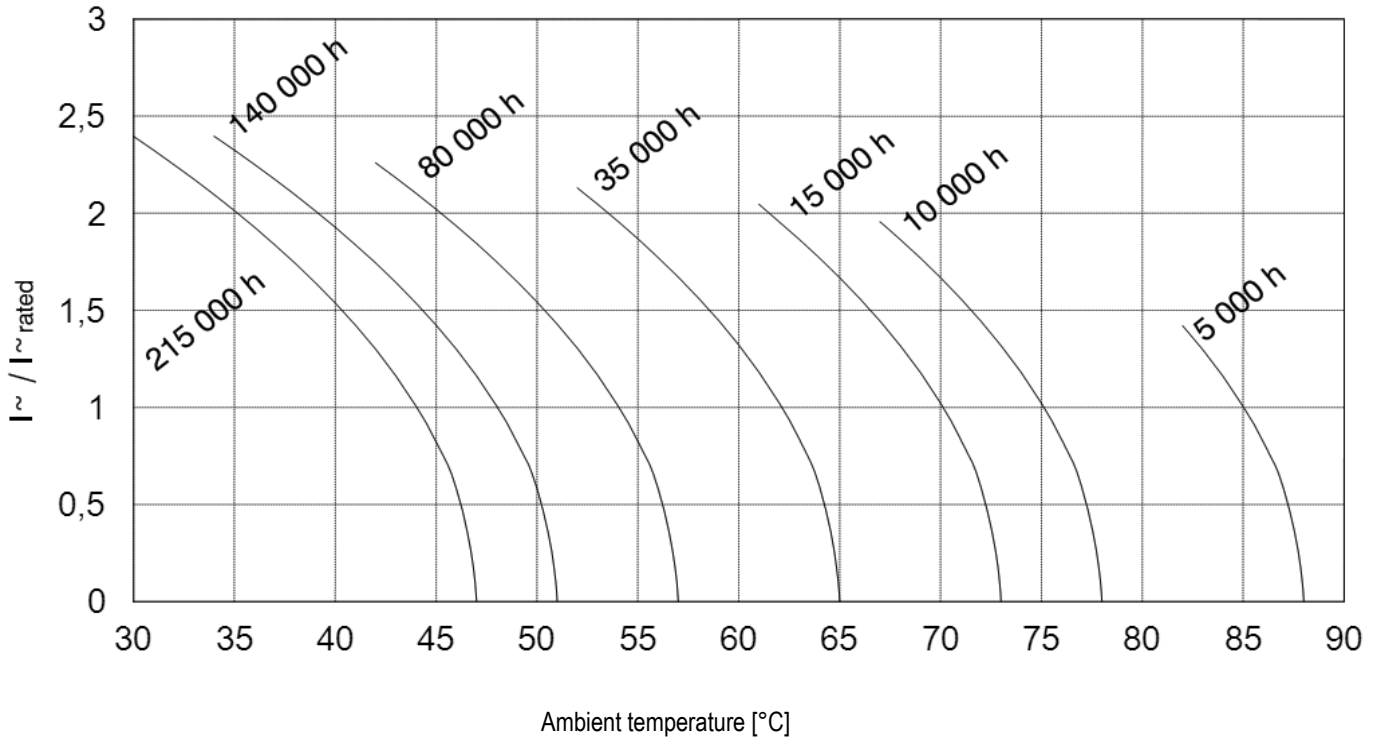


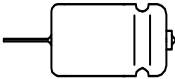
A

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code A... |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|--------------------|
| 160 | 270 | 18x39 | 413 | 0,6 | 27116018039 |
| | 330 | 21x36 | 338 | 0,8 | 33116021036 |
| | 560 | 25x38 | 199 | 1,1 | 56116025038 |
| | 1000 | 25x49 | 111 | 1,6 | 10216025049 |
| | 1500 | 30x50 | 74 | 2,1 | 15216030050 |
| | 1800 | 35x50 | 62 | 2,6 | 18216035050 |
| | 2700 | 35x66 | 41 | 3,5 | 27216035066 |
| 250 | 33 | 10x30 | 2895 | 0,2 | 33025010030 |
| | 56 | 12x30 | 1706 | 0,2 | 56025012030 |
| | 82 | 14x30 | 1165 | 0,3 | 82025014030 |
| | 100 | 14x37 | 955 | 0,4 | 10125014037 |
| | 100 | 16x30 | 955 | 0,4 | 10125016030 |
| | 150 | 16x39 | 637 | 0,5 | 15125016039 |
| | 150 | 18x30 | 637 | 0,5 | 15125018030 |
| | 180 | 18x39 | 531 | 0,6 | 18125018039 |
| | 220 | 21x36 | 434 | 0,7 | 22125021036 |
| | 390 | 25x38 | 245 | 1,0 | 39125025038 |
| | 680 | 25x49 | 141 | 1,4 | 68125025049 |
| | 820 | 30x50 | 117 | 1,7 | 82125030050 |
| | 1200 | 35x50 | 80 | 2,3 | 12225035050 |
| 1800 | 35x66 | 53 | 3,1 | 18225035066 | |
| 350 | 22 | 10x30 | 4343 | 0,1 | 22035010030 |
| | 33 | 12x30 | 2895 | 0,2 | 33035012030 |
| | 47 | 14x30 | 2033 | 0,2 | 47035014030 |
| | 56 | 14x37 | 1706 | 0,3 | 56035014037 |
| | 56 | 16x30 | 1706 | 0,3 | 56035016030 |
| | 68 | 16x39 | 1405 | 0,3 | 68035016039 |
| | 68 | 18x30 | 1405 | 0,3 | 68035018030 |
| | 100 | 18x39 | 955 | 0,4 | 10135018039 |
| | 120 | 21x36 | 796 | 0,5 | 12135021036 |
| | 220 | 25x38 | 434 | 0,7 | 22135025038 |
| | 330 | 25x49 | 290 | 1,0 | 33135025049 |
| | 470 | 30x50 | 203 | 1,3 | 47135030050 |
| | 680 | 35x50 | 141 | 1,7 | 68135035050 |
| | 820 | 35x66 | 117 | 2,1 | 82135035066 |
| 400 | 18 | 10x30 | 7077 | 0,1 | 18040010030 |
| | 27 | 12x30 | 4718 | 0,1 | 27040012030 |
| | 39 | 14x30 | 3266 | 0,2 | 39040014030 |
| | 47 | 14x37 | 2710 | 0,2 | 47040014037 |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code A... |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|--------------------|
| 400 | 47 | 16x30 | 2710 | 0,2 | 47040016030 |
| | 56 | 16x39 | 2275 | 0,3 | 56040016039 |
| | 56 | 18x30 | 2275 | 0,2 | 56040018030 |
| | 68 | 18x39 | 1873 | 0,3 | 68040018039 |
| | 100 | 21x36 | 1274 | 0,4 | 10140021036 |
| | 150 | 25x38 | 849 | 0,5 | 15140025038 |
| | 220 | 25x49 | 579 | 0,7 | 22140025049 |
| | 330 | 30x50 | 386 | 0,9 | 33140030050 |
| | 470 | 35x50 | 271 | 1,2 | 47140035050 |
| | 680 | 35x66 | 187 | 1,7 | 68140035066 |
| | 450 | 10 | 10x30 | 11146 | 0,1 |
| 15 | | 12x30 | 7431 | 0,1 | 15045012030 |
| 22 | | 14x30 | 5067 | 0,1 | 22045014030 |
| 33 | | 14x37 | 3378 | 0,2 | 33045014037 |
| 39 | | 16x30 | 2858 | 0,2 | 39045016030 |
| 47 | | 16x39 | 2372 | 0,3 | 47045016039 |
| 47 | | 18x30 | 2372 | 0,2 | 47045018030 |
| 56 | | 18x39 | 1990 | 0,3 | 56045018039 |
| 100 | | 21x36 | 1115 | 0,4 | 10145021036 |
| 150 | | 25x38 | 743 | 0,6 | 15145025038 |
| 220 | | 25x49 | 507 | 0,8 | 22145025049 |
| 330 | | 30x50 | 338 | 1,0 | 33145030050 |
| 470 | | 35x50 | 237 | 1,3 | 47145035050 |
| 560 | | 35x66 | 199 | 1,6 | 56145035066 |
| 500 | 4,7 | 10x30 | 23716 | 0,1 | 4,750010030 |
| | 6,8 | 10x30 | 14043 | 0,1 | 6,850010030 |
| | 10 | 12x30 | 11146 | 0,1 | 10050012030 |
| | 12 | 14x30 | 9289 | 0,1 | 12050014030 |
| | 15 | 14x37 | 7431 | 0,1 | 15050014037 |
| | 15 | 16x30 | 7431 | 0,1 | 15050016030 |
| | 22 | 16x39 | 5067 | 0,2 | 22050016039 |
| | 22 | 18x30 | 5067 | 0,2 | 22050018030 |
| | 33 | 18x39 | 3378 | 0,2 | 33050018039 |
| | 47 | 21x36 | 2372 | 0,3 | 47050021036 |
| | 82 | 25x38 | 1359 | 0,4 | 82050025038 |
| | 120 | 25x49 | 929 | 0,6 | 12150025049 |
| | 180 | 30x50 | 619 | 0,7 | 18150030050 |
| | 220 | 35x50 | 507 | 0,9 | 22150035050 |
| | 330 | 35x66 | 338 | 1,2 | 33150035066 |

■ USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



105°C  AH



■ FEATURES

- All contacts welded
- High ripple current
- Welded axial leads
- High reliability

■ APPLICATIONS

- HiFi
- Industrial
- Telecommunications

RoHS compliant
REACH compliant

■ GENERAL SPECIFICATIONS

| Items | Characteristics |
|---|---|
| Rated capacitance range C_R | 10... 82.000 μ F |
| Capacitance tolerance | \pm 20% |
| Rated voltage range U | 16 ... 450 V |
| Surge voltage U_S | $U_R \leq 315$ V: $U_S = 1,15 U_R$; $U_R > 315$ V: $U_S = 1,10 U_R$ |
| Max. reverse voltage | 2 V |
| Category temperature range | - 40°C ... + 105 °C |
| Leakage current I_L after 5 min @ U_R | $\leq 0,008 * C_R [\mu F] * U_R [V] + 6 \mu A [\mu A]$ |
| Useful life 3000 h @ 105 °C ; U_R ; I_R | Requirements $\Delta C/C \leq 30$ % of initial value ; ESR ≤ 300 % of specified ; limit $I_L \leq$ specified limit |
| Endurance test 2000 h @ 105 °C , U_R | Requirements $\Delta C/C \leq 20$ % of initial value ; ESR ≤ 130 % of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 40/105/56 |
| Voltage proof of the external insulation | D ≤ 25 mm: ≥ 1000 V AC ; D > 25 mm: ≥ 2500 V AC |
| Sectional specification | IEC 60384-4 |
| \varnothing leads | Up to 25 mm \varnothing : 0,8 mm ; more than 25 mm \varnothing : 1,0 mm |

Different voltages and capacitance combinations are available on request. Also in small lots.

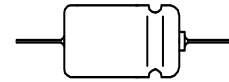
Stand: 12/2019

ELECTRICAL DATA AND ORDERING CODE FOR SERIES AH

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code AH... |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|---------------------|
| 16 | 2200 | 10x30 | 203 | 0,6 | 22201610030 |
| | 3300 | 12x30 | 135 | 0,8 | 33201612030 |
| | 4700 | 14x30 | 95 | 1,0 | 47201614030 |
| | 4700 | 14x37 | 95 | 1,1 | 47201614037 |
| | 5600 | 16x30 | 80 | 1,2 | 56201616030 |
| | 8200 | 16x39 | 54 | 1,7 | 82201616039 |
| | 8200 | 18x30 | 54 | 1,6 | 82201618030 |
| | 10000 | 18x39 | 45 | 2,0 | 10301618039 |
| | 12000 | 21x36 | 37 | 2,3 | 12301621036 |
| | 18000 | 25x38 | 25 | 3,1 | 18301625038 |
| | 33000 | 25x49 | 14 | 4,6 | 33301625049 |
| | 47000 | 30x50 | 9 | 6,0 | 47301630050 |
| | 56000 | 35x50 | 8 | 7,2 | 56301635050 |
| | 82000 | 35x66 | 6 | 9,6 | 82301635066 |
| 25 | 1200 | 10x30 | 372 | 0,4 | 12202510030 |
| | 1800 | 12x30 | 248 | 0,6 | 18202512030 |
| | 2700 | 14x30 | 165 | 0,8 | 27202514030 |
| | 3300 | 14x37 | 135 | 0,9 | 33202514037 |
| | 3300 | 16x30 | 135 | 0,9 | 33202516030 |
| | 4700 | 16x39 | 95 | 1,3 | 47202516039 |
| | 4700 | 18x30 | 95 | 1,2 | 47202518030 |
| | 5600 | 18x39 | 80 | 1,5 | 56202518039 |
| | 6800 | 21x36 | 66 | 1,7 | 68202521036 |
| | 10000 | 25x38 | 45 | 2,3 | 10302525038 |
| | 18000 | 25x49 | 25 | 3,4 | 18302525049 |
| | 27000 | 30x50 | 17 | 4,6 | 27302530050 |
| | 33000 | 35x50 | 14 | 5,5 | 33302535050 |
| | 47000 | 35x66 | 10 | 7,2 | 47302535066 |
| 40 | 560 | 10x30 | 682 | 0,3 | 56104010030 |
| | 1000 | 12x30 | 382 | 0,5 | 10204012030 |
| | 1500 | 14x30 | 255 | 0,6 | 15204014030 |
| | 1800 | 14x37 | 212 | 0,8 | 18204014037 |
| | 1800 | 16x30 | 212 | 0,8 | 18204016030 |
| | 2200 | 16x39 | 174 | 0,9 | 22204016039 |
| | 2200 | 18x30 | 174 | 0,9 | 22204018030 |
| | 3300 | 18x39 | 116 | 1,2 | 33204018039 |
| | 3900 | 21x36 | 98 | 1,4 | 39204021036 |
| | 5600 | 25x38 | 68 | 1,9 | 56204025038 |
| | 10000 | 25x49 | 38 | 2,7 | 10304025049 |
| | 15000 | 30x50 | 25 | 3,7 | 15304030050 |
| | 22000 | 35x50 | 17 | 4,9 | 22304035050 |
| | 27000 | 35x66 | 14 | 6,0 | 27304035066 |
| 63 | 330 | 10x30 | 869 | 0,3 | 33106310030 |
| | 470 | 12x30 | 610 | 0,4 | 47106312030 |
| | 680 | 14x30 | 422 | 0,5 | 68106314030 |
| | 820 | 14x37 | 350 | 0,6 | 82106314037 |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code AH... |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|---------------------|
| 63 | 1000 | 16x30 | 287 | 0,6 | 10206316030 |
| | 1200 | 16x39 | 239 | 0,8 | 12206316039 |
| | 1200 | 18x30 | 239 | 0,8 | 12206318030 |
| | 1500 | 18x39 | 191 | 0,9 | 15206318039 |
| | 2200 | 21x36 | 130 | 1,2 | 22206321036 |
| | 3300 | 25x38 | 87 | 1,6 | 33206325038 |
| | 5600 | 25x49 | 51 | 2,4 | 56206325049 |
| | 8200 | 30x50 | 35 | 3,1 | 82206330050 |
| | 10000 | 30x50 | 29 | 3,6 | 10306330050 |
| | 12000 | 35x50 | 24 | 4,2 | 12306335050 |
| | 15000 | 35x66 | 19 | 5,2 | 15306335066 |
| | 220 | 10x30 | 1448 | 0,2 | 22108010030 |
| | 330 | 12x30 | 965 | 0,3 | 33108012030 |
| | 470 | 14x30 | 678 | 0,4 | 47108014030 |
| 80 | 680 | 14x37 | 468 | 0,5 | 68108014037 |
| | 680 | 16x30 | 468 | 0,5 | 68108016030 |
| | 1000 | 16x39 | 318 | 0,7 | 10208016039 |
| | 1000 | 18x30 | 318 | 0,7 | 10208018030 |
| | 1200 | 18x39 | 265 | 0,8 | 12208018039 |
| | 1500 | 21x36 | 212 | 1,0 | 15208021036 |
| | 2200 | 25x38 | 145 | 1,3 | 22208025038 |
| | 3900 | 25x49 | 82 | 1,9 | 39208025049 |
| | 5600 | 30x50 | 57 | 2,5 | 56208030050 |
| | 8200 | 35x50 | 39 | 3,3 | 82208035050 |
| | 12000 | 35x66 | 27 | 4,4 | 12308035066 |
| | 150 | 10x30 | 1062 | 0,3 | 15110010030 |
| | 220 | 12x30 | 724 | 0,4 | 22110012030 |
| | 330 | 14x30 | 483 | 0,5 | 33110014030 |
| 100 | 390 | 14x37 | 408 | 0,5 | 39110014037 |
| | 470 | 16x30 | 339 | 0,6 | 47110016030 |
| | 560 | 16x39 | 284 | 0,7 | 56110016039 |
| | 560 | 18x30 | 284 | 0,7 | 56110018030 |
| | 680 | 18x39 | 234 | 0,9 | 68110018039 |
| | 1000 | 21x36 | 159 | 1,1 | 10210021036 |
| | 1500 | 25x38 | 106 | 1,5 | 15210025038 |
| | 2200 | 25x49 | 72 | 2,0 | 22210025049 |
| | 3300 | 30x50 | 48 | 2,7 | 33210030050 |
| | 4700 | 35x50 | 34 | 3,5 | 47210035050 |
| | 6800 | 35x66 | 23 | 4,7 | 68210035066 |
| | 56 | 10x30 | 1990 | 0,2 | 56016010030 |
| | 100 | 12x30 | 1115 | 0,3 | 10116012030 |
| | 120 | 14x30 | 929 | 0,3 | 12116014030 |
| 160 | 150 | 14x37 | 743 | 0,4 | 15116014037 |
| | 150 | 16x30 | 743 | 0,4 | 15116016030 |
| | 220 | 16x39 | 507 | 0,5 | 22116016039 |
| | 220 | 18x30 | 507 | 0,5 | 22116018030 |

105°C

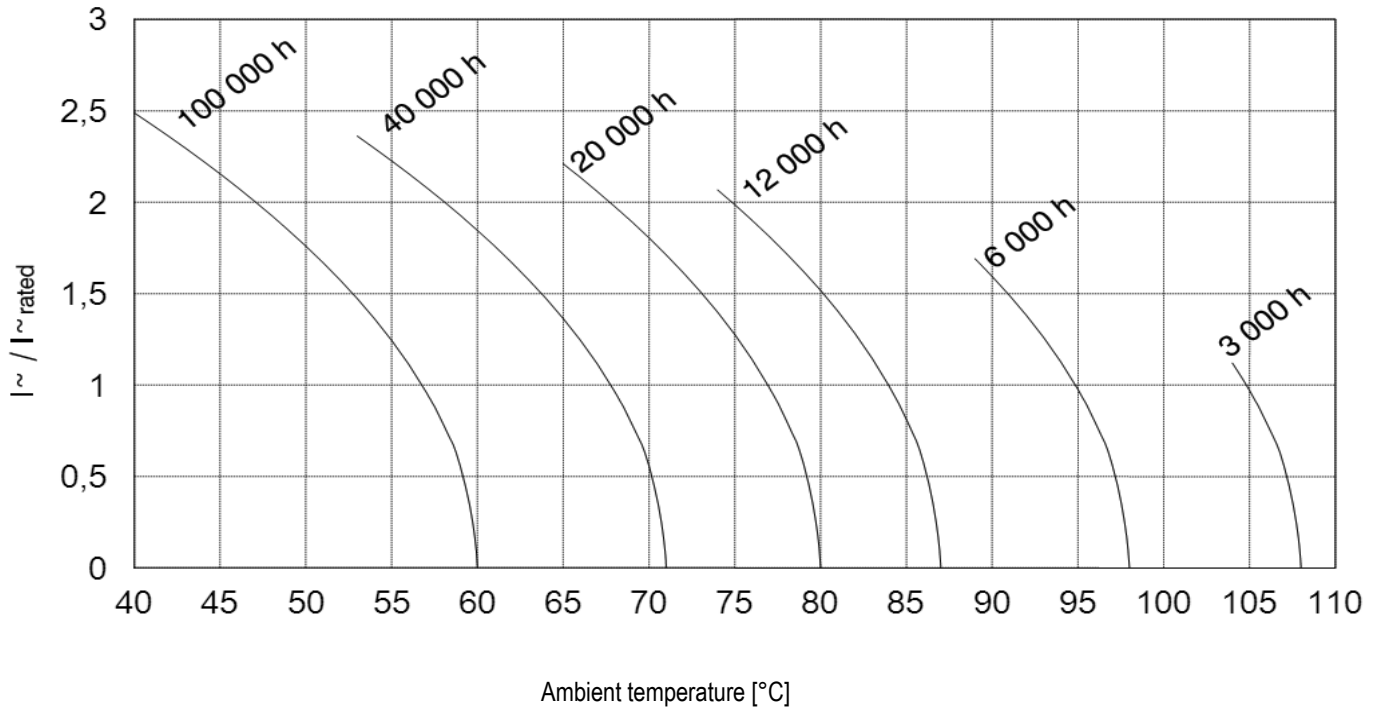


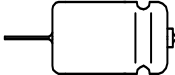
AH

| Rated voltage U_R [V] | Rated cap. C_R [μ F] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [m Ω] | Ripple current IR~ 100 Hz, 105°C [A] | Order code AH... |
|-------------------------------|-----------------------------------|----------------------------|--|---|---------------------|
| 160 | 270 | 18x39 | 413 | 0,6 | 27116018039 |
| | 330 | 21x36 | 338 | 0,8 | 33116021036 |
| | 560 | 25x38 | 199 | 1,1 | 56116025038 |
| | 1000 | 25x49 | 111 | 1,6 | 10216025049 |
| | 1500 | 30x50 | 74 | 2,1 | 15216030050 |
| | 1800 | 35x50 | 62 | 2,6 | 18216035050 |
| | 2700 | 35x66 | 41 | 3,5 | 27216035066 |
| 250 | 33 | 10x30 | 2895 | 0,2 | 33025010030 |
| | 56 | 12x30 | 1706 | 0,2 | 56025012030 |
| | 82 | 14x30 | 1165 | 0,3 | 82025014030 |
| | 100 | 14x37 | 955 | 0,4 | 10125014037 |
| | 100 | 16x30 | 955 | 0,4 | 10125016030 |
| | 150 | 16x39 | 637 | 0,5 | 15125016039 |
| | 150 | 18x30 | 637 | 0,5 | 15125018030 |
| | 180 | 18x39 | 531 | 0,6 | 18125018039 |
| | 220 | 21x36 | 434 | 0,7 | 22125021036 |
| | 390 | 25x38 | 245 | 1,0 | 39125025038 |
| | 680 | 25x49 | 141 | 1,4 | 68125025049 |
| | 820 | 30x50 | 117 | 1,7 | 82125030050 |
| | 1200 | 35x50 | 80 | 2,3 | 12225035050 |
| | 1800 | 35x66 | 53 | 3,1 | 18225035066 |
| 350 | 22 | 10x30 | 4343 | 0,1 | 22035010030 |
| | 33 | 12x30 | 2895 | 0,2 | 33035012030 |
| | 47 | 14x30 | 2033 | 0,2 | 47035014030 |
| | 56 | 14x37 | 1706 | 0,3 | 56035014037 |
| | 56 | 16x30 | 1706 | 0,3 | 56035016030 |
| | 68 | 16x39 | 1405 | 0,3 | 68035016039 |
| | 68 | 18x30 | 1405 | 0,3 | 68035018030 |
| | 100 | 18x39 | 955 | 0,4 | 10135018039 |
| | 120 | 21x36 | 796 | 0,5 | 12135021036 |
| | 120 | 21x36 | 796 | 0,5 | 12135021036 |
| | 220 | 25x38 | 434 | 0,7 | 22135025038 |

| Rated voltage U_R [V] | Rated cap. C_R [μ F] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [m Ω] | Ripple current IR~ 100 Hz, 105°C [A] | Order code AH... |
|-------------------------------|-----------------------------------|----------------------------|--|---|---------------------|
| 350 | 330 | 25x49 | 290 | 1,0 | 33135025049 |
| | 470 | 30x50 | 203 | 1,3 | 47135030050 |
| | 680 | 35x50 | 141 | 1,7 | 68135035050 |
| | 820 | 35x66 | 117 | 2,1 | 82135035066 |
| | 400 | 18 | 10x30 | 7077 | 0,1 |
| 27 | | 12x30 | 4718 | 0,1 | 27040012030 |
| 39 | | 14x30 | 3266 | 0,2 | 39040014030 |
| 47 | | 14x37 | 2710 | 0,2 | 47040014037 |
| 47 | | 16x30 | 2710 | 0,2 | 47040016030 |
| 56 | | 16x39 | 2275 | 0,3 | 56040016039 |
| 56 | | 18x30 | 2275 | 0,2 | 56040018030 |
| 68 | | 18x39 | 1873 | 0,3 | 68040018039 |
| 100 | | 21x36 | 1274 | 0,4 | 10140021036 |
| 150 | | 25x38 | 849 | 0,5 | 15140025038 |
| 220 | | 25x49 | 579 | 0,7 | 22140025049 |
| 330 | | 30x50 | 386 | 0,9 | 33140030050 |
| 470 | | 35x50 | 271 | 1,2 | 47140035050 |
| 680 | | 35x66 | 187 | 1,7 | 68140035066 |
| 450 | | 10 | 10x30 | 11146 | 0,1 |
| | 15 | 12x30 | 7431 | 0,1 | 15045012030 |
| | 22 | 14x30 | 5067 | 0,1 | 22045014030 |
| | 33 | 14x37 | 3378 | 0,2 | 33045014037 |
| | 39 | 16x30 | 2858 | 0,2 | 39045016030 |
| | 47 | 16x39 | 2372 | 0,3 | 47045016039 |
| | 47 | 18x30 | 2372 | 0,2 | 47045018030 |
| | 56 | 18x39 | 1990 | 0,3 | 56045018039 |
| | 100 | 21x36 | 1115 | 0,4 | 10145021036 |
| | 150 | 25x38 | 743 | 0,6 | 15145025038 |
| | 220 | 25x49 | 507 | 0,8 | 22145025049 |
| | 330 | 30x50 | 338 | 1,0 | 33145030050 |
| | 470 | 35x50 | 237 | 1,3 | 47145035050 |
| | 560 | 35x66 | 199 | 1,6 | 56145035066 |

■ USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



125°C  AG



AXIAL TERMINALS

LOW MOUNTING HEIGHT

HIGH CV PRODUCT

LONG LIFE 2000 H @ 125 °C

LOW TEMPERATURE -55°C

■ FEATURES

- All contacts welded
- High temp 125°C
- Long useful life

■ APPLICATIONS

- Automotive
- Inverter/drives
- Laser
- Industrial

RoHS compliant
REACH compliant

■ GENERAL SPECIFICATIONS

| Items | Characteristics |
|---|---|
| Rated capacitance range C_R | 150... 82.000 μ F |
| Capacitance tolerance | \pm 20% |
| Rated voltage range U | 16 ... 63 V |
| Surge voltage U_S | $U_S = 1,15 U_R$ |
| Max. reverse voltage | 2 V |
| Category temperature range | - 55°C ... + 125 °C |
| Leakage current I_L after 5 min @ U_R | $\leq 0,004 * C_R [\mu F] * U_R [V] + 6 \mu A [\mu A]$ |
| Useful life 2000 h @ 125 °C ; U_R ; I_R | Requirements $\Delta C/C \leq 30$ % of initial value ; ESR ≤ 300 % of specified ; limit $I_L \leq$ specified limit |
| Endurance test 1000 h @ 125 °C , U_R | Requirements $\Delta C/C \leq 20$ % of initial value ; ESR ≤ 130 % of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 40/125/56 |
| Voltage proof of the external insulation | D \leq 25 mm: ≥ 1000 V AC ; D > 25 mm: ≥ 2500 V AC |
| Sectional specification | IEC 60384-4 |
| \emptyset leads | Up to 25 mm \emptyset : 0,8 mm ; more than 25 mm \emptyset : 1,0 mm |

Different voltages and capacitance combinations are available on request. Also in small lots.

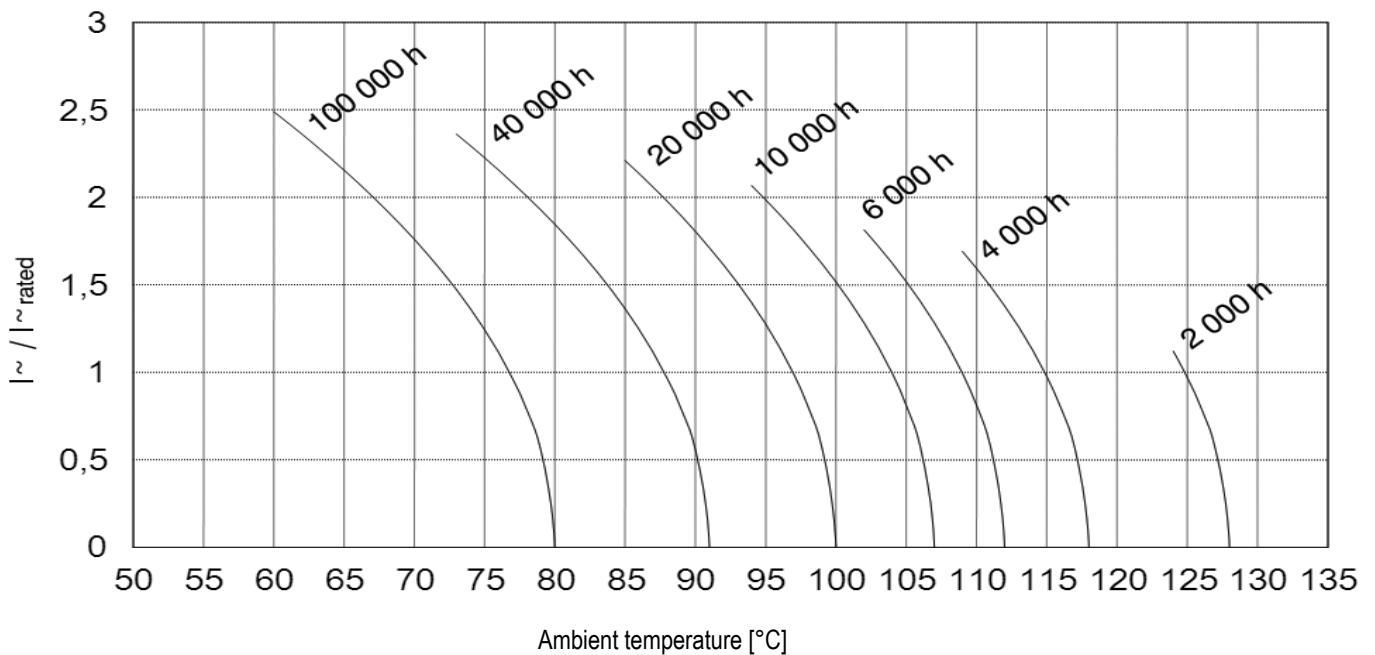
Stand: 12/2019

ELECTRICAL DATA AND ORDERING CODE FOR SERIES AG

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 125°C [A] | Order code AG... |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|---------------------|
| 16 | 1000 | 10x30 | 223 | 0,6 | 10201610030 |
| | 1200 | 12x30 | 186 | 0,7 | 12201612030 |
| | 1500 | 14x30 | 149 | 0,8 | 15201614030 |
| | 2200 | 14x37 | 101 | 1,1 | 22201614037 |
| | 2200 | 16x30 | 101 | 1,1 | 22201616030 |
| | 3300 | 16x39 | 68 | 1,5 | 33201616039 |
| | 3300 | 18x30 | 68 | 1,4 | 33201618030 |
| | 3900 | 18x39 | 57 | 1,7 | 39201618039 |
| | 4700 | 21x36 | 47 | 2,0 | 47201621036 |
| | 8200 | 25x38 | 27 | 2,9 | 82201625038 |
| 25 | 470 | 10x30 | 474 | 0,4 | 47102510030 |
| | 680 | 12x30 | 328 | 0,5 | 68102512030 |
| | 1200 | 14x30 | 186 | 0,7 | 12202514030 |
| | 1500 | 14x37 | 149 | 0,9 | 15202514037 |
| | 1500 | 16x30 | 149 | 0,9 | 15202516030 |
| | 1800 | 16x39 | 124 | 1,1 | 18202516039 |
| | 1800 | 18x30 | 124 | 1,1 | 18202518030 |
| | 2200 | 18x39 | 101 | 1,3 | 22202518039 |
| | 3300 | 21x36 | 68 | 1,7 | 33202521036 |
| | 4700 | 25x38 | 47 | 2,2 | 47202525038 |

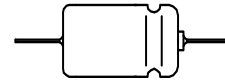
| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 125°C [A] | Order code AG... |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|---------------------|
| 40 | 270 | 10x30 | 708 | 0,3 | 27104010030 |
| | 470 | 12x30 | 407 | 0,5 | 47104012030 |
| | 560 | 14x30 | 341 | 0,5 | 56104014030 |
| | 680 | 14x37 | 281 | 0,7 | 68104014037 |
| | 680 | 16x30 | 281 | 0,7 | 68104016030 |
| | 1000 | 16x39 | 191 | 0,9 | 10204016039 |
| | 1000 | 18x30 | 191 | 0,9 | 10204018030 |
| | 1200 | 18x39 | 159 | 1,0 | 12204018039 |
| | 1500 | 21x36 | 127 | 1,2 | 15204021036 |
| | 2200 | 25x38 | 87 | 1,6 | 22204025038 |
| 63 | 150 | 10x30 | 1062 | 0,3 | 15106310030 |
| | 220 | 12x30 | 724 | 0,4 | 22106312030 |
| | 330 | 14x30 | 483 | 0,5 | 33106314030 |
| | 470 | 14x37 | 339 | 0,6 | 47106314037 |
| | 470 | 16x30 | 339 | 0,6 | 47106316030 |
| | 560 | 16x39 | 284 | 0,7 | 56106316039 |
| | 560 | 18x30 | 284 | 0,7 | 56106318030 |
| | 820 | 18x39 | 194 | 0,9 | 82106318039 |
| | 1000 | 21x36 | 159 | 1,1 | 10206321036 |
| | 1500 | 25x38 | 106 | 1,5 | 15206325038 |

USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



Stand: 12/2019

85°C



ATBI



AXIAL TERMINALS

BIPOLAR CONSTRUCTION

FOR CROSSOVER NETWORKS

■ FEATURES

- All contacts welded
- Bipolar

■ APPLICATIONS

- HiFi
- Consumer

RoHS compliant
REACH compliant

■ GENERAL SPECIFICATIONS

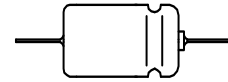
| Items | Characteristics |
|--|---|
| Rated capacitance range C_R | 1... 100 μ F |
| Capacitance tolerance | $\pm 20\%$; $\pm 10\%$ on request |
| U_R bipolar (rated voltage DC) | 63 V dc @ 23 V ac ; 100 V dc @ 35 V ac |
| Max. peak voltage (AC) | May not exceed rated voltage (DC) |
| Category temperature range | - 40°C ... + 85 °C |
| Useful life > 5000 h @ 85 °C > 1000 h @ 105°C | Requirements $\Delta C/C \leq 30\%$ of initial value ; ESR $\leq 300\%$ of specified ; limit $I_L \leq$ specified limit |
| Endurance test 100.000 h @ 40 °C | Requirements $\Delta C/C \leq 20\%$ of initial value ; ESR $\leq 130\%$ of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 40/085/56 |
| Voltage proof of the external insulation | D ≤ 25 mm: ≥ 1000 V AC ; D > 25 mm: ≥ 2500 V AC |
| \emptyset leads | Up to 25 mm \emptyset : 0,8 mm ; more than 25 mm \emptyset : 1,0 mm |

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand: 12/2019



85°C



ATBI

ELECTRICAL DATA AND ORDERING CODE FOR SERIES AG

| Rated voltage U_R [V] | Rated capacitance (other values available on request) C_R [μF] | Case size D x L [mm] | Order code ATBI... |
|-------------------------------|---|-----------------------------|---------------------------|
| 23 Vac @ 50 Hz | 1,0 | 10x20 | 1,002310020 |
| | 2,2 | 10x20 | 2,202310020 |
| | 3,3 | 10x20 | 3,302310020 |
| | 4,7 | 10x20 | 4,702310020 |
| | 6,8 | 10x20 | 6,802310020 |
| | 10 | 10x30 | 10002310030 |
| | 15 | 10x30 | 15002310030 |
| | 22 | 12x30 | 22002312030 |
| | 33 | 12x30 | 33002312030 |
| | 47 | 14x37 | 47002314037 |
| | 68 | 16x39 | 68002316039 |
| | 100 | 18x39 | 10102318039 |
| | 220 | 25x38 | 22102325038 |
| | 330 | 25x38 | 33102325038 |
| | 470 | 25x38 | 47102325038 |
| | 560 | 25x38 | 56102325038 |
| | 680 | 25x38 | 68102325038 |
| | 880 | 25x49 | 80102325049 |
| 1000 | 25x49 | 10202325049 | |
| 35 Vac @ 50 Hz | 1,0 | 10x20 | 1,003510020 |
| | 2,2 | 10x30 | 2,203510030 |
| | 3,3 | 10x30 | 3,303510030 |
| | 4,7 | 10x30 | 4,703510030 |
| | 6,8 | 10x30 | 6,803510030 |
| | 10 | 10x30 | 10003510030 |
| | 15 | 10x30 | 15003510030 |
| | 22 | 12x30 | 22003512030 |
| | 33 | 12x30 | 33003512030 |
| | 47 | 14x37 | 47003514037 |
| | 68 | 16x39 | 68003516039 |
| | 100 | 18x39 | 10103518039 |
| | 220 | 25x38 | 2203525038 |

Stand: 12/2019

85°C



ATBIG



AXIAL TERMINALS

BIPOLAR CONSTRUCTION

PLAIN FOIL

FOR CROSSOVER NETWORKS

■ FEATURES

- All contacts welded
- Bipolar

■ APPLICATIONS

- HiFi
- Consumer

RoHS compliant
REACH compliant

■ GENERAL SPECIFICATIONS

| Items | Characteristics |
|--|---|
| Rated capacitance range C_R | 1... 200 μ F |
| Capacitance tolerance | $\pm 20\%$; $\pm 5\%$ on request |
| U_R bipolar (rated voltage DC) | 35 V dc @ 23 V ac ; 50 V dc @ 35 V ac ; 70V dc @ 50 V ac |
| Max. peak voltage (AC) | May not exceed rated voltage (DC) |
| Category temperature range | - 40°C ... + 85 °C |
| Useful life > 5000 h @ 85 °C > 1000 h @ 105°C | Requirements $\Delta C/C \leq 30\%$ of initial value ; ESR $\leq 300\%$ of specified ; limit $I_L \leq$ specified limit |
| Endurance test 100.000 h @ 40 °C | Requirements $\Delta C/C \leq 20\%$ of initial value ; ESR $\leq 130\%$ of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 40/085/56 |
| Voltage proof of the external insulation | D ≤ 25 mm: ≥ 1000 V AC ; D > 25 mm: ≥ 2500 V AC |
| \emptyset leads | Up to 25 mm \emptyset : 0,8 mm ; more than 25 mm \emptyset : 1,0 mm |

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand: 12/2019

85°C



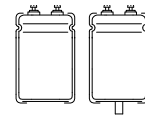
ATBIG

ELECTRICAL DATA AND ORDERING CODE FOR SERIES AG

| Rated voltage U_R [V] | Rated capacitance (other values available on request) C_R [μF] | Case size D x L [mm] | Order code ATBIG... |
|-------------------------------|---|-----------------------------|----------------------------|
| 23 Vac @ 50 Hz | 1,0 | 10x20 | 1,002310020 |
| | 2,2 | 10x30 | 2,202310030 |
| | 3,3 | 10x30 | 3,302310030 |
| | 4,7 | 10x30 | 4,702310030 |
| | 6,8 | 10x30 | 6,802310030 |
| | 10 | 10x30 | 10002310030 |
| | 15 | 14x37 | 15002314037 |
| | 22 | 14x37 | 22002314037 |
| | 33 | 18x39 | 33002318039 |
| | 47 | 21x36 | 47002321036 |
| | 68 | 25x36 | 68002325036 |
| | 100 | 25x36 | 10102325036 |
| | 120 | 25x49 | 12102325049 |
| | 150 | 25x49 | 15102325049 |
| 35 Vac @ 50 Hz | 1,0 | 10x20 | 1,003510020 |
| | 2,2 | 10x30 | 2,203510030 |
| | 3,3 | 10x30 | 3,303510030 |
| | 4,7 | 12x30 | 4,703512030 |
| | 6,8 | 12x30 | 6,803512030 |
| | 10 | 14x37 | 10003514037 |
| | 15 | 16x39 | 15003516039 |
| | 22 | 18x39 | 22003518039 |
| | 33 | 25x36 | 33003525036 |
| | 47 | 25x36 | 47003525036 |
| | 68 | 25x49 | 68003525049 |
| | 100 | 30x49 | 10103530049 |
| | 120 | 30x49 | 12103530049 |
| | 150 | 35x66 | 15103535066 |
| 200 | 35x66 | 20103535066 | |
| 50 Vac @ 50 Hz | 1 | 10x25 | 1,105010025 |
| | 2,2 | 10x30 | 2,205010030 |
| | 3,3 | 10x30 | 3,305010030 |
| | 4,7 | 12x30 | 4,705012030 |
| | 6,8 | 14x30 | 6,805014030 |
| | 10 | 14x37 | 10005014037 |
| | 15 | 18x39 | 15005018039 |
| | 22 | 25x36 | 22005018039 |
| | 33 | 25x36 | 33005025036 |
| | 47 | 25x49 | 47005025049 |
| | 68 | 30x49 | 68005030049 |
| | 100 | 35x49 | 10105035049 |

Stand: 12/2019

85°C



GM



SCREW TERMINALS

HIGH CV PRODUCT

LONG LIFE 8000 H @ 85 °C

■ FEATURES

- All internal contacts welded
- High capacitance
- High CV product
- Low inductance ESL

■ APPLICATIONS

- Computer
- Inverter/drives
- Traction
- Welding

RoHS compliant
REACH compliant

■ GENERAL SPECIFICATIONS

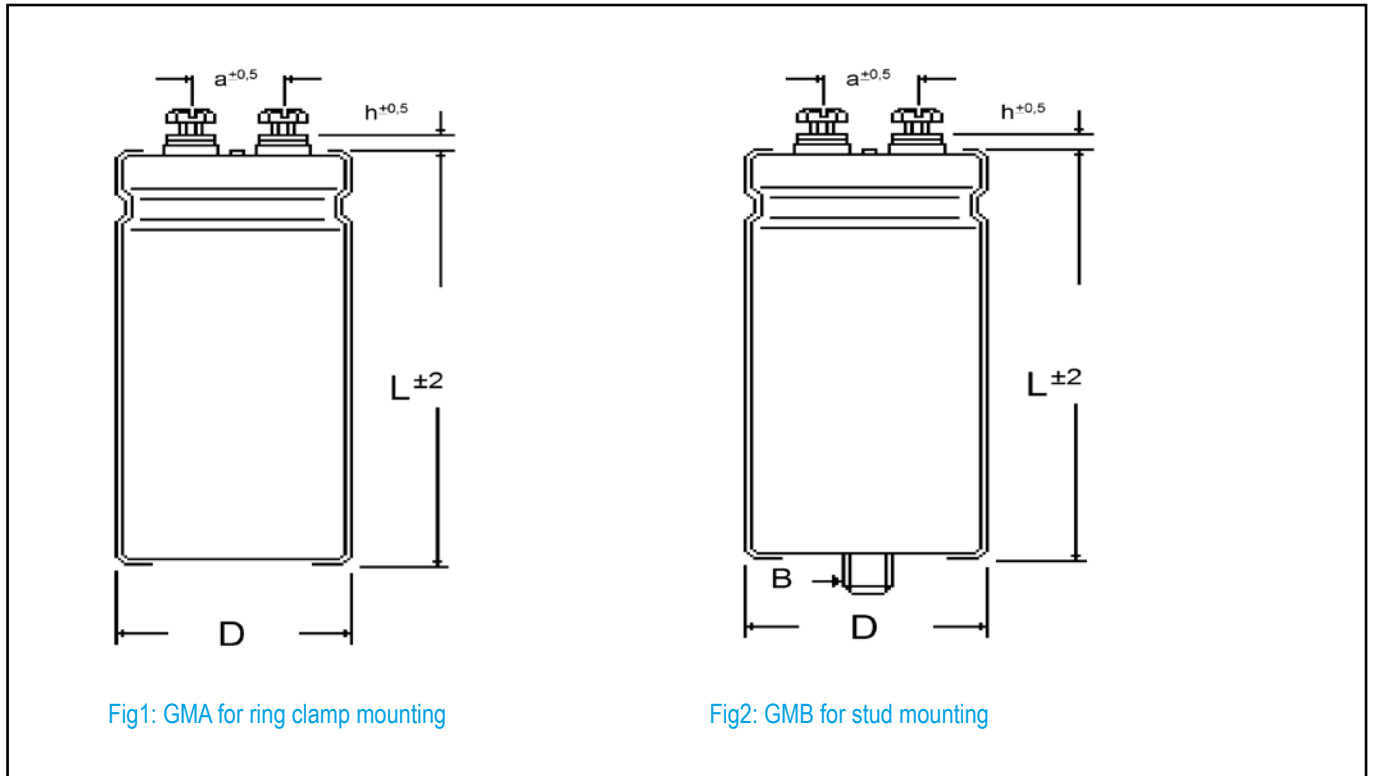
| Items | Characteristics |
|--|---|
| Rated capacitance range C_R | 390... 3.300.000 μ F |
| Capacitance tolerance | \pm 20% |
| Rated voltage range U | 16 ... 500 V |
| Surge voltage U_S | $U_R \leq 315$ V: $U_S = 1,15 U_R$; $U_R > 315$ V: $U_S = 1,10 U_R$ |
| Max. reverse voltage | 2 V / 20 nH |
| Category temperature range | - 40°C ... + 85 °C |
| Leakage current I_L after 5 min @ U_R | $\leq 0,008 * C_R [\mu F] * U_R [V] + 6 \mu A [\mu A]$ |
| Useful life 8000 h @ 85 °C ; U_R ; I_R | Requirements $\Delta C/C \leq 30$ % of initial value ; ESR ≤ 300 % of specified ; limit $I_L \leq$ specified limit |
| Endurance test 4000 h @ 85 °C , U_R | Requirements $\Delta C/C \leq 20$ % of initial value ; ESR ≤ 130 % of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 40/085/56 |
| Voltage proof of the external insulation | ≥ 2500 V AC |
| Sectional specification | IEC 60384-4 |

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand: 12/2019



■ DRAWINGS FOR SERIES GMA AND GMB



■ DIMENSIONS AND MECHANICAL DATA

| Dimensions, case with insulation sleeve | | | | Connecting terminals | | Mounting stud, GMB only | |
|---|--------------------------------------|--------|--------|----------------------|------------------|-------------------------|------------------|
| D [mm] | Case length L available in 5 mm [mm] | h [mm] | a [mm] | Thread | Max. torque [Nm] | B | Max. torque [Nm] |
| 35 | 40 ... 120 | 6 | 13 | M5 | 2,0 | M8 x 12 | 4,0 |
| 40 | 40 ... 120 | 5 | 18 | M5 | 2,0 | M8 x 12 | 4,0 |
| 50 | 40 ... 120 | 5 | 22 | M5 | 2,0 | M12 x 16 | 10,0 |
| 65 | 40 ... 180 | 5 | 28,5 | M5 | 2,0 | M12 x 16 | 10,0 |
| 75 | 40 ... 230 | 5 | 31,7 | M5 ; M6 | 2,0 ; 2,5 | M12 x 16 | 10,0 |
| 90 | 40 ... 230 | 5 | 31,7 | M6 | 2,5 | M12 x 16 | 10,0 |

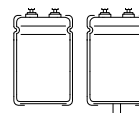
GMA: connecting screws M5 or M6

GMB: connecting screws M5 or M6 + mounting nut M8 or M12

Remarks: Further mounting accessoires like clamps, nylon cup nuts and insulation disks on request, see "accessory equipment".

Stand: 12/2019

85°C



GM

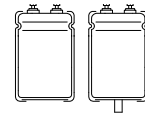
ELECTRICAL DATA AND ORDERING CODE FOR SERIES GM

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|-----------------------|-------------|
| | | | | | Plain base: GMA... | |
| 16 | 82000 | 35x55 | 6 | 9,0 | 82301635055 | |
| | 120000 | 35x70 | 4 | 12,0 | 12401635070 | |
| | 120000 | 40x55 | 4 | 11,1 | 12401640055 | |
| | 150000 | 35x80 | 3 | 14,2 | 15401635080 | |
| | 150000 | 40x70 | 3 | 13,7 | 15401640070 | |
| | 180000 | 35x100 | 3 | 17,0 | 18401635100 | |
| | 180000 | 40x80 | 3 | 15,8 | 18401640080 | |
| | 180000 | 45x70 | 3 | 15,0 | 18401645070 | |
| | 220000 | 40x100 | 2 | 19,1 | 22401640100 | |
| | 220000 | 50x70 | 2 | 17,7 | 22401650070 | |
| | 270000 | 45x100 | 2 | 21,1 | 27401645100 | |
| | 270000 | 50x80 | 2 | 20,6 | 27401650080 | |
| | 390000 | 50x100 | 1 | 27,0 | 39401650100 | |
| | 470000 | 65x80 | 1 | 35,6 | 47401665080 | |
| | 560000 | 65x100 | 1 | 42,1 | 56401665100 | |
| | 820000 | 65x130 | 1 | 56,5 | 82401665130 | |
| | 820000 | 75x100 | 1 | 44,1 | 82401675100 | |
| | 1000000 | 75x115 | 1 | 46,5 | 10501675115 | |
| | 1200000 | 75x145 | 1 | 50,8 | 12501675145 | |
| | 1500000 | 75x165 | 1 | 53,5 | 15501675165 | |
| | 1800000 | 90x148 | 1 | 57,3 | 18501690148 | |
| | 2200000 | 75x225 | 1 | 61,0 | 22501675225 | |
| | 2200000 | 90x170 | 1 | 60,4 | 22501690170 | |
| | 2700000 | 90x220 | 1 | 67,1 | 27501690220 | |
| | 3300000 | 90x230 | 1 | 68,3 | 33501690230 | |
| | 25 | 33000 | 35x55 | 14 | 5,9 | 33302535055 |
| | | 47000 | 35x70 | 9 | 7,8 | 47302535070 |
| | | 47000 | 40x55 | 9 | 7,2 | 47302540055 |
| 56000 | | 35x80 | 8 | 9,0 | 56302535080 | |
| 68000 | | 40x70 | 7 | 9,5 | 68302540070 | |
| 82000 | | 35x100 | 5 | 11,9 | 82301635100 | |
| 68000 | | 40x80 | 7 | 10,0 | 68302540080 | |
| 82000 | | 45x70 | 5 | 10,5 | 82302545070 | |
| 68000 | | 40x100 | 7 | 11,0 | 68302540100 | |
| 100000 | | 50x70 | 4 | 12,3 | 10402550070 | |
| 120000 | | 45x100 | 4 | 14,6 | 12402545100 | |
| 120000 | | 50x80 | 4 | 14,2 | 12402550080 | |
| 150000 | | 50x100 | 3 | 17,3 | 15402550100 | |
| 180000 | | 65x80 | 3 | 22,4 | 18402565080 | |
| 270000 | | 65x100 | 2 | 29,8 | 27402565100 | |
| 330000 | | 75x100 | 1 | 28,5 | 33402575100 | |
| 330000 | | 65x130 | 1 | 36,4 | 33402565130 | |
| 390000 | | 75x115 | 1 | 32,6 | 39402575115 | |
| 560000 | | 75x145 | 1 | 42,7 | 56402575145 | |
| 560000 | | 75x165 | 1 | 45,0 | 56402575165 | |
| 820000 | | 90x148 | 1 | 58,2 | 82402590148 | |
| 820000 | | 75x225 | 1 | 62,0 | 82402575225 | |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|-----------------------|-------------|
| | | | | | Plain base: GMA... | |
| 25 | 820000 | 90x170 | 1 | 61,5 | 82402590170 | |
| | 1200000 | 90x220 | 1 | 82,6 | 12502590220 | |
| | 1500000 | 90x230 | 1 | 94,0 | 15502590230 | |
| | 40 | 18000 | 35x55 | 21 | 4,7 | 18304035055 |
| | | 22000 | 40x55 | 17 | 5,3 | 22304040055 |
| | | 27000 | 35x70 | 14 | 6,4 | 27304035070 |
| | | 33000 | 35x80 | 12 | 7,4 | 33304035080 |
| | | 33000 | 40x70 | 12 | 7,2 | 33304040070 |
| | | 39000 | 35x100 | 10 | 8,9 | 39304035100 |
| | | 39000 | 40x80 | 10 | 8,2 | 39304040080 |
| | | 39000 | 45x70 | 10 | 7,8 | 39304045070 |
| | | 56000 | 50x70 | 7 | 10,0 | 56304050070 |
| 56000 | | 40x100 | 7 | 10,8 | 56304040100 | |
| 68000 | | 50x80 | 6 | 11,6 | 68304050080 | |
| 68000 | | 45x100 | 6 | 11,8 | 68304045100 | |
| 82000 | | 50x100 | 5 | 13,8 | 82304050100 | |
| 100000 | | 65x80 | 4 | 18,3 | 10404065080 | |
| 150000 | | 65x100 | 3 | 24,4 | 15404065100 | |
| 180000 | | 75x100 | 2 | 23,1 | 18404075100 | |
| 180000 | | 65x130 | 2 | 29,6 | 18404065130 | |
| 220000 | | 75x115 | 2 | 26,9 | 22404075115 | |
| 270000 | 75x145 | 1 | 32,6 | 27404075145 | | |
| 330000 | 75x165 | 1 | 38,0 | 33404075165 | | |
| 470000 | 90x148 | 1 | 48,5 | 47404090148 | | |
| 470000 | 75x225 | 1 | 51,6 | 47404075225 | | |
| 560000 | 90x170 | 1 | 55,8 | 56404090170 | | |
| 680000 | 90x220 | 1 | 68,3 | 68404090220 | | |
| 680000 | 90x230 | 1 | 69,6 | 68404090230 | | |
| 63 | 8200 | 35x55 | 35 | 3,7 | 82206335055 | |
| | 12000 | 40x55 | 24 | 4,6 | 12306340055 | |
| | 15000 | 35x70 | 19 | 5,5 | 15306335070 | |
| | 18000 | 35x80 | 16 | 6,3 | 18306335080 | |
| | 18000 | 40x70 | 16 | 6,1 | 18306340070 | |
| | 18000 | 35x100 | 16 | 6,9 | 18306335100 | |
| | 22000 | 40x80 | 13 | 7,1 | 22306340080 | |
| | 22000 | 45x70 | 13 | 6,8 | 22306345070 | |
| | 27000 | 50x70 | 11 | 8,0 | 27306350070 | |
| | 27000 | 40x100 | 11 | 8,6 | 27306340100 | |
| | 33000 | 50x80 | 9 | 9,3 | 33306350080 | |
| | 33000 | 45x100 | 9 | 9,5 | 33306345100 | |
| | 39000 | 50x100 | 7 | 11,0 | 39306350100 | |
| | 47000 | 65x80 | 6 | 14,5 | 47306365080 | |
| | 68000 | 65x100 | 4 | 19,0 | 68306365100 | |
| | 82000 | 75x100 | 3 | 18,0 | 82306375100 | |
| | 100000 | 65x130 | 3 | 25,5 | 10406365130 | |
| | 120000 | 75x115 | 2 | 22,9 | 12406375115 | |
| | 150000 | 75x145 | 2 | 28,1 | 15406375145 | |

Stand: 12/2019

85°C



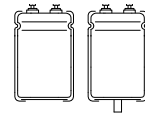
GM

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|--------------------------|-------------|
| | | | | | Plain base: GMA... | |
| | | | | | Stud mounting: GMB... | |
| 63 | 180000 | 75x165 | 2 | 32,4 | 18406375165 | |
| | 220000 | 90x148 | 1 | 38,3 | 22406390148 | |
| | 220000 | 75x225 | 1 | 40,8 | 22406375225 | |
| | 270000 | 90x170 | 1 | 44,8 | 27406390170 | |
| | 330000 | 90x220 | 1 | 54,9 | 33406390220 | |
| | 390000 | 90x230 | 1 | 60,9 | 39406390230 | |
| 80 | 6800 | 35x55 | 47 | 3,2 | 68208035055 | |
| | 8200 | 40x55 | 39 | 3,8 | 82208040055 | |
| | 10000 | 35x70 | 32 | 4,2 | 10308035070 | |
| | 12000 | 35x80 | 27 | 4,6 | 12308035080 | |
| | 12000 | 40x70 | 27 | 4,7 | 12308040070 | |
| | 15000 | 35x100 | 21 | 6,0 | 15308035100 | |
| | 15000 | 40x80 | 21 | 5,6 | 15308040080 | |
| | 15000 | 45x70 | 21 | 5,3 | 15308045070 | |
| | 18000 | 40x100 | 18 | 6,2 | 18308040100 | |
| | 18000 | 50x70 | 18 | 6,2 | 18308050070 | |
| | 22000 | 45x100 | 14 | 7,9 | 22308045100 | |
| | 22000 | 50x80 | 14 | 7,2 | 22308050080 | |
| | 27000 | 50x100 | 12 | 8,7 | 27308050100 | |
| | 39000 | 65x80 | 8 | 12,6 | 39308065080 | |
| | 47000 | 65x100 | 7 | 15,0 | 47308065100 | |
| | 68000 | 65x130 | 5 | 15,7 | 68308065130 | |
| | 68000 | 75x100 | 5 | 19,7 | 68308075100 | |
| | 82000 | 75x115 | 4 | 18,0 | 82308075115 | |
| | 100000 | 75x145 | 3 | 21,7 | 10408075145 | |
| | 120000 | 75x165 | 3 | 25,1 | 12408075165 | |
| | 150000 | 90x148 | 2 | 30,0 | 15408090148 | |
| | 180000 | 75x225 | 2 | 35,0 | 18408075225 | |
| | 180000 | 90x170 | 2 | 34,7 | 18408090170 | |
| | 220000 | 90x220 | 1 | 42,6 | 22408090220 | |
| | 270000 | 90x230 | 1 | 48,0 | 27408090230 | |
| | 100 | 3300 | 35x55 | 48 | 3,1 | 33210035055 |
| 4700 | | 35x70 | 34 | 4,1 | 47210035070 | |
| 4700 | | 40x55 | 34 | 3,8 | 47210040055 | |
| 5600 | | 35x80 | 28 | 4,7 | 56210035080 | |
| 5600 | | 40x70 | 28 | 4,6 | 56210040070 | |
| 6800 | | 35x100 | 23 | 5,7 | 68210035100 | |
| 6800 | | 40x80 | 23 | 5,3 | 68210040080 | |
| 8200 | | 45x70 | 19 | 5,5 | 82210045070 | |
| 10000 | | 50x70 | 16 | 6,5 | 10310050070 | |
| 10000 | | 40x100 | 16 | 7,1 | 10310040100 | |
| 12000 | | 45x100 | 13 | 7,7 | 12310045100 | |
| 12000 | | 50x80 | 13 | 7,5 | 12310050080 | |
| 15000 | | 50x100 | 11 | 9,2 | 15310050100 | |
| 18000 | | 65x80 | 9 | 12,1 | 18310065080 | |
| 22000 | | 65x100 | 7 | 14,5 | 22310065100 | |
| 27000 | | 75x100 | 6 | 13,9 | 27310075100 | |
| 33000 | | 65x130 | 5 | 19,6 | 33310065130 | |
| 39000 | | 75x115 | 4 | 17,6 | 39310075115 | |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|--------------------------|-------------|
| | | | | | Plain base: GMA... | |
| | | | | | Stud mounting: GMB... | |
| 100 | 47000 | 75x145 | 3 | 21,1 | 47310075145 | |
| | 56000 | 75x165 | 3 | 24,2 | 56310075165 | |
| | 68000 | 90x148 | 2 | 28,6 | 68310090148 | |
| | 82000 | 75x225 | 2 | 33,4 | 82310075225 | |
| | 82000 | 90x170 | 2 | 33,1 | 82310090170 | |
| | 120000 | 90x220 | 1 | 44,5 | 12410090220 | |
| | 120000 | 90x230 | 1 | 45,3 | 12410090230 | |
| | 160 | 1800 | 35x55 | 62 | 2,8 | 18216035055 |
| 2200 | | 35x70 | 51 | 3,4 | 22216035070 | |
| 2200 | | 40x55 | 51 | 3,1 | 22216040055 | |
| 2700 | | 35x80 | 41 | 3,9 | 27216035080 | |
| 3300 | | 40x70 | 34 | 4,2 | 33216040070 | |
| 3900 | | 35x100 | 29 | 5,2 | 39216035100 | |
| 3900 | | 40x80 | 29 | 4,8 | 39216040080 | |
| 3900 | | 45x70 | 29 | 4,6 | 39216045070 | |
| 4700 | | 40x100 | 24 | 5,4 | 47216040100 | |
| 4700 | | 50x70 | 24 | 5,7 | 47216050070 | |
| 5600 | | 50x80 | 20 | 6,1 | 56201605080 | |
| 6800 | | 45x100 | 16 | 6,9 | 68216045100 | |
| 8200 | | 50x100 | 14 | 8,1 | 82216050100 | |
| 8200 | | 65x80 | 14 | 9,7 | 82216065080 | |
| 12000 | | 65x100 | 9 | 12,8 | 12316065100 | |
| 18000 | | 65x130 | 6 | 13,7 | 18316065130 | |
| 18000 | | 75x100 | 6 | 17,1 | 18316075100 | |
| 18000 | | 75x115 | 6 | 14,3 | 18316075115 | |
| 27000 | | 75x145 | 4 | 19,1 | 27316075145 | |
| 27000 | | 75x165 | 4 | 20,1 | 27316075165 | |
| 39000 | | 90x148 | 3 | 25,9 | 39316090148 | |
| 47000 | | 75x225 | 2 | 30,2 | 47316075225 | |
| 47000 | | 90x170 | 2 | 30,0 | 47316090170 | |
| 56000 | | 90x220 | 2 | 36,3 | 56316090220 | |
| 68000 | | 90x230 | 2 | 40,7 | 68316090230 | |
| 250 | | 1200 | 35x55 | 80 | 2,4 | 12225035055 |
| | 1500 | 35x70 | 64 | 3,0 | 15225035070 | |
| | 1500 | 40x55 | 64 | 2,8 | 15225040055 | |
| | 1800 | 35x80 | 53 | 3,5 | 18225035080 | |
| | 1800 | 40x70 | 53 | 3,3 | 18225040070 | |
| | 2200 | 40x80 | 43 | 4,1 | 22225040080 | |
| | 2700 | 35x100 | 35 | 4,4 | 27225035100 | |
| | 2700 | 45x70 | 35 | 4,1 | 27225045070 | |
| | 3300 | 40x100 | 29 | 4,9 | 33225040100 | |
| | 3300 | 50x70 | 29 | 5,2 | 33225050070 | |
| | 3900 | 50x80 | 24 | 5,5 | 39225050080 | |
| | 3900 | 45x100 | 24 | 5,7 | 39225045100 | |
| | 5600 | 50x100 | 17 | 7,2 | 56225050100 | |
| | 5600 | 65x80 | 17 | 8,7 | 56225065080 | |
| | 8200 | 65x100 | 12 | 11,4 | 82225065100 | |
| | 12000 | 65x130 | 8 | 12,1 | 12325065130 | |
| | 12000 | 75x100 | 8 | 15,1 | 12325075100 | |

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85°C



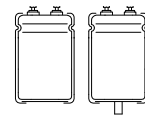
GM

| Rated voltage U_R [V] | Rated cap. C_R [µF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|--------------------------|
| | | | | | Plain base: GMA... |
| | | | | | Stud mounting: GMB... |
| 250 | 15000 | 75x115 | 6 | 14,1 | 15325075115 |
| | 18000 | 75x145 | 5 | 16,8 | 18325075145 |
| | 18000 | 75x165 | 5 | 17,7 | 18325075165 |
| | 27000 | 90x148 | 4 | 23,2 | 27325090148 |
| | 27000 | 75x225 | 4 | 24,7 | 27325075225 |
| | 27000 | 90x170 | 4 | 24,5 | 27325090170 |
| | 39000 | 90x220 | 2 | 32,7 | 39325090220 |
| | 39000 | 90x230 | 2 | 33,3 | 39325090230 |
| 350 | 680 | 35x55 | 141 | 1,8 | 68135035055 |
| | 1000 | 35x70 | 96 | 2,3 | 10235035070 |
| | 1000 | 40x55 | 96 | 2,4 | 10235040055 |
| | 1200 | 35x80 | 80 | 2,8 | 12235035080 |
| | 1200 | 40x70 | 80 | 2,7 | 12235040070 |
| | 1500 | 35x100 | 64 | 3,0 | 15235035100 |
| | 1500 | 40x80 | 64 | 3,4 | 15235040080 |
| | 1500 | 45x70 | 64 | 3,3 | 15235045070 |
| | 1800 | 40x100 | 53 | 3,6 | 18235040100 |
| | 1800 | 50x70 | 53 | 3,8 | 18235050070 |
| | 2200 | 50x80 | 43 | 4,2 | 22235050080 |
| | 2200 | 45x100 | 43 | 4,3 | 22235045100 |
| | 2700 | 50x100 | 35 | 5,0 | 27235050100 |
| | 3900 | 65x80 | 24 | 7,2 | 39235065080 |
| | 4700 | 65x100 | 20 | 8,6 | 47235065100 |
| | 5600 | 75x100 | 17 | 8,2 | 56235075100 |
| | 6800 | 65x130 | 14 | 11,5 | 68235065130 |
| | 6800 | 75x115 | 14 | 9,5 | 68235075115 |
| | 8200 | 75x145 | 12 | 11,4 | 82235075145 |
| | 10000 | 75x165 | 10 | 13,2 | 10335075165 |
| 12000 | 90x148 | 8 | 15,5 | 12335090148 | |
| 15000 | 75x225 | 6 | 18,4 | 15335075225 | |
| 15000 | 90x170 | 6 | 18,3 | 15335090170 | |
| 18000 | 90x220 | 5 | 22,2 | 18335090220 | |
| 18000 | 90x230 | 5 | 22,6 | 18335090230 | |
| 400 | 560 | 35x55 | 227 | 1,4 | 56140035055 |
| | 680 | 40x55 | 187 | 1,7 | 68140040055 |
| | 820 | 35x70 | 155 | 1,8 | 82140035070 |
| | 1000 | 35x80 | 127 | 2,2 | 10240035080 |
| | 1000 | 40x70 | 127 | 2,2 | 10240040070 |
| | 1200 | 35x100 | 106 | 2,5 | 12240035100 |
| | 1200 | 40x80 | 106 | 2,7 | 12240040080 |
| | 1200 | 45x70 | 106 | 2,4 | 12240045070 |
| | 1500 | 40x100 | 85 | 2,8 | 15240040100 |
| | 1500 | 50x70 | 85 | 3,0 | 15240050070 |
| | 1800 | 50x80 | 71 | 3,3 | 18240050080 |
| | 1800 | 45x100 | 71 | 3,3 | 18240045100 |
| | 2200 | 50x100 | 58 | 3,9 | 22240050100 |
| | 3300 | 65x80 | 39 | 5,8 | 33240065080 |
| | 3900 | 65x100 | 33 | 6,8 | 39240065100 |
| | 5600 | 65x130 | 23 | 7,1 | 56240065130 |

| Rated voltage U_R [V] | Rated cap. C_R [µF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|--------------------------|
| | | | | | Plain base: GMA... |
| | | | | | Stud mounting: GMB... |
| 400 | 5600 | 75x100 | 23 | 8,9 | 56240075100 |
| | 6800 | 75x115 | 19 | 8,2 | 68240075115 |
| | 8200 | 75x145 | 16 | 9,8 | 82240075145 |
| | 10000 | 75x165 | 13 | 11,4 | 10340075165 |
| | 12000 | 90x148 | 11 | 13,4 | 12340090148 |
| | 15000 | 75x225 | 8 | 16,0 | 15340075225 |
| | 15000 | 90x170 | 8 | 15,8 | 15340090170 |
| | 18000 | 90x220 | 7 | 19,2 | 18340090220 |
| 450 | 18000 | 90x230 | 7 | 19,6 | 18340090230 |
| | 470 | 35x55 | 237 | 1,4 | 47145035055 |
| | 560 | 35x70 | 199 | 1,7 | 56145035070 |
| | 560 | 40x55 | 199 | 1,7 | 56145040055 |
| | 680 | 35x80 | 164 | 2,0 | 68145035080 |
| | 820 | 40x70 | 136 | 2,1 | 82145040070 |
| | 820 | 35x100 | 136 | 2,2 | 82145035100 |
| | 1000 | 40x80 | 111 | 2,4 | 10245040080 |
| | 1000 | 45x70 | 111 | 2,3 | 10245045070 |
| | 1200 | 40x100 | 93 | 2,9 | 12245040100 |
| | 1200 | 50x70 | 93 | 2,7 | 12245050070 |
| | 1500 | 50x80 | 74 | 3,2 | 15245050080 |
| | 1500 | 45x100 | 74 | 3,3 | 15245045100 |
| | 1800 | 50x100 | 62 | 3,8 | 18245050100 |
| | 2200 | 65x80 | 51 | 5,0 | 22245065080 |
| | 2700 | 65x100 | 41 | 6,1 | 27245065100 |
| | 3900 | 65x130 | 29 | 8,1 | 39245065130 |
| | 3900 | 75x100 | 29 | 6,3 | 39245075100 |
| | 4700 | 75x115 | 24 | 7,3 | 47245075115 |
| | 5600 | 75x145 | 20 | 8,7 | 56245075145 |
| 6800 | 75x165 | 16 | 10,1 | 68245075165 | |
| 8200 | 90x148 | 14 | 11,9 | 82245090148 | |
| 10000 | 75x225 | 11 | 13,9 | 10345075225 | |
| 12000 | 90x170 | 9 | 15,1 | 12345090170 | |
| 500 | 15000 | 90x220 | 7 | 18,8 | 15345090220 |
| | 15000 | 90x230 | 7 | 19,1 | 15345090230 |
| | 390 | 35x55 | 286 | 1,3 | 39150035055 |
| | 470 | 40x55 | 237 | 1,5 | 47150040055 |
| | 560 | 35x70 | 199 | 1,7 | 56150035070 |
| | 680 | 35x80 | 164 | 2,0 | 68150035080 |
| | 680 | 40x70 | 164 | 1,9 | 68150040070 |
| | 820 | 35x100 | 136 | 2,2 | 82150035100 |
| | 820 | 40x80 | 136 | 2,2 | 82150040080 |
| | 820 | 45x70 | 136 | 2,1 | 82150045070 |
| | 1000 | 50x70 | 111 | 2,7 | 10250050070 |
| | 1200 | 40x100 | 93 | 2,7 | 12250040100 |
| | 1200 | 50x80 | 93 | 2,8 | 12250050080 |
| | 1200 | 45x100 | 93 | 2,9 | 12250045100 |
| | 1800 | 50x100 | 62 | 3,8 | 18250050100 |
| | 2200 | 65x80 | 51 | 5,0 | 22250065080 |
| | 2700 | 65x100 | 41 | 6,1 | 27250065100 |

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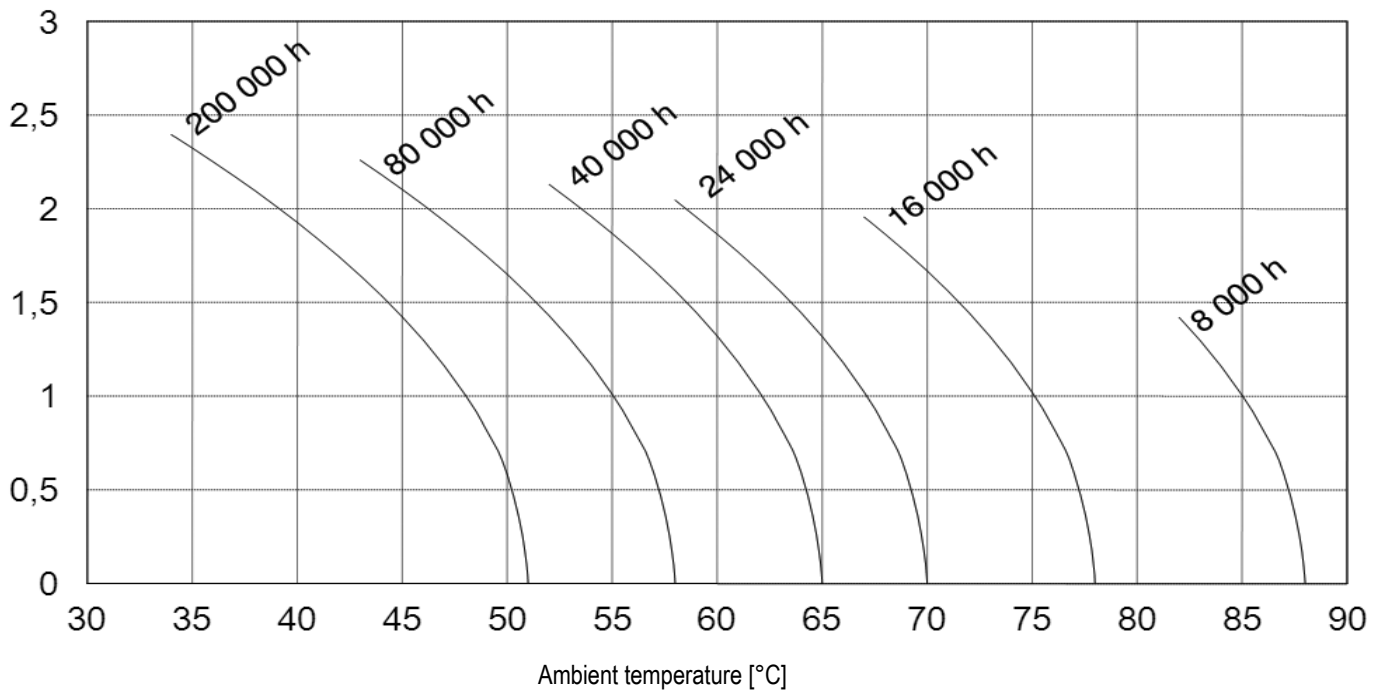
85°C



GM

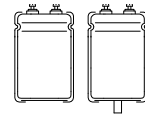
| Rated voltage U_R [V] | Rated cap. C_R [μ F] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [m Ω] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------------|-------------------------|--|--|-----------------------|
| | | | | | Plain base: GMA... |
| | | | | | Stud mounting: GMB... |
| 500 | 3300 | 75x100 | 34 | 7,3 | 33250075100 |
| | 3900 | 65x130 | 29 | 6,4 | 39250065130 |
| | 4700 | 75x115 | 24 | 7,3 | 47250075115 |
| | 5600 | 75x145 | 20 | 8,7 | 56250075145 |
| | 6800 | 75x165 | 16 | 10,1 | 68250075165 |
| | 8200 | 90x148 | 14 | 11,9 | 82250090148 |
| | 10000 | 75x225 | 11 | 13,9 | 10350075225 |
| | 10000 | 90x170 | 11 | 13,8 | 10350090170 |
| | 15000 | 90x220 | 7 | 18,8 | 15350090220 |
| | 15000 | 90x230 | 7 | 19,1 | 15350090230 |

■ USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



Stand: 12/2019

85°C



GMX



SCREW TERMINALS

HIGH CV PRODUCT

LONG LIFE 12000 H @ 85 °C

■ FEATURES

- All internal contacts welded
- High capacitance
- High CV product
- Long useful life

■ APPLICATIONS

- Computer
- Industrial
- Inverter/drives
- Laser

RoHS compliant
REACH compliant

■ GENERAL SPECIFICATIONS

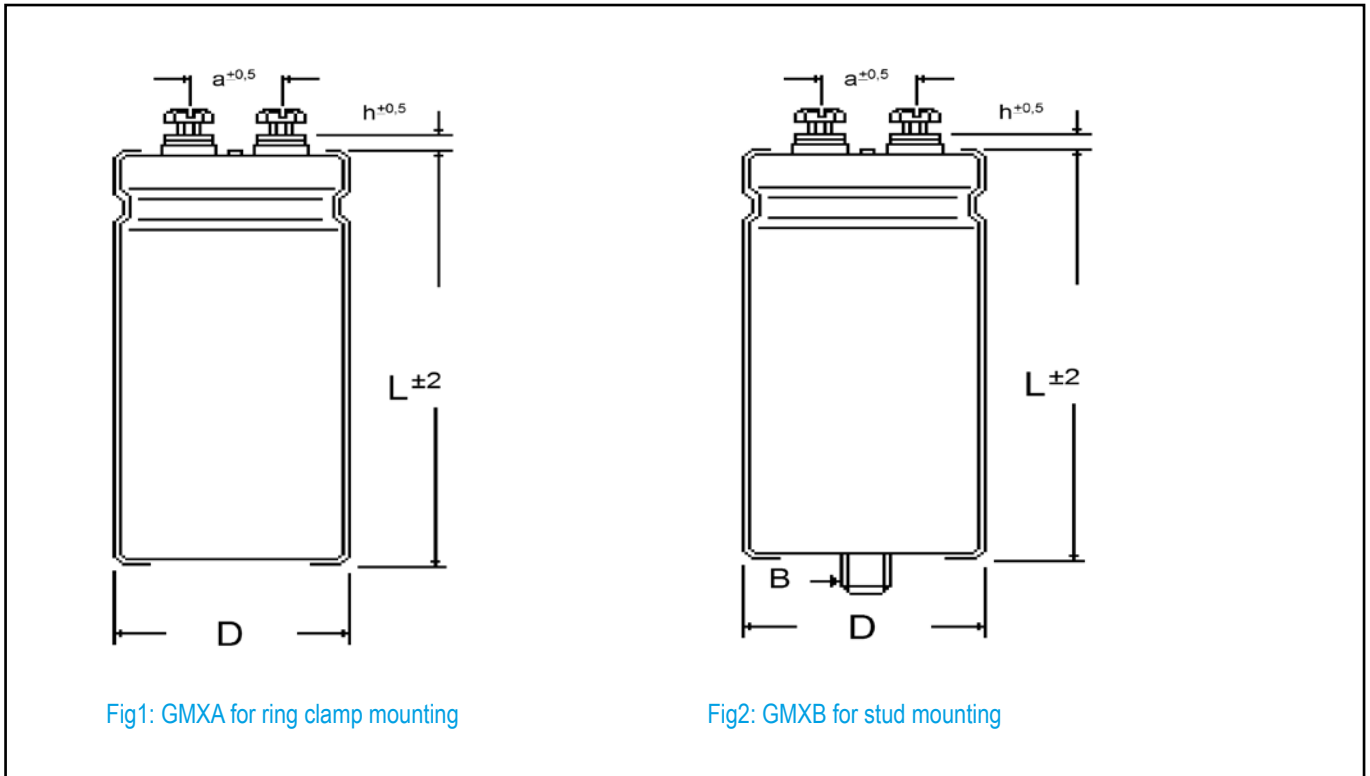
| Items | Characteristics |
|---|---|
| Rated capacitance range C_R | 390... 3.300.000 μ F |
| Capacitance tolerance | \pm 20% |
| Rated voltage range U | 16 ... 450 V |
| Surge voltage U_S | $U_R \leq 315$ V: $U_S = 1,15 U_R$; $U_R > 315$ V: $U_S = 1,10 U_R$ |
| Max. reverse voltage | 2 V / 20 nH |
| Category temperature range | - 40°C ... + 85 °C |
| Leakage current I_L after 5 min @ U_R | $\leq 0,008 * C_R [\mu F] * U_R [V] + 6 \mu A [\mu A]$ |
| Useful life 12000 h @ 85 °C ; U_R ; I_R | Requirements $\Delta C/C \leq 30$ % of initial value ; ESR ≤ 300 % of specified ; limit $I_L \leq$ specified limit |
| Endurance test 4000 h @ 85 °C , U_R | Requirements $\Delta C/C \leq 20$ % of initial value ; ESR ≤ 130 % of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 40/085/56 |
| Voltage proof of the external insulation | ≥ 2500 V AC |
| Sectional specification | IEC 60384-4 |

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand: 12/2019



■ DRAWINGS FOR SERIES GMXA AND GMXB



■ DIMENSIONS AND MECHANICAL DATA

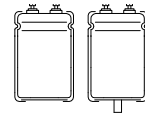
| Dimensions, case with insulation sleeve | | | | Connecting terminals | | Mounting stud, GMB only | |
|---|--------------------------------------|--------|--------|----------------------|------------------|-------------------------|------------------|
| D [mm] | Case length L available in 5 mm [mm] | h [mm] | a [mm] | Thread | Max. torque [Nm] | B | Max. torque [Nm] |
| 35 | 40 ... 120 | 6 | 13 | M5 | 2,0 | M8 x 12 | 4,0 |
| 40 | 40 ... 120 | 5 | 18 | M5 | 2,0 | M8 x 12 | 4,0 |
| 50 | 40 ... 120 | 5 | 22 | M5 | 2,0 | M12 x 16 | 10,0 |
| 65 | 40 ... 180 | 5 | 28,5 | M5 | 2,0 | M12 x 16 | 10,0 |
| 75 | 40 ... 230 | 5 | 31,7 | M5 ; M6 | 2,0 ; 2,5 | M12 x 16 | 10,0 |
| 90 | 40 ... 230 | 5 | 31,7 | M6 | 2,5 | M12 x 16 | 10,0 |

GMA: connecting screws M5 or M6

GMB: connecting screws M5 or M6 + mounting nut M8 or M12

Remarks: Further mounting accessories like clamps, nylon cup nuts and insulation disks on request, see "accessory equipment".

85°C



GMX

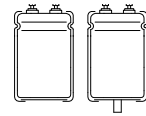
ELECTRICAL DATA AND ORDERING CODE FOR SERIES GMX

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|---------------------------|
| | | | | | Plain base: GMXA... |
| | | | | | Stud mounting: GMXB... |
| 16 | 82000 | 35x55 | 6 | 9,0 | 82301635055 |
| | 120000 | 35x70 | 4 | 12,0 | 12401635070 |
| | 120000 | 40x55 | 4 | 11,1 | 12401640055 |
| | 150000 | 35x80 | 3 | 14,2 | 15401635080 |
| | 150000 | 40x70 | 3 | 13,7 | 15401640070 |
| | 180000 | 35x100 | 3 | 17,0 | 18401635100 |
| | 180000 | 40x80 | 3 | 15,8 | 18401640080 |
| | 180000 | 45x70 | 3 | 15,0 | 18401645070 |
| | 220000 | 40x100 | 2 | 19,1 | 22401640100 |
| | 220000 | 50x70 | 2 | 17,7 | 22401650070 |
| | 270000 | 45x100 | 2 | 21,1 | 27401645100 |
| | 270000 | 50x80 | 2 | 20,6 | 27401650080 |
| | 390000 | 50x100 | 1 | 27,0 | 39401650100 |
| | 470000 | 65x80 | 1 | 35,6 | 47401665080 |
| | 560000 | 65x100 | 1 | 42,1 | 56401665100 |
| | 820000 | 65x130 | 1 | 56,5 | 82401665130 |
| | 820000 | 75x100 | 1 | 44,1 | 82401675100 |
| | 1000000 | 75x115 | 1 | 46,5 | 10501675115 |
| | 1200000 | 75x145 | 1 | 50,8 | 12501675145 |
| | 1500000 | 75x165 | 1 | 53,5 | 15501675165 |
| 1800000 | 90x148 | 1 | 57,3 | 18501690148 | |
| 2200000 | 75x225 | 1 | 61,0 | 22501675225 | |
| 2200000 | 90x170 | 1 | 60,4 | 22501690170 | |
| 2700000 | 90x220 | 1 | 67,1 | 27501690220 | |
| 3300000 | 90x230 | 1 | 68,3 | 33501690230 | |
| 25 | 22000 | 35x55 | 20 | 4,8 | 22302535055 |
| | 33000 | 35x70 | 14 | 6,5 | 33302535070 |
| | 33000 | 40x55 | 14 | 6,1 | 33302540055 |
| | 39000 | 35x80 | 11 | 7,5 | 39302535080 |
| | 47000 | 40x70 | 9 | 7,9 | 47302540070 |
| | 56000 | 35x100 | 8 | 9,8 | 56302535100 |
| | 56000 | 40x80 | 8 | 9,1 | 56302540080 |
| | 56000 | 45x70 | 8 | 8,6 | 56302545070 |
| | 68000 | 40x100 | 7 | 11,0 | 68302540100 |
| | 68000 | 50x70 | 7 | 10,2 | 68302550070 |
| | 68000 | 45x100 | 7 | 11,0 | 68302545100 |
| | 82000 | 50x80 | 5 | 11,7 | 82302550080 |
| | 120000 | 50x100 | 4 | 15,5 | 12402550100 |
| | 120000 | 65x80 | 4 | 18,3 | 12402565080 |
| | 180000 | 65x100 | 3 | 24,3 | 18402565100 |
| | 220000 | 75x100 | 2 | 23,2 | 22402575100 |
| | 270000 | 65x130 | 2 | 33,0 | 27402565130 |
| | 270000 | 75x115 | 2 | 27,1 | 27402575115 |
| | 390000 | 75x145 | 1 | 35,7 | 39402575145 |
| | 470000 | 75x165 | 1 | 41,2 | 47402575165 |
| 560000 | 90x148 | 1 | 48,1 | 56402590148 | |
| 680000 | 75x225 | 1 | 56,5 | 68402575225 | |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|---------------------------|
| | | | | | Plain base: GMXA... |
| | | | | | Stud mounting: GMXB... |
| 25 | 680000 | 90x170 | 1 | 56,0 | 68402590170 |
| | 820000 | 90x220 | 1 | 68,2 | 82402590220 |
| | 1000000 | 90x230 | 1 | 76,8 | 10502590230 |
| 40 | 15000 | 35x55 | 25 | 4,3 | 15304035055 |
| | 18000 | 40x55 | 21 | 4,8 | 18304040055 |
| | 22000 | 35x70 | 17 | 5,7 | 22304035070 |
| | 27000 | 35x80 | 14 | 6,7 | 27304035080 |
| | 27000 | 40x70 | 14 | 6,5 | 27304040070 |
| | 33000 | 35x100 | 12 | 8,1 | 33304035100 |
| | 33000 | 40x80 | 12 | 7,5 | 33304040080 |
| | 33000 | 45x70 | 12 | 7,2 | 33304045070 |
| | 39000 | 50x70 | 10 | 8,3 | 39304050070 |
| | 47000 | 40x100 | 8 | 9,9 | 47304040100 |
| | 47000 | 50x80 | 8 | 9,6 | 47304050080 |
| | 56000 | 45x100 | 7 | 10,7 | 56304045100 |
| | 68000 | 50x100 | 6 | 12,6 | 68304050100 |
| | 82000 | 65x80 | 5 | 16,6 | 82304065080 |
| | 120000 | 65x100 | 3 | 21,8 | 12404065100 |
| | 150000 | 75x100 | 3 | 21,1 | 15404075100 |
| | 150000 | 65x130 | 3 | 27,0 | 15404065130 |
| | 180000 | 75x115 | 2 | 24,3 | 18404075115 |
| | 220000 | 75x145 | 2 | 29,4 | 22404075145 |
| | 270000 | 75x165 | 1 | 34,3 | 27404075165 |
| 330000 | 90x148 | 1 | 40,6 | 33404090148 | |
| 390000 | 75x225 | 1 | 47,0 | 39404075225 | |
| 390000 | 90x170 | 1 | 46,6 | 39404090170 | |
| 560000 | 90x220 | 1 | 62,0 | 56404090220 | |
| 560000 | 90x230 | 1 | 63,1 | 56404090230 | |
| 63 | 6800 | 35x55 | 42 | 3,4 | 68206335055 |
| | 8200 | 40x55 | 35 | 3,8 | 82206340055 |
| | 10000 | 35x70 | 29 | 4,5 | 10306335070 |
| | 12000 | 35x80 | 24 | 5,2 | 12306335080 |
| | 12000 | 40x70 | 24 | 5,0 | 12306340070 |
| | 15000 | 35x100 | 19 | 6,3 | 15306335100 |
| | 15000 | 40x80 | 19 | 5,9 | 15306340080 |
| | 15000 | 45x70 | 19 | 5,6 | 15306345070 |
| | 18000 | 50x70 | 16 | 6,5 | 18306350070 |
| | 18000 | 40x100 | 16 | 7,1 | 18306340100 |
| | 22000 | 50x80 | 13 | 7,6 | 22306350080 |
| | 22000 | 45x100 | 13 | 7,8 | 22306345100 |
| | 27000 | 50x100 | 11 | 9,2 | 27306350100 |
| | 39000 | 65x80 | 7 | 13,2 | 39306365080 |
| | 47000 | 65x100 | 6 | 15,8 | 47306365100 |
| | 68000 | 75x100 | 4 | 16,4 | 68306375100 |
| | 68000 | 65x130 | 4 | 21,0 | 68306365130 |
| | 82000 | 75x115 | 3 | 19,0 | 82306375115 |
| | 100000 | 75x145 | 3 | 22,9 | 10406375145 |

Stand: 12/2019

85°C



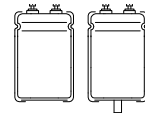
GMX

| Rated voltage U_R [V] | Rated cap. C_R [µF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|---------------------------|-------------|
| | | | | | Plain base: GMXA... | |
| | | | | | Stud mounting: GMXB... | |
| 63 | 120000 | 75x165 | 2 | 26,4 | 12406375165 | |
| | 150000 | 90x148 | 2 | 31,6 | 15406390148 | |
| | 180000 | 75x225 | 2 | 36,9 | 18406375225 | |
| | 180000 | 90x170 | 2 | 36,6 | 18406390170 | |
| | 220000 | 90x220 | 1 | 44,9 | 22406390220 | |
| | 270000 | 90x230 | 1 | 50,6 | 27406390230 | |
| | 3900 | 35x55 | 82 | 2,4 | 39208035055 | |
| | 5600 | 35x70 | 57 | 3,2 | 56208035070 | |
| 80 | 6800 | 35x80 | 47 | 3,7 | 68208035080 | |
| | 6800 | 40x70 | 47 | 3,6 | 68208040070 | |
| | 8200 | 40x55 | 39 | 3,6 | 82208040055 | |
| | 8200 | 35x100 | 39 | 4,4 | 82208035100 | |
| | 8200 | 40x80 | 39 | 4,1 | 82208040080 | |
| | 10000 | 45x70 | 32 | 4,3 | 10308045070 | |
| | 12000 | 50x70 | 27 | 5,1 | 12308050070 | |
| | 12000 | 45x100 | 27 | 5,4 | 12308045100 | |
| | 15000 | 40x100 | 21 | 6,1 | 15308040100 | |
| | 15000 | 50x80 | 21 | 5,9 | 15308050080 | |
| | 18000 | 50x100 | 18 | 7,1 | 18308050100 | |
| | 22000 | 65x80 | 14 | 9,4 | 22308065080 | |
| | 27000 | 65x100 | 12 | 11,3 | 27308065100 | |
| | 39000 | 75x100 | 8 | 11,8 | 39308075100 | |
| | 39000 | 65x130 | 8 | 15,1 | 39308065130 | |
| | 47000 | 75x115 | 7 | 13,6 | 47308075115 | |
| | 68000 | 75x145 | 5 | 17,9 | 68308075145 | |
| | 68000 | 75x165 | 5 | 18,9 | 68308075165 | |
| | 100000 | 90x148 | 3 | 24,5 | 10408090148 | |
| | 120000 | 75x225 | 3 | 28,6 | 12408075225 | |
| | 120000 | 90x170 | 3 | 28,3 | 12408090170 | |
| | 150000 | 90x220 | 2 | 35,1 | 15408090220 | |
| | 150000 | 90x230 | 2 | 35,8 | 15408090230 | |
| | 3300 | 35x55 | 48 | 3,1 | 33210035055 | |
| | 4700 | 35x70 | 34 | 4,1 | 47210035070 | |
| | 100 | 4700 | 40x55 | 34 | 3,8 | 47210040055 |
| | | 5600 | 35x80 | 28 | 4,7 | 56210035080 |
| | | 5600 | 40x70 | 28 | 4,6 | 56210040070 |
| | | 6800 | 35x100 | 23 | 5,7 | 68210035100 |
| | | 6800 | 40x80 | 23 | 5,3 | 68210040080 |
| | | 8200 | 45x70 | 19 | 5,5 | 82210045070 |
| | | 10000 | 50x70 | 16 | 6,5 | 10310050070 |
| 10000 | | 40x100 | 16 | 7,1 | 10310040100 | |
| 12000 | | 45x100 | 13 | 7,7 | 12310045100 | |
| 12000 | | 50x80 | 13 | 7,5 | 12310050080 | |
| 15000 | | 50x100 | 11 | 9,2 | 15310050100 | |
| 18000 | | 65x80 | 9 | 12,1 | 18310065080 | |
| 22000 | | 65x100 | 7 | 14,5 | 22310065100 | |
| 27000 | | 75x100 | 6 | 13,9 | 27310075100 | |
| 33000 | | 65x130 | 5 | 19,6 | 33310065130 | |
| 39000 | | 75x115 | 4 | 17,6 | 39310075115 | |

| Rated voltage U_R [V] | Rated cap. C_R [µF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|---------------------------|
| | | | | | Plain base: GMXA... |
| | | | | | Stud mounting: GMXB... |
| 100 | 47000 | 75x145 | 3 | 21,1 | 47310075145 |
| | 56000 | 75x165 | 3 | 24,2 | 56310075165 |
| | 68000 | 90x148 | 2 | 28,6 | 68310090148 |
| | 82000 | 75x225 | 2 | 33,4 | 82310075225 |
| | 82000 | 90x170 | 2 | 33,1 | 82310090170 |
| | 120000 | 90x220 | 1 | 44,5 | 12410090220 |
| | 120000 | 90x230 | 1 | 45,3 | 12410090230 |
| | 160 | 1800 | 35x55 | 62 | 2,8 |
| 2200 | | 35x70 | 51 | 3,4 | 22216035070 |
| 2200 | | 40x55 | 51 | 3,1 | 22216040055 |
| 2700 | | 35x80 | 41 | 3,9 | 27216035080 |
| 2700 | | 40x70 | 41 | 3,8 | 27216040070 |
| 3900 | | 35x100 | 29 | 5,2 | 39216035100 |
| 3900 | | 40x80 | 29 | 4,8 | 39216040080 |
| 3900 | | 45x70 | 29 | 4,6 | 39216045070 |
| 4700 | | 50x70 | 24 | 5,4 | 47216050070 |
| 4700 | | 40x100 | 24 | 5,8 | 47216040100 |
| 5600 | | 45x100 | 20 | 6,3 | 56216045100 |
| 5600 | | 50x80 | 20 | 6,1 | 56216050080 |
| 6800 | | 50x100 | 16 | 7,4 | 68216050100 |
| 8200 | | 65x80 | 14 | 9,7 | 82216065080 |
| 12000 | | 65x100 | 9 | 12,8 | 12316065100 |
| 15000 | | 75x100 | 7 | 12,4 | 15316075100 |
| 18000 | | 65x130 | 6 | 17,3 | 18316065130 |
| 18000 | | 75x115 | 6 | 14,3 | 18316075115 |
| 27000 | | 75x145 | 4 | 19,1 | 27316075145 |
| 27000 | | 75x165 | 4 | 20,1 | 27316075165 |
| 39000 | 75x225 | 3 | 27,5 | 39316075225 | |
| 39000 | 90x148 | 3 | 25,9 | 39316090148 | |
| 47000 | 90x170 | 2 | 30,0 | 47316090170 | |
| 56000 | 90x220 | 2 | 36,3 | 56316090220 | |
| 56000 | 90x230 | 2 | 37,0 | 56316090230 | |
| 250 | 1000 | 35x55 | 96 | 2,2 | 10225035055 |
| | 1500 | 35x70 | 64 | 3,0 | 15225035070 |
| | 1500 | 40x55 | 64 | 2,8 | 15225040055 |
| | 1800 | 35x80 | 53 | 3,5 | 18225035080 |
| | 1800 | 40x70 | 53 | 3,3 | 18225040070 |
| | 2200 | 35x100 | 43 | 4,2 | 22225035100 |
| | 2200 | 40x80 | 43 | 3,9 | 22225040080 |
| | 2200 | 45x70 | 43 | 3,7 | 22225045070 |
| | 2700 | 50x70 | 35 | 4,4 | 27225050070 |
| | 3300 | 40x100 | 29 | 5,2 | 33225040100 |
| | 3900 | 45x100 | 24 | 5,7 | 39225045100 |
| | 3900 | 50x80 | 24 | 5,5 | 39225050080 |
| | 4700 | 50x100 | 20 | 6,6 | 47225050100 |
| | 5600 | 65x80 | 17 | 8,7 | 56225065080 |
| | 8200 | 65x100 | 12 | 11,4 | 82225065100 |
| | 10000 | 75x100 | 10 | 10,9 | 10325075100 |
| | 12000 | 65x130 | 8 | 15,3 | 12325065130 |

Stand: 12/2019

85°C

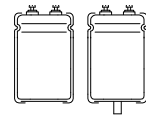


GMX

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|---------------------------|
| | | | | | Plain base: GMXA... |
| | | | | | Stud mounting: GMXB... |
| 250 | 12000 | 75x115 | 8 | 12,6 | 12325075115 |
| | 18000 | 75x145 | 5 | 16,8 | 18325075145 |
| | 18000 | 75x165 | 5 | 17,7 | 18325075165 |
| | 27000 | 75x225 | 4 | 24,7 | 27325075225 |
| | 27000 | 90x148 | 4 | 23,2 | 27325090148 |
| | 27000 | 90x170 | 4 | 24,5 | 27325090170 |
| | 39000 | 90x220 | 2 | 32,7 | 39325090220 |
| | 39000 | 90x230 | 2 | 33,3 | 39325090230 |
| | 350 | 560 | 35x55 | 171 | 1,7 |
| 680 | | 40x55 | 141 | 1,9 | 68135040055 |
| 820 | | 35x70 | 117 | 2,2 | 82135035070 |
| 1000 | | 35x80 | 96 | 2,6 | 10235035080 |
| 1200 | | 40x70 | 80 | 2,7 | 12235040070 |
| 1200 | | 45x70 | 80 | 2,7 | 12235045070 |
| 1500 | | 35x100 | 64 | 3,5 | 15235035100 |
| 1500 | | 40x80 | 64 | 3,2 | 15235040080 |
| 1800 | | 50x70 | 53 | 3,6 | 18235050070 |
| 1800 | | 40x100 | 53 | 3,9 | 18235040100 |
| 1800 | | 50x80 | 53 | 3,8 | 18235050080 |
| 2200 | | 45x100 | 43 | 4,3 | 22235045100 |
| 2700 | | 50x100 | 35 | 5,0 | 27235050100 |
| 3300 | | 65x80 | 29 | 6,7 | 33235065080 |
| 3900 | | 65x100 | 24 | 7,9 | 39235065100 |
| 4700 | | 75x100 | 20 | 7,5 | 47235075100 |
| 5600 | | 65x130 | 17 | 10,4 | 56235065130 |
| 5600 | | 75x115 | 17 | 8,6 | 56235075115 |
| 8200 | | 75x145 | 12 | 11,4 | 82235075145 |
| 8200 | | 75x165 | 12 | 12,0 | 82235075165 |
| 12000 | | 75x225 | 8 | 16,5 | 12335075225 |
| 12000 | 90x148 | 8 | 15,5 | 12335090148 | |
| 15000 | 90x170 | 6 | 18,3 | 15335090170 | |
| 18000 | 90x220 | 5 | 22,2 | 18335090220 | |
| 18000 | 90x230 | 5 | 22,6 | 18335090230 | |
| 400 | 390 | 35x55 | 327 | 1,2 | 39140035055 |
| | 560 | 35x70 | 227 | 1,6 | 56140035070 |
| | 560 | 40x55 | 227 | 1,5 | 56140040055 |
| | 680 | 35x80 | 187 | 1,8 | 68140035080 |
| | 820 | 40x70 | 155 | 2,0 | 82140040070 |
| | 820 | 40x80 | 155 | 2,1 | 82140040080 |
| | 1000 | 35x100 | 127 | 2,5 | 10240035100 |
| | 1000 | 45x70 | 127 | 2,2 | 10240045070 |
| | 1200 | 50x70 | 106 | 2,5 | 12240050070 |
| | 1200 | 40x100 | 106 | 2,7 | 12240040100 |

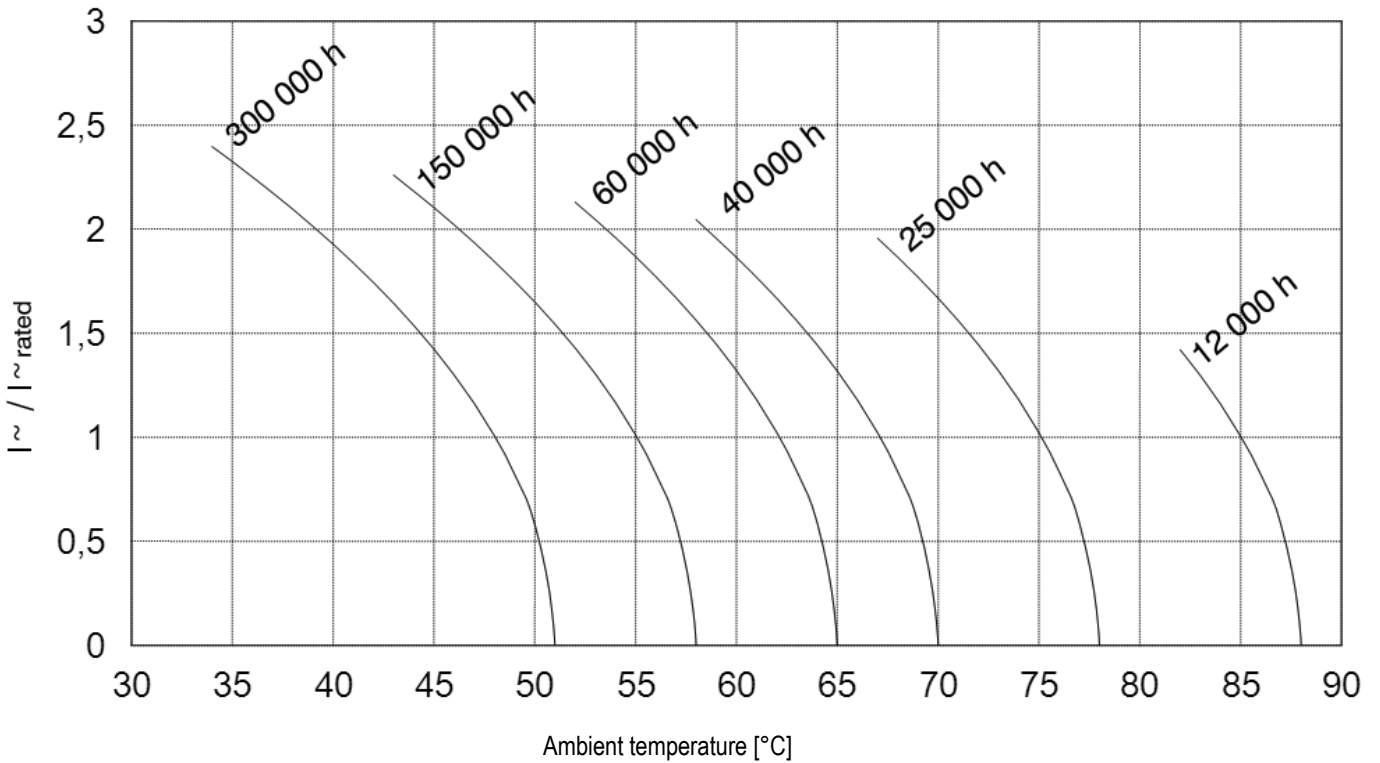
| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|---------------------------|-------------|
| | | | | | Plain base: GMXA... | |
| | | | | | Stud mounting: GMXB... | |
| 400 | 1500 | 45x100 | 85 | 3,0 | 15240045100 | |
| | 1500 | 50x80 | 85 | 3,0 | 15240050080 | |
| | 1800 | 50x100 | 71 | 3,6 | 18240050100 | |
| | 2200 | 65x80 | 58 | 4,7 | 22240065080 | |
| | 2700 | 65x100 | 47 | 5,7 | 27240065100 | |
| | 3300 | 65x100 | 40 | 5,8 | 33240065100 | |
| | 3900 | 75x100 | 33 | 5,9 | 39240075100 | |
| | 3900 | 65x130 | 33 | 7,5 | 39240065130 | |
| | 4700 | 75x115 | 27 | 6,8 | 47240075115 | |
| | 6800 | 75x145 | 19 | 9,0 | 68240075145 | |
| | 6800 | 75x165 | 19 | 9,4 | 68240075165 | |
| | 10000 | 90x148 | 13 | 12,2 | 10340090148 | |
| | 12000 | 75x225 | 11 | 14,3 | 12340075225 | |
| | 12000 | 90x170 | 11 | 14,2 | 12340090170 | |
| | 15000 | 90x220 | 8 | 17,6 | 15340090220 | |
| | 18000 | 90x230 | 7 | 19,6 | 18340090230 | |
| | 450 | 390 | 35x55 | 286 | 1,3 | 39145035055 |
| | | 470 | 35x70 | 237 | 1,6 | 47145035070 |
| 560 | | 35x80 | 199 | 1,8 | 56145035080 | |
| 560 | | 35x100 | 199 | 2,0 | 56145035100 | |
| 680 | | 40x55 | 164 | 1,7 | 68145040055 | |
| 820 | | 40x70 | 136 | 2,1 | 82145040070 | |
| 820 | | 40x80 | 136 | 2,2 | 82145040080 | |
| 1000 | | 45x70 | 111 | 2,3 | 10245045070 | |
| 1000 | | 40x100 | 111 | 2,7 | 10245040100 | |
| 1200 | | 50x70 | 93 | 2,7 | 12245050070 | |
| 1200 | | 45x100 | 93 | 2,9 | 12245045100 | |
| 1200 | | 50x80 | 93 | 2,8 | 12245050080 | |
| 1800 | | 50x100 | 62 | 3,8 | 18245050100 | |
| 1800 | | 65x80 | 62 | 4,6 | 18245065080 | |
| 2700 | | 65x100 | 41 | 6,1 | 27245065100 | |
| 3300 | | 65x130 | 34 | 7,4 | 33245065130 | |
| 3900 | | 75x100 | 29 | 6,3 | 39245075100 | |
| 3900 | | 75x115 | 29 | 6,6 | 39245075115 | |
| 4700 | | 75x145 | 26 | 7,6 | 47245075145 | |
| 5600 | | 75x145 | 20 | 8,7 | 56245075145 | |
| 6800 | | 75x165 | 16 | 10,1 | 68245075165 | |
| 8200 | | 75x225 | 14 | 12,6 | 82245075225 | |
| 10000 | | 90x148 | 11 | 13,1 | 10345090148 | |
| 10000 | | 90x170 | 11 | 13,8 | 10345090170 | |
| 15000 | 90x220 | 7 | 18,8 | 15345090220 | | |
| 15000 | 90x230 | 7 | 19,1 | 15345090230 | | |
| 12000 | 90x220 | 7 | 17,9 | 12345090220 | | |

85°C

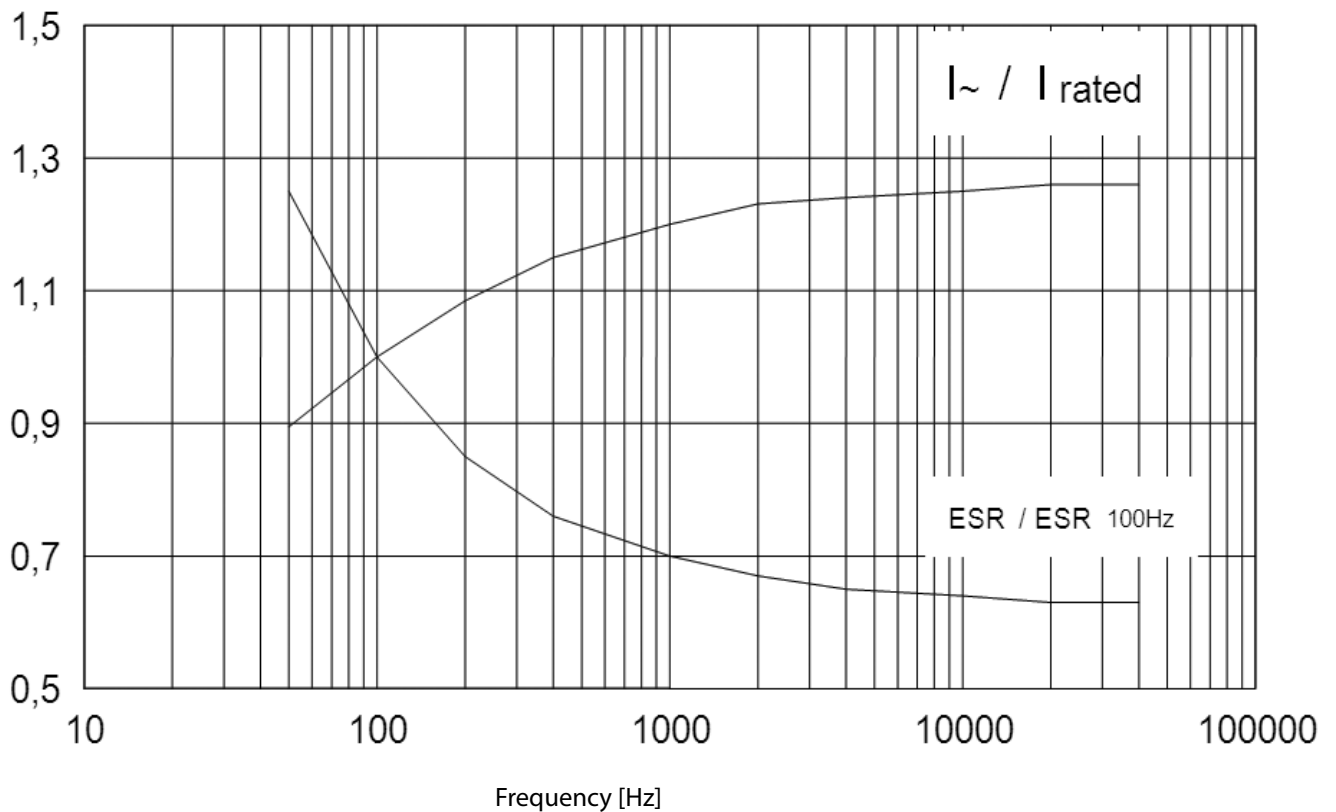


GMX

■ USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT

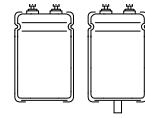


■ RIPPLE CURRENT AND ESR AS A FUNCTION OF FREQUENCY F



Stand: 12/2019

105°C



G



SCREW TERMINALS

HIGH CV PRODUCT

LONG LIFE 8000 H @ 105 °C

■ FEATURES

- All internal contacts welded
- High performance
- High ripple current
- Long useful life

■ APPLICATIONS

- Computer
- Industrial
- Inverter/drives
- Laser

RoHS compliant
REACH compliant

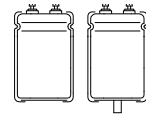
■ GENERAL SPECIFICATIONS

| Items | Characteristics |
|---|---|
| Rated capacitance range C_R | 390... 3.300.000 μ F |
| Capacitance tolerance | \pm 20% |
| Rated voltage range U | 16 ... 450 V |
| Surge voltage U_S | $U_R \leq 315$ V: $U_S = 1,15 U_R$; $U_R > 315$ V: $U_S = 1,10 U_R$ |
| Max. reverse voltage | 2 V / 20 nH |
| Category temperature range | - 40°C ... + 105 °C |
| Leakage current I_L after 5 min @ U_R | $\leq 0,008 * C_R [\mu F] * U_R [V] + 6 \mu A [\mu A]$ |
| Useful life 12000 h @ 85 °C ; U_R ; I_R | Requirements $\Delta C/C \leq 30$ % of initial value ; ESR ≤ 300 % of specified ; limit $I_L \leq$ specified limit |
| Endurance test 4000 h @ 85 °C , U_R | Requirements $\Delta C/C \leq 20$ % of initial value ; ESR ≤ 130 % of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 40/105/56 |
| Voltage proof of the external insulation | ≥ 2500 V AC |
| Sectional specification | IEC 60384-4 |

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand: 12/2019





■ DRAWINGS FOR SERIES GA AND GB

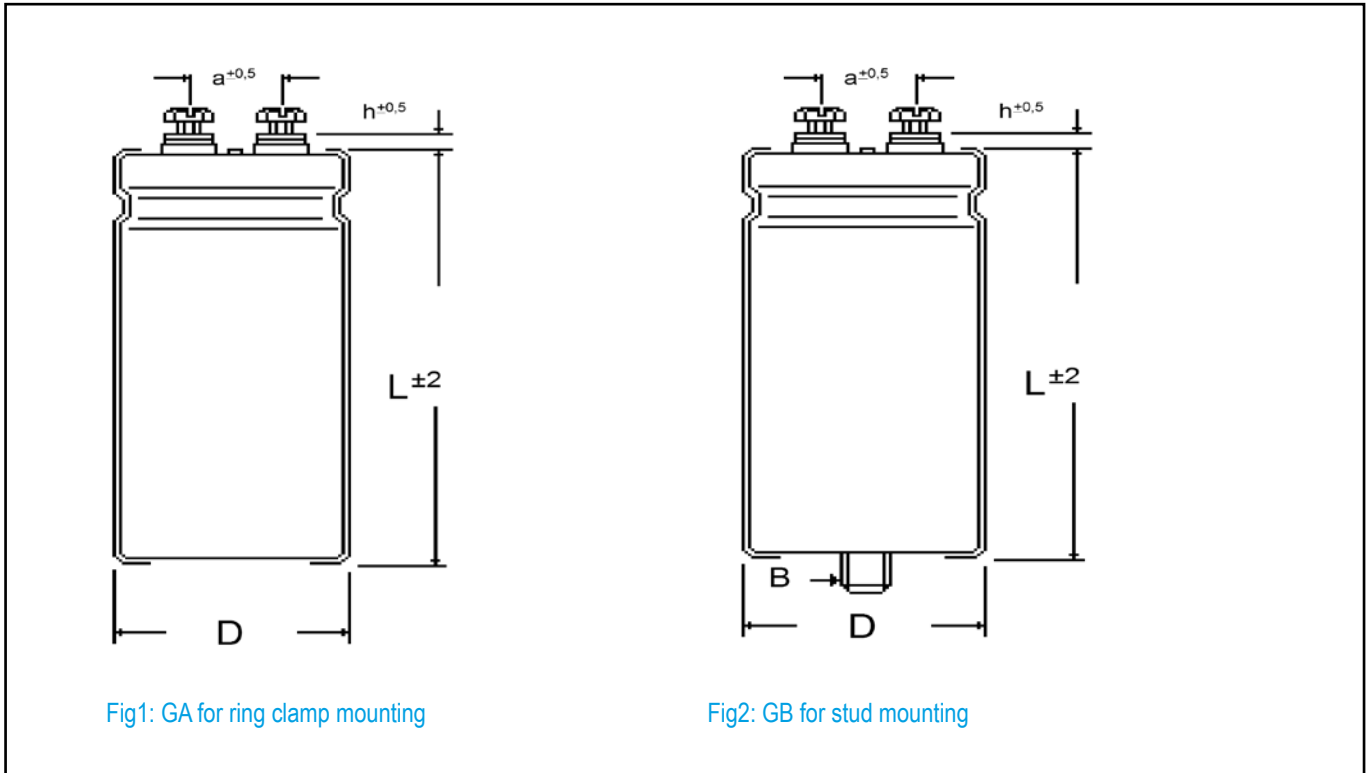


Fig1: GA for ring clamp mounting

Fig2: GB for stud mounting

■ DIMENSIONS AND MECHANICAL DATA

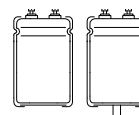
| Dimensions, case with insulation sleeve | | | | Connecting terminals | | Mounting stud, GMB only | |
|---|--------------------------------------|--------|--------|----------------------|------------------|-------------------------|------------------|
| D [mm] | Case length L available in 5 mm [mm] | h [mm] | a [mm] | Thread | Max. torque [Nm] | B | Max. torque [Nm] |
| 35 | 40 ... 120 | 6 | 13 | M5 | 2,0 | M8 x 12 | 4,0 |
| 40 | 40 ... 120 | 5 | 18 | M5 | 2,0 | M8 x 12 | 4,0 |
| 50 | 40 ... 120 | 5 | 22 | M5 | 2,0 | M12 x 16 | 10,0 |
| 65 | 40 ... 180 | 5 | 28,5 | M5 | 2,0 | M12 x 16 | 10,0 |
| 75 | 40 ... 230 | 5 | 31,7 | M5 ; M6 | 2,0 ; 2,5 | M12 x 16 | 10,0 |
| 90 | 40 ... 230 | 5 | 31,7 | M6 | 2,5 | M12 x 16 | 10,0 |

GMA: connecting screws M5 or M6

GMB: connecting screws M5 or M6 + mounting nut M8 or M12

Remarks: Further mounting accessoires like clamps, nylon cup nuts and insulation disks on request, see "accessory equipment".

105°C



G

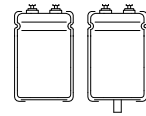
ELECTRICAL DATA AND ORDERING CODE FOR SERIES G

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|-------------------|
| | | | | | Plain base: GA... |
| 16 | 82000 | 35x55 | 6 | 9,0 | 82301635055 |
| | 120000 | 35x70 | 4 | 12,0 | 12401635070 |
| | 120000 | 40x55 | 4 | 11,1 | 12401640055 |
| | 150000 | 35x80 | 3 | 14,2 | 15401635080 |
| | 150000 | 40x70 | 3 | 13,7 | 15401640070 |
| | 180000 | 35x100 | 3 | 17,0 | 18401635100 |
| | 180000 | 40x80 | 3 | 15,8 | 18401640080 |
| | 180000 | 45x70 | 3 | 15,0 | 18401645070 |
| | 220000 | 40x100 | 3 | 19,1 | 22401640100 |
| | 220000 | 50x70 | 3 | 17,7 | 22401650070 |
| | 270000 | 45x100 | 3 | 21,1 | 27401645100 |
| | 270000 | 50x80 | 3 | 20,6 | 27401650080 |
| | 390000 | 50x100 | 3 | 27,0 | 39401650100 |
| | 470000 | 65x80 | 3 | 35,6 | 47401665080 |
| | 560000 | 65x100 | 2 | 42,1 | 56401665100 |
| | 820000 | 65x130 | 2 | 56,5 | 82401665130 |
| | 820000 | 75x100 | 1 | 44,1 | 82401675100 |
| | 1000000 | 75x115 | 1 | 51,3 | 10501675115 |
| | 1200000 | 75x145 | 1 | 61,5 | 12501675145 |
| | 1500000 | 75x165 | 1 | 72,4 | 15501675165 |
| | 1800000 | 90x148 | 1 | 84,8 | 18501690148 |
| | 2200000 | 75x225 | 1 | 99,8 | 22501675225 |
| | 2200000 | 90x170 | 1 | 99,0 | 22501690170 |
| | 2700000 | 90x220 | 1 | 121,7 | 27501690220 |
| | 3300000 | 90x230 | 1 | 137,1 | 33501690230 |
| | 25 | 22000 | 35x55 | 20 | 4,8 |
| 33000 | | 35x70 | 14 | 6,5 | 33302535070 |
| 33000 | | 40x55 | 14 | 6,1 | 33302540055 |
| 39000 | | 35x80 | 11 | 7,5 | 39302535080 |
| 47000 | | 40x70 | 9 | 7,9 | 47302540070 |
| 56000 | | 35x100 | 8 | 9,8 | 56302535100 |
| 56000 | | 40x80 | 8 | 9,1 | 56302540080 |
| 56000 | | 45x70 | 8 | 8,6 | 56302545070 |
| 68000 | | 40x100 | 7 | 11,0 | 68302540100 |
| 68000 | | 50x70 | 7 | 10,2 | 68302550070 |
| 68000 | | 45x100 | 7 | 11,0 | 68302545100 |
| 82000 | | 50x80 | 5 | 11,7 | 82302550080 |
| 120000 | | 50x100 | 4 | 15,5 | 12402550100 |
| 120000 | | 65x80 | 4 | 18,3 | 12402565080 |
| 180000 | | 65x100 | 3 | 24,3 | 18402565100 |
| 220000 | | 75x100 | 2 | 23,2 | 22402575100 |
| 270000 | | 65x130 | 2 | 33,0 | 27402565130 |
| 270000 | | 75x115 | 2 | 27,1 | 27402575115 |
| 390000 | | 75x145 | 1 | 35,7 | 39402575145 |
| 470000 | | 75x165 | 1 | 41,2 | 47402575165 |
| 560000 | | 90x148 | 1 | 48,1 | 56402590148 |
| 680000 | | 75x225 | 1 | 56,5 | 68402575225 |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|-------------------|
| | | | | | Plain base: GA... |
| 25 | 680000 | 90x170 | 1 | 56,0 | 68402590170 |
| | 820000 | 90x220 | 1 | 68,2 | 82402590220 |
| | 1000000 | 90x230 | 1 | 76,8 | 10502590230 |
| 40 | 15000 | 35x55 | 25 | 4,3 | 15304035055 |
| | 18000 | 40x55 | 21 | 4,8 | 18304040055 |
| | 22000 | 35x70 | 17 | 5,7 | 22304035070 |
| | 27000 | 35x80 | 14 | 6,7 | 27304035080 |
| | 27000 | 40x70 | 14 | 6,5 | 27304040070 |
| | 33000 | 35x100 | 12 | 8,1 | 33304035100 |
| | 33000 | 40x80 | 12 | 7,5 | 33304040080 |
| | 33000 | 45x70 | 12 | 7,2 | 33304045070 |
| | 39000 | 50x70 | 10 | 8,3 | 39304050070 |
| | 47000 | 40x100 | 8 | 9,9 | 47304040100 |
| | 47000 | 50x80 | 8 | 9,6 | 47304050080 |
| | 56000 | 45x100 | 7 | 10,7 | 56304045100 |
| | 68000 | 50x100 | 6 | 12,6 | 68304050100 |
| | 82000 | 65x80 | 5 | 16,6 | 82304065080 |
| | 120000 | 65x100 | 3 | 21,8 | 12404065100 |
| | 150000 | 75x100 | 3 | 21,1 | 15404075100 |
| | 150000 | 65x130 | 3 | 27,0 | 15404065130 |
| | 180000 | 75x115 | 2 | 24,3 | 18404075115 |
| | 220000 | 75x145 | 2 | 29,4 | 22404075145 |
| | 270000 | 75x165 | 1 | 34,3 | 27404075165 |
| | 330000 | 90x148 | 1 | 40,6 | 33404090148 |
| | 390000 | 75x225 | 1 | 47,0 | 39404075225 |
| | 390000 | 90x170 | 1 | 46,6 | 39404090170 |
| | 560000 | 90x220 | 1 | 62,0 | 56404090220 |
| | 560000 | 90x230 | 1 | 63,1 | 56404090230 |
| | 63 | 6800 | 35x55 | 42 | 3,4 |
| 8200 | | 40x55 | 35 | 3,8 | 82206340055 |
| 10000 | | 35x70 | 29 | 4,5 | 10306335070 |
| 12000 | | 35x80 | 24 | 5,2 | 12306335080 |
| 12000 | | 40x70 | 24 | 5,0 | 12306340070 |
| 15000 | | 35x100 | 19 | 6,3 | 15306335100 |
| 15000 | | 40x80 | 19 | 5,9 | 15306340080 |
| 15000 | | 45x70 | 19 | 5,6 | 15306345070 |
| 18000 | | 50x70 | 16 | 6,5 | 18306350070 |
| 18000 | | 40x100 | 16 | 7,1 | 18306340100 |
| 22000 | | 50x80 | 13 | 7,6 | 22306350080 |
| 22000 | | 45x100 | 13 | 7,8 | 22306345100 |
| 27000 | | 50x100 | 11 | 9,2 | 27306350100 |
| 39000 | | 65x80 | 7 | 13,2 | 39306365080 |
| 47000 | | 65x100 | 6 | 15,8 | 47306365100 |
| 68000 | | 75x100 | 4 | 16,4 | 68306375100 |
| 68000 | | 65x130 | 4 | 21,0 | 68306365130 |
| 82000 | | 75x115 | 3 | 19,0 | 82306375115 |
| 100000 | | 75x145 | 3 | 22,9 | 10406375145 |

Stand: 12/2019

105°C



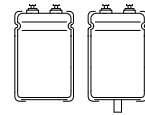
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| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code | | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|-------------------------|-------------|--|
| | | | | | Plain base: GA... | | |
| | | | | | Stud mounting: GB... | | |
| 63 | 120000 | 75x165 | 2 | 26,4 | 12406375165 | | |
| | 150000 | 90x148 | 2 | 31,6 | 15406390148 | | |
| | 180000 | 75x225 | 2 | 36,9 | 18406375225 | | |
| | 180000 | 90x170 | 2 | 36,6 | 18406390170 | | |
| | 220000 | 90x220 | 1 | 44,9 | 22406390220 | | |
| | 270000 | 90x230 | 1 | 50,6 | 27406390230 | | |
| | 3900 | 35x55 | 82 | 2,4 | 39208035055 | | |
| | 5600 | 35x70 | 57 | 3,2 | 56208035070 | | |
| 80 | 6800 | 35x80 | 47 | 3,7 | 68208035080 | | |
| | 6800 | 40x70 | 47 | 3,6 | 68208040070 | | |
| | 8200 | 40x55 | 39 | 3,6 | 82208040055 | | |
| | 8200 | 35x100 | 39 | 4,4 | 82208035100 | | |
| | 8200 | 40x80 | 39 | 4,1 | 82208040080 | | |
| | 10000 | 45x70 | 32 | 4,3 | 10308045070 | | |
| | 12000 | 50x70 | 27 | 5,1 | 12308050070 | | |
| | 12000 | 45x100 | 27 | 5,4 | 12308045100 | | |
| | 15000 | 40x100 | 21 | 6,1 | 15308040100 | | |
| | 15000 | 50x80 | 21 | 5,9 | 15308050080 | | |
| | 18000 | 50x100 | 18 | 7,1 | 18308050100 | | |
| | 22000 | 65x80 | 14 | 9,4 | 22308065080 | | |
| | 27000 | 65x100 | 12 | 11,3 | 27308065100 | | |
| | 39000 | 75x100 | 8 | 11,8 | 39308075100 | | |
| | 39000 | 65x130 | 8 | 15,1 | 39308065130 | | |
| | 47000 | 75x115 | 7 | 13,6 | 47308075115 | | |
| | 68000 | 75x145 | 5 | 17,9 | 68308075145 | | |
| | 68000 | 75x165 | 5 | 18,9 | 68308075165 | | |
| | 100000 | 90x148 | 3 | 24,5 | 10408090148 | | |
| | 120000 | 75x225 | 3 | 28,6 | 12408075225 | | |
| | 120000 | 90x170 | 3 | 28,3 | 12408090170 | | |
| | 150000 | 90x220 | 2 | 35,1 | 15408090220 | | |
| | 150000 | 90x230 | 2 | 35,8 | 15408090230 | | |
| | 3300 | 35x55 | 48 | 3,1 | 33210035055 | | |
| | 4700 | 35x70 | 34 | 4,1 | 47210035070 | | |
| | 100 | 4700 | 40x55 | 34 | 3,8 | 47210040055 | |
| | | 5600 | 35x80 | 28 | 4,7 | 56210035080 | |
| | | 5600 | 40x70 | 28 | 4,6 | 56210040070 | |
| 6800 | | 35x100 | 23 | 5,7 | 68210035100 | | |
| 6800 | | 40x80 | 23 | 5,3 | 68210040080 | | |
| 8200 | | 45x70 | 19 | 5,5 | 82210045070 | | |
| 10000 | | 50x70 | 16 | 6,5 | 10310050070 | | |
| 10000 | | 40x100 | 16 | 7,1 | 10310040100 | | |
| 12000 | | 45x100 | 13 | 7,7 | 12310045100 | | |
| 12000 | | 50x80 | 13 | 7,5 | 12310050080 | | |
| 15000 | | 50x100 | 11 | 9,2 | 15310050100 | | |
| 18000 | | 65x80 | 9 | 12,1 | 18310065080 | | |
| 22000 | | 65x100 | 7 | 14,5 | 22310065100 | | |
| 27000 | | 75x100 | 6 | 13,9 | 27310075100 | | |
| 33000 | | 65x130 | 5 | 19,6 | 33310065130 | | |
| 39000 | | 75x115 | 4 | 17,6 | 39310075115 | | |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code | | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|-------------------------|-------------|--|
| | | | | | Plain base: GA... | | |
| | | | | | Stud mounting: GB... | | |
| 100 | 47000 | 75x145 | 3 | 21,1 | 47310075145 | | |
| | 56000 | 75x165 | 3 | 24,2 | 56310075165 | | |
| | 68000 | 90x148 | 2 | 28,6 | 68310090148 | | |
| | 82000 | 75x225 | 2 | 33,4 | 82310075225 | | |
| | 82000 | 90x170 | 2 | 33,1 | 82310090170 | | |
| | 120000 | 90x220 | 1 | 44,5 | 12410090220 | | |
| | 120000 | 90x230 | 1 | 45,3 | 12410090230 | | |
| | 160 | 1800 | 35x55 | 62 | 2,8 | 18216035055 | |
| 2200 | | 35x70 | 51 | 3,4 | 22216035070 | | |
| 2200 | | 40x55 | 51 | 3,1 | 22216040055 | | |
| 2700 | | 35x80 | 41 | 3,9 | 27216035080 | | |
| 2700 | | 40x70 | 41 | 3,8 | 27216040070 | | |
| 3900 | | 35x100 | 29 | 5,2 | 39216035100 | | |
| 3900 | | 40x80 | 29 | 4,8 | 39216040080 | | |
| 3900 | | 45x70 | 29 | 4,6 | 39216045070 | | |
| 4700 | | 50x70 | 24 | 5,4 | 47216050070 | | |
| 4700 | | 40x100 | 24 | 5,8 | 47216040100 | | |
| 5600 | | 45x100 | 20 | 6,3 | 56216045100 | | |
| 5600 | | 50x80 | 20 | 6,1 | 56216050080 | | |
| 6800 | | 50x100 | 16 | 7,4 | 68216050100 | | |
| 8200 | | 65x80 | 14 | 9,7 | 82216065080 | | |
| 12000 | | 65x100 | 9 | 12,8 | 12316065100 | | |
| 15000 | | 75x100 | 7 | 12,4 | 15316075100 | | |
| 18000 | | 65x130 | 6 | 17,3 | 18316065130 | | |
| 18000 | | 75x115 | 6 | 14,3 | 18316075115 | | |
| 27000 | | 75x145 | 4 | 19,1 | 27316075145 | | |
| 27000 | | 75x165 | 4 | 20,1 | 27316075165 | | |
| 39000 | | 75x225 | 3 | 27,5 | 39316075225 | | |
| 39000 | | 90x148 | 3 | 25,9 | 39316090148 | | |
| 47000 | | 90x170 | 2 | 30,0 | 47316090170 | | |
| 56000 | | 90x220 | 2 | 36,3 | 56316090220 | | |
| 56000 | | 90x230 | 2 | 37,0 | 56316090230 | | |
| 250 | | 1000 | 35x55 | 96 | 2,2 | 10225035055 | |
| | | 1500 | 35x70 | 64 | 3,0 | 15225035070 | |
| | | 1500 | 40x55 | 64 | 2,8 | 15225040055 | |
| | 1800 | 35x80 | 53 | 3,5 | 18225035080 | | |
| | 1800 | 40x70 | 53 | 3,3 | 18225040070 | | |
| | 2200 | 35x100 | 43 | 4,2 | 22225035100 | | |
| | 2200 | 40x80 | 43 | 3,9 | 22225040080 | | |
| | 2200 | 45x70 | 43 | 3,7 | 22225045070 | | |
| | 2700 | 50x70 | 35 | 4,4 | 27225050070 | | |
| | 3300 | 40x100 | 29 | 5,2 | 33225040100 | | |
| | 3900 | 45x100 | 24 | 5,7 | 39225045100 | | |
| | 3900 | 50x80 | 24 | 5,5 | 39225050080 | | |
| | 4700 | 50x100 | 20 | 6,6 | 47225050100 | | |
| | 5600 | 65x80 | 17 | 8,7 | 56225065080 | | |
| | 8200 | 65x100 | 12 | 11,4 | 82225065100 | | |
| | 10000 | 75x100 | 10 | 10,9 | 10325075100 | | |
| 12000 | 65x130 | 8 | 15,3 | 12325065130 | | | |

Stand: 12/2019

105°C

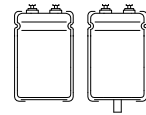


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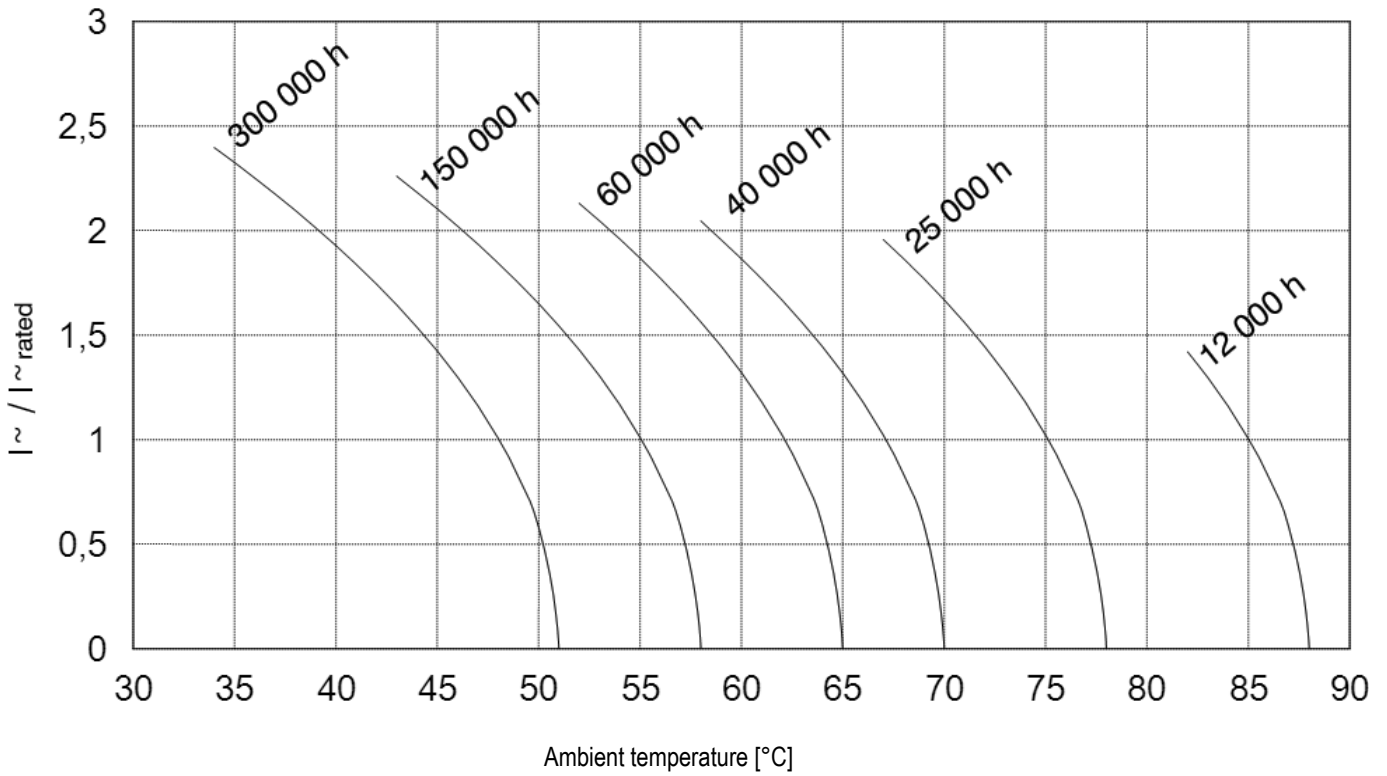
| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|-------------------------|
| | | | | | Plain base: GA... |
| | | | | | Stud mounting: GB... |
| 250 | 12000 | 75x115 | 8 | 12,6 | 12325075115 |
| | 18000 | 75x145 | 5 | 16,8 | 18325075145 |
| | 18000 | 75x165 | 5 | 17,7 | 18325075165 |
| | 27000 | 75x225 | 4 | 24,7 | 27325075225 |
| | 27000 | 90x148 | 4 | 23,2 | 27325090148 |
| | 27000 | 90x170 | 4 | 24,5 | 27325090170 |
| | 39000 | 90x220 | 2 | 32,7 | 39325090220 |
| | 39000 | 90x230 | 2 | 33,3 | 39325090230 |
| 350 | 560 | 35x55 | 171 | 1,7 | 56135035055 |
| | 680 | 40x55 | 141 | 1,9 | 68135040055 |
| | 820 | 35x70 | 117 | 2,2 | 82135035070 |
| | 1000 | 35x80 | 96 | 2,6 | 10235035080 |
| | 1200 | 40x70 | 80 | 2,7 | 12235040070 |
| | 1200 | 45x70 | 80 | 2,7 | 12235045070 |
| | 1500 | 35x100 | 64 | 3,5 | 15235035100 |
| | 1500 | 40x80 | 64 | 3,2 | 15235040080 |
| | 1800 | 50x70 | 53 | 3,6 | 18235050070 |
| | 1800 | 40x100 | 53 | 3,9 | 18235040100 |
| | 1800 | 50x80 | 53 | 3,8 | 18235050080 |
| | 2200 | 45x100 | 43 | 4,3 | 22235045100 |
| | 2700 | 50x100 | 35 | 5,0 | 27235050100 |
| | 3300 | 65x80 | 29 | 6,7 | 33235065080 |
| | 3900 | 65x100 | 24 | 7,9 | 39235065100 |
| | 4700 | 75x100 | 20 | 7,5 | 47235075100 |
| | 5600 | 65x130 | 17 | 10,4 | 56235065130 |
| | 5600 | 75x115 | 17 | 8,6 | 56235075115 |
| | 8200 | 75x145 | 12 | 11,4 | 82235075145 |
| | 8200 | 75x165 | 12 | 12,0 | 82235075165 |
| | 12000 | 75x225 | 8 | 16,5 | 12335075225 |
| | 12000 | 90x148 | 8 | 15,5 | 12335090148 |
| | 15000 | 90x170 | 6 | 18,3 | 15335090170 |
| | 18000 | 90x220 | 5 | 22,2 | 18335090220 |
| 18000 | 90x230 | 5 | 22,6 | 18335090230 | |
| 400 | 390 | 35x55 | 327 | 1,2 | 39140035055 |
| | 560 | 35x70 | 227 | 1,6 | 56140035070 |
| | 560 | 40x55 | 227 | 1,5 | 56140040055 |
| | 680 | 35x80 | 187 | 1,8 | 68140035080 |
| | 820 | 40x70 | 155 | 2,0 | 82140040070 |
| | 820 | 40x80 | 155 | 2,1 | 82140040080 |
| | 1000 | 35x100 | 127 | 2,5 | 10240035100 |
| | 1000 | 45x70 | 127 | 2,2 | 10240045070 |
| | 1200 | 50x70 | 106 | 2,5 | 12240050070 |
| | 1200 | 40x100 | 106 | 2,7 | 12240040100 |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|-------------------------|
| | | | | | Plain base: GA... |
| | | | | | Stud mounting: GB... |
| 400 | 1500 | 45x100 | 85 | 3,0 | 15240045100 |
| | 1500 | 50x80 | 85 | 3,0 | 15240050080 |
| | 1800 | 50x100 | 71 | 3,6 | 18240050100 |
| | 2200 | 65x80 | 58 | 4,7 | 22240065080 |
| | 2700 | 65x100 | 47 | 5,7 | 27240065100 |
| | 3300 | 65x100 | 40 | 5,8 | 33240065100 |
| | 3900 | 75x100 | 33 | 5,9 | 39240075100 |
| | 3900 | 65x130 | 33 | 7,5 | 39240065130 |
| | 4700 | 75x115 | 27 | 6,8 | 47240075115 |
| | 6800 | 75x145 | 19 | 9,0 | 68240075145 |
| | 6800 | 75x165 | 19 | 9,4 | 68240075165 |
| | 10000 | 90x148 | 13 | 12,2 | 10340090148 |
| | 12000 | 75x225 | 11 | 14,3 | 12340075225 |
| | 12000 | 90x170 | 11 | 14,2 | 12340090170 |
| | 15000 | 90x220 | 8 | 17,6 | 15340090220 |
| | 18000 | 90x230 | 7 | 19,6 | 18340090230 |
| | 450 | 390 | 35x55 | 286 | 1,3 |
| 470 | | 35x70 | 237 | 1,6 | 47145035070 |
| 560 | | 35x80 | 199 | 1,8 | 56145035080 |
| 560 | | 35x100 | 199 | 2,0 | 56145035100 |
| 680 | | 40x60 | 164 | 1,8 | 68145040060 |
| 820 | | 40x70 | 136 | 2,1 | 82145040070 |
| 820 | | 40x80 | 136 | 2,2 | 82145040080 |
| 1000 | | 45x70 | 111 | 2,3 | 10245045070 |
| 1000 | | 40x100 | 111 | 2,7 | 10245040100 |
| 1200 | | 50x70 | 93 | 2,7 | 12245050070 |
| 1200 | | 45x100 | 93 | 2,9 | 12245045100 |
| 1200 | | 50x80 | 93 | 2,8 | 12245050080 |
| 1800 | | 50x100 | 62 | 3,8 | 18245050100 |
| 1800 | | 65x80 | 62 | 4,6 | 18245065080 |
| 2700 | | 65x100 | 41 | 6,1 | 27245065100 |
| 3300 | | 65x130 | 34 | 7,4 | 33245065130 |
| 3900 | | 75x100 | 29 | 6,3 | 39245075100 |
| 3900 | | 75x115 | 29 | 6,6 | 39245075115 |
| 4700 | | 75x145 | 25 | 7,6 | 47245075145 |
| 5600 | | 75x145 | 20 | 8,7 | 56245075145 |
| 6800 | | 75x165 | 16 | 10,1 | 68245075165 |
| 8200 | | 75x225 | 14 | 12,6 | 82245075225 |
| 10000 | | 90x148 | 11 | 13,1 | 10345090148 |
| 10000 | | 90x170 | 11 | 13,8 | 10345090170 |
| 15000 | 90x220 | 7 | 18,8 | 15345090220 | |
| 15000 | 90x230 | 7 | 19,1 | 15345090230 | |
| 15000 | 90x230 | 7 | 19,1 | 15345090230 | |

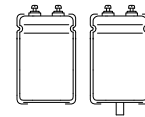
Stand: 12/2019



■ USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



125°C



GG



SCREW TERMINALS

VERY LONG LIFETIME

HIGH CV PRODUCT

HIGH-TEMP 125 °C

LOW INDUCTANCE ESL

■ FEATURES

- All internal contacts welded
- High temp 125°C
- Long useful life
- Low inductance ESL

■ APPLICATIONS

- Computer
- Industrial
- Inverter/drives
- Welding

RoHS compliant
REACH compliant

■ GENERAL SPECIFICATIONS

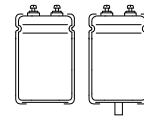
| Items | Characteristics |
|---|---|
| Rated capacitance range C_R | 3.900... 3.300.000 μ F |
| Capacitance tolerance | $\pm 20\%$ |
| Rated voltage range U | 16 ... 63 V |
| Surge voltage U_s | $U_s = 1,15 U_R$ |
| Max. reverse voltage | 2 V / 13 nH |
| Category temperature range | - 55°C ... + 125 °C |
| Leakage current I_L after 5 min @ U_R | $\leq 0,008 * C_R [\mu F] * U_R [V] + 6 \mu A [\mu A]$ |
| Useful life 2000 h @ 125 °C ; U_R ; I_R | Requirements $\Delta C/C \leq 30\%$ of initial value ; ESR $\leq 300\%$ of specified ; limit $I_L \leq$ specified limit |
| Endurance test 1000 h @ 125 °C , U_R | Requirements $\Delta C/C \leq 20\%$ of initial value ; ESR $\leq 130\%$ of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 55/125/56 |
| Voltage proof of the external insulation | ≥ 2500 V AC |
| Sectional specification | IEC 60384-4 |

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand: 12/2019



125°C



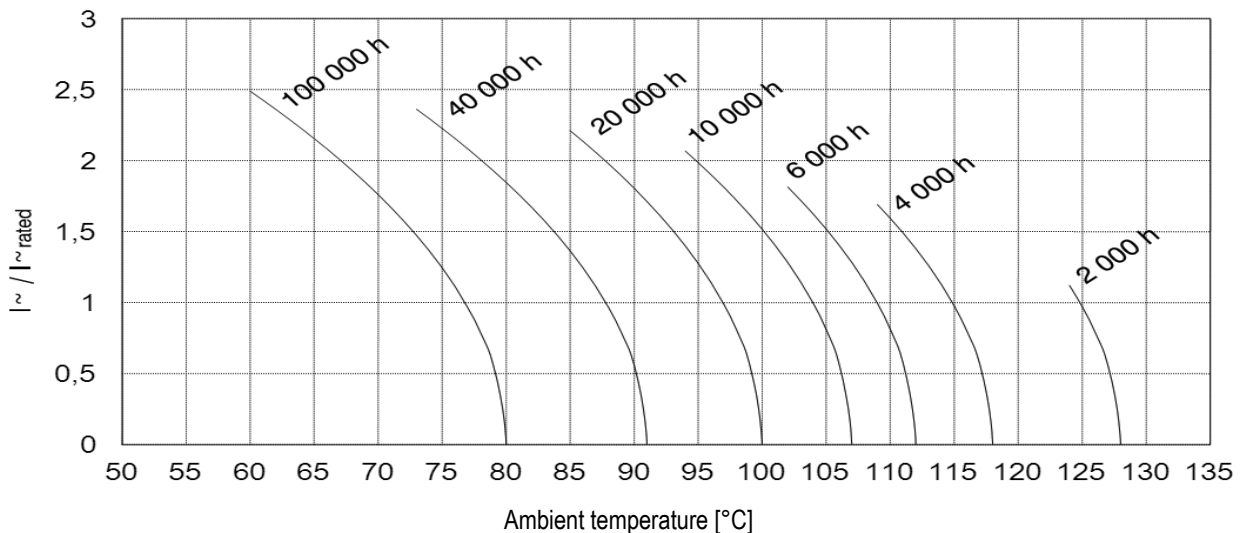
GG

ELECTRICAL DATA AND ORDERING CODE FOR SERIES GG

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current $I_{R\sim}$ 100 Hz, 125°C [A] | Order code | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|--------------------------|-------------|
| | | | | | Plain base: GGA... | |
| | | | | | Stud mounting: GGB... | |
| 16 | 27000 | 35x55 | 17 | 5,4 | 27301635055 | |
| | 39000 | 40x55 | 11 | 6,6 | 39301640055 | |
| | 47000 | 35x70 | 9 | 7,8 | 47301635070 | |
| | 56000 | 35x80 | 8 | 9,0 | 56301635080 | |
| | 56000 | 40x70 | 8 | 8,6 | 56301640070 | |
| | 68000 | 35x100 | 7 | 10,8 | 68301635100 | |
| | 68000 | 40x80 | 7 | 10,0 | 68301640080 | |
| | 68000 | 45x70 | 7 | 9,5 | 68301645070 | |
| | 68000 | 45x100 | 7 | 11,0 | 68301645100 | |
| | 82000 | 50x70 | 5 | 11,2 | 82301650070 | |
| | 100000 | 50x80 | 4 | 13,0 | 10401650080 | |
| | 120000 | 40x100 | 4 | 14,6 | 12401640100 | |
| | 150000 | 50x100 | 3 | 17,3 | 15401650100 | |
| | 25 | 18000 | 35x55 | 25 | 4,4 | 18302535055 |
| 22000 | | 35x70 | 20 | 5,3 | 22302535070 | |
| 22000 | | 40x55 | 20 | 4,9 | 22302540055 | |
| 27000 | | 35x80 | 17 | 6,2 | 27302535080 | |
| 33000 | | 40x70 | 14 | 6,6 | 33302540070 | |
| 39000 | | 35x100 | 11 | 8,2 | 39302535100 | |
| 39000 | | 40x80 | 11 | 7,6 | 39302540080 | |
| 39000 | | 45x70 | 11 | 7,2 | 39302545070 | |
| 47000 | | 40x100 | 9 | 9,1 | 47302540100 | |
| 47000 | | 50x70 | 9 | 8,5 | 47302550070 | |
| 56000 | | 45x100 | 8 | 9,9 | 56302545100 | |
| 56000 | | 50x80 | 8 | 9,7 | 56302550080 | |
| 82000 | | 50x100 | 5 | 12,8 | 82302550100 | |

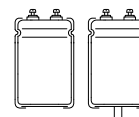
| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current $I_{R\sim}$ 100 Hz, 125°C [A] | Order code | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|--------------------------|-------------|
| | | | | | Plain base: GGA... | |
| | | | | | Stud mounting: GGB... | |
| 40 | 8200 | 35x55 | 47 | 3,2 | 82204035055 | |
| | 12000 | 40x55 | 32 | 3,9 | 12304040055 | |
| | 12000 | 35x70 | 32 | 4,2 | 12304035070 | |
| | 15000 | 35x80 | 25 | 5,0 | 15304035080 | |
| | 15000 | 40x70 | 25 | 4,8 | 15304040070 | |
| | 18000 | 35x100 | 21 | 6,0 | 18304035100 | |
| | 18000 | 40x80 | 21 | 5,6 | 18304040080 | |
| | 18000 | 45x70 | 21 | 5,3 | 18304045070 | |
| | 22000 | 50x70 | 17 | 6,3 | 22304050070 | |
| | 27000 | 40x100 | 14 | 7,5 | 27304040100 | |
| | 27000 | 50x80 | 14 | 7,3 | 27304050080 | |
| | 33000 | 45x100 | 12 | 8,2 | 33304045100 | |
| | 39000 | 50x100 | 10 | 9,5 | 39304050100 | |
| | 63 | 3900 | 35x55 | 73 | 2,5 | 39206335055 |
| 4700 | | 40x55 | 61 | 2,8 | 47206340055 | |
| 5600 | | 35x70 | 51 | 3,3 | 56206335070 | |
| 6800 | | 35x80 | 42 | 3,9 | 68206335080 | |
| 6800 | | 40x70 | 42 | 3,8 | 68206340070 | |
| 8200 | | 35x100 | 35 | 4,7 | 82206335100 | |
| 8200 | | 40x80 | 35 | 4,3 | 82206340080 | |
| 8200 | | 45x70 | 35 | 4,1 | 82206345070 | |
| 10000 | | 50x70 | 29 | 4,9 | 10306350070 | |
| 12000 | | 40x100 | 24 | 5,8 | 12306340100 | |
| 12000 | | 50x80 | 24 | 5,6 | 12306350080 | |
| 12000 | | 45x100 | 24 | 5,7 | 12306345100 | |
| 18000 | | 50x100 | 16 | 7,5 | 18306350100 | |

USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



Stand: 12/2019

Special electrolyte 85°C



GF



NON FLAMMABLE ELECTROLYTE

SCREW TERMINALS

HIGH CV PRODUCT

LONG LIFE 8000 H @ 85 °C

FEATURES

- All internal contacts welded
- Self distinguishing electrolyte
- High capacitance
- High reliability

APPLICATIONS

- Industrial
- Inverter/drives
- Professional photoflash
- Welding

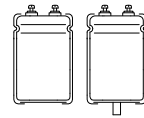
RoHS compliant
REACH compliant

GENERAL SPECIFICATIONS

| Items | Characteristics |
|--|---|
| Rated capacitance range C_R | 3.900... 18.000 μF |
| Capacitance tolerance | $\pm 20\%$ |
| Rated voltage range U | 350 ... 450 V |
| Surge voltage U_S | $U_S = 1,10 U_R$ |
| Max. reverse voltage | 2 V / 20 nH |
| Category temperature range | - 25°C ... + 85 °C |
| Leakage current I_L after 5 min @ U_R | $\leq 0,008 * C_R [\mu\text{F}] * U_R [\text{V}] + 6 \mu\text{A} [\mu\text{A}]$ |
| Useful life 8000 h @ 85 °C ; U_R ; I_R | Requirements $\Delta C/C \leq 30\%$ of initial value ; ESR $\leq 300\%$ of specified ; limit $I_L \leq$ specified limit |
| Endurance test 2000 h @ 85 °C , U_R | Requirements $\Delta C/C \leq 20\%$ of initial value ; ESR $\leq 130\%$ of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 25/085/56 |
| Voltage proof of the external insulation | ≥ 2500 V AC |
| Sectional specification | IEC 60384-4 |

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand: 12/2019



■ DRAWINGS FOR SERIES GFA AND GFB

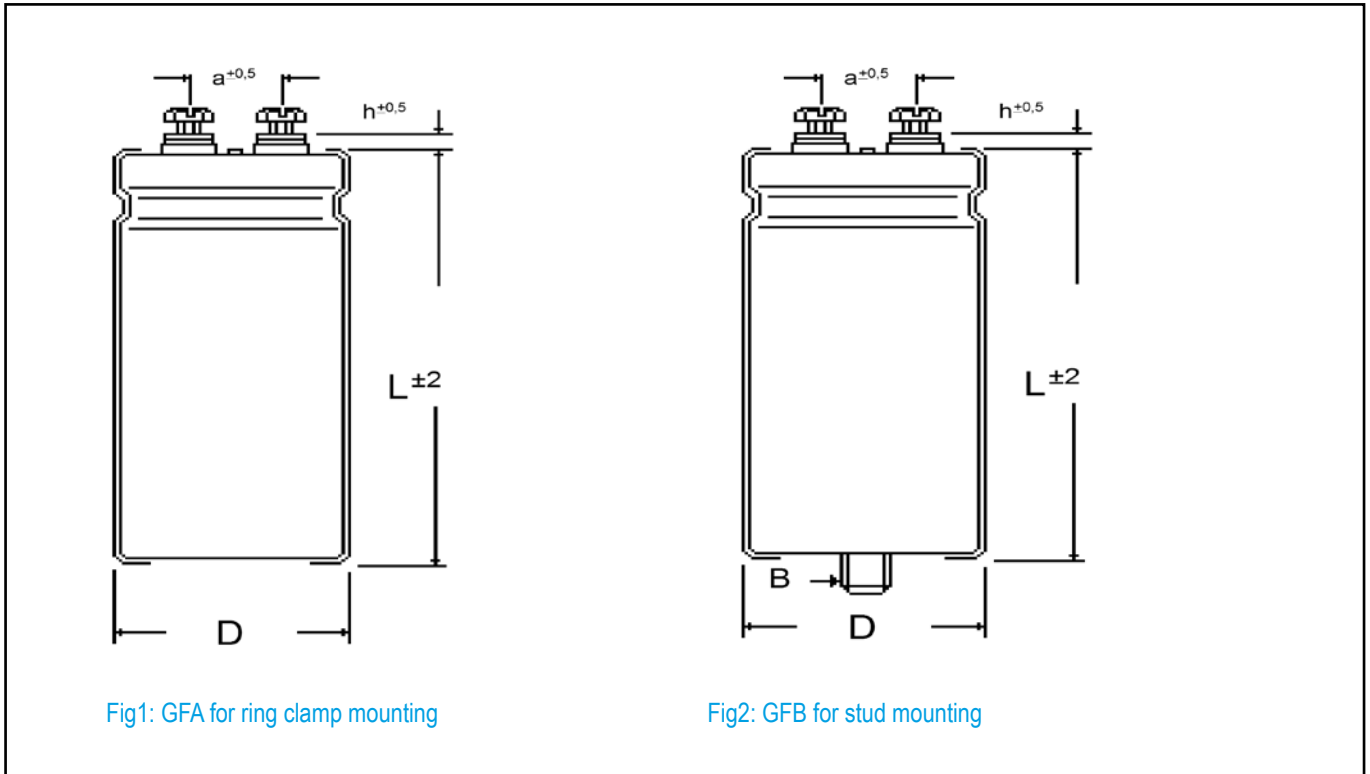


Fig1: GFA for ring clamp mounting

Fig2: GFB for stud mounting

■ DIMENSIONS AND MECHANICAL DATA

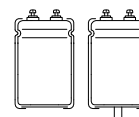
| Dimensions, case with insulation sleeve | | | | Connecting terminals | | Mounting stud, GMB only | |
|---|--------------------------------------|--------|--------|----------------------|------------------|-------------------------|------------------|
| D [mm] | Case length L available in 5 mm [mm] | h [mm] | a [mm] | Thread | Max. torque [Nm] | B | Max. torque [Nm] |
| 35 | 40 ... 120 | 6 | 13 | M5 | 2,0 | M8 x 12 | 4,0 |
| 40 | 40 ... 120 | 5 | 18 | M5 | 2,0 | M8 x 12 | 4,0 |
| 50 | 40 ... 120 | 5 | 22 | M5 | 2,0 | M12 x 16 | 10,0 |
| 65 | 40 ... 180 | 5 | 28,5 | M5 | 2,0 | M12 x 16 | 10,0 |
| 75 | 40 ... 230 | 5 | 31,7 | M5 ; M6 | 2,0 ; 2,5 | M12 x 16 | 10,0 |
| 90 | 40 ... 230 | 5 | 31,7 | M6 | 2,5 | M12 x 16 | 10,0 |

GMA: connecting screws M5 or M6

GMB: connecting screws M5 or M6 + mounting nut M8 or M12

Remarks: Further mounting accessories like clamps, nylon cup nuts and insulation disks on request, see "accessory equipment".

Special electrolyte 85°C



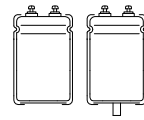
GF

ELECTRICAL DATA AND ORDERING CODE FOR SERIES GF

| Rated voltage U_R [V] | Rated cap. C_R [μ F] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [m Ω] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------------|----------------------------|--|--|--------------------------|
| | | | | | Plain base: GFA... |
| | | | | | Stud mounting: GFB... |
| 350 | 560 | 35x55 | 199 | 1,8 | 56135035055 |
| | 680 | 40x55 | 164 | 2,1 | 68135040055 |
| | 1200 | 45x70 | 93 | 3,0 | 12235045070 |
| | 1500 | 35x100 | 74 | 3,7 | 15235035100 |
| | 1800 | 40x100 | 62 | 4,3 | 18235040100 |
| | 1800 | 50x70 | 62 | 4,0 | 18235050070 |
| | 2200 | 45x100 | 51 | 4,7 | 22235045100 |
| | 2700 | 50x100 | 41 | 5,6 | 27235050100 |
| | 3300 | 65x80 | 34 | 6,4 | 33235065080 |
| | 4700 | 75x100 | 24 | 8,3 | 47235075100 |
| | 5600 | 65x130 | 20 | 10,0 | 56235065130 |
| | 8200 | 75x145 | 14 | 12,6 | 82235075145 |
| | 12000 | 75x225 | 9 | 18,3 | 12335075225 |
| | 12000 | 90x148 | 9 | 17,1 | 12335090148 |
| 18000 | 90x230 | 6 | 25,1 | 18335090230 | |
| 400 | 390 | 35x55 | 286 | 1,5 | 39140035055 |
| | 560 | 40x55 | 199 | 1,9 | 56140040055 |
| | 1000 | 45x70 | 111 | 2,8 | 10240045070 |
| | 1000 | 35x100 | 111 | 3,0 | 10240035100 |
| | 1200 | 40x100 | 93 | 3,5 | 12240040100 |
| | 1200 | 50x70 | 93 | 3,2 | 12240050070 |
| | 1500 | 45x100 | 74 | 3,9 | 15240045100 |
| | 1800 | 50x100 | 62 | 4,5 | 18240050100 |

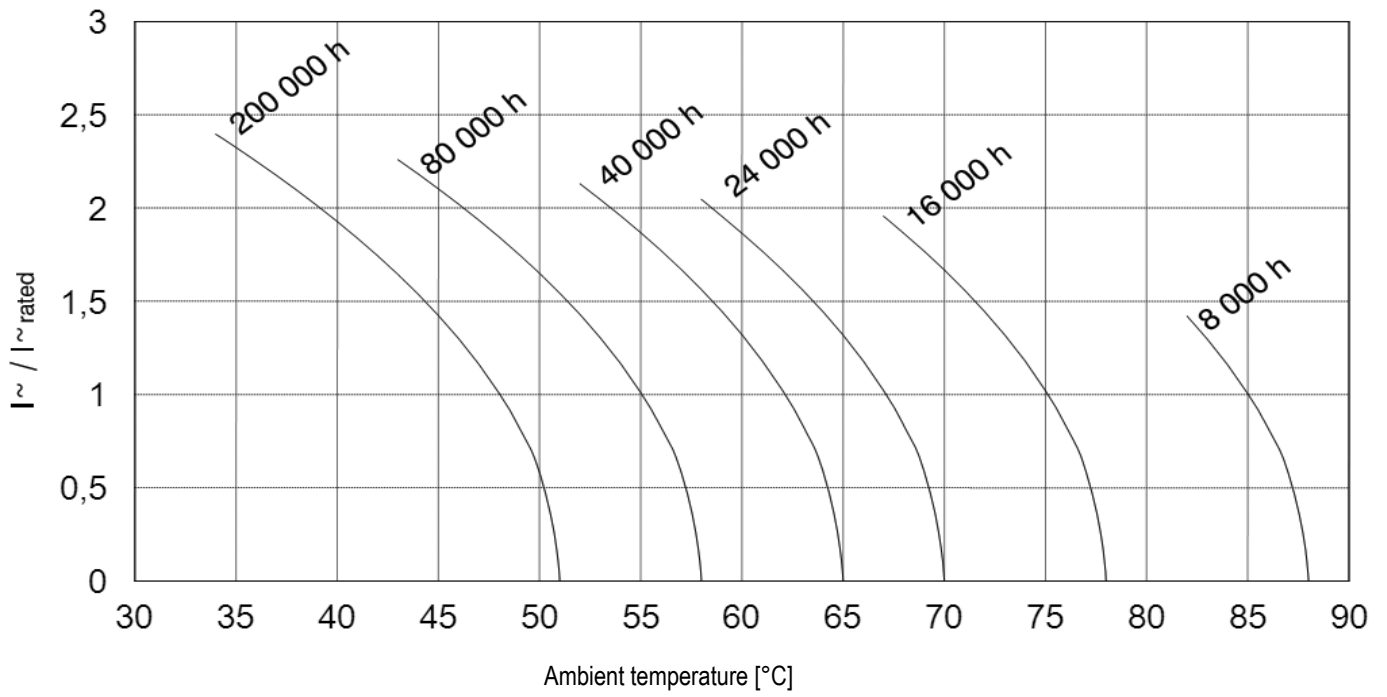
| Rated voltage U_R [V] | Rated cap. C_R [μ F] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [m Ω] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------------|----------------------------|--|--|--------------------------|
| | | | | | Plain base: GFA... |
| | | | | | Stud mounting: GFB... |
| 400 | 2200 | 65x80 | 51 | 5,2 | 22240065080 |
| | 3900 | 75x100 | 29 | 7,5 | 39240075100 |
| | 3900 | 65x130 | 29 | 8,3 | 39240065130 |
| | 6800 | 75x145 | 16 | 11,5 | 68240075145 |
| | 10000 | 90x148 | 11 | 15,6 | 10340090148 |
| | 12000 | 75x225 | 9 | 18,3 | 12340075225 |
| | 18000 | 90x230 | 6 | 25,1 | 18340090230 |
| | 390 | 35x55 | 286 | 1,5 | 39145035055 |
| | 560 | 35x100 | 199 | 0,9 | 56145035000 |
| | 680 | 40x55 | 164 | 2,1 | 68145040055 |
| | 820 | 40x60 | 136 | 2,4 | 82145040060 |
| | 1000 | 45x70 | 111 | 3,2 | 10245045100 |
| | 1200 | 40x100 | 93 | 3,5 | 12245040100 |
| | 1200 | 50x70 | 93 | 3,2 | 12245050070 |
| | 1200 | 45x100 | 93 | 3,5 | 12245045100 |
| | 450 | 1800 | 50x100 | 62 | 4,5 |
| 1800 | | 65x80 | 62 | 4,7 | 18245065080 |
| 3900 | | 75x100 | 29 | 7,5 | 39245075100 |
| 3300 | | 65x130 | 34 | 7,7 | 33245065130 |
| 5600 | | 75x145 | 20 | 10,4 | 56245075145 |
| 8200 | | 75x225 | 14 | 15,1 | 82245075225 |
| 10000 | | 90x148 | 11 | 15,6 | 10345090148 |
| 15000 | | 90x230 | 7 | 22,9 | 15345090230 |

Special electrolyte 85°C

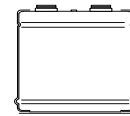


GF

■ USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



105°C



GW



- SCREW TERMINALS
- HIGH PERFORMANCE
- ULTRA LOW
- HEAT SINK MOUNTING!
- VERY HIGH RIPPLE CURRENT

■ FEATURES

- All contacts welded
- High ripple current
- Thermal conducting pad
- Best suited for heatsink mounting

■ APPLICATIONS

- Inverter/drives
- Traction
- Industrial
- Welding

RoHS compliant
REACH compliant

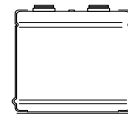
■ GENERAL SPECIFICATIONS

| Items | Characteristics |
|---|---|
| Rated capacitance range C_R | 1.000... 22.000 μF |
| Capacitance tolerance | $\pm 20\%$ |
| Rated voltage range U | 40 ... 450 V |
| Surge voltage U_S | $U_R \leq 315 \text{ V}: U_S = 1,15 U_R$; $U_R > 315 \text{ V}: U_S = 1,10 U_R$ |
| Max. reverse voltage | 2 V / 13 nH |
| Category temperature range | - 40°C ... + 105 °C |
| Leakage current I_L after 5 min @ U_R | $\leq 0,008 * C_R [\mu\text{F}] * U_R [\text{V}] + 6 \mu\text{A} [\mu\text{A}]$ |
| Useful life 5000 h @ 105 °C ; U_R ; I_R | Requirements $\Delta C/C \leq 30 \%$ of initial value ; ESR $\leq 300 \%$ of specified ; limit $I_L \leq$ specified limit |
| Endurance test 2000 h @ 105 °C , U_R | Requirements $\Delta C/C \leq 20 \%$ of initial value ; ESR $\leq 130 \%$ of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 40/105/56 |
| Voltage proof of the external insulation | $\geq 2500 \text{ V AC}$ |
| Sectional specification | IEC 60384-4 |

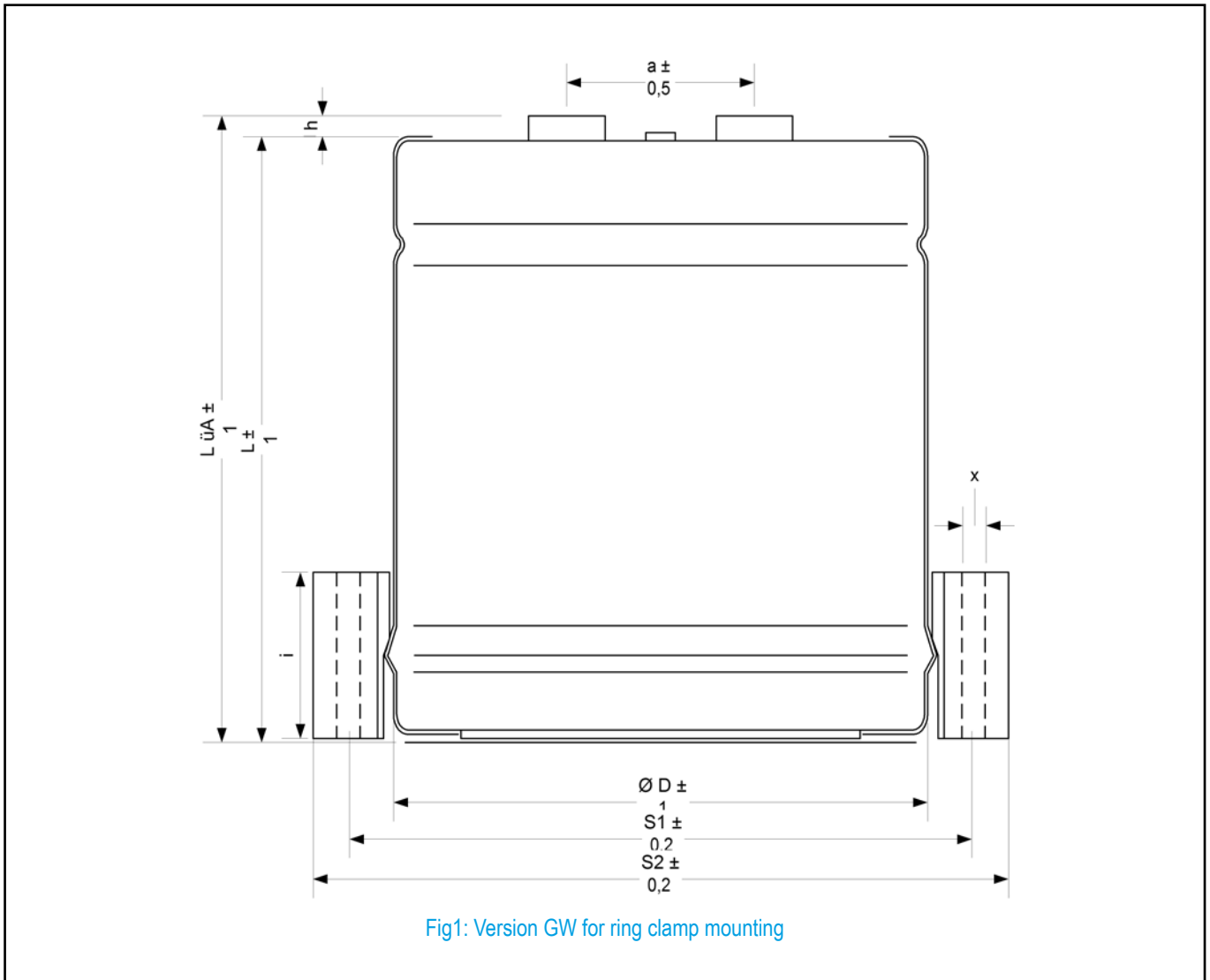
Different voltages and capacitance combinations are available on request. Also in small lots.

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■ DRAWINGS FOR SERIES GW



■ DIMENSIONS AND MECHANICAL DATA

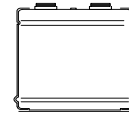
| D [mm] | h [mm] | a [mm] | x [mm] | i [mm] | Thread | Max. torque [Nm] | S ₁ | S ₂ |
|--------|--------|--------|--------|--------|---------|------------------|----------------|----------------|
| 50 | 5 | 22 | 4,5 | 20 | M5 | 2,0 | 63 | 75 |
| 75 | 5 | 31,7 | 4,5 | 20 | M5 ; M6 | 2,0 ; 2,5 | 90 | 101 |
| 90 | 5 | 31,7 | 4,5 | 20 | M5 | 2,0 | 105 | 116 |

GW: connecting screws M5 or M6

Remarks: Further mounting accessoires like clamps, nylon cup nuts and insulation disks on request, see “accessory equipment”.

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105°C



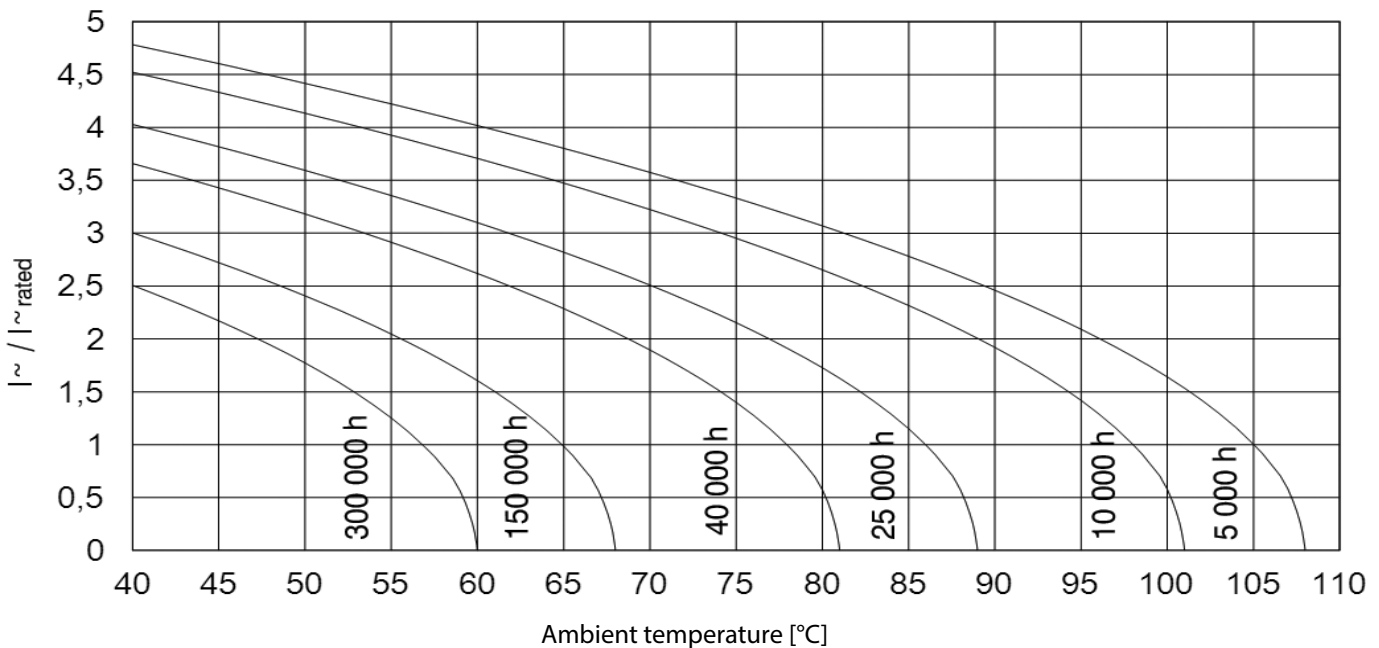
GW

ELECTRICAL DATA AND ORDERING CODE FOR SERIES GW

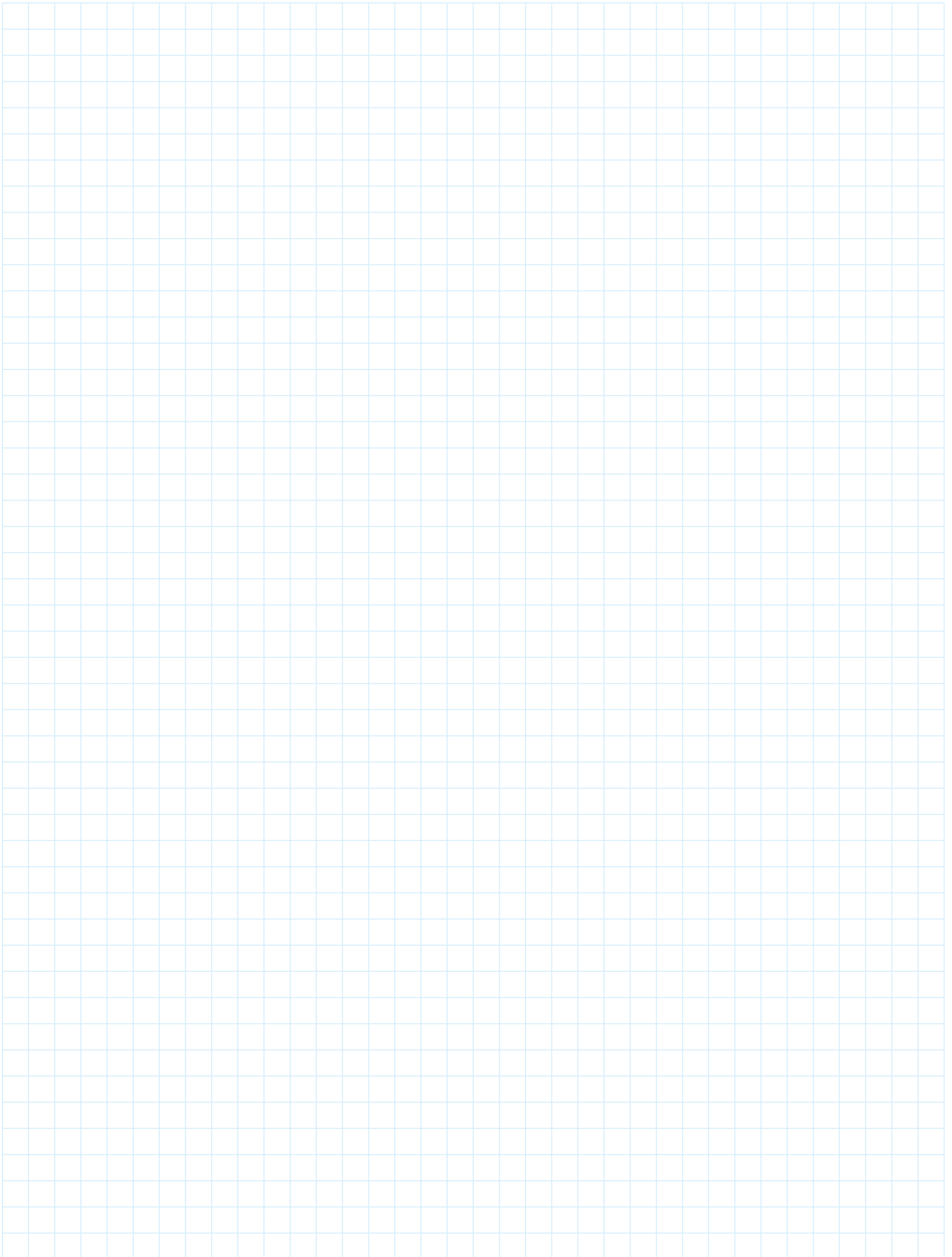
| Rated voltage U_R [V] | Rated cap. C_R [μ F] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [m Ω] | Ripple current IR~ 100 Hz, 105°C [A] | Order code GW... |
|-------------------------------|-----------------------------------|----------------------------|--|---|---------------------|
| 40 | 56000 | 50x80 | 7 | 12,3 | 56304050080 |
| | 100000 | 75x69 | 5 | 16,2 | 10404075069 |
| | 180000 | 75x100 | 3 | 22,9 | 18404075100 |
| | 150000 | 90x69 | 4 | 20,8 | 15404090069 |
| | 220000 | 90x98 | 3 | 28,3 | 22404090098 |
| 63 | 27000 | 50x80 | 8 | 11,4 | 27306350080 |
| | 47000 | 75x69 | 5 | 16,3 | 47306375069 |
| | 82000 | 75x100 | 4 | 20,4 | 82306375100 |
| | 82000 | 90x69 | 4 | 20,4 | 82306390069 |
| | 120000 | 90x98 | 3 | 25,2 | 12406390098 |
| 100 | 12000 | 50x80 | 13 | 9,0 | 12310050080 |
| | 22000 | 75x69 | 7 | 13,2 | 22310075069 |
| | 39000 | 75x100 | 4 | 19,9 | 39310075100 |
| | 39000 | 90x69 | 4 | 19,9 | 39310090069 |
| | 47000 | 90x98 | 3 | 26,7 | 47310090098 |
| | 56000 | 90x98 | 3 | 26,7 | 56310090098 |
| 160 | 4700 | 50x80 | 27 | 6,3 | 47216050080 |
| | 8200 | 75x69 | 16 | 9,0 | 82216075069 |
| | 15000 | 75x100 | 8 | 13,8 | 15316075100 |
| | 15000 | 90x69 | 8 | 13,8 | 15316090069 |
| | 22000 | 90x98 | 6 | 18,7 | 22316090098 |

| Rated voltage U_R [V] | Rated cap. C_R [μ F] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [m Ω] | Ripple current IR~ 100 Hz, 105°C [A] | Oder code GW... |
|-------------------------------|-----------------------------------|----------------------------|--|---|--------------------|
| 250 | 3300 | 50x80 | 34 | 8,0 | 33225050080 |
| | 5600 | 75x69 | 20 | 11,2 | 56225075069 |
| | 8200 | 90x69 | 14 | 15,4 | 82225090069 |
| | 10000 | 75x100 | 11 | 17,1 | 10325075100 |
| | 15000 | 90x98 | 7 | 23,3 | 15325090098 |
| 350 | 1500 | 50x80 | 74 | 5,4 | 15235050080 |
| | 2700 | 75x69 | 41 | 7,8 | 27235075069 |
| | 3900 | 90x69 | 29 | 10,6 | 39235090069 |
| | 4700 | 75x100 | 24 | 11,7 | 47235075100 |
| | 6800 | 90x98 | 16 | 15,7 | 68235090098 |
| 400 | 1000 | 50x80 | 111 | 4,4 | 10240050080 |
| | 1800 | 75x69 | 62 | 6,4 | 18240075069 |
| | 3300 | 75x100 | 34 | 9,8 | 33240075100 |
| | 3300 | 90x69 | 34 | 9,8 | 33240090069 |
| | 4700 | 90x98 | 24 | 13,1 | 47240090098 |
| | 1000 | 50x80 | 111 | 4,4 | 10245050080 |
| 450 | 1500 | 75x69 | 74 | 5,8 | 15245075069 |
| | 2200 | 90x69 | 51 | 8,0 | 22245090069 |
| | 3300 | 75x100 | 34 | 9,8 | 33245075100 |
| | 3300 | 90x98 | 34 | 10,9 | 33245090098 |
| | 4700 | 90x98 | 20 | 14,2 | 47245090098 |

USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



Stand: 12/2019



85°C



SI



STANDARD SERIES

SI: SNAP IN, 2 PINS

SI4P: SNAP IN, 4 PINS

FEATURES

- All internal contacts welded
- High CV product
- High reliability
- Long useful life

APPLICATIONS

- HiFi
- Computer
- Inverter/drives

RoHS compliant
REACH compliant

GENERAL SPECIFICATIONS

| Items | Characteristics |
|--|---|
| Rated capacitance range C_R | 56... 330.000 μF |
| Capacitance tolerance | $\pm 20\%$ |
| Rated voltage range U | 16 ... 500 V |
| Surge voltage U_S | $U_R \leq 315 \text{ V}: U_S = 1,15 U_R$; $U_R > 315 \text{ V}: U_S = 1,10 U_R$ |
| Max. reverse voltage | 2 V |
| Category temperature range | - 40°C ... + 85 °C |
| Leakage current I_L after 5 min @ U_R | $\leq 0,008 * C_R [\mu\text{F}] * U_R [\text{V}] + 6 \mu\text{A} [\mu\text{A}]$ |
| Useful life 5000 h @ 85 °C ; U_R ; I_R | Requirements $\Delta C/C \leq 30\%$ of initial value ; ESR $\leq 300\%$ of specified ; limit $I_L \leq$ specified limit |
| Endurance test 2000 h @ 85 °C , U_R | Requirements $\Delta C/C \leq 20\%$ of initial value ; ESR $\leq 130\%$ of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 40/085/56 |
| Voltage proof of the external insulation | $\geq 2500 \text{ V AC}$ |
| Sectional specification | IEC 60384-4 |

Different voltages and capacitance combinations are available on request. Also in small lots.

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■ DRAWINGS FOR SERIES SI AND SI4P

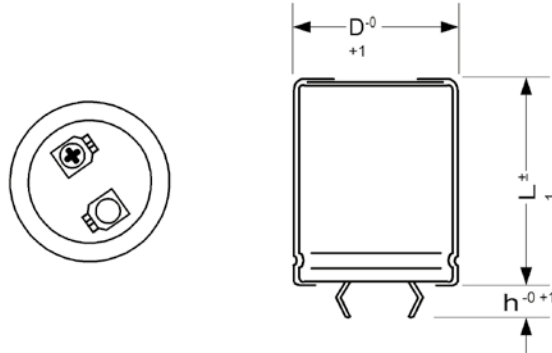
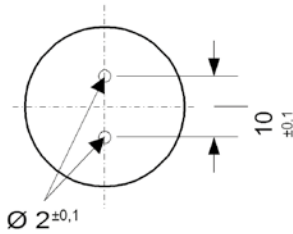


Fig1: SI - Standard 2 pin snap in version and mounting hole dimensions (mm)

Case diameter 25 to 45 mm only

Piercing diagram



h = 6,3 / 4,5 mm

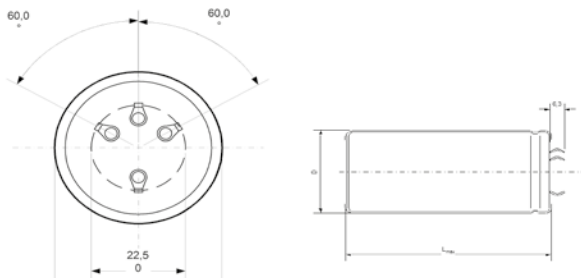
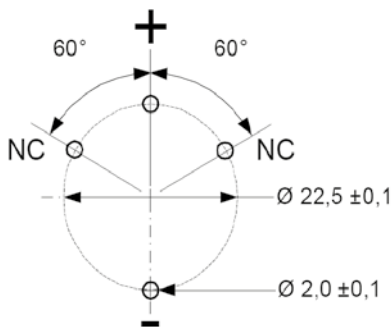


Fig2: SI4P - Keyed polarity 4 pin snap in version (here with 6,3 mm claw. The 4,5 mm claw is also available) and mounting hole dimensions (mm)

Case diameter 35, 40, 45 mm only



NC terminals must be soldered to isolated pads or pads connected to the minus potential

85°C



SI

ELECTRICAL DATA AND ORDERING CODE FOR SERIES SI

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|-----------------|
| | | | | | 2 Pins: SI... |
| | | | | | 4 Pins: SI4P... |
| 16 | 15000 | 22x25 | 32 | 2,6 | 15301622025 |
| | 18000 | 22x30 | 27 | 3,0 | 18301622030 |
| | 22000 | 22x35 | 22 | 3,5 | 22301622035 |
| | 22000 | 25x30 | 22 | 3,6 | 22301625030 |
| | 27000 | 22x40 | 18 | 4,1 | 27301622040 |
| | 27000 | 25x35 | 18 | 4,2 | 27301625035 |
| | 39000 | 25x40 | 12 | 5,3 | 39301625040 |
| | 33000 | 30x30 | 14 | 4,8 | 33301630030 |
| | 39000 | 25x45 | 12 | 5,6 | 39301625045 |
| | 47000 | 25x50 | 10 | 6,4 | 47301625050 |
| | 39000 | 30x35 | 12 | 5,5 | 39301630035 |
| | 47000 | 35x30 | 10 | 6,4 | 47301635030 |
| | 56000 | 30x40 | 9 | 7,0 | 56301630040 |
| | 56000 | 35x35 | 9 | 7,4 | 56301635035 |
| | 56000 | 30x45 | 9 | 7,3 | 56301630045 |
| | 68000 | 30x50 | 7 | 8,4 | 68301630050 |
| | 68000 | 35x40 | 7 | 8,5 | 68301635040 |
| | 82000 | 35x45 | 6 | 9,7 | 82301635045 |
| | 82000 | 35x50 | 6 | 10,1 | 82301635050 |
| | 100000 | 30x70 | 5 | 11,6 | 10401630070 |
| | 120000 | 40x50 | 4 | 12,9 | 12401640050 |
| | 150000 | 35x80 | 3 | 16,4 | 15401635080 |
| | 120000 | 40x50 | 4 | 12,9 | 12401640050 |
| | 150000 | 40x60 | 3 | 15,4 | 15401640060 |
| | 180000 | 35x100 | 3 | 19,7 | 18401635100 |
| | 220000 | 40x80 | 2 | 20,8 | 22401640080 |
| | 180000 | 45x60 | 3 | 16,9 | 18401645060 |
| | 270000 | 45x80 | 2 | 23,1 | 27401645080 |
| 270000 | 40x100 | 2 | 25,3 | 27401640100 | |
| 330000 | 45x100 | 1 | 27,9 | 33401645100 | |
| 25 | 5600 | 22x25 | 80 | 1,6 | 56202522025 |
| | 6800 | 22x30 | 66 | 1,9 | 68202522030 |
| | 10000 | 22x35 | 45 | 2,5 | 10302522035 |
| | 10000 | 25x30 | 45 | 2,5 | 10302525030 |
| | 12000 | 22x40 | 37 | 2,8 | 12302522040 |
| | 12000 | 25x35 | 37 | 2,9 | 12302525035 |
| | 15000 | 25x40 | 30 | 3,4 | 15302525040 |
| | 15000 | 30x30 | 30 | 3,4 | 15302530030 |
| | 18000 | 25x45 | 25 | 3,9 | 18302525045 |
| | 18000 | 30x35 | 25 | 3,9 | 18302530035 |
| | 18000 | 25x50 | 25 | 4,1 | 18302525050 |
| | 22000 | 30x40 | 20 | 4,5 | 22302530040 |
| | 18000 | 35x30 | 25 | 4,1 | 18302535030 |
| | 27000 | 30x45 | 17 | 5,1 | 27302530045 |
| | 27000 | 30x50 | 17 | 5,4 | 27302530050 |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|-----------------|-------------|
| | | | | | 2 Pins: SI... | |
| | | | | | 4 Pins: SI4P... | |
| 25 | 22000 | 35x35 | 21 | 4,7 | 22302535035 | |
| | 27000 | 35x40 | 17 | 5,4 | 27302535040 | |
| | 33000 | 35x45 | 14 | 6,3 | 33302535045 | |
| | 39000 | 30x70 | 12 | 7,4 | 39302530070 | |
| | 39000 | 35x50 | 12 | 7,1 | 39302535050 | |
| | 47000 | 35x60 | 10 | 8,3 | 47302535060 | |
| | 56000 | 40x50 | 8 | 8,9 | 56302540050 | |
| | 56000 | 35x80 | 8 | 10,2 | 56302535080 | |
| | 68000 | 40x60 | 7 | 10,5 | 68302540060 | |
| | 82000 | 35x100 | 6 | 13,5 | 82302535100 | |
| | 82000 | 45x60 | 6 | 11,6 | 82302545060 | |
| | 120000 | 40x80 | 4 | 15,6 | 12402540080 | |
| | 120000 | 40x100 | 4 | 17,1 | 12402540100 | |
| | 120000 | 45x80 | 4 | 15,6 | 12402545080 | |
| | 150000 | 45x100 | 3 | 19,1 | 15402545100 | |
| | 40 | 3300 | 22x25 | 116 | 1,4 | 33204022025 |
| | | 3900 | 22x30 | 98 | 1,6 | 39204022030 |
| | | 5600 | 22x35 | 68 | 2,0 | 56204022035 |
| | | 5600 | 25x30 | 68 | 2,0 | 56204025030 |
| | | 5600 | 22x40 | 68 | 2,1 | 56204022040 |
| 6800 | | 25x35 | 56 | 2,4 | 68204025035 | |
| 8200 | | 25x40 | 47 | 2,7 | 82204025040 | |
| 8200 | | 30x30 | 47 | 2,7 | 82204030030 | |
| 10000 | | 25x45 | 38 | 3,2 | 10304025045 | |
| 10000 | | 30x35 | 38 | 3,1 | 10304030035 | |
| 10000 | | 25x50 | 38 | 3,3 | 10304025050 | |
| 12000 | | 30x40 | 32 | 3,6 | 12304030040 | |
| 10000 | | 35x30 | 38 | 3,3 | 10304035030 | |
| 15000 | | 30x45 | 25 | 4,2 | 15304030045 | |
| 12000 | | 35x35 | 32 | 3,8 | 12304035035 | |
| 15000 | | 30x50 | 25 | 4,4 | 15304030050 | |
| 15000 | | 35x40 | 25 | 4,5 | 15304035040 | |
| 18000 | | 35x45 | 21 | 5,1 | 18304035045 | |
| 22000 | | 35x50 | 17 | 5,8 | 22304035050 | |
| 22000 | | 30x70 | 17 | 6,1 | 22304030070 | |
| 27000 | | 35x60 | 14 | 6,9 | 27304035060 | |
| 27000 | | 40x50 | 14 | 6,8 | 27304040050 | |
| 33000 | | 35x80 | 12 | 8,6 | 33304035080 | |
| 33000 | | 40x60 | 12 | 8,1 | 33304040060 | |
| 47000 | | 35x100 | 8 | 11,3 | 47304035100 | |
| 47000 | | 40x80 | 8 | 10,8 | 47304040080 | |
| 39000 | | 45x60 | 10 | 8,8 | 39304045060 | |
| 56000 | | 40x100 | 7 | 12,9 | 56304040100 | |
| 56000 | 45x80 | 7 | 11,7 | 56304045080 | | |
| 82000 | 45x100 | 5 | 15,5 | 82304045100 | | |

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85°C



SI

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|-----------------|
| | | | | | 2 Pins: SI... |
| | | | | | 4 Pins: SI4P... |
| 63 | 1500 | 22x25 | 191 | 1,1 | 15206322025 |
| | 2200 | 22x30 | 130 | 1,4 | 22206322030 |
| | 2700 | 22x35 | 106 | 1,6 | 27206322035 |
| | 2700 | 25x30 | 106 | 1,6 | 27206325030 |
| | 3300 | 22x40 | 87 | 1,9 | 33206322040 |
| | 3300 | 25x35 | 87 | 1,9 | 33206325035 |
| | 3900 | 25x40 | 73 | 2,2 | 39206325040 |
| | 3900 | 30x30 | 73 | 2,1 | 39206330030 |
| | 4700 | 25x45 | 61 | 2,5 | 47206325045 |
| | 4700 | 30x35 | 61 | 2,5 | 47206330035 |
| | 5600 | 25x50 | 51 | 0,0 | 56206325050 |
| | 5600 | 30x40 | 51 | 2,8 | 56206330040 |
| | 5600 | 35x30 | 51 | 2,9 | 56206335030 |
| | 6800 | 30x45 | 42 | 3,3 | 68206330045 |
| | 6800 | 35x35 | 42 | 3,3 | 68206335035 |
| | 8200 | 30x50 | 35 | 3,7 | 82206330050 |
| | 8200 | 35x45 | 35 | 4,0 | 82206335045 |
| | 12000 | 30x70 | 24 | 5,2 | 12306330070 |
| | 12000 | 35x60 | 24 | 5,3 | 12306335060 |
| | 15000 | 40x50 | 19 | 5,9 | 15306340050 |
| | 18000 | 35x80 | 16 | 7,3 | 18306335080 |
| | 18000 | 40x60 | 16 | 6,9 | 18306340060 |
| | 22000 | 45x60 | 13 | 7,6 | 22306345060 |
| | 22000 | 35x100 | 13 | 8,9 | 22306335100 |
| | 22000 | 40x80 | 13 | 8,5 | 22306340080 |
| | 27000 | 40x100 | 11 | 10,3 | 27306340100 |
| | 27000 | 45x80 | 11 | 9,4 | 27306345080 |
| | 39000 | 45x100 | 7 | 12,4 | 39306345100 |
| 80 | 1200 | 22x25 | 265 | 0,9 | 12208022025 |
| | 1500 | 22x30 | 212 | 1,1 | 15208022030 |
| | 1800 | 22x35 | 177 | 1,2 | 18208022035 |
| | 1800 | 25x30 | 177 | 1,3 | 18208025030 |
| | 2200 | 22x40 | 145 | 1,4 | 22208022040 |
| | 1800 | 25x35 | 177 | 1,3 | 18208025035 |
| | 2700 | 25x40 | 118 | 1,7 | 27208025040 |
| | 2700 | 30x30 | 118 | 1,7 | 27208030030 |
| | 3300 | 25x45 | 97 | 2,0 | 33208025045 |
| | 3900 | 25x50 | 82 | 2,3 | 39208025050 |
| | 3300 | 30x35 | 97 | 2,0 | 33208030035 |
| | 3900 | 35x30 | 82 | 2,3 | 39208035030 |
| | 3900 | 30x40 | 82 | 2,3 | 39208030040 |
| | 4700 | 30x45 | 68 | 2,6 | 47208030045 |
| | 4700 | 35x35 | 68 | 2,6 | 47208035035 |
| | 5600 | 30x50 | 57 | 2,9 | 56208030050 |
| | 5600 | 35x40 | 57 | 3,0 | 56208035040 |
| | 6800 | 35x45 | 47 | 3,4 | 68208035045 |
| | 6800 | 35x50 | 47 | 3,6 | 68208035050 |
| | 8200 | 30x70 | 39 | 4,1 | 82208030070 |
| | 10000 | 35x60 | 32 | 4,6 | 10308035060 |
| | 10000 | 40x50 | 32 | 4,6 | 10308040050 |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|-----------------|-------------|
| | | | | | 2 Pins: SI... | |
| | | | | | 4 Pins: SI4P... | |
| 80 | 12000 | 35x80 | 27 | 5,7 | 12308035080 | |
| | 12000 | 40x60 | 27 | 5,3 | 12308040060 | |
| | 18000 | 35x100 | 18 | 7,6 | 18308035100 | |
| | 15000 | 45x60 | 21 | 6,0 | 15308045060 | |
| | 18000 | 40x80 | 18 | 7,3 | 18308040080 | |
| | 22000 | 45x80 | 14 | 8,1 | 22308045080 | |
| | 22000 | 40x100 | 14 | 8,8 | 22308040100 | |
| | 27000 | 45x100 | 12 | 9,8 | 27308045100 | |
| | 100 | 680 | 22x25 | 234 | 1,0 | 68110022025 |
| | | 820 | 22x30 | 194 | 1,1 | 82110022030 |
| | | 1200 | 22x35 | 133 | 1,4 | 12210022035 |
| | | 1200 | 25x30 | 133 | 1,5 | 12210025030 |
| | | 1500 | 22x40 | 106 | 1,7 | 15210022040 |
| | | 1500 | 25x35 | 106 | 1,7 | 15210025035 |
| 1800 | | 25x40 | 88 | 2,0 | 18210025040 | |
| 1800 | | 30x30 | 88 | 2,0 | 18210030030 | |
| 2200 | | 25x45 | 72 | 2,3 | 22210025045 | |
| 2200 | | 25x50 | 72 | 2,4 | 22210025050 | |
| 2200 | | 35x30 | 72 | 2,4 | 22210035030 | |
| 2700 | | 30x40 | 59 | 2,7 | 27210030040 | |
| 2700 | | 30x45 | 59 | 2,8 | 27210030045 | |
| 2700 | | 35x35 | 59 | 2,8 | 27210035035 | |
| 3300 | | 30x50 | 48 | 3,2 | 33210030050 | |
| 3300 | | 35x40 | 48 | 3,2 | 33210035040 | |
| 3900 | | 35x45 | 41 | 3,7 | 39210035045 | |
| 5600 | | 30x70 | 28 | 4,7 | 56210030070 | |
| 4700 | | 35x50 | 34 | 4,2 | 47210035050 | |
| 5600 | | 35x60 | 28 | 4,9 | 56210035060 | |
| 5600 | | 40x50 | 28 | 4,8 | 56210040050 | |
| 6800 | | 35x80 | 23 | 6,1 | 68210035080 | |
| 6800 | | 40x60 | 23 | 5,7 | 68210040060 | |
| 10000 | | 35x100 | 16 | 8,1 | 10310035100 | |
| 12000 | | 40x80 | 13 | 8,4 | 12310040080 | |
| 10000 | | 45x60 | 16 | 6,9 | 10310045060 | |
| 12000 | | 45x80 | 13 | 8,4 | 12310045080 | |
| 15000 | | 40x100 | 11 | 10,3 | 15310040100 | |
| 18000 | 45x100 | 9 | 11,3 | 18310045100 | | |
| 160 | 270 | 22x25 | 413 | 0,7 | 27116022025 | |
| | 390 | 22x30 | 286 | 0,9 | 39116022030 | |
| | 470 | 22x35 | 237 | 1,1 | 47116022035 | |
| | 470 | 25x30 | 237 | 1,1 | 47116025030 | |
| | 560 | 22x40 | 199 | 1,2 | 56116022040 | |
| | 560 | 25x35 | 199 | 1,3 | 56116025035 | |
| | 680 | 25x40 | 164 | 1,5 | 68116025040 | |
| | 680 | 30x30 | 164 | 1,4 | 68116030030 | |
| | 820 | 25x45 | 136 | 1,7 | 82116025045 | |
| | 820 | 30x35 | 136 | 1,7 | 82116030035 | |
| | 1000 | 25x50 | 111 | 1,9 | 10216025050 | |
| | 1000 | 30x40 | 111 | 1,9 | 10216030040 | |
| | 1000 | 35x30 | 111 | 1,9 | 10216035030 | |

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85°C



SI

| Rated voltage U_R [V] | Rated cap. C_R [μ F] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [m Ω] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------------|----------------------------|--|--|-----------------|
| | | | | | 2 Pins: SI... |
| | | | | | 4 Pins: SI4P... |
| 160 | 1200 | 30x45 | 93 | 2,2 | 12216030045 |
| | 1200 | 35x35 | 93 | 2,2 | 12216035035 |
| | 1500 | 30x50 | 74 | 2,6 | 15216030050 |
| | 1500 | 35x40 | 74 | 2,6 | 15216035040 |
| | 1800 | 35x45 | 62 | 3,0 | 18216035045 |
| | 1800 | 35x50 | 62 | 3,1 | 18216035050 |
| | 2200 | 30x70 | 51 | 3,6 | 22216030070 |
| | 2200 | 35x60 | 51 | 3,7 | 22216035060 |
| | 2700 | 40x50 | 41 | 4,0 | 27216040050 |
| | 3300 | 35x80 | 34 | 5,0 | 33216035080 |
| | 3300 | 40x60 | 34 | 4,7 | 33216040060 |
| | 3900 | 35x100 | 29 | 6,0 | 39216035100 |
| | 3900 | 45x60 | 29 | 5,2 | 39216045060 |
| | 4700 | 40x80 | 24 | 6,3 | 47216040080 |
| | 5600 | 40x100 | 20 | 7,5 | 56216040100 |
| | 5600 | 45x80 | 20 | 6,9 | 56216045080 |
| 6800 | 45x100 | 16 | 8,3 | 68216045100 | |
| 200 | 270 | 22x25 | 354 | 0,8 | 27120022025 |
| | 390 | 22x30 | 245 | 1,0 | 39120022030 |
| | 470 | 22x35 | 203 | 1,2 | 47120022035 |
| | 470 | 25x30 | 203 | 1,2 | 47120025030 |
| | 560 | 22x40 | 171 | 1,3 | 56120022040 |
| | 560 | 25x35 | 171 | 1,4 | 56120025035 |
| | 680 | 25x40 | 141 | 1,6 | 68120025040 |
| | 680 | 30x30 | 141 | 1,6 | 68120030030 |
| | 820 | 25x45 | 117 | 1,8 | 82120025045 |
| | 820 | 30x35 | 117 | 1,8 | 82120030035 |
| | 1000 | 35x30 | 96 | 2,1 | 10220035030 |
| | 1000 | 25x50 | 96 | 2,1 | 10220025050 |
| | 1000 | 30x40 | 96 | 2,1 | 10220030040 |
| | 1200 | 30x45 | 80 | 2,4 | 12220030045 |
| | 1500 | 30x50 | 64 | 2,8 | 15220030050 |
| | 1200 | 35x35 | 80 | 2,4 | 12220035035 |
| | 1500 | 35x40 | 64 | 2,8 | 15220035040 |
| | 1800 | 35x45 | 53 | 3,2 | 18220035045 |
| | 1800 | 35x50 | 53 | 3,3 | 18220035050 |
| | 2200 | 30x70 | 43 | 3,8 | 22220030070 |
| 2200 | 35x60 | 43 | 4,0 | 22220035060 | |
| 3300 | 35x80 | 29 | 5,4 | 33220035080 | |
| 2700 | 40x50 | 35 | 4,3 | 27220040050 | |
| 3300 | 40x60 | 29 | 5,1 | 33220040060 | |
| 3900 | 35x100 | 24 | 6,5 | 39220035100 | |
| 4700 | 40x80 | 20 | 6,8 | 47220040080 | |
| 3900 | 45x60 | 24 | 5,6 | 39220045060 | |
| 5600 | 40x100 | 17 | 8,1 | 56220040100 | |
| 5600 | 45x80 | 17 | 7,4 | 56220045080 | |
| 6800 | 45x100 | 14 | 9,0 | 68220045100 | |

| Rated voltage U_R [V] | Rated cap. C_R [μ F] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [m Ω] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------------|----------------------------|--|--|-----------------|
| | | | | | 2 Pins: SI... |
| | | | | | 4 Pins: SI4P... |
| 350 | 100 | 22x25 | 955 | 0,5 | 10135022025 |
| | 150 | 22x30 | 637 | 0,6 | 15135022030 |
| | 180 | 22x35 | 531 | 0,7 | 18135022035 |
| | 180 | 22x40 | 531 | 0,8 | 18135022040 |
| | 180 | 25x30 | 531 | 0,7 | 18135025030 |
| | 220 | 25x35 | 434 | 0,9 | 22135025035 |
| | 270 | 25x40 | 354 | 1,0 | 27135025040 |
| | 270 | 30x30 | 354 | 1,0 | 27135030030 |
| | 330 | 25x45 | 290 | 1,2 | 33135025045 |
| | 330 | 30x35 | 290 | 1,1 | 33135030035 |
| | 390 | 35x30 | 245 | 1,3 | 39135035030 |
| | 390 | 25x50 | 245 | 1,3 | 39135025050 |
| | 390 | 30x40 | 245 | 1,3 | 39135030040 |
| | 470 | 30x45 | 203 | 1,5 | 47135030045 |
| | 470 | 35x35 | 203 | 1,5 | 47135035035 |
| | 560 | 30x50 | 171 | 1,7 | 56135030050 |
| | 560 | 35x40 | 171 | 1,7 | 56135035040 |
| | 560 | 35x45 | 171 | 1,8 | 56135035045 |
| | 680 | 35x50 | 141 | 2,1 | 68135035050 |
| | 820 | 30x70 | 117 | 2,3 | 82135030070 |
| | 820 | 35x60 | 117 | 2,4 | 82135035060 |
| | 1000 | 40x50 | 96 | 2,6 | 10235040050 |
| | 1200 | 35x80 | 80 | 3,3 | 12235035080 |
| | 1200 | 40x60 | 80 | 3,1 | 12235040060 |
| | 1500 | 35x100 | 64 | 4,0 | 15235035100 |
| | 1500 | 45x60 | 64 | 3,4 | 15235045060 |
| 1800 | 40x80 | 53 | 4,2 | 18235040080 | |
| 1800 | 40x100 | 53 | 4,6 | 18235040100 | |
| 2200 | 45x80 | 43 | 4,7 | 22235045080 | |
| 2700 | 45x100 | 35 | 5,6 | 27235045100 | |
| 400 | 100 | 22x25 | 1274 | 0,4 | 10140022025 |
| | 120 | 22x30 | 1062 | 0,5 | 12140022030 |
| | 180 | 22x35 | 708 | 0,6 | 18140022035 |
| | 180 | 25x30 | 708 | 0,6 | 18140025030 |
| | 180 | 22x40 | 708 | 0,7 | 18140022040 |
| | 220 | 25x35 | 579 | 0,7 | 22140025035 |
| | 270 | 25x40 | 472 | 0,9 | 27140025040 |
| | 270 | 30x30 | 472 | 0,8 | 27140030030 |
| | 330 | 25x45 | 386 | 1,0 | 33140025045 |
| | 330 | 25x50 | 386 | 1,0 | 33140025050 |
| | 330 | 30x35 | 386 | 1,0 | 33140030035 |
| | 390 | 35x30 | 327 | 1,1 | 39140035030 |
| | 390 | 30x40 | 327 | 1,1 | 39140030040 |
| | 470 | 35x35 | 271 | 1,3 | 47140035035 |
| | 470 | 30x45 | 271 | 1,3 | 47140030045 |
| | 560 | 30x50 | 227 | 1,5 | 56140030050 |
| | 560 | 35x40 | 227 | 1,5 | 56140035040 |

Stand: 12/2019

85°C



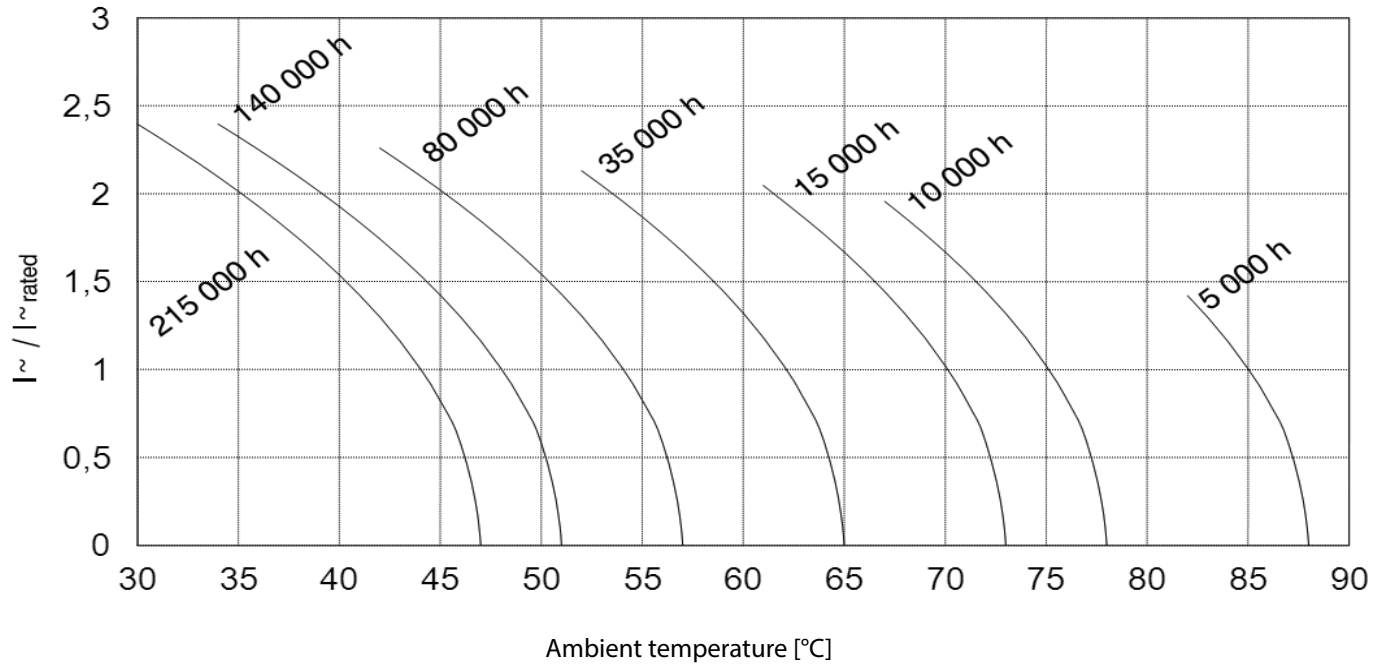
SI

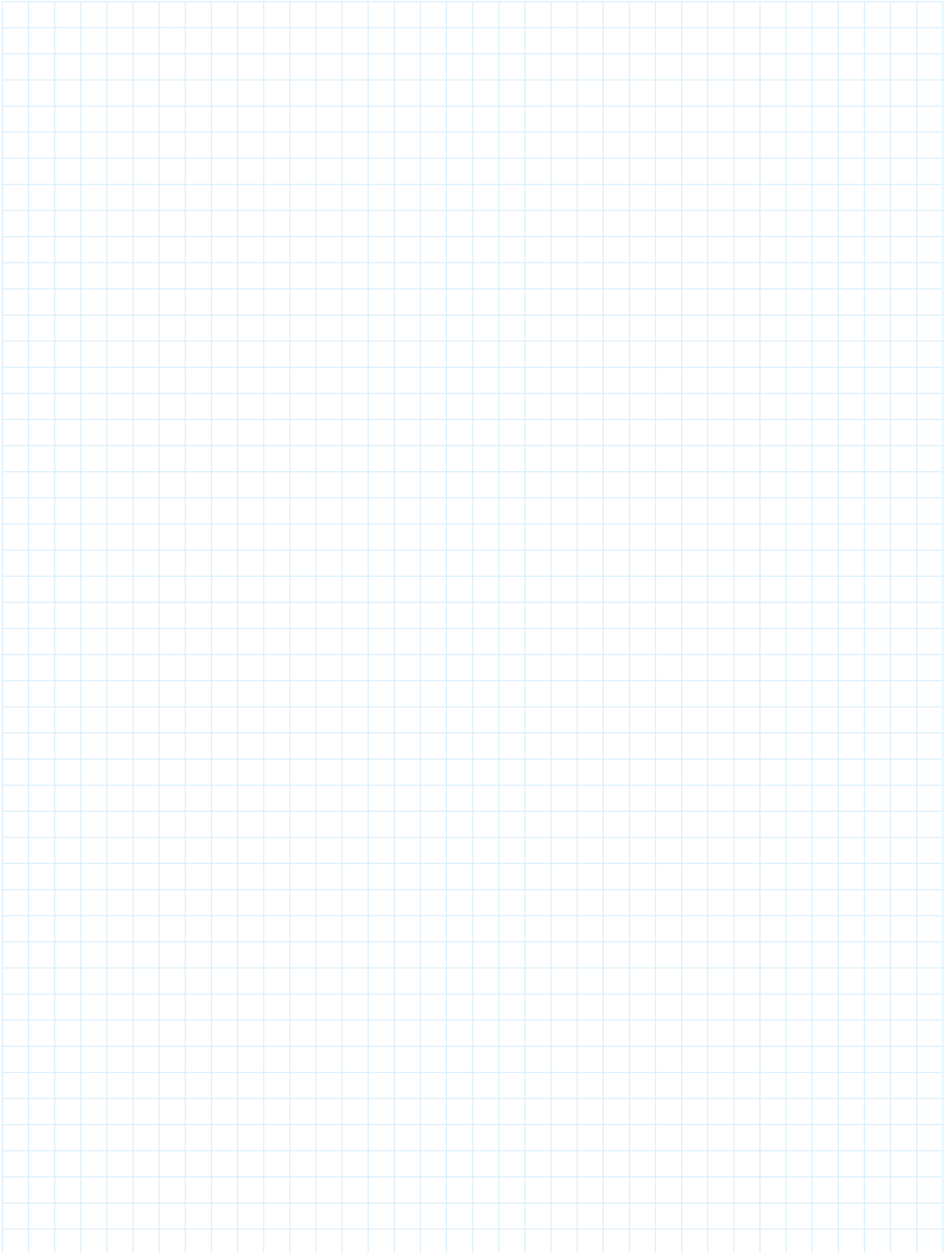
| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|-----------------|
| | | | | | 2 Pins: SI... |
| | | | | | 4 Pins: SI4P... |
| 400 | 560 | 35x45 | 227 | 1,6 | 56140035045 |
| | 680 | 30x70 | 187 | 1,8 | 68140030070 |
| | 820 | 35x50 | 155 | 2,0 | 82140035050 |
| | 820 | 35x60 | 155 | 2,1 | 82140035060 |
| | 820 | 40x50 | 155 | 2,1 | 82140040050 |
| | 1200 | 35x80 | 106 | 2,8 | 12240035080 |
| | 1200 | 40x60 | 106 | 2,7 | 12240040060 |
| | 1500 | 35x100 | 85 | 3,5 | 15240035100 |
| | 1500 | 40x80 | 85 | 3,3 | 15240040080 |
| | 1800 | 45x60 | 71 | 3,3 | 18240045060 |
| | 1800 | 40x100 | 71 | 4,0 | 18240040100 |
| | 1800 | 45x80 | 71 | 3,6 | 18240045080 |
| | 2700 | 45x100 | 47 | 4,9 | 27240045100 |
| 450 | 68 | 22x25 | 1639 | 0,4 | 68045022025 |
| | 100 | 22x30 | 1115 | 0,5 | 10145022030 |
| | 120 | 22x35 | 929 | 0,5 | 12145022035 |
| | 150 | 22x40 | 743 | 0,6 | 15145022040 |
| | 120 | 25x30 | 929 | 0,6 | 12145025030 |
| | 150 | 25x35 | 743 | 0,7 | 15145025035 |
| | 180 | 25x40 | 619 | 0,8 | 18145025040 |
| | 220 | 25x45 | 507 | 0,9 | 22145025045 |
| | 180 | 30x30 | 619 | 0,7 | 18145030030 |
| | 220 | 30x35 | 507 | 0,9 | 22145030035 |
| | 220 | 25x50 | 507 | 0,9 | 22145025050 |
| | 270 | 30x40 | 413 | 1,0 | 27145030040 |
| | 220 | 35x30 | 507 | 0,9 | 22145035030 |
| | 270 | 30x45 | 413 | 1,0 | 27145030045 |
| | 270 | 35x35 | 413 | 1,1 | 27145035035 |
| | 330 | 30x50 | 338 | 1,2 | 33145030050 |
| | 390 | 35x40 | 286 | 1,3 | 39145035040 |
| | 390 | 35x45 | 286 | 1,4 | 39145035045 |
| | 560 | 30x70 | 199 | 1,8 | 56145030070 |
| | 470 | 35x50 | 237 | 1,6 | 47145035050 |
| | 560 | 35x60 | 199 | 1,9 | 56145035060 |
| | 560 | 40x50 | 199 | 1,8 | 56145040050 |
| | 820 | 35x80 | 136 | 2,5 | 82145035080 |
| | 1200 | 40x60 | 93 | 2,8 | 12245040060 |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|-----------------|
| | | | | | 2 Pins: SI... |
| | | | | | 4 Pins: SI4P... |
| 450 | 1000 | 35x100 | 111 | 3,0 | 10245035100 |
| | 1000 | 45x60 | 111 | 2,6 | 10245045060 |
| | 1200 | 40x80 | 93 | 3,3 | 12245040080 |
| | 1500 | 40x100 | 74 | 4,0 | 15245040100 |
| | 1200 | 45x80 | 93 | 3,2 | 12245045080 |
| | 1800 | 45x100 | 62 | 4,3 | 18245045100 |
| | 500 | 56 | 22x25 | 1706 | 0,4 |
| 82 | | 22x30 | 1165 | 0,5 | 82050022030 |
| 100 | | 22x35 | 955 | 0,5 | 10150022035 |
| 100 | | 22x40 | 955 | 0,6 | 10150022040 |
| 120 | | 25x30 | 796 | 0,6 | 12150025030 |
| 120 | | 25x35 | 796 | 0,6 | 12150025035 |
| 150 | | 25x40 | 637 | 0,7 | 15150025040 |
| 180 | | 25x45 | 531 | 0,9 | 18150025045 |
| 150 | | 30x30 | 637 | 0,7 | 15150030030 |
| 180 | | 30x35 | 531 | 0,8 | 18150030035 |
| 220 | | 25x50 | 434 | 1,0 | 22150025050 |
| 220 | | 30x40 | 434 | 1,0 | 22150030040 |
| 180 | | 35x30 | 531 | 0,9 | 18150035030 |
| 270 | | 30x45 | 354 | 1,1 | 27150030045 |
| 270 | | 35x35 | 354 | 1,1 | 27150035035 |
| 270 | | 30x50 | 354 | 1,2 | 27150030050 |
| 270 | | 35x40 | 354 | 1,2 | 27150035040 |
| 390 | | 35x45 | 245 | 1,5 | 39150035045 |
| 470 | | 30x70 | 203 | 1,8 | 47150030070 |
| 390 | | 35x50 | 245 | 1,6 | 39150035050 |
| 560 | | 35x60 | 171 | 2,0 | 56150035060 |
| 560 | | 40x50 | 171 | 2,0 | 56150040050 |
| 680 | | 35x80 | 141 | 2,5 | 68150035080 |
| 680 | | 40x60 | 141 | 2,3 | 68150040060 |
| 820 | | 35x100 | 117 | 3,0 | 82150035100 |
| 820 | | 45x60 | 117 | 2,6 | 82150045060 |
| 1200 | | 40x80 | 80 | 3,4 | 12250040080 |
| 820 | | 40x100 | 117 | 3,1 | 82150040100 |
| 1200 | | 45x80 | 80 | 3,4 | 12250045080 |
| 1500 | | 45x100 | 64 | 4,2 | 15250045100 |



■ USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT





105°C



SIH



ULTRA COMPACT DESIGN

LONG LIFE TIME

SIH: SNAP IN, 2 PINS

SI4PH: SNAP IN, 4 PINS

FEATURES

- All internal contacts welded
- High CV product
- High reliability
- Ultra compact

APPLICATIONS

- HiFi
- Computer
- Industrial
- Tube amplifier

RoHS compliant
REACH compliant

GENERAL SPECIFICATIONS

| Items | Characteristics |
|---|---|
| Rated capacitance range C_R | 68... 150.000 μF |
| Capacitance tolerance | $\pm 20\%$ |
| Rated voltage range U | 16 ... 450 V |
| Surge voltage U_S | $U_R \leq 315 \text{ V}: U_S = 1,15 U_R$; $U_R > 315 \text{ V}: U_S = 1,10 U_R$ |
| Max. reverse voltage | 2 V |
| Category temperature range | - 40°C ... + 105 °C |
| Leakage current I_L after 5 min @ U_R | $\leq 0,008 * C_R [\mu\text{F}] * U_R [\text{V}] + 6 \mu\text{A} [\mu\text{A}]$ |
| Useful life 5000 h @ 105 °C ; U_R ; I_R | Requirements $\Delta C/C \leq 30\%$ of initial value ; ESR $\leq 300\%$ of specified ; limit $I_L \leq$ specified limit |
| Endurance test 2000 h @ 105 °C , U_R | Requirements $\Delta C/C \leq 20\%$ of initial value ; ESR $\leq 130\%$ of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 40/105/56 |
| Voltage proof of the external insulation | $\geq 2500 \text{ V AC}$ |
| Sectional specification | IEC 60384-4 |

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand: 12/2019





■ DRAWINGS FOR SERIES SIH AND SI4PH

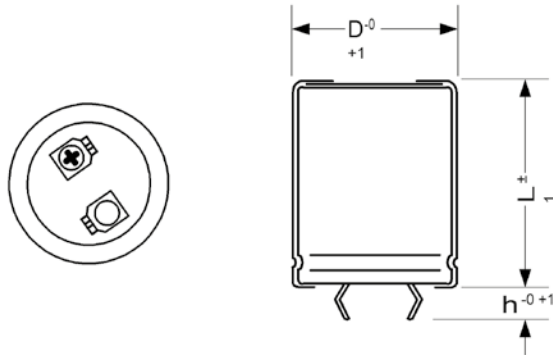


Fig1: SIH - Standard 2 pin snap in version and mounting hole dimensions (mm)

Case diameter 25 to 45 mm only

Piercing diagram

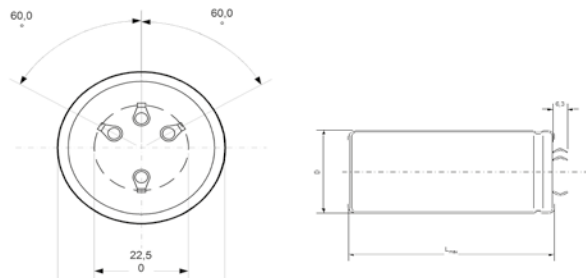
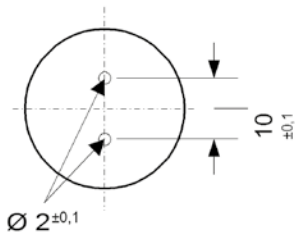
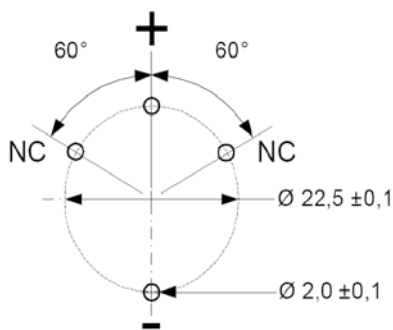


Fig2: SI4PH - Keyed polarity 4 pin snap in version (here with 6,3 mm claw. The 4,5 mm claw is also available) and mounting hole dimensions (mm)

Case diameter 35, 40, 45 mm only



NC terminals must be soldered to isolated pads or pads connected to the minus potential

105°C



SIH

ELECTRICAL DATA AND ORDERING CODE FOR SERIES SIH

| Rated voltage U_R [V] | Rated cap. C_R [µF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|------------------|
| | | | | | 2 Pins: SIH... |
| | | | | | 4 Pins: SI4PH... |
| 16 | 5600 | 22x25 | 85 | 1,6 | 56201622025 |
| | 6800 | 22x30 | 70 | 1,9 | 68201622030 |
| | 10000 | 22x35 | 48 | 2,4 | 10301622035 |
| | 10000 | 25x30 | 48 | 2,4 | 10301625030 |
| | 12000 | 22x40 | 40 | 2,7 | 12301622040 |
| | 12000 | 25x35 | 40 | 2,8 | 12301625035 |
| | 15000 | 25x40 | 32 | 3,3 | 15301625040 |
| | 15000 | 30x30 | 32 | 3,3 | 15301630030 |
| | 18000 | 25x45 | 27 | 3,8 | 18301625045 |
| | 18000 | 25x50 | 27 | 4,0 | 18301625050 |
| | 18000 | 30x35 | 27 | 3,8 | 18301630035 |
| | 18000 | 35x30 | 27 | 4,0 | 18301635030 |
| | 22000 | 30x40 | 22 | 4,4 | 22301630040 |
| | 22000 | 35x35 | 22 | 4,6 | 22301635035 |
| | 27000 | 30x45 | 18 | 5,1 | 27301630045 |
| | 27000 | 30x50 | 18 | 5,3 | 27301630050 |
| | 27000 | 35x40 | 18 | 5,3 | 27301635040 |
| | 33000 | 35x45 | 14 | 6,2 | 33301635045 |
| | 39000 | 30x70 | 12 | 7,2 | 39301630070 |
| | 39000 | 35x50 | 12 | 7,0 | 39301635050 |
| | 47000 | 40x50 | 10 | 8,1 | 47301640050 |
| | 56000 | 35x80 | 9 | 10,0 | 56301635080 |
| | 56000 | 40x50 | 9 | 8,8 | 56301640050 |
| | 68000 | 40x60 | 7 | 10,4 | 68301640060 |
| | 82000 | 35x100 | 6 | 13,3 | 82301635100 |
| | 82000 | 40x80 | 6 | 12,7 | 82301640080 |
| | 82000 | 45x60 | 6 | 11,4 | 82301645060 |
| | 100000 | 45x80 | 5 | 14,0 | 10401645080 |
| 120000 | 40x100 | 4 | 16,9 | 12401640100 | |
| 150000 | 45x100 | 3 | 18,8 | 15401645100 | |
| 25 | 3900 | 22x25 | 114 | 1,4 | 39202522025 |
| | 5600 | 22x30 | 80 | 1,7 | 56202522030 |
| | 6800 | 22x35 | 66 | 2,0 | 68202522035 |
| | 6800 | 25x30 | 66 | 2,1 | 68202525030 |
| | 8200 | 22x40 | 54 | 2,3 | 82202522040 |
| | 8200 | 25x35 | 54 | 2,4 | 82202525035 |
| | 10000 | 25x40 | 45 | 2,8 | 10302525040 |
| | 10000 | 30x30 | 45 | 2,8 | 10302530030 |
| | 12000 | 25x45 | 37 | 3,2 | 12302525045 |
| | 12000 | 30x35 | 37 | 3,2 | 12302530035 |
| | 15000 | 25x50 | 30 | 3,7 | 15302525050 |
| | 15000 | 30x40 | 30 | 3,7 | 15302530040 |
| | 15000 | 35x30 | 30 | 3,7 | 15302535030 |
| | 18000 | 30x45 | 26 | 4,2 | 18302530045 |
| | 18000 | 30x50 | 26 | 4,4 | 18302530050 |
| | 18000 | 35x35 | 26 | 4,2 | 18302535035 |
| | 22000 | 35x40 | 21 | 4,9 | 22302535040 |
| | 22000 | 35x45 | 21 | 5,1 | 22302535045 |

| Rated voltage U_R [V] | Rated cap. C_R [µF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|------------------|-------------|
| | | | | | 2 Pins: SIH... | |
| | | | | | 4 Pins: SI4PH... | |
| 25 | 27000 | 30x70 | 17 | 6,1 | 27302530070 | |
| | 27000 | 35x50 | 17 | 5,9 | 27302535050 | |
| | 33000 | 35x60 | 14 | 7,0 | 33302535060 | |
| | 39000 | 40x50 | 12 | 7,5 | 39302540050 | |
| | 47000 | 35x80 | 10 | 9,3 | 47302535080 | |
| | 47000 | 40x60 | 10 | 8,8 | 47302540060 | |
| | 56000 | 35x100 | 8 | 11,2 | 56302535100 | |
| | 56000 | 45x60 | 8 | 9,6 | 56302545060 | |
| | 68000 | 40x80 | 7 | 11,8 | 68302540080 | |
| | 68000 | 40x100 | 7 | 12,9 | 68302540100 | |
| | 82000 | 45x80 | 6 | 12,9 | 82302545080 | |
| | 100000 | 45x100 | 5 | 15,6 | 10402545100 | |
| | 40 | 1500 | 22x25 | 255 | 0,9 | 15204022025 |
| | | 2200 | 22x30 | 174 | 1,2 | 22204022030 |
| 2700 | | 22x35 | 142 | 1,4 | 27204022035 | |
| 2700 | | 25x30 | 142 | 1,4 | 27204025030 | |
| 3300 | | 22x40 | 116 | 1,6 | 33204022040 | |
| 3300 | | 25x35 | 116 | 1,7 | 33204025035 | |
| 3900 | | 25x40 | 98 | 1,9 | 39204025040 | |
| 3900 | | 30x30 | 98 | 1,9 | 39204030030 | |
| 4700 | | 25x45 | 81 | 2,2 | 47204025045 | |
| 4700 | | 30x35 | 81 | 2,2 | 47204030035 | |
| 5600 | | 25x50 | 68 | 2,5 | 56204025050 | |
| 5600 | | 30x40 | 68 | 2,5 | 56204030040 | |
| 5600 | | 35x30 | 68 | 2,5 | 56204035030 | |
| 6800 | | 30x45 | 56 | 2,8 | 68204030045 | |
| 6800 | | 35x35 | 56 | 2,9 | 68204035035 | |
| 8200 | | 30x50 | 47 | 3,2 | 82204030050 | |
| 8200 | | 35x40 | 47 | 3,3 | 82204035040 | |
| 8200 | | 35x45 | 47 | 3,4 | 82204035045 | |
| 10000 | | 35x50 | 38 | 3,9 | 10304035050 | |
| 63 | | 1200 | 22x25 | 239 | 0,9 | 12206322025 |
| | 1500 | 22x30 | 191 | 1,1 | 15206322030 | |
| | 1800 | 22x35 | 159 | 1,3 | 18206322035 | |
| | 1800 | 25x30 | 159 | 1,3 | 18206325030 | |
| | 2200 | 22x40 | 130 | 1,5 | 22206322040 | |
| | 2200 | 25x35 | 130 | 1,6 | 22206325035 | |
| | 12000 | 30x70 | 32 | 4,5 | 12304030070 | |
| | 12000 | 35x60 | 32 | 4,6 | 12304035060 | |
| | 15000 | 40x50 | 25 | 5,1 | 15304040050 | |
| | 18000 | 35x80 | 21 | 6,4 | 18304035080 | |
| | 18000 | 40x60 | 21 | 6,0 | 18304040060 | |
| | 22000 | 35x100 | 17 | 7,7 | 22304035100 | |
| | 22000 | 40x80 | 17 | 7,4 | 22304040080 | |
| | 22000 | 45x60 | 17 | 6,6 | 22304045060 | |
| | 27000 | 40x100 | 14 | 8,9 | 27304040100 | |
| | 27000 | 45x80 | 14 | 8,2 | 27304045080 | |
| 39000 | 45x100 | 10 | 10,7 | 39304045100 | | |

Stand: 12/2019

105°C



SIH

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|----------------|
| | | | | | 2 Pins: SIH... |
| 63 | 2700 | 25x40 | 106 | 1,8 | 27206325040 |
| | 2700 | 30x30 | 106 | 1,8 | 27206330030 |
| | 3300 | 25x45 | 87 | 2,1 | 33206325045 |
| | 3300 | 30x35 | 87 | 2,1 | 33206330035 |
| | 3900 | 25x50 | 73 | 2,4 | 39206325050 |
| | 3900 | 30x40 | 73 | 2,4 | 39206330040 |
| | 3900 | 35x30 | 73 | 2,4 | 39206335030 |
| | 4700 | 30x45 | 61 | 2,7 | 47206330045 |
| | 4700 | 35x35 | 61 | 2,8 | 47206335035 |
| | 5600 | 30x50 | 51 | 3,1 | 56206330050 |
| | 6800 | 35x45 | 42 | 3,6 | 68206335045 |
| | 8200 | 30x70 | 35 | 4,3 | 82206330070 |
| | 10000 | 35x60 | 29 | 4,9 | 10306335060 |
| | 10000 | 40x50 | 29 | 4,8 | 10306340050 |
| | 12000 | 35x80 | 24 | 6,0 | 12306335080 |
| | 12000 | 40x60 | 24 | 5,6 | 12306340060 |
| | 15000 | 45x60 | 19 | 6,3 | 15306345060 |
| | 18000 | 35x100 | 16 | 8,1 | 18306335100 |
| | 18000 | 40x80 | 16 | 7,7 | 18306340080 |
| | 22000 | 40x100 | 13 | 9,3 | 22306340100 |
| 22000 | 45x80 | 13 | 8,5 | 22306345080 | |
| 27000 | 45x100 | 11 | 10,3 | 27306345100 | |
| 80 | 680 | 22x25 | 468 | 0,7 | 68108022025 |
| | 820 | 22x30 | 388 | 0,8 | 82108022030 |
| | 1200 | 22x35 | 265 | 1,0 | 12208022035 |
| | 1200 | 25x30 | 265 | 1,0 | 12208025030 |
| | 1500 | 22x40 | 212 | 1,2 | 15208022040 |
| | 1500 | 25x35 | 212 | 1,2 | 15208025035 |
| | 1800 | 25x40 | 177 | 1,4 | 18208025040 |
| | 1800 | 30x30 | 177 | 1,4 | 18208030030 |
| | 2200 | 25x45 | 145 | 1,6 | 22208025045 |
| | 2200 | 25x50 | 145 | 1,7 | 22208025050 |
| | 2200 | 30x35 | 145 | 1,6 | 22208030035 |
| | 2200 | 35x30 | 145 | 1,7 | 22208035030 |
| | 2700 | 30x40 | 118 | 1,9 | 27208030040 |
| | 2700 | 30x45 | 118 | 2,0 | 27208030045 |
| | 2700 | 35x35 | 118 | 2,0 | 27208035035 |
| | 3300 | 30x50 | 97 | 2,3 | 33208030050 |
| | 3300 | 35x40 | 97 | 2,3 | 33208035040 |
| | 3900 | 35x45 | 82 | 2,6 | 39208035045 |
| | 4700 | 35x50 | 68 | 3,0 | 47208035050 |
| | 5600 | 30x70 | 57 | 3,4 | 56208030070 |
| | 5600 | 35x60 | 57 | 3,5 | 56208035060 |
| | 5600 | 40x50 | 57 | 3,4 | 56208040050 |
| | 6800 | 35x80 | 47 | 4,3 | 68208035080 |
| | 6800 | 40x60 | 47 | 4,0 | 68208040060 |
| | 10000 | 35x100 | 32 | 5,7 | 10308035100 |
| | 10000 | 45x60 | 32 | 4,9 | 10308045060 |
| | 12000 | 40x80 | 27 | 6,0 | 12308040080 |
| | 12000 | 45x80 | 27 | 6,0 | 12308045080 |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|----------------|-------------|
| | | | | | 2 Pins: SIH... | |
| 80 | 15000 | 40x100 | 21 | 7,3 | 15308040100 | |
| | 18000 | 45x100 | 18 | 8,0 | 18308045100 | |
| 100 | 560 | 22x25 | 284 | 0,9 | 56110022025 | |
| | 1000 | 22x35 | 159 | 1,3 | 10210022035 | |
| | 1000 | 25x30 | 159 | 1,3 | 10210025030 | |
| | 1200 | 22x40 | 133 | 1,5 | 12210022040 | |
| | 1200 | 25x35 | 133 | 1,5 | 12210025035 | |
| | 1500 | 25x40 | 106 | 1,8 | 15210025040 | |
| | 1500 | 30x30 | 106 | 1,8 | 15210030030 | |
| | 1800 | 25x45 | 88 | 2,1 | 18210025045 | |
| | 1800 | 25x50 | 88 | 2,2 | 18210025050 | |
| | 1800 | 35x30 | 88 | 2,2 | 18210035030 | |
| | 2200 | 30x40 | 72 | 2,4 | 22210030040 | |
| | 2200 | 30x45 | 72 | 2,5 | 22210030045 | |
| | 2200 | 35x35 | 72 | 2,5 | 22210035035 | |
| | 2700 | 30x50 | 59 | 2,9 | 27210030050 | |
| | 2700 | 35x40 | 59 | 2,9 | 27210035040 | |
| | 3300 | 35x45 | 48 | 3,4 | 33210035045 | |
| | 3900 | 30x70 | 41 | 4,0 | 39210030070 | |
| | 3900 | 35x50 | 41 | 3,8 | 39210035050 | |
| | 4700 | 35x60 | 34 | 4,5 | 47210035060 | |
| | 4700 | 40x50 | 34 | 4,4 | 47210040050 | |
| | 5600 | 35x80 | 28 | 5,5 | 56210035080 | |
| | 5600 | 40x60 | 28 | 5,1 | 56210040060 | |
| | 8200 | 35x100 | 19 | 7,3 | 82210035100 | |
| | 8200 | 40x80 | 19 | 7,0 | 82210040080 | |
| | 8200 | 45x60 | 19 | 6,2 | 82210045060 | |
| | 10000 | 45x80 | 16 | 7,7 | 10310045080 | |
| | 12000 | 40x100 | 13 | 9,2 | 12310040100 | |
| | 15000 | 45x100 | 11 | 10,3 | 15310045100 | |
| | 160 | 270 | 22x25 | 413 | 0,7 | 27116022025 |
| | | 390 | 22x30 | 286 | 0,9 | 39116022030 |
| | | 470 | 22x35 | 237 | 1,1 | 47116022035 |
| | | 470 | 25x30 | 237 | 1,1 | 47116025030 |
| 560 | | 22x40 | 199 | 1,2 | 56116022040 | |
| 560 | | 25x35 | 199 | 1,3 | 56116025035 | |
| 680 | | 25x40 | 164 | 1,5 | 68116025040 | |
| 680 | | 30x30 | 164 | 1,4 | 68116030030 | |
| 820 | | 25x45 | 136 | 1,6 | 82116025045 | |
| 820 | | 30x35 | 136 | 1,7 | 82116030035 | |
| 1000 | | 25x50 | 111 | 1,9 | 10216025050 | |
| 1000 | | 30x40 | 111 | 1,9 | 10216030040 | |
| 1000 | | 35x30 | 111 | 1,9 | 10216035030 | |
| 1200 | | 30x45 | 93 | 2,2 | 12216030045 | |
| 1200 | | 35x35 | 93 | 2,2 | 12216035035 | |
| 1500 | | 30x50 | 74 | 2,6 | 15216030050 | |
| 1500 | | 35x40 | 74 | 2,6 | 15216035040 | |
| 1800 | | 35x45 | 62 | 3,0 | 18216035045 | |
| 1800 | | 35x50 | 62 | 3,1 | 18216035050 | |
| 2200 | | 30x70 | 51 | 3,6 | 22216030070 | |

Stand: 12/2019

105°C



SIH

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|------------------|
| | | | | | 2 Pins: SIH... |
| | | | | | 4 Pins: SI4PH... |
| 160 | 2200 | 35x60 | 51 | 3,7 | 22216035060 |
| | 2700 | 40x50 | 41 | 4,0 | 27216040050 |
| | 3300 | 35x80 | 34 | 5,0 | 33216035080 |
| | 3300 | 40x60 | 34 | 4,7 | 33216040060 |
| | 3900 | 35x100 | 29 | 6,2 | 39216035100 |
| | 3900 | 45x60 | 29 | 5,2 | 39216045060 |
| | 4700 | 40x80 | 24 | 6,3 | 47216040080 |
| | 5600 | 40x100 | 20 | 7,5 | 56216040100 |
| | 5600 | 45x80 | 20 | 6,9 | 56216045080 |
| | 6800 | 45x100 | 16 | 8,3 | 68216045100 |
| 250 | 180 | 22x25 | 531 | 0,6 | 18125022025 |
| | 220 | 22x30 | 434 | 0,7 | 22125022030 |
| | 270 | 22x35 | 354 | 0,9 | 27125022035 |
| | 330 | 25x30 | 290 | 1,0 | 33125025030 |
| | 390 | 22x40 | 245 | 1,1 | 39125022040 |
| | 390 | 25x35 | 245 | 1,1 | 39125025035 |
| | 470 | 25x40 | 203 | 1,3 | 47125025040 |
| | 470 | 30x30 | 203 | 1,3 | 47125030030 |
| | 560 | 25x45 | 171 | 1,5 | 56125025045 |
| | 560 | 30x35 | 171 | 1,5 | 56125030035 |
| | 560 | 35x30 | 171 | 1,6 | 56125035030 |
| | 680 | 25x50 | 141 | 1,7 | 68125025050 |
| | 680 | 30x40 | 141 | 1,7 | 68125030040 |
| | 820 | 30x45 | 117 | 2,0 | 82125030045 |
| | 820 | 30x50 | 117 | 2,1 | 82125030050 |
| | 820 | 35x35 | 117 | 2,0 | 82125035035 |
| | 1000 | 35x40 | 96 | 2,3 | 10225035040 |
| | 1200 | 35x45 | 80 | 2,6 | 12225035045 |
| | 1200 | 35x50 | 80 | 2,7 | 12225035050 |
| | 1500 | 30x70 | 64 | 3,2 | 15225030070 |
| | 1500 | 35x60 | 64 | 3,3 | 15225035060 |
| | 1800 | 35x80 | 53 | 4,0 | 18225035080 |
| | 1800 | 40x50 | 53 | 3,5 | 18225040050 |
| | 1800 | 40x60 | 53 | 3,8 | 18225040060 |
| | 2700 | 35x100 | 35 | 5,4 | 27225035100 |
| | 2700 | 40x80 | 35 | 5,2 | 27225040080 |
| 2700 | 45x60 | 35 | 4,6 | 27225045060 | |
| 3300 | 40x100 | 29 | 6,3 | 33225040100 | |
| 3300 | 45x80 | 29 | 5,7 | 33225045080 | |
| 4700 | 45x100 | 20 | 7,4 | 47225045100 | |
| 350 | 100 | 22x25 | 955 | 0,5 | 10135022025 |
| | 120 | 22x30 | 796 | 0,6 | 12135022030 |
| | 180 | 22x35 | 531 | 0,7 | 18135022035 |
| | 180 | 22x40 | 531 | 0,8 | 18135022040 |
| | 180 | 25x30 | 531 | 0,7 | 18135025030 |
| | 220 | 25x35 | 434 | 0,9 | 22135025035 |
| | 270 | 25x40 | 354 | 1,0 | 27135025040 |
| | 270 | 30x30 | 354 | 1,0 | 27135030030 |
| | 330 | 25x45 | 290 | 1,2 | 33135025045 |
| | 330 | 30x35 | 290 | 1,1 | 33135030035 |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|------------------|
| | | | | | 2 Pins: SIH... |
| | | | | | 4 Pins: SI4PH... |
| 350 | 330 | 35x30 | 290 | 1,2 | 33135035030 |
| | 390 | 25x50 | 245 | 1,3 | 39135025050 |
| | 390 | 30x40 | 245 | 1,3 | 39135030040 |
| | 470 | 30x45 | 203 | 1,5 | 47135030045 |
| | 470 | 35x35 | 203 | 1,5 | 47135035035 |
| | 560 | 30x50 | 171 | 1,7 | 56135030050 |
| | 560 | 35x40 | 171 | 1,7 | 56135035040 |
| | 560 | 35x45 | 171 | 1,8 | 56135035045 |
| | 680 | 35x50 | 141 | 2,1 | 68135035050 |
| | 820 | 30x70 | 117 | 2,3 | 82135030070 |
| | 820 | 35x60 | 117 | 2,4 | 82135035060 |
| | 820 | 40x50 | 117 | 2,4 | 82135040050 |
| | 1200 | 35x80 | 80 | 3,3 | 12235035080 |
| | 1200 | 40x60 | 80 | 3,1 | 12235040060 |
| | 1500 | 35x100 | 64 | 4,0 | 15235035100 |
| | 1500 | 45x60 | 64 | 3,4 | 15235045060 |
| | 1800 | 40x80 | 53 | 4,2 | 18235040080 |
| | 1800 | 40x100 | 53 | 4,6 | 18235040100 |
| | 1800 | 45x80 | 53 | 4,2 | 18235045080 |
| | 2700 | 45x100 | 35 | 5,6 | 27235045100 |
| 400 | 82 | 22x25 | 1554 | 0,4 | 82040022025 |
| | 120 | 22x30 | 1062 | 0,5 | 12140022030 |
| | 150 | 22x35 | 849 | 0,6 | 15140022035 |
| | 150 | 25x30 | 849 | 0,6 | 15140025030 |
| | 180 | 22x40 | 708 | 0,7 | 18140022040 |
| | 180 | 25x35 | 708 | 0,7 | 18140025035 |
| | 220 | 25x40 | 579 | 0,8 | 22140025040 |
| | 220 | 30x30 | 579 | 0,8 | 22140030030 |
| | 270 | 25x45 | 472 | 0,9 | 27140025045 |
| | 270 | 25x50 | 472 | 0,9 | 27140025050 |
| | 270 | 30x35 | 472 | 0,9 | 27140030035 |
| | 270 | 35x30 | 472 | 0,9 | 27140035030 |
| | 330 | 30x40 | 386 | 1,0 | 33140030040 |
| | 330 | 35x35 | 386 | 1,1 | 33140035035 |
| | 390 | 30x45 | 327 | 1,2 | 39140030045 |
| | 390 | 30x50 | 327 | 1,2 | 39140030050 |
| | 390 | 35x40 | 327 | 1,2 | 39140035040 |
| | 470 | 35x45 | 271 | 1,4 | 47140035045 |
| | 560 | 30x70 | 227 | 1,7 | 56140030070 |
| | 560 | 35x50 | 227 | 1,6 | 56140035050 |
| | 680 | 35x60 | 187 | 1,9 | 68140035060 |
| | 680 | 40x50 | 187 | 1,9 | 68140040050 |
| | 820 | 35x80 | 155 | 2,3 | 82140035080 |
| | 820 | 40x60 | 155 | 2,2 | 82140040060 |
| | 1200 | 35x100 | 106 | 3,1 | 12240035100 |
| | 1200 | 40x80 | 106 | 3,0 | 12240040080 |
| 1200 | 45x60 | 106 | 2,7 | 12240045060 | |
| 1500 | 40x100 | 85 | 3,6 | 15240040100 | |
| 1500 | 45x80 | 85 | 3,3 | 15240045080 | |
| 2200 | 45x100 | 58 | 4,4 | 22240045100 | |

Stand: 12/2019

105°C

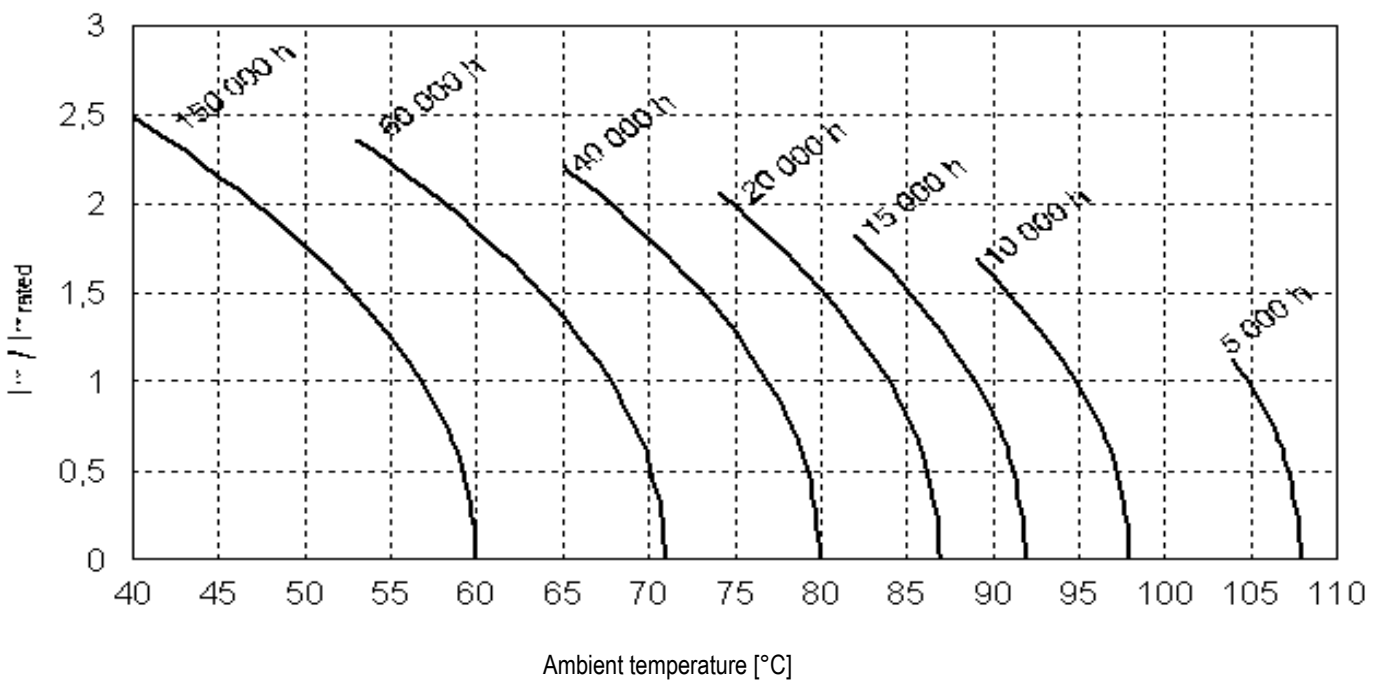


SIH

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|----------------|
| | | | | | 2 Pins: SIH... |
| 450 | 68 | 22x25 | 1639 | 0,4 | 68045022025 |
| | 82 | 22x30 | 1359 | 0,4 | 82045022030 |
| | 100 | 22x35 | 1115 | 0,5 | 10145022035 |
| | 120 | 22x40 | 929 | 0,6 | 12145022040 |
| | 120 | 25x30 | 929 | 0,6 | 12145025030 |
| | 150 | 25x35 | 743 | 0,7 | 15145025035 |
| | 150 | 25x40 | 743 | 0,7 | 15145025040 |
| | 180 | 25x45 | 619 | 0,8 | 18145025045 |
| | 180 | 30x30 | 619 | 0,7 | 18145030030 |
| | 180 | 30x35 | 619 | 0,8 | 18145030035 |
| | 220 | 25x50 | 507 | 0,9 | 22145025050 |
| | 220 | 30x40 | 507 | 0,9 | 22145030040 |
| | 220 | 35x30 | 507 | 0,9 | 22145035030 |
| | 270 | 30x45 | 413 | 1,0 | 27145030045 |
| | 270 | 35x35 | 413 | 1,1 | 27145035035 |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|----------------|
| | | | | | 2 Pins: SIH... |
| 450 | 330 | 30x50 | 338 | 1,2 | 33145030050 |
| | 330 | 35x40 | 338 | 1,2 | 33145035040 |
| | 390 | 35x45 | 286 | 1,4 | 39145035045 |
| | 470 | 30x70 | 237 | 1,6 | 47145030070 |
| | 470 | 35x50 | 237 | 1,6 | 47145035050 |
| | 560 | 35x60 | 199 | 1,9 | 56145035060 |
| | 560 | 40x50 | 199 | 1,8 | 56145040050 |
| | 680 | 35x80 | 164 | 2,3 | 68145035080 |
| | 680 | 40x60 | 164 | 2,1 | 68145040060 |
| | 820 | 35x100 | 136 | 2,8 | 82145035100 |
| | 820 | 45x60 | 136 | 2,4 | 82145045060 |
| | 1000 | 40x80 | 111 | 2,9 | 10245040080 |
| | 1200 | 40x100 | 93 | 3,5 | 12245040100 |
| | 1200 | 45x80 | 93 | 3,2 | 12245045080 |
| | 1500 | 45x100 | 74 | 3,9 | 15245045100 |

USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



Stand: 12/2019

125°C



SIG



HIGH RELIABILITY

LONG LIFE TIME AT 125°C

SIG: SNAP IN, 2 PINS

SI4PG: SNAP IN, 4 PINS

FEATURES

- All internal contacts welded
- High temp 125°C
- High CV product
- High performance
- Low temperature

RoHS compliant
REACH compliant

APPLICATIONS

- HiFi
- Computer
- Industrial
- Tube amplifier

GENERAL SPECIFICATIONS

| Items | Characteristics |
|---|---|
| Rated capacitance range C_R | 1.200... 130.000 μ F |
| Capacitance tolerance | \pm 20% |
| Rated voltage range U | 16 ... 63 V |
| Surge voltage U_S | $U_S = 1,15 U_R$ |
| Max. reverse voltage | 2 V |
| Category temperature range | - 55°C ... + 125 °C |
| Leakage current I_L after 5 min @ U_R | $\leq 0,006 * C_R [\mu F] * U_R [V] + 6 \mu A [\mu A]$ |
| Useful life 2000 h @ 125 °C ; U_R ; I_R | Requirements $\Delta C/C \leq 30$ % of initial value ; ESR ≤ 300 % of specified ; limit $I_L \leq$ specified limit |
| Endurance test 1000 h @ 125 °C , U_R | Requirements $\Delta C/C \leq 20$ % of initial value ; ESR ≤ 130 % of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 55/125/56 |
| Voltage proof of the external insulation | ≥ 2500 V AC |
| Sectional specification | IEC 60384-4 |

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand: 12/2019





■ DRAWINGS FOR SERIES SIG AND SI4PG

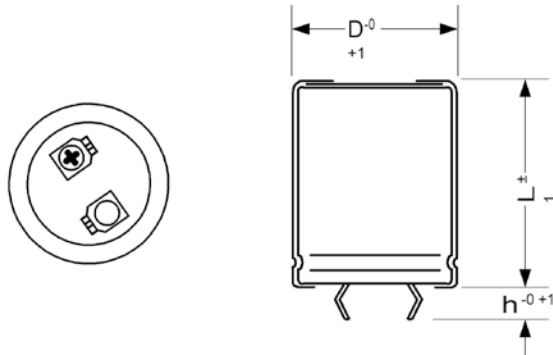
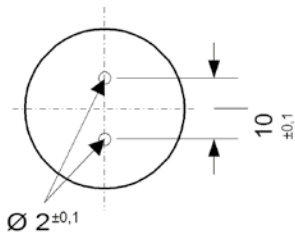


Fig1: SIG - Standard 2 pin snap in version and mounting hole dimensions (mm)

Case diameter 25 to 45 mm only

Piercing diagram



h = 6,3 / 4,5 mm

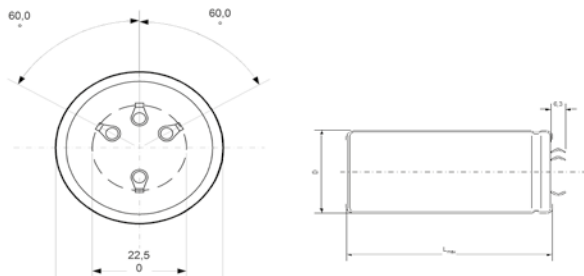
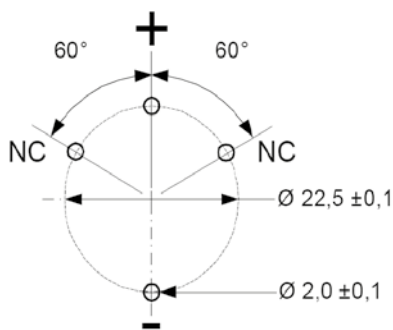


Fig2: SI4PG - Keyed polarity 4 pin snap in version (here with 6,3 mm claw. The 4,5 mm claw is also available) and mounting hole dimensions (mm)

Case diameter 35, 40, 45 mm only



NC terminals must be soldered to isolated pads or pads connected to the minus potential

125°C



SIG

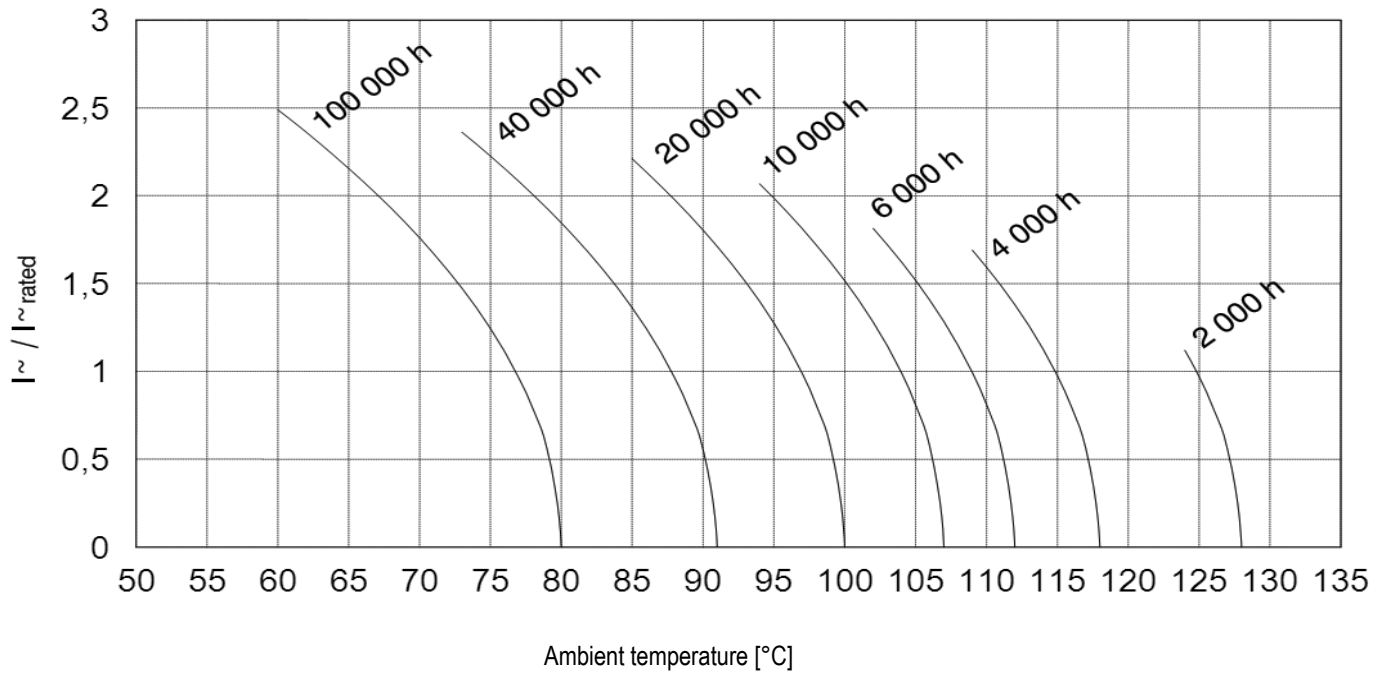
ELECTRICAL DATA AND ORDERING CODE FOR SERIES SIH

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 125°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|------------------|
| | | | | | 2 Pins: SIG... |
| | | | | | 4 Pins: SI4PG... |
| 16 | 10000 | 25x30 | 40 | 2,7 | 10301625030 |
| | 15000 | 30x30 | 27 | 3,6 | 15301630030 |
| | 18000 | 25x50 | 22 | 4,3 | 18301625050 |
| | 18000 | 35x30 | 22 | 4,3 | 18301635030 |
| | 27000 | 30x50 | 15 | 5,8 | 27301630050 |
| | 39000 | 30x70 | 10 | 7,9 | 39301630070 |
| | 39000 | 35x50 | 10 | 7,6 | 39301635050 |
| | 47000 | 40x50 | 8 | 8,8 | 47301640050 |
| | 82000 | 35x80 | 5 | 14,6 | 823016350800 |
| | 82000 | 40x80 | 5 | 13,9 | 82301640080 |
| | 100000 | 45x80 | 4 | 15,4 | 10401645080 |
| | 120000 | 40x100 | 4 | 16,9 | 12401640100 |
| | 130000 | 45x100 | 4 | 17,5 | 13401645100 |
| 25 | 6800 | 25x30 | 47 | 2,5 | 68202525030 |
| | 10000 | 30x30 | 32 | 3,3 | 10302530030 |
| | 15000 | 25x50 | 21 | 4,4 | 15302525050 |
| | 15000 | 35x30 | 21 | 4,4 | 15302535030 |
| | 18000 | 30x50 | 18 | 5,3 | 18302530050 |
| | 27000 | 30x70 | 12 | 7,4 | 27302530070 |
| | 27000 | 35x50 | 12 | 7,1 | 27302535050 |
| | 39000 | 40x50 | 8 | 9,0 | 39302540050 |
| | 47000 | 35x80 | 7 | 11,3 | 47302535080 |
| | 56000 | 45x80 | 6 | 12,9 | 56302545080 |
| | 68000 | 40x80 | 5 | 14,2 | 68302540080 |
| | 68000 | 40x100 | 5 | 15,5 | 68302540100 |
| | 100000 | 45x100 | 3 | 18,8 | 10402545100 |

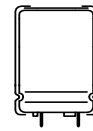
| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 125°C [A] | Order code | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|------------------|-------------|
| | | | | | 2 Pins: SIG... | |
| | | | | | 4 Pins: SI4PG... | |
| 40 | 2700 | 25x30 | 71 | 2,0 | 27204025030 | |
| | 3900 | 30x30 | 49 | 2,7 | 39204030030 | |
| | 4700 | 25x50 | 41 | 3,2 | 47204025050 | |
| | 6800 | 35x30 | 28 | 4,0 | 68204035030 | |
| | 8200 | 30x50 | 23 | 4,7 | 82204030050 | |
| | 10000 | 35x50 | 19 | 5,7 | 10304035050 | |
| | 12000 | 30x70 | 16 | 6,5 | 12304030070 | |
| | 15000 | 40x50 | 13 | 7,4 | 15304040050 | |
| | 18000 | 35x80 | 11 | 9,3 | 18304035080 | |
| | 22000 | 40x80 | 9 | 10,8 | 22304040080 | |
| | 27000 | 45x80 | 7 | 13,2 | 27304045080 | |
| | 27000 | 40x100 | 7 | 13,1 | 27304040100 | |
| | 39000 | 45x100 | 5 | 16,8 | 39304045100 | |
| | 63 | 1800 | 25x30 | 80 | 1,9 | 18206325030 |
| | | 2700 | 30x30 | 53 | 2,6 | 27206330030 |
| 3900 | | 25x50 | 37 | 3,4 | 39206325050 | |
| 3900 | | 35x30 | 37 | 3,5 | 39206335030 | |
| 5600 | | 30x50 | 26 | 4,5 | 56206330050 | |
| 6800 | | 35x50 | 21 | 5,5 | 68206335050 | |
| 8200 | | 30x70 | 17 | 6,2 | 82206330070 | |
| 10000 | | 40x50 | 14 | 7,0 | 10306340050 | |
| 12000 | | 35x80 | 12 | 8,7 | 12306335080 | |
| 18000 | | 40x80 | 8 | 11,2 | 18306340080 | |
| 22000 | | 45x80 | 7 | 13,8 | 22306345080 | |
| 22000 | | 40x100 | 7 | 13,6 | 22306340100 | |
| 27000 | | 45x100 | 5 | 16,2 | 27306345100 | |



■ USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



85°C



GS



■ FEATURES

- All internal contacts welded
- High CV product
- High reliability
- Long useful life

■ APPLICATIONS

- HiFi
- Consumer
- Industrial
- Inverter/drives

RoHS compliant
REACH compliant

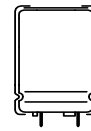
■ GENERAL SPECIFICATIONS

| Items | Characteristics |
|--|---|
| Rated capacitance range C_R | 56... 330.000 μF |
| Capacitance tolerance | $\pm 20\%$ |
| Rated voltage range U | 16 ... 500 V |
| Surge voltage U_S | $U_R \leq 315 \text{ V}: U_S = 1,15 U_R$; $U_R > 315 \text{ V}: U_S = 1,10 U_R$ |
| Max. reverse voltage | 2 V |
| Category temperature range | - 40°C ... + 185 °C |
| Leakage current I_L after 5 min @ U_R | $\leq 0,008 * C_R [\mu\text{F}] * U_R [\text{V}] + 6 \mu\text{A} [\mu\text{A}]$ |
| Useful life 5000 h @ 85 °C ; U_R ; I_R | Requirements $\Delta C/C \leq 30 \%$ of initial value ; ESR $\leq 300 \%$ of specified ; limit $I_L \leq$ specified limit |
| Endurance test 2000 h @ 85 °C , U_R | Requirements $\Delta C/C \leq 20 \%$ of initial value ; ESR $\leq 130 \%$ of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 40/085/56 |
| Voltage proof of the external insulation | $\geq 2500 \text{ V AC}$ |
| Sectional specification | IEC 60384-4 |

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand: 12/2019





■ DRAWING AND MOUNTING PIN LAYOUT OF THE SERIES GS CAPACITORS

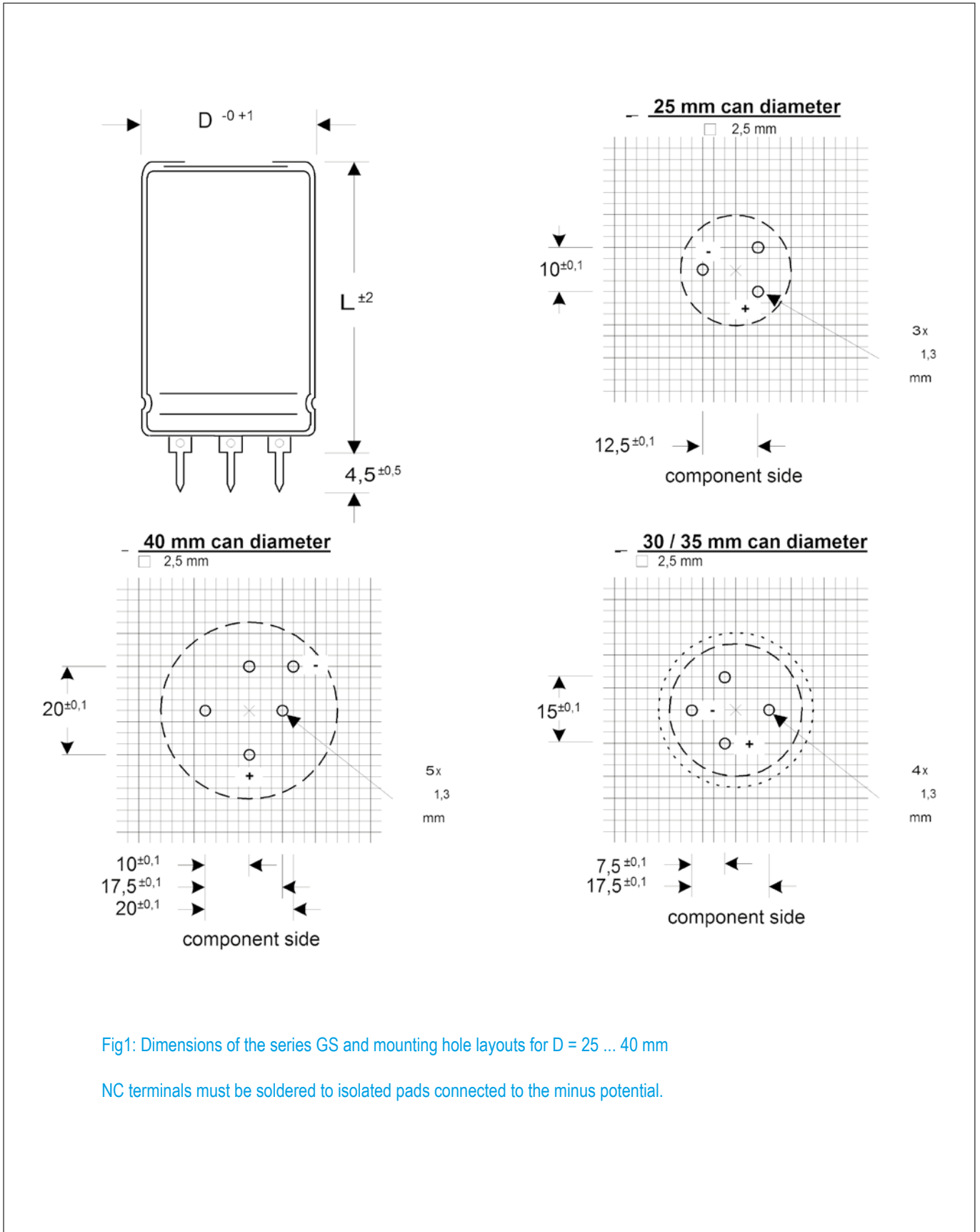
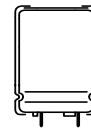


Fig1: Dimensions of the series GS and mounting hole layouts for D = 25 ... 40 mm

NC terminals must be soldered to isolated pads connected to the minus potential.

85°C



GS

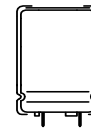
ELECTRICAL DATA AND ORDERING CODE FOR SERIES GS

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code GS... |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|---------------------|
| 16 | 22000 | 25x30 | 22 | 3,6 | 22301625030 |
| | 27000 | 25x35 | 18 | 4,2 | 27301625035 |
| | 39000 | 25x40 | 12 | 5,3 | 39301625040 |
| | 33000 | 30x30 | 14 | 4,8 | 33301630030 |
| | 39000 | 25x45 | 12 | 5,6 | 39301625045 |
| | 47000 | 25x50 | 10 | 6,4 | 47301625050 |
| | 39000 | 30x35 | 12 | 5,5 | 39301630035 |
| | 47000 | 35x30 | 10 | 6,4 | 47301635030 |
| | 56000 | 30x40 | 9 | 7,0 | 56301630040 |
| | 56000 | 35x35 | 9 | 7,4 | 56301635035 |
| | 56000 | 30x45 | 9 | 7,3 | 56301630045 |
| | 68000 | 30x50 | 7 | 8,4 | 68301630050 |
| | 68000 | 35x40 | 7 | 8,5 | 68301635040 |
| | 82000 | 35x45 | 6 | 9,7 | 82301635045 |
| | 82000 | 35x50 | 6 | 10,1 | 82301635050 |
| | 100000 | 30x70 | 5 | 11,6 | 10401630070 |
| | 120000 | 40x50 | 4 | 12,9 | 12401640050 |
| | 150000 | 35x80 | 3 | 16,4 | 15401635080 |
| | 120000 | 40x50 | 4 | 12,9 | 12401640050 |
| | 150000 | 40x60 | 3 | 15,4 | 15401640060 |
| 180000 | 35x100 | 3 | 19,7 | 18401635100 | |
| 220000 | 40x80 | 2 | 20,8 | 22401640080 | |
| 180000 | 45x60 | 3 | 16,9 | 18401645060 | |
| 270000 | 45x80 | 2 | 23,1 | 27401645080 | |
| 270000 | 40x100 | 2 | 25,3 | 27401640100 | |
| 330000 | 45x100 | 1 | 27,9 | 33401645100 | |
| 25 | 10000 | 25x30 | 45 | 2,5 | 10302525030 |
| | 12000 | 25x35 | 37 | 2,9 | 12302525035 |
| | 15000 | 25x40 | 30 | 3,4 | 15302525040 |
| | 15000 | 30x30 | 30 | 3,4 | 15302530030 |
| | 18000 | 25x45 | 25 | 3,9 | 18302525045 |
| | 18000 | 30x35 | 25 | 3,9 | 18302530035 |
| | 18000 | 25x50 | 25 | 4,1 | 18302525050 |
| | 22000 | 30x40 | 20 | 4,5 | 22302530040 |
| | 18000 | 35x30 | 25 | 4,1 | 18302535030 |
| | 27000 | 30x45 | 17 | 5,1 | 27302530045 |
| | 27000 | 30x50 | 17 | 5,4 | 27302530050 |
| | 22000 | 35x35 | 21 | 4,7 | 22302535035 |
| | 27000 | 35x40 | 17 | 5,4 | 27302535040 |
| | 33000 | 35x45 | 14 | 6,3 | 33302535045 |
| | 39000 | 30x70 | 12 | 7,4 | 39302530070 |
| | 39000 | 35x50 | 12 | 7,1 | 39302535050 |
| | 47000 | 35x60 | 10 | 8,3 | 47302535060 |
| | 56000 | 40x50 | 8 | 8,9 | 56302540050 |
| | 56000 | 35x80 | 8 | 10,2 | 56302535080 |
| | 68000 | 40x60 | 7 | 10,5 | 68302540060 |
| | 82000 | 35x100 | 6 | 13,5 | 82302535100 |
| | 82000 | 45x60 | 6 | 11,6 | 82302545060 |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code GS... |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|---------------------|
| 25 | 120000 | 40x80 | 4 | 15,6 | 12402540080 |
| | 120000 | 40x100 | 4 | 17,1 | 12402540100 |
| | 120000 | 45x80 | 4 | 15,6 | 12402545080 |
| | 150000 | 45x100 | 3 | 19,1 | 15402545100 |
| | 5600 | 25x30 | 68 | 2,0 | 56204025030 |
| 40 | 6800 | 25x35 | 56 | 2,4 | 68204025035 |
| | 8200 | 25x40 | 47 | 2,7 | 82204025040 |
| | 8200 | 30x30 | 47 | 2,7 | 82204030030 |
| | 10000 | 25x45 | 38 | 3,2 | 10304025045 |
| | 10000 | 30x35 | 38 | 3,1 | 10304030035 |
| | 10000 | 25x50 | 38 | 3,3 | 10304025050 |
| | 12000 | 30x40 | 32 | 3,6 | 12304030040 |
| | 10000 | 35x30 | 38 | 3,3 | 10304035030 |
| | 15000 | 30x45 | 25 | 4,2 | 15304030045 |
| | 12000 | 35x35 | 32 | 3,8 | 12304035035 |
| | 15000 | 30x50 | 25 | 4,4 | 15304030050 |
| | 15000 | 35x40 | 25 | 4,5 | 15304035040 |
| | 18000 | 35x45 | 21 | 5,1 | 18304035045 |
| | 22000 | 35x50 | 17 | 5,8 | 22304035050 |
| | 22000 | 30x70 | 17 | 6,1 | 22304030070 |
| | 27000 | 35x60 | 14 | 6,9 | 27304035060 |
| | 27000 | 40x50 | 14 | 6,8 | 27304040050 |
| | 33000 | 35x80 | 12 | 8,6 | 33304035080 |
| | 33000 | 40x60 | 12 | 8,1 | 33304040060 |
| | 47000 | 35x100 | 8 | 11,3 | 47304035100 |
| | 47000 | 40x80 | 8 | 10,8 | 47304040080 |
| | 39000 | 45x60 | 10 | 8,8 | 39304045060 |
| | 56000 | 40x100 | 7 | 12,9 | 56304040100 |
| | 56000 | 45x80 | 7 | 11,7 | 56304045080 |
| | 82000 | 45x100 | 5 | 15,5 | 82304045100 |
| 63 | 2700 | 25x30 | 106 | 1,6 | 27206325030 |
| | 3300 | 25x35 | 87 | 1,9 | 33206325035 |
| | 3900 | 25x40 | 73 | 2,2 | 39206325040 |
| | 3900 | 30x30 | 73 | 2,1 | 39206330030 |
| | 4700 | 25x45 | 61 | 2,5 | 47206325045 |
| | 4700 | 30x35 | 61 | 2,5 | 47206330035 |
| | 5600 | 25x50 | 51 | 0,0 | 56206325050 |
| | 5600 | 30x40 | 51 | 2,8 | 56206330040 |
| | 5600 | 35x30 | 51 | 2,9 | 56206335030 |
| | 6800 | 30x45 | 42 | 3,3 | 68206330045 |
| | 6800 | 35x35 | 42 | 3,3 | 68206335035 |
| | 8200 | 30x50 | 35 | 3,7 | 82206330050 |
| | 8200 | 35x45 | 35 | 4,0 | 82206335045 |
| | 12000 | 30x70 | 24 | 5,2 | 12306330070 |
| | 12000 | 35x60 | 24 | 5,3 | 12306335060 |
| | 15000 | 40x50 | 19 | 5,9 | 15306340050 |
| | 18000 | 35x80 | 16 | 7,3 | 18306335080 |
| | 18000 | 40x60 | 16 | 6,9 | 18306340060 |

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85°C



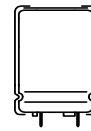
GS

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code GS... |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|---------------------|
| 63 | 22000 | 45x60 | 13 | 7,6 | 22306345060 |
| | 22000 | 35x100 | 13 | 8,9 | 22306335100 |
| | 22000 | 40x80 | 13 | 8,5 | 22306340080 |
| | 27000 | 40x100 | 11 | 10,3 | 27306340100 |
| | 27000 | 45x80 | 11 | 9,4 | 27306345080 |
| | 39000 | 45x100 | 7 | 12,4 | 39306345100 |
| 80 | 1800 | 25x30 | 177 | 1,3 | 18208025030 |
| | 1800 | 25x35 | 177 | 1,3 | 18208025035 |
| | 2700 | 25x40 | 118 | 1,7 | 27208025040 |
| | 2700 | 30x30 | 118 | 1,7 | 27208030030 |
| | 3300 | 25x45 | 97 | 2,0 | 33208025045 |
| | 3900 | 25x50 | 82 | 2,3 | 39208025050 |
| | 3300 | 30x35 | 97 | 2,0 | 33208030035 |
| | 3900 | 35x30 | 82 | 2,3 | 39208035030 |
| | 3900 | 30x40 | 82 | 2,3 | 39208030040 |
| | 4700 | 30x45 | 68 | 2,6 | 47208030045 |
| | 4700 | 35x35 | 68 | 2,6 | 47208035035 |
| | 5600 | 30x50 | 57 | 2,9 | 56208030050 |
| | 5600 | 35x40 | 57 | 3,0 | 56208035040 |
| | 6800 | 35x45 | 47 | 3,4 | 68208035045 |
| | 6800 | 35x50 | 47 | 3,6 | 68208035050 |
| | 8200 | 30x70 | 39 | 4,1 | 82208030070 |
| | 10000 | 35x60 | 32 | 4,6 | 10308035060 |
| | 10000 | 40x50 | 32 | 4,6 | 10308040050 |
| | 12000 | 35x80 | 27 | 5,7 | 12308035080 |
| | 12000 | 40x60 | 27 | 5,3 | 12308040060 |
| | 18000 | 35x100 | 18 | 7,6 | 18308035100 |
| | 15000 | 45x60 | 21 | 6,0 | 15308045060 |
| | 18000 | 40x80 | 18 | 7,3 | 18308040080 |
| | 22000 | 45x80 | 14 | 8,1 | 22308045080 |
| | 22000 | 40x100 | 14 | 8,8 | 22308040100 |
| | 27000 | 45x100 | 12 | 9,8 | 27308045100 |
| 100 | 1200 | 25x30 | 133 | 1,5 | 12210025030 |
| | 1500 | 25x35 | 106 | 1,7 | 15210025035 |
| | 1800 | 25x40 | 88 | 2,0 | 18210025040 |
| | 1800 | 30x30 | 88 | 2,0 | 18210030030 |
| | 2200 | 25x45 | 72 | 2,3 | 22210025045 |
| | 2200 | 25x50 | 72 | 2,4 | 22210025050 |
| | 2200 | 35x30 | 72 | 2,4 | 22210035030 |
| | 2700 | 30x40 | 59 | 2,7 | 27210030040 |
| | 2700 | 30x45 | 59 | 2,8 | 27210030045 |
| | 2700 | 35x35 | 59 | 2,8 | 27210035035 |
| | 3300 | 30x50 | 48 | 3,2 | 33210030050 |
| | 3300 | 35x40 | 48 | 3,2 | 33210035040 |
| | 3900 | 35x45 | 41 | 3,7 | 39210035045 |
| | 5600 | 30x70 | 28 | 4,7 | 56210030070 |
| | 4700 | 35x50 | 34 | 4,2 | 47210035050 |
| | 5600 | 35x60 | 28 | 4,9 | 56210035060 |
| | 5600 | 40x50 | 28 | 4,8 | 56210040050 |
| | 6800 | 35x80 | 23 | 6,1 | 68210035080 |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code GS... |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|---------------------|
| 100 | 6800 | 40x60 | 23 | 5,7 | 68210040060 |
| | 10000 | 35x100 | 16 | 8,1 | 10310035100 |
| | 12000 | 40x80 | 13 | 8,4 | 12310040080 |
| | 10000 | 45x60 | 16 | 6,9 | 10310045060 |
| | 12000 | 45x80 | 13 | 8,4 | 12310045080 |
| | 15000 | 40x100 | 11 | 10,3 | 15310040100 |
| | 18000 | 45x100 | 9 | 11,3 | 18310045100 |
| 160 | 470 | 25x30 | 237 | 1,1 | 47116025030 |
| | 560 | 25x35 | 199 | 1,3 | 56116025035 |
| | 680 | 25x40 | 164 | 1,5 | 68116025040 |
| | 680 | 30x30 | 164 | 1,4 | 68116030030 |
| | 820 | 25x45 | 136 | 1,7 | 82116025045 |
| | 820 | 30x35 | 136 | 1,7 | 82116030035 |
| | 1000 | 25x50 | 111 | 1,9 | 10216025050 |
| | 1000 | 30x40 | 111 | 1,9 | 10216030040 |
| | 1000 | 35x30 | 111 | 1,9 | 10216035030 |
| | 1200 | 30x45 | 93 | 2,2 | 12216030045 |
| | 1200 | 35x35 | 93 | 2,2 | 12216035035 |
| | 1500 | 30x50 | 74 | 2,6 | 15216030050 |
| | 1500 | 35x40 | 74 | 2,6 | 15216035040 |
| | 1800 | 35x45 | 62 | 3,0 | 18216035045 |
| | 1800 | 35x50 | 62 | 3,1 | 18216035050 |
| | 2200 | 30x70 | 51 | 3,6 | 22216030070 |
| | 2200 | 35x60 | 51 | 3,7 | 22216035060 |
| | 2700 | 40x50 | 41 | 4,0 | 27216040050 |
| | 3300 | 35x80 | 34 | 5,0 | 33216035080 |
| | 3300 | 40x60 | 34 | 4,7 | 33216040060 |
| | 3900 | 35x100 | 29 | 6,0 | 39216035100 |
| | 3900 | 45x60 | 29 | 5,2 | 39216045060 |
| | 4700 | 40x80 | 24 | 6,3 | 47216040080 |
| | 5600 | 40x100 | 20 | 7,5 | 56216040100 |
| | 5600 | 45x80 | 20 | 6,9 | 56216045080 |
| | 6800 | 45x100 | 16 | 8,3 | 68216045100 |
| 200 | 470 | 25x30 | 203 | 1,2 | 47120025030 |
| | 560 | 25x35 | 171 | 1,4 | 56120025035 |
| | 680 | 25x40 | 141 | 1,6 | 68120025040 |
| | 680 | 30x30 | 141 | 1,6 | 68120030030 |
| | 820 | 25x45 | 117 | 1,8 | 82120025045 |
| | 820 | 30x35 | 117 | 1,8 | 82120030035 |
| | 1000 | 35x30 | 96 | 2,1 | 10220035030 |
| | 1000 | 25x50 | 96 | 2,1 | 10220025050 |
| | 1000 | 30x40 | 96 | 2,1 | 10220030040 |
| | 1200 | 30x45 | 80 | 2,4 | 12220030045 |
| | 1500 | 30x50 | 64 | 2,8 | 15220030050 |
| | 1200 | 35x35 | 80 | 2,4 | 12220035035 |
| | 1500 | 35x40 | 64 | 2,8 | 15220035040 |
| | 1800 | 35x45 | 53 | 3,2 | 18220035045 |
| | 1800 | 35x50 | 53 | 3,3 | 18220035050 |
| | 2200 | 30x70 | 43 | 3,8 | 22220030070 |
| | 2200 | 35x60 | 43 | 4,0 | 22220035060 |

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85°C



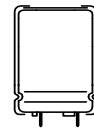
GS

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code GS... |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|---------------------|
| 200 | 3300 | 35x80 | 29 | 5,4 | 33220035080 |
| | 2700 | 40x50 | 35 | 4,3 | 27220040050 |
| | 3300 | 40x60 | 29 | 5,1 | 33220040060 |
| | 3900 | 35x100 | 24 | 6,5 | 39220035100 |
| | 4700 | 40x80 | 20 | 6,8 | 47220040080 |
| | 3900 | 45x60 | 24 | 5,6 | 39220045060 |
| | 5600 | 40x100 | 17 | 8,1 | 56220040100 |
| | 5600 | 45x80 | 17 | 7,4 | 56220045080 |
| | 6800 | 45x100 | 14 | 9,0 | 68220045100 |
| 350 | 180 | 25x30 | 531 | 0,7 | 18135025030 |
| | 220 | 25x35 | 434 | 0,9 | 22135025035 |
| | 270 | 25x40 | 354 | 1,0 | 27135025040 |
| | 270 | 30x30 | 354 | 1,0 | 27135030030 |
| | 330 | 25x45 | 290 | 1,2 | 33135025045 |
| | 330 | 30x35 | 290 | 1,1 | 33135030035 |
| | 390 | 35x30 | 245 | 1,3 | 39135035030 |
| | 390 | 25x50 | 245 | 1,3 | 39135025050 |
| | 390 | 30x40 | 245 | 1,3 | 39135030040 |
| | 470 | 30x45 | 203 | 1,5 | 47135030045 |
| | 470 | 35x35 | 203 | 1,5 | 47135035035 |
| | 560 | 30x50 | 171 | 1,7 | 56135030050 |
| | 560 | 35x40 | 171 | 1,7 | 56135035040 |
| | 560 | 35x45 | 171 | 1,8 | 56135035045 |
| | 680 | 35x50 | 141 | 2,1 | 68135035050 |
| | 820 | 30x70 | 117 | 2,3 | 82135030070 |
| | 820 | 35x60 | 117 | 2,4 | 82135035060 |
| | 1000 | 40x50 | 96 | 2,6 | 10235040050 |
| | 1200 | 35x80 | 80 | 3,3 | 12235035080 |
| | 1200 | 40x60 | 80 | 3,1 | 12235040060 |
| | 1500 | 35x100 | 64 | 4,0 | 15235035100 |
| | 1500 | 45x60 | 64 | 3,4 | 15235045060 |
| 1800 | 40x80 | 53 | 4,2 | 18235040080 | |
| 1800 | 40x100 | 53 | 4,6 | 18235040100 | |
| 2200 | 45x80 | 43 | 4,7 | 22235045080 | |
| 2700 | 45x100 | 35 | 5,6 | 27235045100 | |
| 400 | 180 | 25x30 | 708 | 0,6 | 18140025030 |
| | 220 | 25x35 | 579 | 0,7 | 22140025035 |
| | 270 | 25x40 | 472 | 0,9 | 27140025040 |
| | 270 | 30x30 | 472 | 0,8 | 27140030030 |
| | 330 | 25x45 | 386 | 1,0 | 33140025045 |
| | 330 | 25x50 | 386 | 1,0 | 33140025050 |
| | 330 | 30x35 | 386 | 1,0 | 33140030035 |
| | 390 | 35x30 | 327 | 1,1 | 39140035030 |
| | 390 | 30x40 | 327 | 1,1 | 39140030040 |
| | 470 | 35x35 | 271 | 1,3 | 47140035035 |
| | 470 | 30x45 | 271 | 1,3 | 47140030045 |
| | 560 | 30x50 | 227 | 1,5 | 56140030050 |
| | 560 | 35x40 | 227 | 1,5 | 56140035040 |
| | 560 | 35x45 | 227 | 1,6 | 56140035045 |
| | 680 | 30x70 | 187 | 1,8 | 68140030070 |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code GS... | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|---------------------|-------------|
| 400 | 820 | 35x50 | 155 | 2,0 | 82140035050 | |
| | 820 | 35x60 | 155 | 2,1 | 82140035060 | |
| | 820 | 40x50 | 155 | 2,1 | 82140040050 | |
| | 1200 | 35x80 | 106 | 2,8 | 12240035080 | |
| | 1200 | 40x60 | 106 | 2,7 | 12240040060 | |
| | 1500 | 35x100 | 85 | 3,5 | 15240035100 | |
| | 1500 | 40x80 | 85 | 3,3 | 15240040080 | |
| | 1800 | 45x60 | 71 | 3,3 | 18240045060 | |
| | 1800 | 40x100 | 71 | 4,0 | 18240040100 | |
| | 1800 | 45x80 | 71 | 3,6 | 18240045080 | |
| | 2700 | 45x100 | 47 | 4,9 | 27240045100 | |
| | 2200 | 45x100 | 58 | 4,7 | 22240045100 | |
| 450 | 120 | 25x30 | 929 | 0,6 | 12145025030 | |
| | 150 | 25x35 | 743 | 0,7 | 15145025035 | |
| | 180 | 25x40 | 619 | 0,8 | 18145025040 | |
| | 220 | 25x45 | 507 | 0,9 | 22145025045 | |
| | 180 | 30x30 | 619 | 0,7 | 18145030030 | |
| | 220 | 30x35 | 507 | 0,9 | 22145030035 | |
| | 220 | 25x50 | 507 | 0,9 | 22145025050 | |
| | 270 | 30x40 | 413 | 1,0 | 27145030040 | |
| | 220 | 35x30 | 507 | 0,9 | 22145035030 | |
| | 270 | 30x45 | 413 | 1,0 | 27145030045 | |
| | 270 | 35x35 | 413 | 1,1 | 27145035035 | |
| | 330 | 30x50 | 338 | 1,2 | 33145030050 | |
| | 390 | 35x40 | 286 | 1,3 | 39145035040 | |
| | 390 | 35x45 | 286 | 1,4 | 39145035045 | |
| | 560 | 30x70 | 199 | 1,8 | 56145030070 | |
| | 470 | 35x50 | 237 | 1,6 | 47145035050 | |
| | 560 | 35x60 | 199 | 1,9 | 56145035060 | |
| | 560 | 40x50 | 199 | 1,8 | 56145040050 | |
| | 820 | 35x80 | 136 | 2,5 | 82145035080 | |
| | 1200 | 40x60 | 93 | 2,8 | 12245040060 | |
| | 1000 | 35x100 | 111 | 3,0 | 10245035100 | |
| | 1000 | 45x60 | 111 | 2,6 | 10245045060 | |
| | 1200 | 40x80 | 93 | 3,3 | 12245040080 | |
| | 1500 | 40x100 | 74 | 4,0 | 15245040100 | |
| | 1200 | 45x80 | 93 | 3,2 | 12245045080 | |
| | 1800 | 45x100 | 62 | 4,3 | 18245045100 | |
| | 500 | 120 | 25x30 | 796 | 0,6 | 12150025030 |
| | | 120 | 25x35 | 796 | 0,6 | 12150025035 |
| | | 150 | 25x40 | 637 | 0,7 | 15150025040 |
| | | 180 | 25x45 | 531 | 0,9 | 18150025045 |
| | | 150 | 30x30 | 637 | 0,7 | 15150030030 |
| | | 180 | 30x35 | 531 | 0,8 | 18150030035 |
| 220 | | 25x50 | 434 | 1,0 | 22150025050 | |
| 220 | | 30x40 | 434 | 1,0 | 22150030040 | |
| 180 | | 35x30 | 531 | 0,9 | 18150035030 | |
| 270 | | 30x45 | 354 | 1,1 | 27150030045 | |
| 270 | | 35x35 | 354 | 1,1 | 27150035035 | |
| 270 | | 30x50 | 354 | 1,2 | 27150030050 | |

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85°C

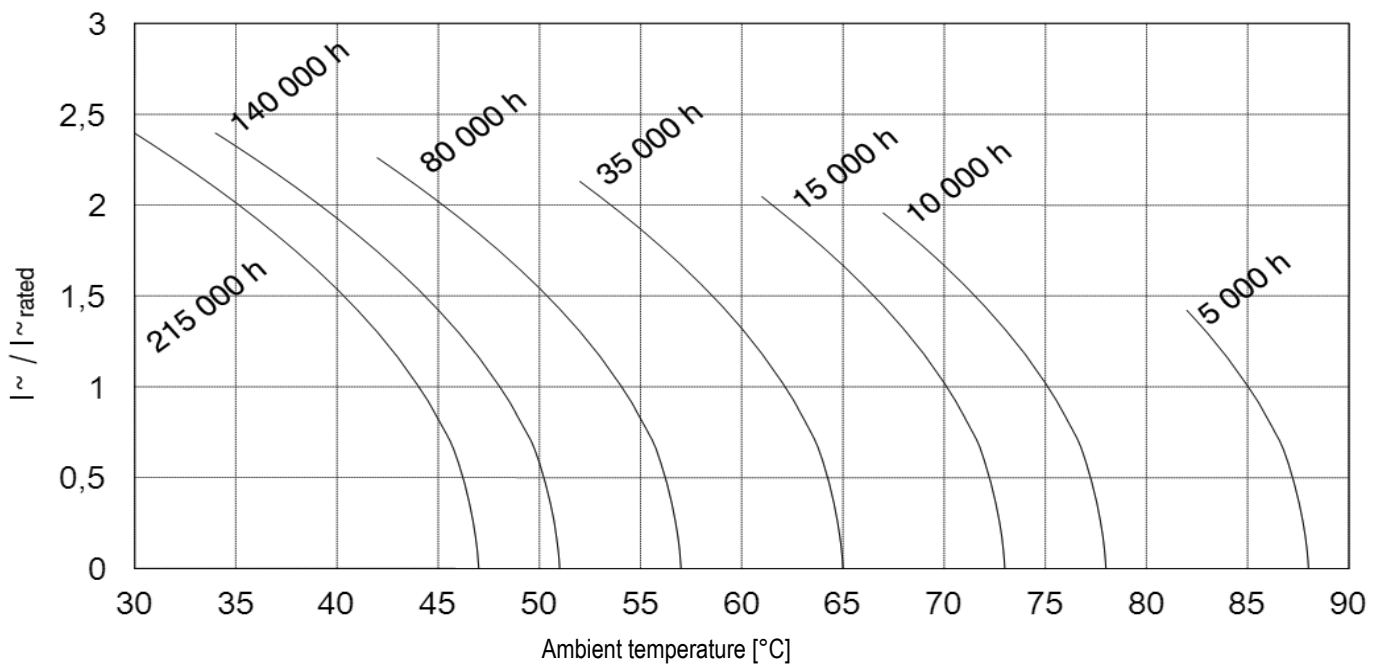


GS

| Rated voltage U_R [V] | Rated cap. C_R [μ F] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [m Ω] | Ripple current IR~ 100 Hz, 85°C [A] | Order code GS... |
|-------------------------------|-----------------------------------|----------------------------|--|--|---------------------|
| 500 | 270 | 35x40 | 354 | 1,2 | 27150035040 |
| | 390 | 35x45 | 245 | 1,5 | 39150035045 |
| | 470 | 30x70 | 203 | 1,8 | 47150030070 |
| | 390 | 35x50 | 245 | 1,6 | 39150035050 |
| | 560 | 35x60 | 171 | 2,0 | 56150035060 |
| | 560 | 40x50 | 171 | 2,0 | 56150040050 |
| | 680 | 35x80 | 141 | 2,5 | 68150035080 |

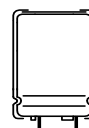
| Rated voltage U_R [V] | Rated cap. C_R [μ F] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [m Ω] | Ripple current IR~ 100 Hz, 85°C [A] | Order code GS... |
|-------------------------------|-----------------------------------|----------------------------|--|--|---------------------|
| 500 | 680 | 40x60 | 141 | 2,3 | 68150040060 |
| | 820 | 35x100 | 117 | 3,0 | 82150035100 |
| | 820 | 45x60 | 117 | 2,6 | 82150045060 |
| | 1200 | 40x80 | 80 | 3,4 | 12250040080 |
| | 820 | 40x100 | 117 | 3,1 | 82150040100 |
| | 1200 | 45x80 | 80 | 3,4 | 12250045080 |
| | 1500 | 45x100 | 64 | 4,2 | 15250045100 |

■ USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



Stand: 12/2019

105°C



GSH



DIN SERIES

ULTRA COMPACT DESIGN

LONG LIFETIME

PCB SOLDER PINS

■ FEATURES

- All internal contacts welded
- High CV product
- High reliability
- Ultra compact

■ APPLICATIONS

- HiFi
- Computer
- Industrial
- Tube amplifier

RoHS compliant
REACH compliant

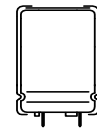
■ GENERAL SPECIFICATIONS

| Items | Characteristics |
|---|---|
| Rated capacitance range C_R | 68... 150.000 μF |
| Capacitance tolerance | $\pm 20\%$ |
| Rated voltage range U | 16 ... 450 V |
| Surge voltage U_S | $U_R \leq 315 \text{ V}: U_S = 1,15 U_R$; $U_R > 315 \text{ V}: U_S = 1,10 U_R$ |
| Max. reverse voltage | 2 V |
| Category temperature range | - 40°C ... + 105 °C |
| Leakage current I_L after 5 min @ U_R | $\leq 0,008 * C_R [\mu\text{F}] * U_R [\text{V}] + 6 \mu\text{A} [\mu\text{A}]$ |
| Useful life 5000 h @ 105 °C ; U_R ; I_R | Requirements $\Delta C/C \leq 30\%$ of initial value ; ESR $\leq 300\%$ of specified ; limit $I_L \leq$ specified limit |
| Endurance test 2000 h @ 105 °C , U_R | Requirements $\Delta C/C \leq 20\%$ of initial value ; ESR $\leq 130\%$ of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 40/105/56 |
| Voltage proof of the external insulation | $\geq 2500 \text{ V AC}$ |
| Sectional specification | IEC 60384-4 |

Different voltages and capacitance combinations are available on request. Also in small lots.

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■ DRAWING AND MOUNTING PIN LAYOUT OF THE SERIES GSH CAPACITORS

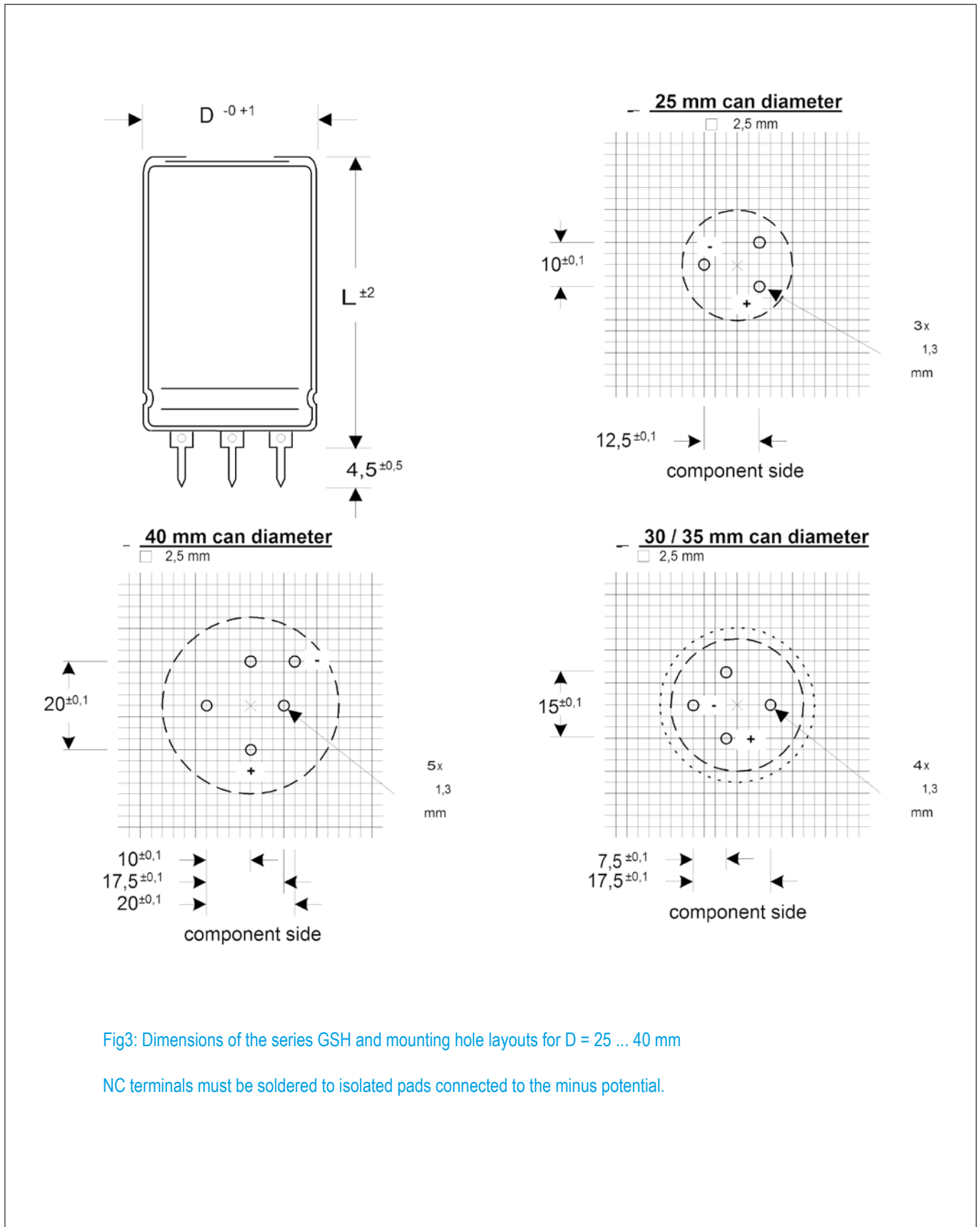
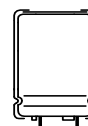


Fig3: Dimensions of the series GSH and mounting hole layouts for D = 25 ... 40 mm

NC terminals must be soldered to isolated pads connected to the minus potential.

105°C



GSH

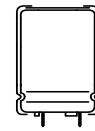
ELECTRICAL DATA AND ORDERING CODE FOR SERIES GSH

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code GSH... |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|----------------------|
| 16 | 10000 | 25x30 | 48 | 2,4 | 10301625030 |
| | 12000 | 25x35 | 40 | 2,8 | 12301625035 |
| | 15000 | 25x40 | 32 | 3,3 | 15301625040 |
| | 15000 | 30x30 | 32 | 3,3 | 15301630030 |
| | 18000 | 25x45 | 27 | 3,8 | 18301625045 |
| | 18000 | 25x50 | 27 | 4,0 | 18301625050 |
| | 18000 | 30x35 | 27 | 3,8 | 18301630035 |
| | 18000 | 35x30 | 27 | 4,0 | 18301635030 |
| | 22000 | 30x40 | 22 | 4,4 | 22301630040 |
| | 22000 | 35x35 | 22 | 4,6 | 22301635035 |
| | 27000 | 30x45 | 18 | 5,1 | 27301630045 |
| | 27000 | 30x50 | 18 | 5,3 | 27301630050 |
| | 27000 | 35x40 | 18 | 5,3 | 27301635040 |
| | 33000 | 35x45 | 14 | 6,2 | 33301635045 |
| | 39000 | 30x70 | 12 | 7,2 | 39301630070 |
| | 39000 | 35x50 | 12 | 7,0 | 39301635050 |
| | 47000 | 40x50 | 10 | 8,1 | 47301640050 |
| | 56000 | 35x80 | 9 | 10,0 | 56301635080 |
| | 56000 | 40x50 | 9 | 8,8 | 56301640050 |
| | 25 | 6800 | 25x30 | 66 | 2,1 |
| 8200 | | 25x35 | 54 | 2,4 | 82202525035 |
| 10000 | | 25x40 | 45 | 2,8 | 10302525040 |
| 10000 | | 30x30 | 45 | 2,8 | 10302530030 |
| 12000 | | 25x45 | 37 | 3,2 | 12302525045 |
| 12000 | | 30x35 | 37 | 3,2 | 12302530035 |
| 15000 | | 25x50 | 30 | 3,7 | 15302525050 |
| 15000 | | 30x40 | 30 | 3,7 | 15302530040 |
| 15000 | | 35x30 | 30 | 3,7 | 15302535030 |
| 18000 | | 30x45 | 26 | 4,2 | 18302530045 |
| 18000 | | 30x50 | 26 | 4,4 | 18302530050 |
| 18000 | | 35x35 | 26 | 4,2 | 18302535035 |
| 22000 | | 35x40 | 21 | 4,9 | 22302535040 |
| 22000 | | 35x45 | 21 | 5,1 | 22302535045 |
| 27000 | | 30x70 | 17 | 6,1 | 27302530070 |
| 27000 | | 35x50 | 17 | 5,9 | 27302535050 |
| 33000 | | 35x60 | 14 | 7,0 | 33302535060 |
| 39000 | | 40x50 | 12 | 7,5 | 39302540050 |
| 47000 | | 35x80 | 10 | 9,3 | 47302535080 |
| 47000 | | 40x60 | 10 | 8,8 | 47302540060 |
| 56000 | 35x100 | 8 | 11,2 | 56302535100 | |
| 56000 | 45x60 | 8 | 9,6 | 56302545060 | |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code GSH... |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|----------------------|
| 25 | 68000 | 40x80 | 7 | 11,8 | 68302540080 |
| | 68000 | 40x100 | 7 | 12,9 | 68302540100 |
| | 82000 | 45x80 | 6 | 12,9 | 82302545080 |
| | 100000 | 45x100 | 5 | 15,6 | 10402545100 |
| | 40 | 2700 | 25x30 | 142 | 1,4 |
| 3300 | | 25x35 | 116 | 1,7 | 33204025035 |
| 3900 | | 25x40 | 98 | 1,9 | 39204025040 |
| 3900 | | 30x30 | 98 | 1,9 | 39204030030 |
| 4700 | | 25x45 | 81 | 2,2 | 47204025045 |
| 4700 | | 30x35 | 81 | 2,2 | 47204030035 |
| 5600 | | 25x50 | 68 | 2,5 | 56204025050 |
| 5600 | | 30x40 | 68 | 2,5 | 56204030040 |
| 5600 | | 35x30 | 68 | 2,5 | 56204035030 |
| 6800 | | 30x45 | 56 | 2,8 | 68204030045 |
| 6800 | | 35x35 | 56 | 2,9 | 68204035035 |
| 8200 | | 30x50 | 47 | 3,2 | 82204030050 |
| 8200 | | 35x40 | 47 | 3,3 | 82204035040 |
| 8200 | | 35x45 | 47 | 3,4 | 82204035045 |
| 10000 | | 35x50 | 38 | 3,9 | 10304035050 |
| 12000 | | 30x70 | 32 | 4,5 | 12304030070 |
| 12000 | | 35x60 | 32 | 4,6 | 12304035060 |
| 15000 | | 40x50 | 25 | 5,1 | 15304040050 |
| 18000 | | 35x80 | 21 | 6,4 | 18304035080 |
| 18000 | | 40x60 | 21 | 6,0 | 18304040060 |
| 63 | 22000 | 35x100 | 17 | 7,7 | 22304035100 |
| | 22000 | 40x80 | 17 | 7,4 | 22304040080 |
| | 22000 | 45x60 | 17 | 6,6 | 22304045060 |
| | 27000 | 40x100 | 14 | 8,9 | 27304040100 |
| | 27000 | 45x80 | 14 | 8,2 | 27304045080 |
| | 39000 | 45x100 | 10 | 10,7 | 39304045100 |
| | 1800 | 25x30 | 159 | 1,3 | 18206325030 |
| | 2200 | 25x35 | 130 | 1,6 | 22206325035 |
| | 2700 | 25x40 | 106 | 1,8 | 27206325040 |
| | 2700 | 30x30 | 106 | 1,8 | 27206330030 |
| | 3300 | 25x45 | 87 | 2,1 | 33206325045 |
| | 3300 | 30x35 | 87 | 2,1 | 33206330035 |
| | 3900 | 25x50 | 73 | 2,4 | 39206325050 |
| | 3900 | 30x40 | 73 | 2,4 | 39206330040 |
| | 3900 | 35x30 | 73 | 2,4 | 39206335030 |
| | 4700 | 30x45 | 61 | 2,7 | 47206330045 |
| | 4700 | 35x35 | 61 | 2,8 | 47206335035 |
| | 5600 | 30x50 | 51 | 3,1 | 56206330050 |
| | 6800 | 35x45 | 42 | 3,6 | 68206335045 |
| | 8200 | 30x70 | 35 | 4,3 | 82206330070 |
| 10000 | 35x60 | 29 | 4,9 | 10306335060 | |
| 10000 | 40x50 | 29 | 4,8 | 10306340050 | |
| 12000 | 35x80 | 24 | 6,0 | 12306335080 | |
| 12000 | 40x60 | 24 | 5,6 | 12306340060 | |

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105°C



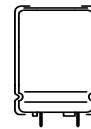
GSH

| Rated voltage U_R [V] | Rated cap. C_R [µF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code GSH... | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|----------------------|-------------|
| 63 | 15000 | 45x60 | 19 | 6,3 | 15306345060 | |
| | 18000 | 35x100 | 16 | 8,1 | 18306335100 | |
| | 18000 | 40x80 | 16 | 7,7 | 18306340080 | |
| | 22000 | 40x100 | 13 | 9,3 | 22306340100 | |
| | 22000 | 45x80 | 13 | 8,5 | 22306345080 | |
| | 27000 | 45x100 | 11 | 10,3 | 27306345100 | |
| 80 | 1200 | 25x30 | 265 | 1,0 | 12208025030 | |
| | 1500 | 25x35 | 212 | 1,2 | 15208025035 | |
| | 1800 | 25x40 | 177 | 1,4 | 18208025040 | |
| | 1800 | 30x30 | 177 | 1,4 | 18208030030 | |
| | 2200 | 25x45 | 145 | 1,6 | 22208025045 | |
| | 2200 | 25x50 | 145 | 1,7 | 22208025050 | |
| | 2200 | 30x35 | 145 | 1,6 | 22208030035 | |
| | 2200 | 35x30 | 145 | 1,7 | 22208035030 | |
| | 2700 | 30x40 | 118 | 1,9 | 27208030040 | |
| | 2700 | 30x45 | 118 | 2,0 | 27208030045 | |
| | 2700 | 35x35 | 118 | 2,0 | 27208035035 | |
| | 3300 | 30x50 | 97 | 2,3 | 33208030050 | |
| | 3300 | 35x40 | 97 | 2,3 | 33208035040 | |
| | 3900 | 35x45 | 82 | 2,6 | 39208035045 | |
| | 4700 | 35x50 | 68 | 3,0 | 47208035050 | |
| | 5600 | 30x70 | 57 | 3,4 | 56208030070 | |
| | 5600 | 35x60 | 57 | 3,5 | 56208035060 | |
| | 5600 | 40x50 | 57 | 3,4 | 56208040050 | |
| | 6800 | 35x80 | 47 | 4,3 | 68208035080 | |
| | 6800 | 40x60 | 47 | 4,0 | 68208040060 | |
| | 10000 | 35x100 | 32 | 5,7 | 10308035100 | |
| | 10000 | 45x60 | 32 | 4,9 | 10308045060 | |
| | 12000 | 40x80 | 27 | 6,0 | 12308040080 | |
| | 12000 | 45x80 | 27 | 6,0 | 12308045080 | |
| | 15000 | 40x100 | 21 | 7,3 | 15308040100 | |
| | 18000 | 45x100 | 18 | 8,0 | 18308045100 | |
| | 100 | 1000 | 25x30 | 159 | 1,3 | 10210025030 |
| | | 1200 | 25x35 | 133 | 1,5 | 12210025035 |
| 1500 | | 25x40 | 106 | 1,8 | 15210025040 | |
| 1500 | | 30x30 | 106 | 1,8 | 15210030030 | |
| 1800 | | 25x45 | 88 | 2,1 | 18210025045 | |
| 1800 | | 25x50 | 88 | 2,2 | 18210025050 | |
| 1800 | | 35x30 | 88 | 2,2 | 18210035030 | |
| 2200 | | 30x40 | 72 | 2,4 | 22210030040 | |
| 2200 | | 30x45 | 72 | 2,5 | 22210030045 | |
| 2200 | | 35x35 | 72 | 2,5 | 22210035035 | |
| 2700 | | 30x50 | 59 | 2,9 | 27210030050 | |
| 2700 | | 35x40 | 59 | 2,9 | 27210035040 | |
| 3300 | | 35x45 | 48 | 3,4 | 33210035045 | |
| 3900 | | 30x70 | 41 | 4,0 | 39210030070 | |
| 3900 | | 35x50 | 41 | 3,8 | 39210035050 | |
| 4700 | | 35x60 | 34 | 4,5 | 47210035060 | |
| 4700 | | 40x50 | 34 | 4,4 | 47210040050 | |
| 5600 | | 35x80 | 28 | 5,5 | 56210035080 | |

| Rated voltage U_R [V] | Rated cap. C_R [µF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code GSH... | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|----------------------|-------------|
| 100 | 5600 | 40x60 | 28 | 5,1 | 56210040060 | |
| | 8200 | 35x100 | 19 | 7,3 | 82210035100 | |
| | 8200 | 40x80 | 19 | 7,0 | 82210040080 | |
| | 8200 | 45x60 | 19 | 6,2 | 82210045060 | |
| | 10000 | 45x80 | 16 | 7,7 | 10310045080 | |
| | 12000 | 40x100 | 13 | 9,2 | 12310040100 | |
| | 15000 | 45x100 | 11 | 10,3 | 15310045100 | |
| | 160 | 470 | 25x30 | 237 | 1,1 | 47116025030 |
| 560 | | 25x35 | 199 | 1,3 | 56116025035 | |
| 680 | | 25x40 | 164 | 1,5 | 68116025040 | |
| 680 | | 30x30 | 164 | 1,4 | 68116030030 | |
| 820 | | 25x45 | 136 | 1,6 | 82116025045 | |
| 820 | | 30x35 | 136 | 1,7 | 82116030035 | |
| 1000 | | 25x50 | 111 | 1,9 | 10216025050 | |
| 1000 | | 30x40 | 111 | 1,9 | 10216030040 | |
| 1000 | | 35x30 | 111 | 1,9 | 10216035030 | |
| 1200 | | 30x45 | 93 | 2,2 | 12216030045 | |
| 1200 | | 35x35 | 93 | 2,2 | 12216035035 | |
| 1500 | | 30x50 | 74 | 2,6 | 15216030050 | |
| 1500 | | 35x40 | 74 | 2,6 | 15216035040 | |
| 1800 | | 35x45 | 62 | 3,0 | 18216035045 | |
| 1800 | | 35x50 | 62 | 3,1 | 18216035050 | |
| 2200 | | 30x70 | 51 | 3,6 | 22216030070 | |
| 2200 | | 35x60 | 51 | 3,7 | 22216035060 | |
| 2700 | | 40x50 | 41 | 4,0 | 27216040050 | |
| 3300 | | 35x80 | 34 | 5,0 | 33216035080 | |
| 3300 | | 40x60 | 34 | 4,7 | 33216040060 | |
| 3900 | | 35x100 | 29 | 6,2 | 39216035100 | |
| 3900 | | 45x60 | 29 | 5,2 | 39216045060 | |
| 4700 | | 40x80 | 24 | 6,3 | 47216040080 | |
| 5600 | | 40x100 | 20 | 7,5 | 56216040100 | |
| 5600 | | 45x80 | 20 | 6,9 | 56216045080 | |
| 6800 | | 45x100 | 16 | 8,3 | 68216045100 | |
| 200 | | 330 | 25x30 | 290 | 1,0 | 33125025030 |
| | | 390 | 25x35 | 245 | 1,1 | 39125025035 |
| | 470 | 25x40 | 203 | 1,3 | 47125025040 | |
| | 470 | 30x30 | 203 | 1,3 | 47125030030 | |
| | 560 | 25x45 | 171 | 1,5 | 56125025045 | |
| | 560 | 30x35 | 171 | 1,5 | 56125030035 | |
| | 560 | 35x30 | 171 | 1,6 | 56125035030 | |
| | 680 | 25x50 | 141 | 1,7 | 68125025050 | |
| | 680 | 30x40 | 141 | 1,7 | 68125030040 | |
| | 820 | 30x45 | 117 | 2,0 | 82125030045 | |
| | 820 | 30x50 | 117 | 2,1 | 82125030050 | |
| | 820 | 35x35 | 117 | 2,0 | 82125035035 | |
| | 1000 | 35x40 | 96 | 2,3 | 10225035040 | |
| | 1200 | 35x45 | 80 | 2,6 | 12225035045 | |
| | 1200 | 35x50 | 80 | 2,7 | 12225035050 | |
| | 1500 | 30x70 | 64 | 3,2 | 15225030070 | |
| | 1500 | 35x60 | 64 | 3,3 | 15225035060 | |

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105°C

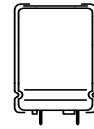


GSH

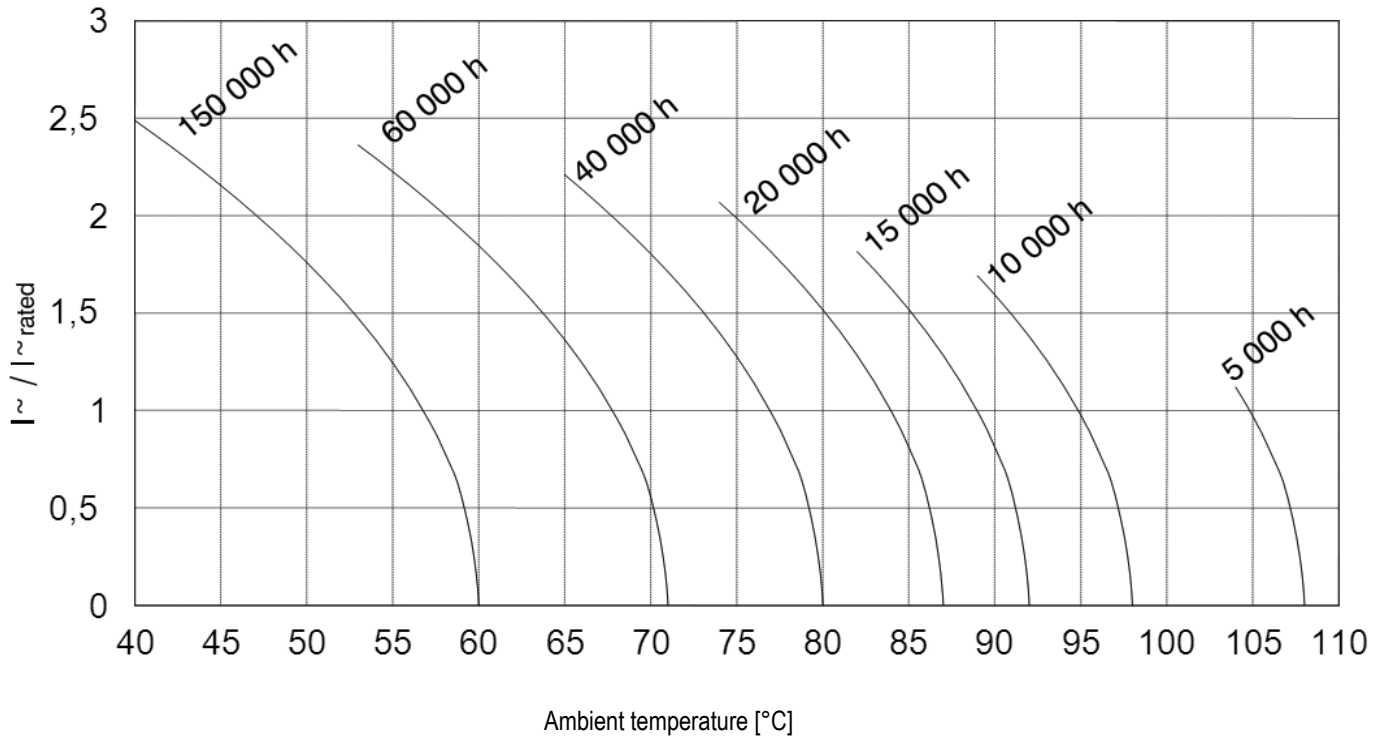
| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code GSH... |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|----------------------|
| 250 | 1800 | 35x80 | 53 | 4,0 | 18225035080 |
| | 1800 | 40x50 | 53 | 3,5 | 18225040050 |
| | 1800 | 40x60 | 53 | 3,8 | 18225040060 |
| | 2700 | 35x100 | 35 | 5,4 | 27225035100 |
| | 2700 | 40x80 | 35 | 5,2 | 27225040080 |
| | 2700 | 45x60 | 35 | 4,6 | 27225045060 |
| | 3300 | 40x100 | 29 | 6,3 | 33225040100 |
| | 3300 | 45x80 | 29 | 5,7 | 33225045080 |
| | 4700 | 45x100 | 20 | 7,4 | 47225045100 |
| 350 | 180 | 25x30 | 531 | 0,7 | 18135025030 |
| | 220 | 25x35 | 434 | 0,9 | 22135025035 |
| | 270 | 25x40 | 354 | 1,0 | 27135025040 |
| | 270 | 30x30 | 354 | 1,0 | 27135030030 |
| | 330 | 25x45 | 290 | 1,2 | 33135025045 |
| | 330 | 30x35 | 290 | 1,1 | 33135030035 |
| | 330 | 35x30 | 290 | 1,2 | 33135035030 |
| | 390 | 25x50 | 245 | 1,3 | 39135025050 |
| | 390 | 30x40 | 245 | 1,3 | 39135030040 |
| | 470 | 30x45 | 203 | 1,5 | 47135030045 |
| | 470 | 35x35 | 203 | 1,5 | 47135035035 |
| | 560 | 30x50 | 171 | 1,7 | 56135030050 |
| | 560 | 35x40 | 171 | 1,7 | 56135035040 |
| | 560 | 35x45 | 171 | 1,8 | 56135035045 |
| | 680 | 35x50 | 141 | 2,1 | 68135035050 |
| | 820 | 30x70 | 117 | 2,3 | 82135030070 |
| | 820 | 35x60 | 117 | 2,4 | 82135035060 |
| | 820 | 40x50 | 117 | 2,4 | 82135040050 |
| | 1200 | 35x80 | 80 | 3,3 | 12235035080 |
| | 1200 | 40x60 | 80 | 3,1 | 12235040060 |
| 1500 | 35x100 | 64 | 4,0 | 15235035100 | |
| 1500 | 45x60 | 64 | 3,4 | 15235045060 | |
| 1800 | 40x80 | 53 | 4,2 | 18235040080 | |
| 1800 | 40x100 | 53 | 4,6 | 18235040100 | |
| 1800 | 45x80 | 53 | 4,2 | 18235045080 | |
| 2700 | 45x100 | 35 | 5,6 | 27235045100 | |
| 400 | 150 | 25x30 | 849 | 0,6 | 15140025030 |
| | 180 | 25x35 | 708 | 0,7 | 18140025035 |
| | 220 | 25x40 | 579 | 0,8 | 22140025040 |
| | 220 | 30x30 | 579 | 0,8 | 22140030030 |
| | 270 | 25x45 | 472 | 0,9 | 27140025045 |
| | 270 | 25x50 | 472 | 0,9 | 27140025050 |
| | 270 | 30x35 | 472 | 0,9 | 27140030035 |
| | 270 | 35x30 | 472 | 0,9 | 27140035030 |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code GSH... | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|----------------------|-------------|
| 400 | 330 | 30x40 | 386 | 1,0 | 33140030040 | |
| | 330 | 35x35 | 386 | 1,1 | 33140035035 | |
| | 390 | 30x45 | 327 | 1,2 | 39140030045 | |
| | 390 | 30x50 | 327 | 1,2 | 39140030050 | |
| | 470 | 35x45 | 271 | 1,4 | 47140035045 | |
| | 560 | 30x70 | 227 | 1,7 | 56140030070 | |
| | 560 | 35x50 | 227 | 1,6 | 56140035050 | |
| | 680 | 35x60 | 187 | 1,9 | 68140035060 | |
| | 680 | 40x50 | 187 | 1,9 | 68140040050 | |
| | 820 | 35x80 | 155 | 2,3 | 82140035080 | |
| | 820 | 40x60 | 155 | 2,2 | 82140040060 | |
| | 1200 | 35x100 | 106 | 3,1 | 12240035100 | |
| | 1200 | 40x80 | 106 | 3,0 | 12240040080 | |
| | 1200 | 45x60 | 106 | 2,7 | 12240045060 | |
| | 1500 | 40x100 | 85 | 3,6 | 15240040100 | |
| | 1500 | 45x80 | 85 | 3,3 | 15240045080 | |
| | 2200 | 45x100 | 58 | 4,4 | 22240045100 | |
| | 450 | 120 | 25x30 | 929 | 0,6 | 12145025030 |
| | | 150 | 25x35 | 743 | 0,7 | 15145025035 |
| 150 | | 25x40 | 743 | 0,7 | 15145025040 | |
| 180 | | 25x45 | 619 | 0,8 | 18145025045 | |
| 180 | | 30x30 | 619 | 0,7 | 18145030030 | |
| 180 | | 30x35 | 619 | 0,8 | 18145030035 | |
| 220 | | 25x50 | 507 | 0,9 | 22145025050 | |
| 220 | | 30x40 | 507 | 0,9 | 22145030040 | |
| 220 | | 35x30 | 507 | 0,9 | 22145035030 | |
| 270 | | 30x45 | 413 | 1,0 | 27145030045 | |
| 270 | | 35x35 | 413 | 1,1 | 27145035035 | |
| 330 | | 30x50 | 338 | 1,2 | 33145030050 | |
| 330 | | 35x40 | 338 | 1,2 | 33145035040 | |
| 390 | | 35x45 | 286 | 1,4 | 39145035045 | |
| 470 | | 30x70 | 237 | 1,6 | 47145030070 | |
| 470 | | 35x50 | 237 | 1,6 | 47145035050 | |
| 560 | | 35x60 | 199 | 1,9 | 56145035060 | |
| 560 | | 40x50 | 199 | 1,8 | 56145040050 | |
| 680 | | 35x80 | 164 | 2,3 | 68145035080 | |
| 680 | | 40x60 | 164 | 2,1 | 68145040060 | |
| 820 | 35x100 | 136 | 2,8 | 82145035100 | | |
| 820 | 45x60 | 136 | 2,4 | 82145045060 | | |
| 1000 | 40x80 | 111 | 2,9 | 10245040080 | | |
| 1200 | 40x100 | 93 | 3,5 | 12245040100 | | |
| 1200 | 45x80 | 93 | 3,2 | 12245045080 | | |
| 1500 | 45x100 | 74 | 3,9 | 15245045100 | | |

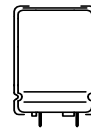
Stand: 12/2019



USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



125°C



GSG



DIN SERIES

HIGH RELIABILITY

LONG LIFETIME AT 125°C

PCB SOLDER PINS

■ FEATURES

- All internal contacts welded
- High temp 125°C
- High CV product
- High performance
- Low temperature -55°C

RoHS compliant
REACH compliant

■ APPLICATIONS

- HiFi
- Automotive
- Consumer
- Traction

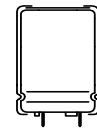
■ GENERAL SPECIFICATIONS

| Items | Characteristics |
|---|---|
| Rated capacitance range C_R | 1.200... 130.000 μ F |
| Capacitance tolerance | $\pm 20\%$ |
| Rated voltage range U | 16 ... 63 V |
| Surge voltage U_S | $U_S = 1,15 U_R$ |
| Max. reverse voltage | 2 V |
| Category temperature range | - 55°C ... + 125 °C |
| Leakage current I_L after 5 min @ U_R | $\leq 0,006 * C_R [\mu F] * U_R [V] + 6 \mu A [\mu A]$ |
| Useful life 2000 h @ 125 °C ; U_R ; I_R | Requirements $\Delta C/C \leq 30\%$ of initial value ; ESR $\leq 300\%$ of specified ; limit $I_L \leq$ specified limit |
| Endurance test 1000 h @ 125 °C , U_R | Requirements $\Delta C/C \leq 20\%$ of initial value ; ESR $\leq 130\%$ of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 55/125/56 |
| Voltage proof of the external insulation | ≥ 2500 V AC |
| Sectional specification | IEC 60384-4 |

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand: 12/2019





■ DRAWING AND MOUNTING PIN LAYOUT OF THE SERIES GSG CAPACITORS

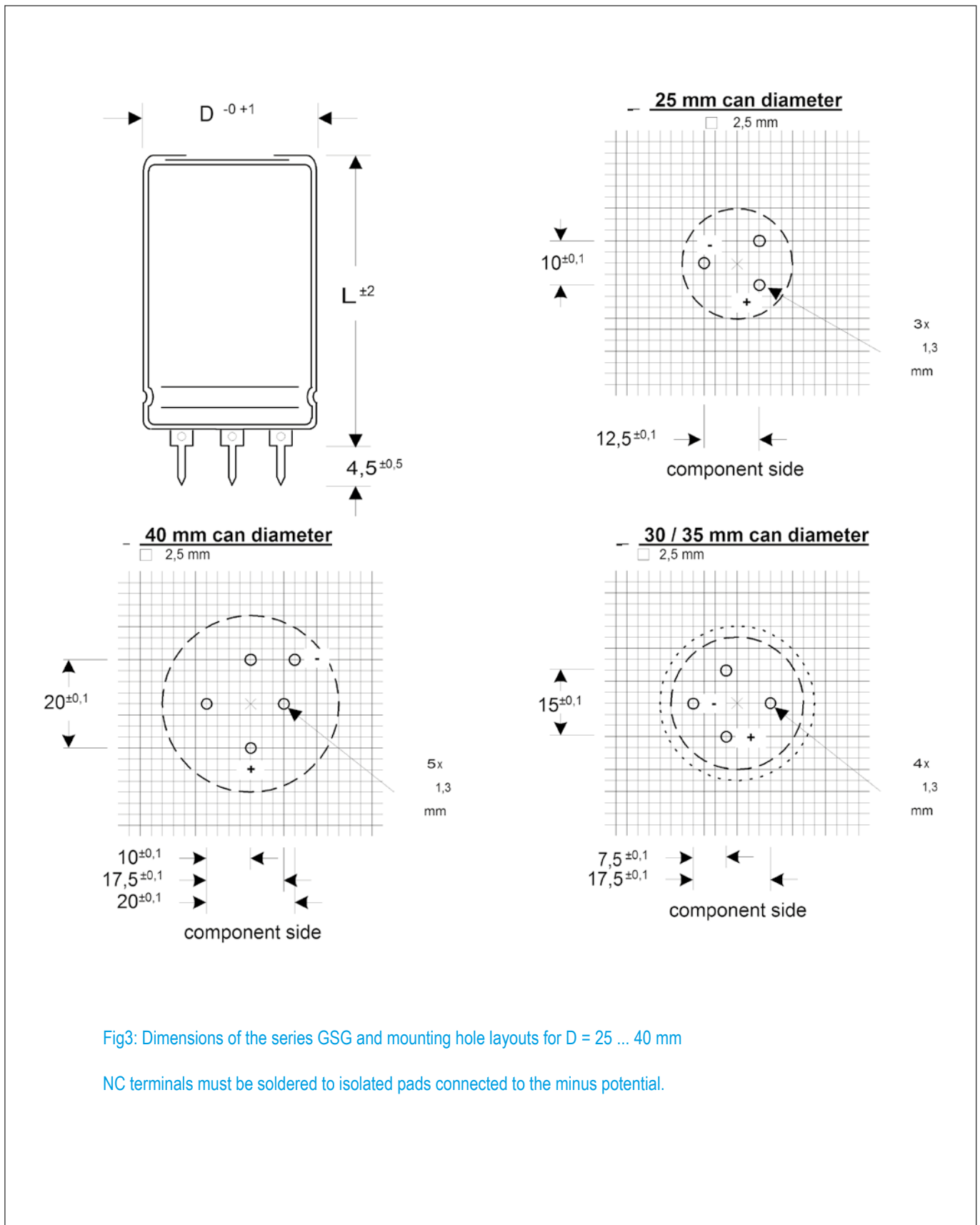
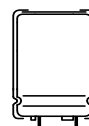


Fig3: Dimensions of the series GSG and mounting hole layouts for D = 25 ... 40 mm

NC terminals must be soldered to isolated pads connected to the minus potential.

125°C

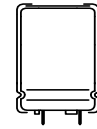


GSG

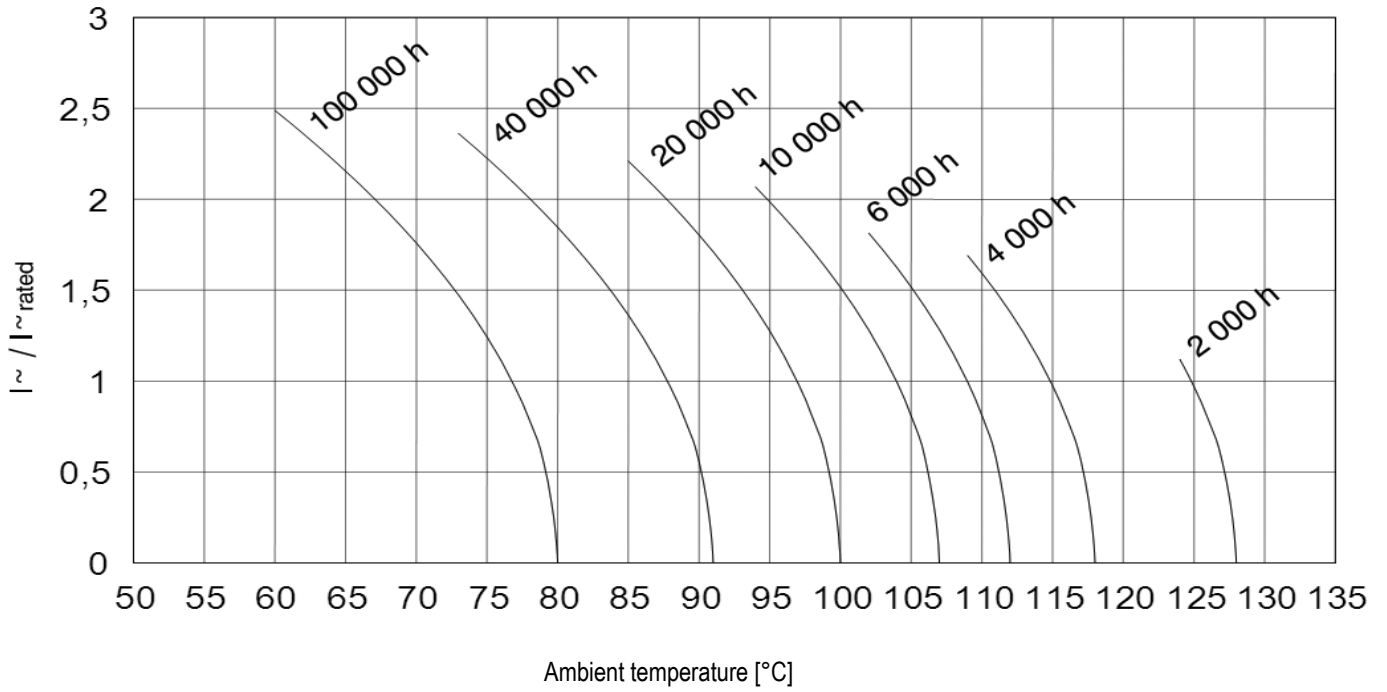
ELECTRICAL DATA AND ORDERING CODE FOR SERIES GSH

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 125°C [A] | Order code GSG... |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|----------------------|
| 16 | 10000 | 25x30 | 40 | 2,7 | 10301625030 |
| | 15000 | 30x30 | 27 | 3,6 | 15301630030 |
| | 18000 | 25x50 | 22 | 4,3 | 18301625050 |
| | 18000 | 35x30 | 22 | 4,3 | 18301635030 |
| | 27000 | 30x50 | 15 | 5,8 | 27301630050 |
| | 39000 | 30x70 | 10 | 7,9 | 39301630070 |
| | 39000 | 35x50 | 10 | 7,6 | 39301635050 |
| | 47000 | 40x50 | 8 | 8,8 | 47301640050 |
| | 82000 | 35x80 | 5 | 14,6 | 82316350100 |
| | 82000 | 40x80 | 5 | 13,9 | 82301640080 |
| | 100000 | 45x80 | 4 | 15,4 | 10401645080 |
| | 120000 | 40x100 | 4 | 16,9 | 12401640100 |
| | 130000 | 45x100 | 4 | 17,5 | 13401645100 |
| 25 | 6800 | 25x30 | 47 | 2,5 | 68202525030 |
| | 10000 | 30x30 | 32 | 3,3 | 10302530030 |
| | 15000 | 25x50 | 21 | 4,4 | 15302525050 |
| | 15000 | 35x30 | 21 | 4,4 | 15302535030 |
| | 18000 | 30x50 | 18 | 5,3 | 18302530050 |
| | 27000 | 30x70 | 12 | 7,4 | 27302530070 |
| | 27000 | 35x50 | 12 | 7,1 | 27302535050 |
| | 39000 | 40x50 | 8 | 9,0 | 39302540050 |
| | 47000 | 35x80 | 7 | 11,3 | 47302535080 |
| | 56000 | 45x80 | 6 | 12,9 | 56302545080 |
| | 68000 | 40x80 | 5 | 14,2 | 68302540080 |
| | 68000 | 40x100 | 5 | 15,5 | 68302540100 |
| | 100000 | 45x100 | 3 | 18,8 | 10402545100 |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 125°C [A] | Order code GSG... |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|----------------------|
| 40 | 2700 | 25x30 | 71 | 2,0 | 27204025030 |
| | 3900 | 30x30 | 49 | 2,7 | 39204030030 |
| | 4700 | 25x50 | 41 | 3,2 | 47204025050 |
| | 6800 | 35x30 | 28 | 4,0 | 68204035030 |
| | 8200 | 30x50 | 23 | 4,7 | 82204030050 |
| | 10000 | 35x50 | 19 | 5,7 | 10304035050 |
| | 12000 | 30x70 | 16 | 6,5 | 12304030070 |
| | 15000 | 40x50 | 13 | 7,4 | 15304040050 |
| | 18000 | 35x80 | 11 | 9,3 | 18304035080 |
| | 22000 | 40x80 | 9 | 10,8 | 22304040080 |
| | 27000 | 45x80 | 7 | 13,2 | 27304045080 |
| | 27000 | 40x100 | 7 | 13,1 | 27304040100 |
| | 39000 | 45x100 | 5 | 16,8 | 39304045100 |
| | 63 | 1800 | 25x30 | 80 | 1,9 |
| 2700 | | 30x30 | 53 | 2,6 | 27206330030 |
| 3900 | | 25x50 | 37 | 3,4 | 39206325050 |
| 3900 | | 35x30 | 37 | 3,5 | 39206335030 |
| 5600 | | 30x50 | 26 | 4,5 | 56206330050 |
| 6800 | | 35x50 | 21 | 5,5 | 68206335050 |
| 8200 | | 30x70 | 17 | 6,2 | 82206330070 |
| 10000 | | 40x50 | 14 | 7,0 | 10306340050 |
| 12000 | | 35x80 | 12 | 8,7 | 12306335080 |
| 18000 | | 40x80 | 8 | 11,2 | 18306340080 |
| 22000 | | 45x80 | 7 | 13,8 | 22306345080 |
| 22000 | | 40x100 | 7 | 13,6 | 22306340100 |
| 27000 | | 45x100 | 5 | 16,2 | 27306345100 |



■ USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT





■ FEATURES

- All contacts welded
- Soldering lug terminals
- High capacitance
- High performance
- Long useful life

RoHS compliant
REACH compliant

■ APPLICATIONS

- HiFi
- Consumer
- Industrial
- Telecommunications

■ GENERAL SPECIFICATIONS

| Items | Characteristics |
|--|---|
| Rated capacitance range C_R | 56... 330.000 μF |
| Capacitance tolerance | $\pm 20\%$ |
| Rated voltage range U | 16 ... 500 V |
| Surge voltage U_S | $U_R \leq 315 \text{ V}: U_S = 1,15 U_R$; $U_R > 315 \text{ V}: U_S = 1,10 U_R$ |
| Max. reverse voltage | 2 V |
| Category temperature range | - 40°C ... + 85 °C |
| Leakage current I_L after 5 min @ U_R | $\leq 0,008 * C_R [\mu\text{F}] * U_R [\text{V}] + 6 \mu\text{A} [\mu\text{A}]$ |
| Useful life 5000 h @ 85 °C ; U_R ; I_R | Requirements $\Delta C/C \leq 30 \%$ of initial value ; ESR $\leq 300 \%$ of specified ; limit $I_L \leq$ specified limit |
| Endurance test 2000 h @ 85 °C , U_R | Requirements $\Delta C/C \leq 20 \%$ of initial value ; ESR $\leq 130 \%$ of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 40/085/56 |
| Voltage proof of the external insulation | $\geq 2500 \text{ V AC}$ |
| Sectional specification | IEC 60384-4 |

Different voltages and capacitance combinations are available on request. Also in small lots.



■ DRAWINGS FOR SERIES LFA AND LFB

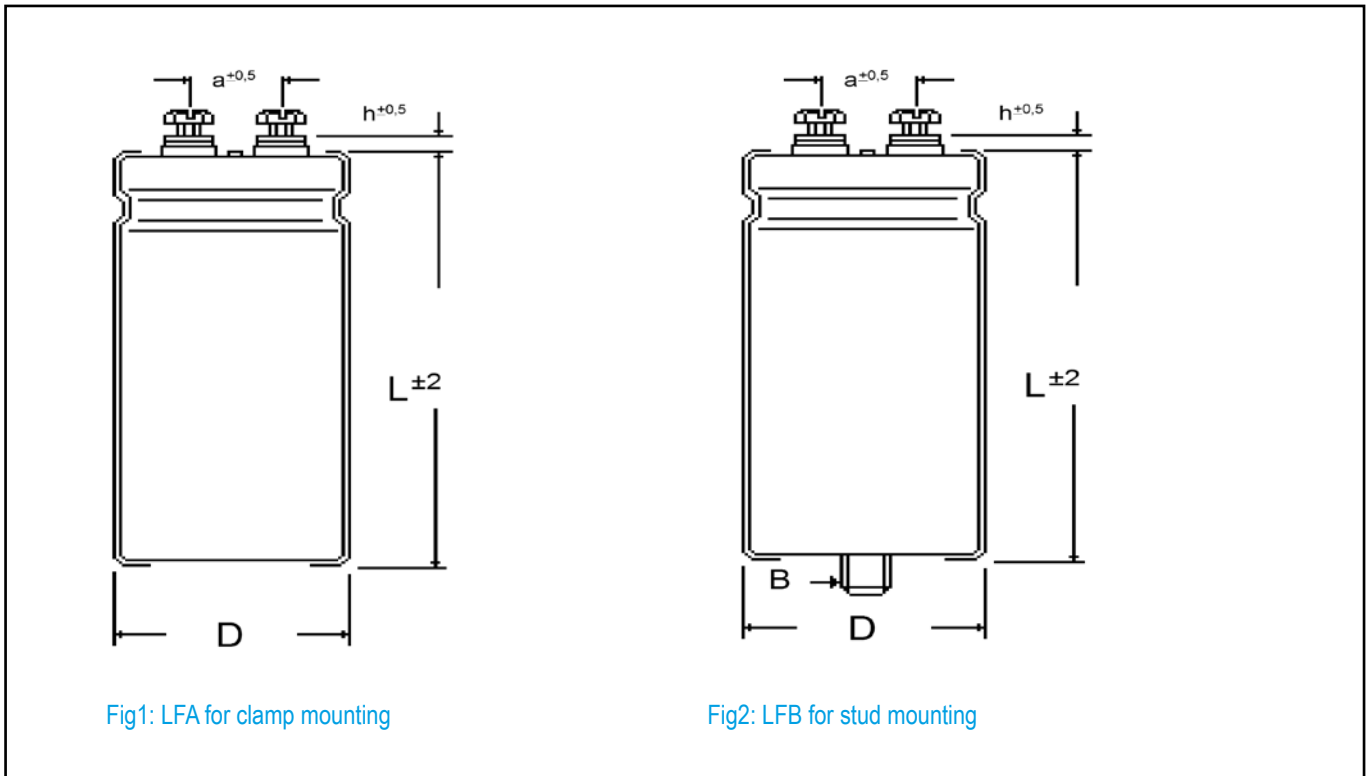


Fig1: LFA for clamp mounting

Fig2: LFB for stud mounting

■ DIMENSIONS AND MECHANICAL DATA

| D [mm] | h [mm] | a [mm] | B [mm] |
|--------|--------|--------|---------|
| 25 | 10 | 10 | M8 x 12 |
| 30 | 10 | 10 | M8 x 12 |
| 35 | 10 | 10 | M8 x 12 |
| 40 | 10 | 20 | M8 x 12 |
| 50 | 10 | 20 | M8 x 12 |

| | Thread | Max. tightening torque |
|----------|--------|------------------------|
| Mounting | M8 | 4 Nm |
| Mounting | M12 | 10Nm |

85°C



LF

ELECTRICAL DATA AND ORDERING CODE FOR SERIES LF

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|--------------------------|
| | | | | | Plain base: LFA... |
| | | | | | Stud mounting: LFB... |
| 16 | 22000 | 25x30 | 22 | 3,6 | 22301625030 |
| | 27000 | 25x35 | 18 | 4,2 | 27301625035 |
| | 39000 | 25x40 | 12 | 5,3 | 39301625040 |
| | 33000 | 30x30 | 14 | 4,8 | 33301630030 |
| | 39000 | 25x45 | 12 | 5,6 | 39301625045 |
| | 47000 | 25x50 | 10 | 6,4 | 47301625050 |
| | 39000 | 30x35 | 12 | 5,5 | 39301630035 |
| | 47000 | 35x30 | 10 | 6,4 | 47301635030 |
| | 56000 | 30x40 | 9 | 7,0 | 56301630040 |
| | 56000 | 35x35 | 9 | 7,4 | 56301635035 |
| | 56000 | 30x45 | 9 | 7,3 | 56301630045 |
| | 68000 | 30x50 | 7 | 8,4 | 68301630050 |
| | 68000 | 35x40 | 7 | 8,5 | 68301635040 |
| | 82000 | 35x45 | 6 | 9,7 | 82301635045 |
| | 100000 | 30x70 | 5 | 11,6 | 10401630070 |
| | 82000 | 35x50 | 6 | 10,1 | 82301635050 |
| | 120000 | 40x50 | 4 | 12,9 | 12401640050 |
| | 150000 | 35x80 | 3 | 16,4 | 15401635080 |
| | 120000 | 40x50 | 4 | 12,9 | 12401640050 |
| | 150000 | 40x60 | 3 | 15,4 | 15401640060 |
| | 180000 | 35x100 | 3 | 19,7 | 18401635100 |
| | 220000 | 40x80 | 2 | 20,8 | 22401640080 |
| | 180000 | 45x60 | 3 | 16,9 | 18401645060 |
| | 270000 | 45x80 | 2 | 23,1 | 27401645080 |
| | 270000 | 40x100 | 2 | 25,3 | 27401640100 |
| 330000 | 45x100 | 1 | 27,9 | 33401645100 | |
| 25 | 10000 | 25x30 | 45 | 2,5 | 10302525030 |
| | 12000 | 25x35 | 37 | 2,9 | 12302525035 |
| | 15000 | 25x40 | 30 | 3,4 | 15302525040 |
| | 15000 | 30x30 | 30 | 3,4 | 15302530030 |
| | 18000 | 25x45 | 25 | 3,9 | 18302525045 |
| | 18000 | 30x35 | 25 | 3,9 | 18302530035 |
| | 18000 | 25x50 | 25 | 4,1 | 18302525050 |
| | 22000 | 30x40 | 20 | 4,5 | 22302530040 |
| | 18000 | 35x30 | 25 | 4,1 | 18302535030 |
| | 27000 | 30x45 | 17 | 5,1 | 27302530045 |
| | 27000 | 30x50 | 17 | 5,4 | 27302530050 |
| | 22000 | 35x35 | 21 | 4,7 | 22302535035 |
| | 27000 | 35x40 | 17 | 5,4 | 27302535040 |
| | 33000 | 35x45 | 14 | 6,3 | 33302535045 |
| | 39000 | 30x70 | 12 | 7,4 | 39302530070 |
| | 39000 | 35x50 | 12 | 7,1 | 39302535050 |
| | 47000 | 35x60 | 10 | 8,3 | 47302535060 |
| | 56000 | 40x50 | 8 | 8,9 | 56302540050 |
| | 56000 | 35x80 | 8 | 10,2 | 56302535080 |
| | 58000 | 40x60 | 7 | 10,5 | 68302540060 |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|--------------------------|
| | | | | | Plain base: LFA... |
| | | | | | Stud mounting: LFB... |
| 25 | 82000 | 35x100 | 6 | 13,5 | 82302535100 |
| | 82000 | 45x60 | 6 | 11,6 | 82302545060 |
| | 120000 | 40x80 | 4 | 15,6 | 12402540080 |
| | 120000 | 40x100 | 4 | 17,1 | 12402540100 |
| | 120000 | 45x80 | 4 | 15,6 | 12402545080 |
| | 150000 | 45x100 | 3 | 19,1 | 15402545100 |
| | 5600 | 25x30 | 68 | 2,0 | 56204025030 |
| | 6800 | 25x35 | 56 | 2,4 | 68204025035 |
| | 8200 | 25x40 | 47 | 2,7 | 82204025040 |
| | 8200 | 30x30 | 47 | 2,7 | 82204030030 |
| 40 | 10000 | 25x45 | 38 | 3,2 | 10304025045 |
| | 10000 | 30x35 | 38 | 3,1 | 10304030035 |
| | 10000 | 25x50 | 38 | 3,3 | 10304025050 |
| | 12000 | 30x40 | 32 | 3,6 | 12304030040 |
| | 10000 | 35x30 | 38 | 3,3 | 10304035030 |
| | 15000 | 30x45 | 25 | 4,2 | 15304030045 |
| | 12000 | 35x35 | 32 | 3,8 | 12304035035 |
| | 15000 | 30x50 | 25 | 4,4 | 15304030050 |
| | 15000 | 35x40 | 25 | 4,5 | 15304035040 |
| | 18000 | 35x45 | 21 | 5,1 | 18304035045 |
| | 22000 | 35x50 | 17 | 5,8 | 22304035050 |
| | 22000 | 30x70 | 17 | 6,1 | 22304030070 |
| | 27000 | 35x60 | 14 | 6,9 | 27304035060 |
| | 27000 | 40x50 | 14 | 6,8 | 27304040050 |
| | 33000 | 35x80 | 12 | 8,6 | 33304035080 |
| | 33000 | 40x60 | 12 | 8,1 | 33304040060 |
| | 47000 | 35x100 | 8 | 11,3 | 47304035100 |
| | 47000 | 40x80 | 8 | 10,8 | 47304040080 |
| | 39000 | 45x60 | 10 | 8,8 | 39304045060 |
| | 56000 | 40x100 | 7 | 12,9 | 56304040100 |
| | 56000 | 45x80 | 7 | 11,7 | 56304045080 |
| | 82000 | 45x100 | 5 | 15,5 | 82304045100 |
| | 2700 | 25x30 | 106 | 1,6 | 27206325030 |
| | 3300 | 25x35 | 87 | 1,9 | 33206325035 |
| | 3900 | 25x40 | 73 | 2,2 | 39206325040 |
| | 3900 | 30x30 | 73 | 2,1 | 39206330030 |
| | 4700 | 25x45 | 61 | 2,5 | 47206325045 |
| | 4700 | 30x35 | 61 | 2,5 | 47206330035 |
| | 5600 | 25x50 | 51 | 0,0 | 56206325050 |
| | 5600 | 30x40 | 51 | 2,8 | 56206330040 |
| 5600 | 35x30 | 51 | 2,9 | 56206335030 | |
| 6800 | 30x45 | 42 | 3,3 | 68206330045 | |
| 6800 | 35x35 | 42 | 3,3 | 68206335035 | |
| 8200 | 30x50 | 35 | 3,7 | 82206330050 | |
| 8200 | 35x45 | 35 | 4,0 | 82206335045 | |
| 12000 | 30x70 | 24 | 5,2 | 12306330070 | |

Stand: 12/2019

85°C



LF

| Rated voltage U_R [V] | Rated cap. C_R [µF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|--------------------------|-------------|
| | | | | | Plain base: LFA... | |
| | | | | | Stud mounting: LFB... | |
| 63 | 12000 | 35x60 | 24 | 5,3 | 12306335060 | |
| | 15000 | 40x50 | 19 | 5,9 | 15306340050 | |
| | 18000 | 35x80 | 16 | 7,3 | 18306335080 | |
| | 18000 | 40x60 | 16 | 6,9 | 18306340060 | |
| | 22000 | 45x60 | 13 | 7,6 | 22306345060 | |
| | 22000 | 35x100 | 13 | 8,9 | 22306335100 | |
| | 22000 | 40x80 | 13 | 8,5 | 22306340080 | |
| | 27000 | 40x100 | 11 | 10,3 | 27306340100 | |
| | 27000 | 45x80 | 11 | 9,4 | 27306345080 | |
| | 39000 | 45x100 | 7 | 12,4 | 39306345100 | |
| 80 | 1800 | 25x30 | 177 | 1,3 | 18208025030 | |
| | 1800 | 25x35 | 177 | 1,3 | 18208025035 | |
| | 2700 | 25x40 | 118 | 1,7 | 27208025040 | |
| | 2700 | 30x30 | 118 | 1,7 | 27208030030 | |
| | 3300 | 25x45 | 97 | 2,0 | 33208025045 | |
| | 3900 | 25x50 | 82 | 2,3 | 39208025050 | |
| | 3300 | 30x35 | 97 | 2,0 | 33208030035 | |
| | 3900 | 35x30 | 82 | 2,3 | 39208035030 | |
| | 3900 | 30x40 | 82 | 2,3 | 39208030040 | |
| | 4700 | 30x45 | 68 | 2,6 | 47208030045 | |
| | 4700 | 35x35 | 68 | 2,6 | 47208035035 | |
| | 5600 | 30x50 | 57 | 2,9 | 56208030050 | |
| | 5600 | 35x40 | 57 | 3,0 | 56208035040 | |
| | 6800 | 35x45 | 47 | 3,4 | 68208035045 | |
| | 6800 | 35x50 | 47 | 3,6 | 68208035050 | |
| | 8200 | 30x70 | 39 | 4,1 | 82208030070 | |
| | 10000 | 35x60 | 32 | 4,6 | 10308035060 | |
| | 10000 | 40x50 | 32 | 4,6 | 10308040050 | |
| | 12000 | 35x80 | 27 | 5,7 | 12308035080 | |
| | 12000 | 40x60 | 27 | 5,3 | 12308040060 | |
| | 18000 | 35x100 | 18 | 7,6 | 18308035100 | |
| | 15000 | 45x60 | 21 | 6,0 | 15308045060 | |
| | 18000 | 40x80 | 18 | 7,3 | 18308040080 | |
| | 22000 | 45x80 | 14 | 8,1 | 22308045080 | |
| | 22000 | 40x100 | 14 | 8,8 | 22308040100 | |
| | 27000 | 45x100 | 12 | 9,8 | 27308045100 | |
| | 100 | 1200 | 25x30 | 133 | 1,5 | 12210025030 |
| | | 1500 | 25x35 | 106 | 1,7 | 15210025035 |
| 1800 | | 25x40 | 88 | 2,0 | 18210025040 | |
| 1800 | | 30x30 | 88 | 2,0 | 18210030030 | |
| 2200 | | 25x45 | 72 | 2,3 | 22210025045 | |
| 2200 | | 25x50 | 72 | 2,4 | 22210025050 | |
| 2200 | | 35x30 | 72 | 2,4 | 22210035030 | |
| 2700 | | 30x40 | 59 | 2,7 | 27210030040 | |
| 2700 | | 30x45 | 59 | 2,8 | 27210030045 | |
| 2700 | | 35x35 | 59 | 2,8 | 27210035035 | |
| 3300 | | 30x50 | 48 | 3,2 | 33210030050 | |
| 3300 | | 35x40 | 48 | 3,2 | 33210035040 | |
| 3900 | | 35x45 | 41 | 3,7 | 39210035045 | |
| 5600 | | 30x70 | 28 | 4,7 | 56210030070 | |

| Rated voltage U_R [V] | Rated cap. C_R [µF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|--------------------------|-------------|
| | | | | | Plain base: LFA... | |
| | | | | | Stud mounting: LFB... | |
| 100 | 4700 | 35x50 | 34 | 4,2 | 47210035050 | |
| | 5600 | 35x60 | 28 | 4,9 | 56210035060 | |
| | 5600 | 40x50 | 28 | 4,8 | 56210040050 | |
| | 6800 | 35x80 | 23 | 6,1 | 68210035080 | |
| | 6800 | 40x60 | 23 | 5,7 | 68210040060 | |
| | 10000 | 35x100 | 16 | 8,1 | 10310035100 | |
| | 12000 | 40x80 | 13 | 8,4 | 12310040080 | |
| | 10000 | 45x60 | 16 | 6,9 | 10310045060 | |
| | 12000 | 45x80 | 13 | 8,4 | 12310045080 | |
| | 15000 | 40x100 | 11 | 10,3 | 15310040100 | |
| | 18000 | 45x100 | 9 | 11,3 | 18310045100 | |
| | 160 | 470 | 25x30 | 237 | 1,1 | 47116025030 |
| | | 560 | 25x35 | 199 | 1,3 | 56116025035 |
| | | 680 | 25x40 | 164 | 1,5 | 68116025040 |
| 680 | | 30x30 | 164 | 1,4 | 68116030030 | |
| 820 | | 25x45 | 136 | 1,7 | 82116025045 | |
| 820 | | 30x35 | 136 | 1,7 | 82116030035 | |
| 1000 | | 25x50 | 111 | 1,9 | 10216025050 | |
| 1000 | | 30x40 | 111 | 1,9 | 10216030040 | |
| 1000 | | 35x30 | 111 | 1,9 | 10216035030 | |
| 1200 | | 30x45 | 93 | 2,2 | 12216030045 | |
| 1200 | | 35x35 | 93 | 2,2 | 12216035035 | |
| 1500 | | 30x50 | 74 | 2,6 | 15216030050 | |
| 1500 | | 35x40 | 74 | 2,6 | 15216035040 | |
| 1800 | | 35x45 | 62 | 3,0 | 18216035045 | |
| 1800 | | 35x50 | 62 | 3,1 | 18216035050 | |
| 2200 | | 30x70 | 51 | 3,6 | 22216030070 | |
| 2200 | | 35x60 | 51 | 3,7 | 22216035060 | |
| 2700 | | 40x50 | 41 | 4,0 | 27216040050 | |
| 3300 | | 35x80 | 34 | 5,0 | 33216035080 | |
| 3300 | | 40x60 | 34 | 4,7 | 33216040060 | |
| 3900 | | 35x100 | 29 | 6,0 | 39216035100 | |
| 3900 | | 45x60 | 29 | 5,2 | 39216045060 | |
| 4700 | | 40x80 | 24 | 6,3 | 47216040080 | |
| 5600 | | 40x100 | 20 | 7,5 | 56216040100 | |
| 5600 | | 45x80 | 20 | 6,9 | 56216045080 | |
| 6800 | | 45x100 | 16 | 8,3 | 68216045100 | |
| 200 | | 470 | 25x30 | 203 | 1,2 | 47120025030 |
| | | 560 | 25x35 | 171 | 1,4 | 56120025035 |
| | | 680 | 25x40 | 141 | 1,6 | 68120025040 |
| | | 680 | 30x30 | 141 | 1,6 | 68120030030 |
| | | 820 | 25x45 | 117 | 1,8 | 82120025045 |
| | | 820 | 30x35 | 117 | 1,8 | 82120030035 |
| | | 1000 | 35x30 | 96 | 2,1 | 10220035030 |
| | | 1000 | 25x50 | 96 | 2,1 | 10220025050 |
| | 1000 | 30x40 | 96 | 2,1 | 10220030040 | |
| | 1200 | 30x45 | 80 | 2,4 | 12220030045 | |
| | 1500 | 30x50 | 64 | 2,8 | 15220030050 | |
| | 1200 | 35x35 | 80 | 2,4 | 12220035035 | |
| | 1500 | 35x40 | 64 | 2,8 | 15220035040 | |

Stand: 12/2019

85°C



LF

| Rated voltage U_R [V] | Rated cap. C_R [µF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|--------------------------|
| | | | | | Plain base: LFA... |
| | | | | | Stud mounting: LFB... |
| 200 | 1800 | 35x45 | 53 | 3,2 | 18220035045 |
| | 1800 | 35x50 | 53 | 3,3 | 18220035050 |
| | 2200 | 30x70 | 43 | 3,8 | 22220030070 |
| | 2200 | 35x60 | 43 | 4,0 | 22220035060 |
| | 3300 | 35x80 | 29 | 5,4 | 33220035080 |
| | 2700 | 40x50 | 35 | 4,3 | 27220040050 |
| | 3300 | 40x60 | 29 | 5,1 | 33220040060 |
| | 3900 | 35x100 | 24 | 6,5 | 39220035100 |
| | 4700 | 40x80 | 20 | 6,8 | 47220040080 |
| | 3900 | 45x60 | 24 | 5,6 | 39220045060 |
| | 5600 | 40x100 | 17 | 8,1 | 56220040100 |
| | 5600 | 45x80 | 17 | 7,4 | 56220045080 |
| | 6800 | 45x100 | 14 | 9,0 | 68220045100 |
| | 350 | 180 | 25x30 | 531 | 0,7 |
| 220 | | 25x35 | 434 | 0,9 | 22135025035 |
| 270 | | 25x40 | 354 | 1,0 | 27135025040 |
| 270 | | 30x30 | 354 | 1,0 | 27135030030 |
| 330 | | 25x45 | 290 | 1,2 | 33135025045 |
| 330 | | 30x35 | 290 | 1,1 | 33135030035 |
| 390 | | 35x30 | 245 | 1,3 | 39135035030 |
| 390 | | 25x50 | 245 | 1,3 | 39135025050 |
| 390 | | 30x40 | 245 | 1,3 | 39135030040 |
| 470 | | 30x45 | 203 | 1,5 | 47135030045 |
| 470 | | 35x35 | 203 | 1,5 | 47135035035 |
| 560 | | 30x50 | 171 | 1,7 | 56135030050 |
| 560 | | 35x40 | 171 | 1,7 | 56135035040 |
| 560 | | 35x45 | 171 | 1,8 | 56135035045 |
| 680 | | 35x50 | 141 | 2,1 | 68135035050 |
| 820 | | 30x70 | 117 | 2,3 | 82135030070 |
| 820 | | 35x60 | 117 | 2,4 | 82135035060 |
| 1000 | | 40x50 | 96 | 2,6 | 10235040050 |
| 1200 | | 35x80 | 80 | 3,3 | 12235035080 |
| 1200 | | 40x60 | 80 | 3,1 | 12235040060 |
| 1500 | | 35x100 | 64 | 4,0 | 15235035100 |
| 1500 | | 45x60 | 64 | 3,4 | 15235045060 |
| 1800 | | 40x80 | 53 | 4,2 | 18235040080 |
| 1800 | | 40x100 | 53 | 4,6 | 18235040100 |
| 2200 | | 45x80 | 43 | 4,7 | 22235045080 |
| 2700 | 45x100 | 35 | 5,6 | 27235045100 | |
| 400 | 180 | 25x30 | 708 | 0,6 | 18140025030 |
| | 180 | 22x40 | 708 | 0,7 | 18140022040 |
| | 220 | 25x35 | 579 | 0,7 | 22140025035 |
| | 270 | 25x40 | 472 | 0,9 | 27140025040 |
| | 270 | 30x30 | 472 | 0,8 | 27140030030 |
| | 330 | 25x45 | 386 | 1,0 | 33140025045 |
| | 330 | 25x50 | 386 | 1,0 | 33140025050 |
| | 330 | 30x35 | 386 | 1,0 | 33140030035 |
| | 390 | 35x30 | 327 | 1,1 | 39140035030 |
| | 390 | 30x40 | 327 | 1,1 | 39140030040 |
| | 470 | 35x35 | 271 | 1,3 | 47140035035 |

| Rated voltage U_R [V] | Rated cap. C_R [µF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 85°C [A] | Order code | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|--|--------------------------|-------------|
| | | | | | Plain base: LFA... | |
| | | | | | Stud mounting: LFB... | |
| 400 | 470 | 30x45 | 271 | 1,3 | 47140030045 | |
| | 560 | 30x50 | 227 | 1,5 | 56140030050 | |
| | 560 | 35x40 | 227 | 1,5 | 56140035040 | |
| | 560 | 35x45 | 227 | 1,6 | 56140035045 | |
| | 680 | 30x70 | 187 | 1,8 | 68140030070 | |
| | 680 | 35x60 | 187 | 1,8 | 68140035060 | |
| | 820 | 35x50 | 155 | 2,0 | 82140035050 | |
| | 820 | 35x60 | 155 | 2,1 | 82140035060 | |
| | 820 | 40x50 | 155 | 2,1 | 82140040050 | |
| | 1200 | 35x80 | 106 | 2,8 | 12240035080 | |
| | 1200 | 40x60 | 106 | 2,7 | 12240040060 | |
| | 1500 | 35x100 | 85 | 3,5 | 15240035100 | |
| | 1500 | 40x80 | 85 | 3,3 | 15240040080 | |
| | 1800 | 45x60 | 71 | 3,3 | 18240045060 | |
| | 1800 | 40x100 | 71 | 4,0 | 18240040100 | |
| | 1800 | 45x80 | 71 | 3,6 | 18240045080 | |
| | 2700 | 45x100 | 47 | 4,9 | 27240045100 | |
| | 450 | 120 | 25x30 | 929 | 0,6 | 12145025030 |
| 150 | | 25x35 | 743 | 0,7 | 15145025035 | |
| 180 | | 25x40 | 619 | 0,8 | 18145025040 | |
| 220 | | 25x45 | 507 | 0,9 | 22145025045 | |
| 180 | | 30x30 | 619 | 0,7 | 18145030030 | |
| 220 | | 30x35 | 507 | 0,9 | 22145030035 | |
| 220 | | 25x50 | 507 | 0,9 | 22145025050 | |
| 270 | | 30x40 | 413 | 1,0 | 27145030040 | |
| 220 | | 35x30 | 507 | 0,9 | 22145035030 | |
| 270 | | 30x45 | 413 | 1,0 | 27145030045 | |
| 270 | | 35x35 | 413 | 1,1 | 27145035035 | |
| 330 | | 30x50 | 338 | 1,2 | 33145030050 | |
| 390 | | 35x40 | 286 | 1,3 | 39145035040 | |
| 390 | | 35x45 | 286 | 1,4 | 39145035045 | |
| 560 | | 30x70 | 199 | 1,8 | 56145030070 | |
| 470 | | 35x50 | 237 | 1,6 | 47145035050 | |
| 560 | | 35x60 | 199 | 1,9 | 56145035060 | |
| 560 | | 40x50 | 199 | 1,8 | 56145040050 | |
| 820 | | 35x80 | 136 | 2,5 | 82145035080 | |
| 1200 | | 40x60 | 93 | 2,8 | 12245040060 | |
| 1000 | | 35x100 | 111 | 3,0 | 10245035100 | |
| 1000 | | 45x60 | 111 | 2,6 | 10245045060 | |
| 1200 | | 40x80 | 93 | 3,3 | 12245040080 | |
| 1500 | | 40x100 | 74 | 4,0 | 15245040100 | |
| 1200 | | 45x80 | 93 | 3,2 | 12245045080 | |
| 1800 | | 45x100 | 62 | 4,3 | 18245045100 | |
| 500 | | 120 | 25x30 | 796 | 0,6 | 12150025030 |
| | | 120 | 25x35 | 796 | 0,6 | 12150025035 |
| | 150 | 25x40 | 637 | 0,7 | 15150025040 | |
| | 180 | 25x45 | 531 | 0,9 | 18150025045 | |
| | 150 | 30x30 | 637 | 0,7 | 15150030030 | |
| | 180 | 30x35 | 531 | 0,8 | 18150030035 | |
| | 220 | 25x50 | 434 | 1,0 | 22150025050 | |

Stand: 12/2019

85°C

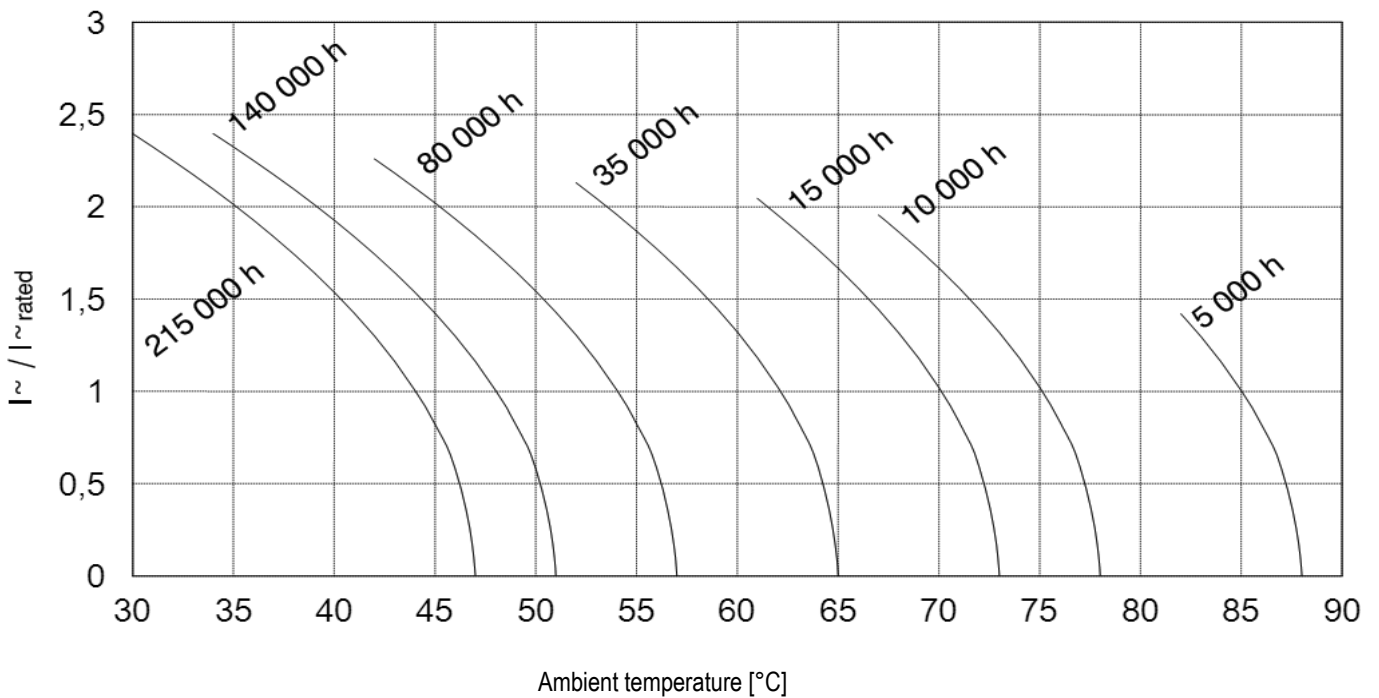


LF

| Rated voltage U_R [V] | Rated cap. C_R [μ F] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [m Ω] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------------|----------------------------|--|--|--------------------------|
| | | | | | Plain base: LFA... |
| | | | | | Stud mounting: LFB... |
| 500 | 220 | 30x40 | 434 | 1,0 | 22150030040 |
| | 180 | 35x30 | 531 | 0,9 | 18150035030 |
| | 270 | 30x45 | 354 | 1,1 | 27150030045 |
| | 270 | 35x35 | 354 | 1,1 | 27150035035 |
| | 270 | 30x50 | 354 | 1,2 | 27150030050 |
| | 270 | 35x40 | 354 | 1,2 | 27150035040 |
| | 390 | 35x45 | 245 | 1,5 | 39150035045 |
| | 470 | 30x70 | 203 | 1,8 | 47150030070 |
| | 390 | 35x50 | 245 | 1,6 | 39150035050 |

| Rated voltage U_R [V] | Rated cap. C_R [μ F] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [m Ω] | Ripple current IR~ 100 Hz, 85°C [A] | Order code |
|-------------------------------|-----------------------------------|----------------------------|--|--|--------------------------|
| | | | | | Plain base: LFA... |
| | | | | | Stud mounting: LFB... |
| 500 | 560 | 35x60 | 171 | 2,0 | 56150035060 |
| | 680 | 35x80 | 141 | 2,5 | 68150035080 |
| | 680 | 40x60 | 141 | 2,3 | 68150040060 |
| | 820 | 35x100 | 117 | 3,0 | 82150035100 |
| | 820 | 45x60 | 117 | 2,6 | 82150045060 |
| | 820 | 40x100 | 117 | 3,1 | 82150040100 |
| | 1200 | 40x80 | 80 | 3,4 | 12250040080 |
| | 1200 | 45x80 | 80 | 3,4 | 12250045080 |
| | 1500 | 45x100 | 64 | 4,2 | 15250045100 |

■ USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



Stand: 12/2019

105°C



LFH



ULTRA COMPACT DESIGN

PHOTOFLASH

SOLDER LUG PINS

■ FEATURES

- All contacts welded
- Soldering lug terminals
- High reliability
- Stud mounted

■ APPLICATIONS

- Laser
- Welding
- Tube amplifier
- Telecommunications

RoHS compliant
REACH compliant

■ GENERAL SPECIFICATIONS

| Items | Characteristics |
|---|---|
| Rated capacitance range C_R | 68... 150.000 μF |
| Capacitance tolerance | $\pm 20\%$ |
| Rated voltage range U | 16 ... 450 V |
| Surge voltage U_S | $U_R \leq 315 \text{ V}: U_S = 1,15 U_R$; $U_R > 315 \text{ V}: U_S = 1,10 U_R$ |
| Max. reverse voltage | 2 V |
| Category temperature range | - 40°C ... + 105 °C |
| Leakage current I_L after 5 min @ U_R | $\leq 0,008 * C_R [\mu\text{F}] * U_R [\text{V}] + 6 \mu\text{A} [\mu\text{A}]$ |
| Useful life 5000 h @ 105 °C ; U_R ; I_R | Requirements $\Delta C/C \leq 30 \%$ of initial value ; ESR $\leq 300 \%$ of specified ; limit $I_L \leq$ specified limit |
| Endurance test 2000 h @ 105 °C , U_R | Requirements $\Delta C/C \leq 20 \%$ of initial value ; ESR $\leq 130 \%$ of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 40/105/56 |
| Voltage proof of the external insulation | $\geq 2500 \text{ V AC}$ |
| Sectional specification | IEC 60384-4 |

Different voltages and capacitance combinations are available on request. Also in small lots.

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■ DRAWINGS FOR SERIES LFHA AND LFHB

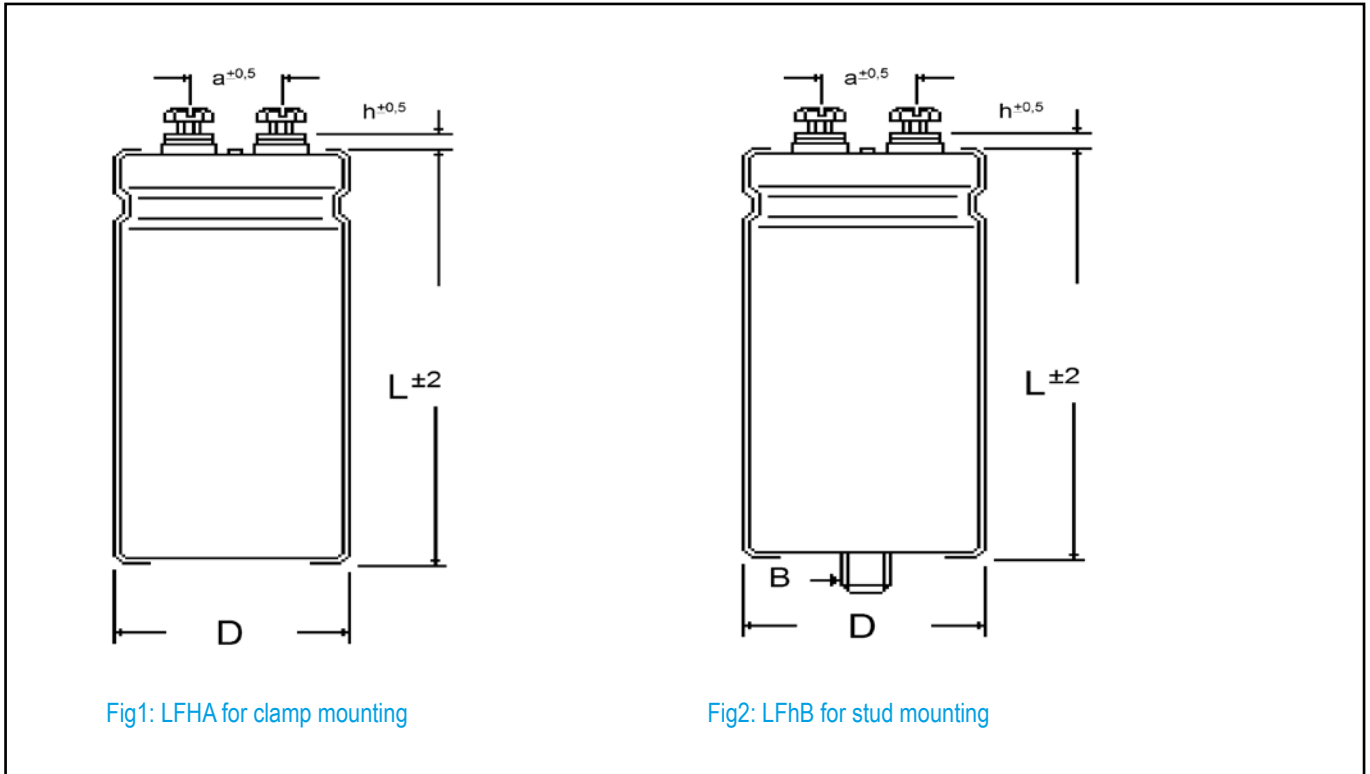


Fig1: LFHA for clamp mounting

Fig2: LFhB for stud mounting

■ DIMENSIONS AND MECHANICAL DATA

| D [mm] | h [mm] | a [mm] | B [mm] |
|--------|--------|--------|---------|
| 25 | 10 | 10 | M8 x 12 |
| 30 | 10 | 10 | M8 x 12 |
| 35 | 10 | 10 | M8 x 12 |
| 40 | 10 | 20 | M8 x 12 |
| 50 | 10 | 20 | M8 x 12 |

| | Thread | Max. tightening torque |
|----------|--------|------------------------|
| Mounting | M8 | 4 Nm |
| Mounting | M12 | 10Nm |

105°C



LFH

ELECTRICAL DATA AND ORDERING CODE FOR SERIES LF

| Rated voltage U_R [V] | Rated cap. C_R [µF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|---------------------------|
| | | | | | Plain base: LFHA... |
| | | | | | Stud mounting: LFHB... |
| 16 | 10000 | 25x30 | 48 | 2,4 | 10301625030 |
| | 12000 | 25x35 | 40 | 2,8 | 12301625035 |
| | 15000 | 25x40 | 32 | 3,3 | 15301625040 |
| | 15000 | 30x30 | 32 | 3,3 | 15301630030 |
| | 18000 | 25x45 | 27 | 3,8 | 18301625045 |
| | 18000 | 25x50 | 27 | 4,0 | 18301625050 |
| | 18000 | 30x35 | 27 | 3,8 | 18301630035 |
| | 18000 | 35x30 | 27 | 4,0 | 18301635030 |
| | 22000 | 30x40 | 22 | 4,4 | 22301630040 |
| | 22000 | 35x35 | 22 | 4,6 | 22301635035 |
| | 27000 | 30x45 | 18 | 5,1 | 27301630045 |
| | 27000 | 30x50 | 18 | 5,3 | 27301630050 |
| | 27000 | 35x40 | 18 | 5,3 | 27301635040 |
| | 33000 | 35x45 | 14 | 6,2 | 33301635045 |
| | 39000 | 30x70 | 12 | 7,2 | 39301630070 |
| | 39000 | 35x50 | 12 | 7,0 | 39301635050 |
| | 47000 | 40x50 | 10 | 8,1 | 47301640050 |
| | 56000 | 35x80 | 9 | 10,0 | 56301635080 |
| | 56000 | 40x50 | 9 | 8,8 | 56301640050 |
| | 68000 | 40x60 | 7 | 10,4 | 68301640060 |
| 82000 | 35x100 | 6 | 13,3 | 82301635100 | |
| 82000 | 40x80 | 6 | 12,7 | 82301640080 | |
| 82000 | 45x60 | 6 | 11,4 | 82301645060 | |
| 100000 | 45x80 | 5 | 14,0 | 10401645080 | |
| 120000 | 40x100 | 4 | 16,9 | 12401640100 | |
| 150000 | 45x100 | 3 | 18,8 | 15401645100 | |
| 25 | 6800 | 25x30 | 66 | 2,1 | 68202525030 |
| | 8200 | 25x35 | 54 | 2,4 | 82202525035 |
| | 10000 | 25x40 | 45 | 2,8 | 10302525040 |
| | 10000 | 30x30 | 45 | 2,8 | 10302530030 |
| | 12000 | 25x45 | 37 | 3,2 | 12302525045 |
| | 12000 | 30x35 | 37 | 3,2 | 12302530035 |
| | 15000 | 25x50 | 30 | 3,7 | 15302525050 |
| | 15000 | 30x40 | 30 | 3,7 | 15302530040 |
| | 15000 | 35x30 | 30 | 3,7 | 15302535030 |
| | 18000 | 30x45 | 26 | 4,2 | 18302530045 |
| | 18000 | 30x50 | 26 | 4,4 | 18302530050 |
| | 18000 | 35x35 | 26 | 4,2 | 18302535035 |
| | 22000 | 35x40 | 21 | 4,9 | 22302535040 |
| | 22000 | 35x45 | 21 | 5,1 | 22302535045 |
| | 27000 | 30x70 | 17 | 6,1 | 27302530070 |
| | 27000 | 35x50 | 17 | 5,9 | 27302535050 |
| | 33000 | 35x60 | 14 | 7,0 | 33302535060 |
| | 39000 | 40x50 | 12 | 7,5 | 39302540050 |
| | 47000 | 35x80 | 10 | 9,3 | 47302535080 |
| | 47000 | 40x60 | 10 | 8,8 | 47302540060 |
| | 56000 | 35x100 | 8 | 11,2 | 56302535100 |
| | 56000 | 45x60 | 8 | 9,6 | 56302545060 |

| Rated voltage U_R [V] | Rated cap. C_R [µF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|---------------------------|-------------|
| | | | | | Plain base: LFHA... | |
| | | | | | Stud mounting: LFHB... | |
| 25 | 68000 | 40x80 | 7 | 11,8 | 68303540080 | |
| | 68000 | 40x100 | 7 | 12,9 | 68302540100 | |
| | 82000 | 45x80 | 6 | 12,9 | 8230254580 | |
| | 100000 | 45x100 | 5 | 15,6 | 10402545100 | |
| | 1500 | 22x25 | 255 | 0,9 | 15204022025 | |
| 40 | 2200 | 22x30 | 174 | 1,2 | 22204022030 | |
| | 2700 | 22x35 | 142 | 1,4 | 27204022035 | |
| | 2700 | 25x30 | 142 | 1,4 | 27104025030 | |
| | 3300 | 22x40 | 116 | 1,6 | 33204022040 | |
| | 3300 | 25x35 | 116 | 1,7 | 33204025035 | |
| | 3900 | 25x40 | 98 | 1,9 | 39204025040 | |
| | 3900 | 30x35 | 98 | 1,9 | 39204030030 | |
| | 4700 | 25x45 | 81 | 2,2 | 47204025045 | |
| | 4700 | 30x35 | 81 | 2,2 | 47204030035 | |
| | 5600 | 25x50 | 68 | 2,5 | 56204025050 | |
| | 5600 | 30x40 | 68 | 2,5 | 56204030040 | |
| | 5600 | 35x30 | 68 | 2,5 | 56204035030 | |
| | 6800 | 30x45 | 56 | 2,8 | 68204030045 | |
| | 6800 | 35x35 | 56 | 2,9 | 68204035035 | |
| | 8200 | 30x50 | 47 | 3,2 | 82204030050 | |
| | 8200 | 35x40 | 47 | 3,3 | 82204035040 | |
| | 8200 | 35x45 | 47 | 3,4 | 82204035045 | |
| | 10000 | 35x50 | 38 | 3,9 | 10304035050 | |
| | 12000 | 30x70 | 32 | 4,5 | 12304030070 | |
| | 12000 | 35x60 | 32 | 4,6 | 12304035060 | |
| | 15000 | 40x50 | 25 | 5,1 | 15304040050 | |
| | 18000 | 35x80 | 21 | 6,4 | 18304035080 | |
| | 18000 | 40x60 | 21 | 6,0 | 18304040060 | |
| | 22000 | 35x100 | 17 | 7,7 | 22304035100 | |
| | 22000 | 40x80 | 17 | 7,4 | 22304040080 | |
| | 22000 | 45x60 | 17 | 6,6 | 22304045060 | |
| | 27000 | 40x100 | 14 | 8,9 | 27304040100 | |
| | 27000 | 45x80 | 14 | 8,2 | 27304045080 | |
| | 39000 | 45x100 | 10 | 10,7 | 39304045100 | |
| | 63 | 1800 | 25x30 | 159 | 1,3 | 18206325030 |
| | | 2200 | 25x35 | 130 | 1,6 | 22206325035 |
| | | 2700 | 25x40 | 106 | 1,8 | 27206325040 |
| | | 2700 | 30x30 | 106 | 1,8 | 27206330030 |
| | | 3300 | 25x45 | 87 | 2,1 | 33206325045 |
| | | 3300 | 30x35 | 87 | 2,1 | 33206330035 |
| 3900 | | 25x50 | 73 | 2,4 | 39206325050 | |
| 3900 | | 30x40 | 73 | 2,4 | 39206330040 | |
| 3900 | | 35x30 | 73 | 2,4 | 39206335030 | |
| 4700 | | 30x45 | 61 | 2,7 | 47206330045 | |
| 4700 | | 35x35 | 61 | 2,8 | 47206335035 | |
| 5600 | | 30x50 | 51 | 3,1 | 56206330050 | |
| 6800 | | 35x45 | 42 | 3,6 | 68206335045 | |
| 8200 | | 30x70 | 35 | 4,3 | 82296330070 | |

Stand: 12/2019

105°C



LFH

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|---------------------------|
| | | | | | Plain base: LFHA... |
| | | | | | Stud mounting: LFHB... |
| 63 | 10000 | 35x60 | 29 | 4,9 | 10306335060 |
| | 10000 | 40x50 | 29 | 4,8 | 10306340050 |
| | 12000 | 35x80 | 24 | 6,0 | 12306335080 |
| | 12000 | 40x60 | 24 | 5,6 | 12306340060 |
| | 15000 | 45x60 | 19 | 6,3 | 15306345060 |
| | 18000 | 35x100 | 16 | 8,1 | 18306335100 |
| | 18000 | 40x80 | 16 | 7,7 | 18306340080 |
| | 22000 | 40x100 | 13 | 9,3 | 22306340100 |
| | 22000 | 45x80 | 13 | 8,5 | 22306345080 |
| | 27000 | 45x100 | 11 | 10,3 | 27306345100 |
| 80 | 1200 | 25x30 | 265 | 1,0 | 12208025030 |
| | 1500 | 25x35 | 212 | 1,2 | 15208025035 |
| | 1800 | 25x40 | 177 | 1,4 | 18208025040 |
| | 1800 | 30x30 | 177 | 1,4 | 18208030030 |
| | 2200 | 25x45 | 145 | 1,6 | 22208025045 |
| | 2200 | 25x50 | 145 | 1,7 | 22208025050 |
| | 2200 | 30x35 | 145 | 1,6 | 22208030035 |
| | 2200 | 35x30 | 145 | 1,7 | 22208035030 |
| | 2700 | 30x40 | 118 | 1,9 | 27208030040 |
| | 2700 | 30x45 | 118 | 2,0 | 27208030045 |
| | 2700 | 35x35 | 118 | 2,0 | 27208035035 |
| | 3300 | 30x50 | 97 | 2,3 | 33208030050 |
| | 3300 | 35x40 | 97 | 2,3 | 33208035040 |
| | 3900 | 35x45 | 82 | 2,6 | 39208035045 |
| | 4700 | 35x50 | 68 | 3,0 | 47208035050 |
| | 5600 | 30x70 | 57 | 3,4 | 56208030070 |
| | 5600 | 35x60 | 57 | 3,5 | 56208035060 |
| | 5600 | 40x50 | 57 | 3,4 | 56208040050 |
| | 6800 | 35x80 | 47 | 4,3 | 68208035080 |
| | 6800 | 40x60 | 47 | 4,0 | 68208040060 |
| | 10000 | 35x100 | 32 | 5,7 | 10308035100 |
| | 10000 | 45x60 | 32 | 4,9 | 10308045060 |
| | 12000 | 40x80 | 27 | 6,0 | 12308040080 |
| | 12000 | 45x80 | 27 | 6,0 | 12308045080 |
| | 15000 | 40x100 | 21 | 7,3 | 15308040100 |
| 18000 | 45x100 | 18 | 8,0 | 18308045100 | |
| 100 | 1000 | 25x30 | 159 | 1,3 | 10210025030 |
| | 1200 | 25x35 | 133 | 1,5 | 12210025035 |
| | 1500 | 25x40 | 106 | 1,8 | 15210025040 |
| | 1500 | 30x30 | 106 | 1,8 | 15210030030 |
| | 1800 | 25x45 | 88 | 2,1 | 18210025045 |
| | 1800 | 25x50 | 88 | 2,2 | 18210025050 |
| | 1800 | 35x30 | 88 | 2,2 | 18210035030 |
| | 2200 | 30x40 | 72 | 2,4 | 22210030040 |
| | 2200 | 30x45 | 72 | 2,5 | 22210030045 |
| | 2200 | 35x35 | 72 | 2,5 | 22210035035 |
| | 2700 | 30x50 | 59 | 2,9 | 27210030050 |
| | 2700 | 35x40 | 59 | 2,9 | 27210035040 |
| | 3300 | 35x45 | 48 | 3,4 | 33210035045 |
| | 3900 | 30x70 | 41 | 4,0 | 39210030070 |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|---------------------------|-------------|
| | | | | | Plain base: LFHA... | |
| | | | | | Stud mounting: LFHB... | |
| 100 | 3900 | 35x50 | 41 | 3,8 | 39210035050 | |
| | 4700 | 35x60 | 34 | 4,5 | 47210035060 | |
| | 4700 | 40x50 | 34 | 4,4 | 47210040050 | |
| | 5600 | 35x80 | 28 | 5,5 | 56210035080 | |
| | 5600 | 40x60 | 28 | 5,1 | 56210040060 | |
| | 8200 | 35x100 | 19 | 7,3 | 82210035100 | |
| | 8200 | 40x80 | 19 | 7,0 | 82210040080 | |
| | 8200 | 45x60 | 19 | 6,2 | 82210045060 | |
| | 10000 | 45x80 | 16 | 7,7 | 10310045080 | |
| | 12000 | 40x100 | 13 | 9,2 | 12310040100 | |
| | 15000 | 45x100 | 11 | 10,3 | 15310045100 | |
| | 160 | 470 | 25x30 | 237 | 1,1 | 47116025030 |
| | | 560 | 25x35 | 199 | 1,3 | 56116025035 |
| | | 680 | 25x40 | 164 | 1,5 | 68116025040 |
| | | 680 | 30x30 | 164 | 1,4 | 68116030030 |
| 820 | | 25x45 | 136 | 1,6 | 82116025045 | |
| 820 | | 30x35 | 136 | 1,7 | 82116030035 | |
| 1000 | | 25x50 | 111 | 1,9 | 10216025050 | |
| 1000 | | 30x40 | 111 | 1,9 | 10216030040 | |
| 1000 | | 35x30 | 111 | 1,9 | 10216035030 | |
| 1200 | | 30x45 | 93 | 2,2 | 12216030045 | |
| 1200 | | 35x35 | 93 | 2,2 | 12216035035 | |
| 1500 | | 30x50 | 74 | 2,6 | 15216030050 | |
| 1500 | | 35x40 | 74 | 2,6 | 15216035040 | |
| 1800 | | 35x45 | 62 | 3,0 | 18216035045 | |
| 1800 | | 35x50 | 62 | 3,1 | 18216035050 | |
| 2200 | | 30x70 | 51 | 3,6 | 22216030070 | |
| 2200 | | 35x60 | 51 | 3,7 | 22216035060 | |
| 2700 | | 40x50 | 41 | 4,0 | 27216040050 | |
| 3300 | | 35x80 | 34 | 5,0 | 33216035080 | |
| 3300 | | 40x60 | 34 | 4,7 | 33216040060 | |
| 3900 | | 35x100 | 29 | 6,2 | 39216035100 | |
| 3900 | | 45x60 | 29 | 5,2 | 39216045060 | |
| 4700 | | 40x80 | 24 | 6,3 | 47216040080 | |
| 5600 | | 40x100 | 20 | 7,5 | 56216040100 | |
| 5600 | | 45x80 | 20 | 6,9 | 56216045080 | |
| 6800 | 45x100 | 16 | 8,3 | 68216045100 | | |
| 250 | 330 | 25x30 | 290 | 1,0 | 33125025030 | |
| | 390 | 25x35 | 245 | 1,1 | 39125025035 | |
| | 470 | 25x40 | 203 | 1,3 | 47125025040 | |
| | 470 | 30x30 | 203 | 1,3 | 47125030030 | |
| | 560 | 25x45 | 171 | 1,5 | 56125025045 | |
| | 560 | 30x35 | 171 | 1,5 | 56125030035 | |
| | 560 | 35x30 | 171 | 1,6 | 56125035030 | |
| | 680 | 25x50 | 141 | 1,7 | 68125025050 | |
| | 680 | 30x40 | 141 | 1,7 | 68125030040 | |
| | 820 | 30x45 | 117 | 2,0 | 82125030045 | |
| | 820 | 30x50 | 117 | 2,1 | 82125030050 | |
| | 820 | 35x35 | 117 | 2,0 | 82125035035 | |
| | 1000 | 35x40 | 96 | 2,3 | 10225035040 | |

105°C



LFH

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|---------------------------|
| | | | | | Plain base: LFHA... |
| | | | | | Stud mounting: LFHB... |
| 250 | 1200 | 35x45 | 80 | 2,6 | 12225035045 |
| | 1200 | 35x50 | 80 | 2,7 | 12225035050 |
| | 1500 | 30x70 | 64 | 3,2 | 15225030070 |
| | 1500 | 35x60 | 64 | 3,3 | 15225035060 |
| | 1800 | 35x80 | 53 | 4,0 | 18225035080 |
| | 1800 | 40x50 | 53 | 3,5 | 18225040050 |
| | 1800 | 40x60 | 53 | 3,8 | 18225040060 |
| | 2700 | 35x100 | 35 | 5,4 | 27225035100 |
| | 2700 | 40x80 | 35 | 5,2 | 27225040080 |
| | 2700 | 45x60 | 35 | 4,6 | 27225045060 |
| | 3300 | 40x100 | 29 | 6,3 | 33225040100 |
| | 3300 | 45x80 | 29 | 5,7 | 33225045080 |
| | 4700 | 45x100 | 20 | 7,4 | 47225045100 |
| | 350 | 180 | 25x30 | 531 | 0,7 |
| 220 | | 25x35 | 434 | 0,9 | 22135025035 |
| 270 | | 25x40 | 354 | 1,0 | 27135025040 |
| 270 | | 30x30 | 354 | 1,0 | 27135030030 |
| 330 | | 25x45 | 290 | 1,2 | 33135025045 |
| 330 | | 30x35 | 290 | 1,1 | 33135030035 |
| 330 | | 35x30 | 290 | 1,2 | 33135035030 |
| 390 | | 25x50 | 245 | 1,3 | 39135025050 |
| 390 | | 30x40 | 245 | 1,3 | 39135030040 |
| 470 | | 30x45 | 203 | 1,5 | 47135030045 |
| 470 | | 35x35 | 203 | 1,5 | 47135035035 |
| 560 | | 30x50 | 171 | 1,7 | 56135030050 |
| 560 | | 35x40 | 171 | 1,7 | 56135035040 |
| 560 | | 35x45 | 171 | 1,8 | 56135035045 |
| 680 | | 35x50 | 141 | 2,1 | 68135035050 |
| 820 | | 30x70 | 117 | 2,3 | 82135030070 |
| 820 | | 35x60 | 117 | 2,4 | 82135035060 |
| 820 | | 40x50 | 117 | 2,4 | 82135040050 |
| 1200 | | 35x80 | 80 | 3,3 | 12235035080 |
| 1200 | | 40x60 | 80 | 3,1 | 12235040060 |
| 1500 | | 35x100 | 64 | 4,0 | 15235035100 |
| 1500 | | 45x60 | 64 | 3,4 | 15235045060 |
| 1800 | | 40x80 | 53 | 4,2 | 18235040080 |
| 1800 | 40x100 | 53 | 4,6 | 18235040100 | |
| 1800 | 45x80 | 53 | 4,2 | 18235045080 | |
| 2700 | 45x100 | 35 | 5,6 | 27235045100 | |
| 400 | 150 | 25x30 | 849 | 0,6 | 15140025030 |
| | 180 | 25x35 | 708 | 0,7 | 18140025035 |
| | 220 | 25x40 | 579 | 0,8 | 22140025040 |
| | 220 | 30x30 | 579 | 0,8 | 22140030030 |
| | 270 | 25x45 | 472 | 0,9 | 27140025045 |
| | 270 | 25x50 | 472 | 0,9 | 27140025050 |
| | 270 | 30x35 | 472 | 0,9 | 27140030035 |

| Rated voltage U_R [V] | Rated cap. C_R [μF] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [mΩ] | Ripple current IR~ 100 Hz, 105°C [A] | Order code | |
|-------------------------------|-----------------------------|----------------------------|-------------------------------------|---|---------------------------|-------------|
| | | | | | Plain base: LFHA... | |
| | | | | | Stud mounting: LFHB... | |
| 400 | 270 | 35x30 | 472 | 0,9 | 27140035030 | |
| | 330 | 30x40 | 386 | 1,0 | 33140030040 | |
| | 330 | 35x35 | 386 | 1,1 | 33140035035 | |
| | 390 | 30x45 | 327 | 1,2 | 39140030045 | |
| | 390 | 30x50 | 327 | 1,2 | 39140030050 | |
| | 390 | 35x40 | 327 | 1,2 | 39140035040 | |
| | 470 | 35x45 | 271 | 1,4 | 47140035045 | |
| | 560 | 30x70 | 227 | 1,7 | 56140030070 | |
| | 560 | 35x50 | 227 | 1,6 | 56140035050 | |
| | 680 | 35x60 | 187 | 1,9 | 68140035060 | |
| | 680 | 40x50 | 187 | 1,9 | 68140040050 | |
| | 820 | 35x80 | 155 | 2,3 | 82140035080 | |
| | 820 | 40x60 | 155 | 2,2 | 82140040060 | |
| | 1200 | 35x100 | 106 | 3,1 | 12240035100 | |
| | 1200 | 40x80 | 106 | 3,0 | 12240040080 | |
| | 1200 | 45x60 | 106 | 2,7 | 12240045060 | |
| | 1500 | 40x100 | 85 | 3,6 | 15240040100 | |
| | 1500 | 45x80 | 85 | 3,3 | 15240045080 | |
| | 2200 | 45x100 | 58 | 4,4 | 22240045100 | |
| | 450 | 120 | 25x30 | 929 | 0,6 | 12145025030 |
| | | 150 | 25x35 | 743 | 0,7 | 15145025035 |
| | | 150 | 25x40 | 743 | 0,7 | 15145025040 |
| | | 180 | 25x45 | 619 | 0,8 | 18145025045 |
| 180 | | 30x30 | 619 | 0,7 | 18145030030 | |
| 180 | | 30x35 | 619 | 0,8 | 18145030035 | |
| 220 | | 25x50 | 507 | 0,9 | 22145025050 | |
| 220 | | 30x40 | 507 | 0,9 | 22145030040 | |
| 220 | | 35x30 | 507 | 0,9 | 22145035030 | |
| 390 | | 35x50 | 286 | 1,5 | 39145035050 | |
| 270 | | 30x45 | 413 | 1,0 | 27145030045 | |
| 270 | | 35x35 | 413 | 1,1 | 27145035035 | |
| 330 | | 30x50 | 338 | 1,2 | 33145030050 | |
| 330 | | 35x40 | 338 | 1,2 | 33145035040 | |
| 390 | | 35x45 | 286 | 1,4 | 39145035045 | |
| 470 | | 30x70 | 237 | 1,6 | 47145030070 | |
| 470 | | 35x50 | 237 | 1,6 | 47145035050 | |
| 560 | | 35x60 | 199 | 1,9 | 56145035060 | |
| 560 | | 40x50 | 199 | 1,8 | 56145040050 | |
| 680 | | 35x80 | 164 | 2,3 | 68145035080 | |
| 680 | | 40x60 | 164 | 2,1 | 68145040060 | |
| 820 | | 35x100 | 136 | 2,8 | 82145035100 | |
| 820 | | 45x60 | 136 | 2,4 | 82145045060 | |
| 1000 | | 40x80 | 111 | 2,9 | 10245040080 | |
| 1200 | | 40x100 | 93 | 3,5 | 12245040100 | |
| 1200 | | 45x80 | 93 | 3,2 | 12245045080 | |
| 1500 | | 45x100 | 74 | 3,9 | 15245045100 | |

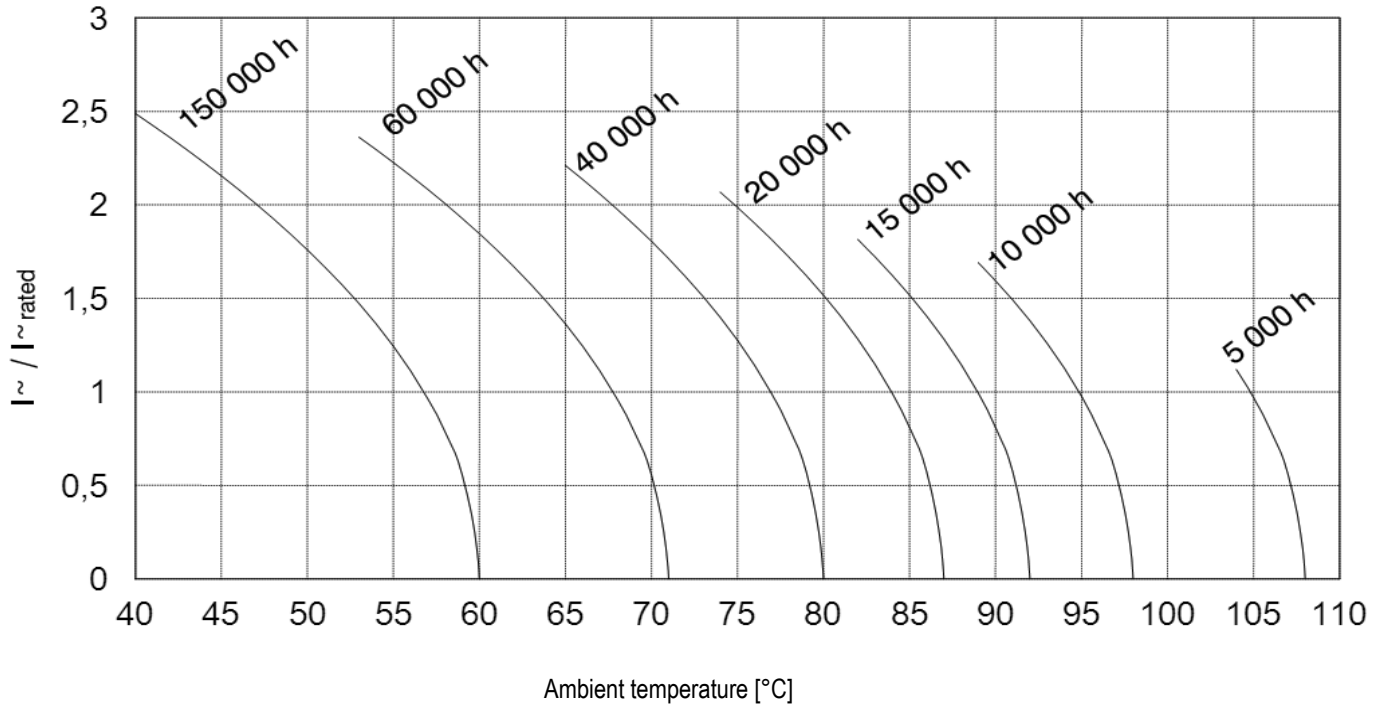
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105°C



LFH

■ USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



85°C



S/SZ



CENTRAL MOUNTING

SZ: DOUBLE CAPACITANCE 85°C

■ FEATURES

- All contacts welded
- Central mounting
- Soldering lug terminals
- High mechanical stability

■ APPLICATIONS

- Industrial
- Tube amplifier
- SMPS

RoHS compliant
REACH compliant

■ GENERAL SPECIFICATIONS

| Items | Characteristics |
|--|---|
| Rated capacitance range C_R | 22... 22.000 μ F |
| Capacitance tolerance | -10 +30 % |
| Rated voltage range U | 16 ... 450 V |
| Surge voltage U_S | $U_R \leq 315$ V: $U_S = 1,15 U_R$; $U_R > 315$ V: $U_S = 1,10 U_R$ |
| Max. reverse voltage | 2 V |
| Category temperature range | - 40°C ... + 85 °C |
| Leakage current I_L after 5 min @ U_R | $\leq 0,008 * C_R [\mu F] * U_R [V] + 6 \mu A [\mu A]$ |
| Useful life 3000 h @ 85 °C ; U_R ; I_R | Requirements $\Delta C/C \leq 30$ % of initial value ; ESR ≤ 300 % of specified ; limit $I_L \leq$ specified limit |
| Endurance test 2000 h @ 85 °C , U_R | Requirements $\Delta C/C \leq 20$ % of initial value ; ESR ≤ 130 % of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 40/085/56 |
| Voltage proof of the external insulation | ≥ 2500 V AC |
| Sectional specification | IEC 60384-4 |

Different voltages and capacitance combinations are available on request. Also in small lots.

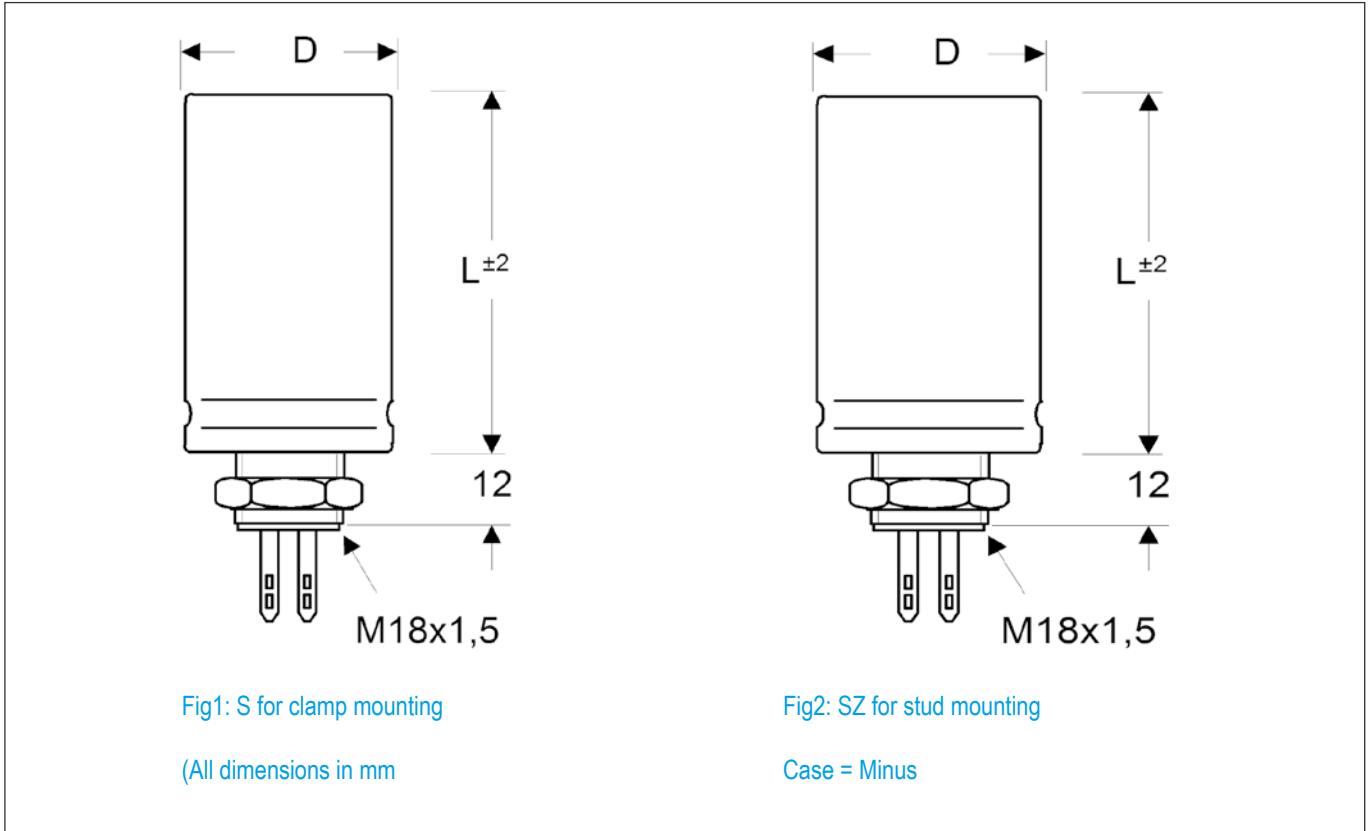
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85°C



S/SZ

■ DRAWINGS FOR SERIES S AND SZ



■ ELECTRICAL DATA AND ORDERING CODE FOR SERIES S

| Rated voltage U_R [V] | Rated cap. C_R [μ F] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [m Ω] | $\tan \delta_{100\text{Hz}}$ 20°C max. [%] | Ripple current IR~ 100 Hz, 85°C [A] | Order code s... |
|-------------------------------|-----------------------------------|----------------------------|--|---|---|--------------------|
| 16 | 10000 | 30 x 40 | 30 | 30 | 1,9 | 10301630040 |
| | 22000 | 35 x 54 | 20 | 36 | 2,8 | 22301635054 |
| 25 | 2200 | 25 x 40 | 32 | 15 | 1,7 | 22202525040 |
| | 4700 | 25 x 40 | 30 | 18 | 1,7 | 47202525040 |
| | 10000 | 30 x 54 | 27 | 22 | 2,2 | 10302530054 |
| | 22000 | 35 x 54 | 17 | 30 | 3,0 | 22302535054 |
| 40 | 1000 | 25 x 40 | 50 | 11 | 1,3 | 10204025040 |
| | 2200 | 25 x 40 | 45 | 12 | 1,4 | 22204025040 |
| | 4700 | 30 x 40 | 40 | 14 | 1,6 | 47204030040 |
| | 10000 | 35 x 54 | 23 | 20 | 2,6 | 10304035054 |
| 63 | 470 | 25 x 40 | 113 | 10 | 0,9 | 47106325040 |
| | 1000 | 25 x 40 | 93 | 10 | 1,0 | 10206325040 |
| | 2200 | 25 x 40 | 63 | 12 | 1,2 | 22206325040 |
| | 4700 | 30 x 54 | 37 | 13 | 1,9 | 47206330054 |
| | 10000 | 35 x 70 | 21 | 14 | 3,1 | 10306335070 |
| 100 | 220 | 25 x 40 | 233 | 8 | 0,6 | 22110025040 |
| | 470 | 25 x 40 | 167 | 9 | 0,7 | 47110025040 |
| | 1000 | 25 x 54 | 107 | 10 | 1,0 | 10210025054 |

| Rated voltage U_R [V] | Rated cap. C_R [μ F] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [m Ω] | $\tan \delta_{100\text{Hz}}$ 20°C max. [%] | Ripple current IR~ 100 Hz, 85°C [A] | Order code s... |
|-------------------------------|-----------------------------------|----------------------------|--|---|---|--------------------|
| 100 | 2200 | 35 x 54 | 60 | 12 | 1,6 | 22210035054 |
| 160 | 100 | 25 x 40 | 500 | 8 | 0,7 | 10116025040 |
| | 220 | 25 x 40 | 400 | 9 | 0,8 | 22116025040 |
| | 470 | 30 x 54 | 200 | 9 | 1,4 | 47116030054 |
| | 1000 | 35 x 70 | 93 | 10 | 2,5 | 10216035070 |
| 250 | 100 | 25 x 40 | 493 | 7 | 0,7 | 10125025040 |
| | 220 | 25 x 54 | 347 | 8 | 1,0 | 22125025054 |
| | 470 | 35 x 54 | 167 | 8 | 1,7 | 47125035054 |
| 350 | 47 | 25 x 40 | 1267 | 7 | 0,5 | 47035025040 |
| | 100 | 25 x 40 | 1000 | 7 | 0,5 | 10135025040 |
| | 220 | 25 x 54 | 387 | 7 | 0,9 | 22135025054 |
| | 470 | 35 x 70 | 187 | 8 | 1,8 | 47135035070 |
| 450 | 22 | 25 x 40 | 1600 | 8 | 0,4 | 22045025040 |
| | 33 | 25 x 40 | 1200 | 8 | 0,5 | 33045025040 |
| | 47 | 25 x 40 | 1000 | 8 | 0,5 | 47045025040 |
| | 100 | 30 x 54 | 547 | 8 | 0,8 | 10145030054 |
| | 220 | 35 x 54 | 213 | 8 | 1,5 | 22145035054 |

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85°C

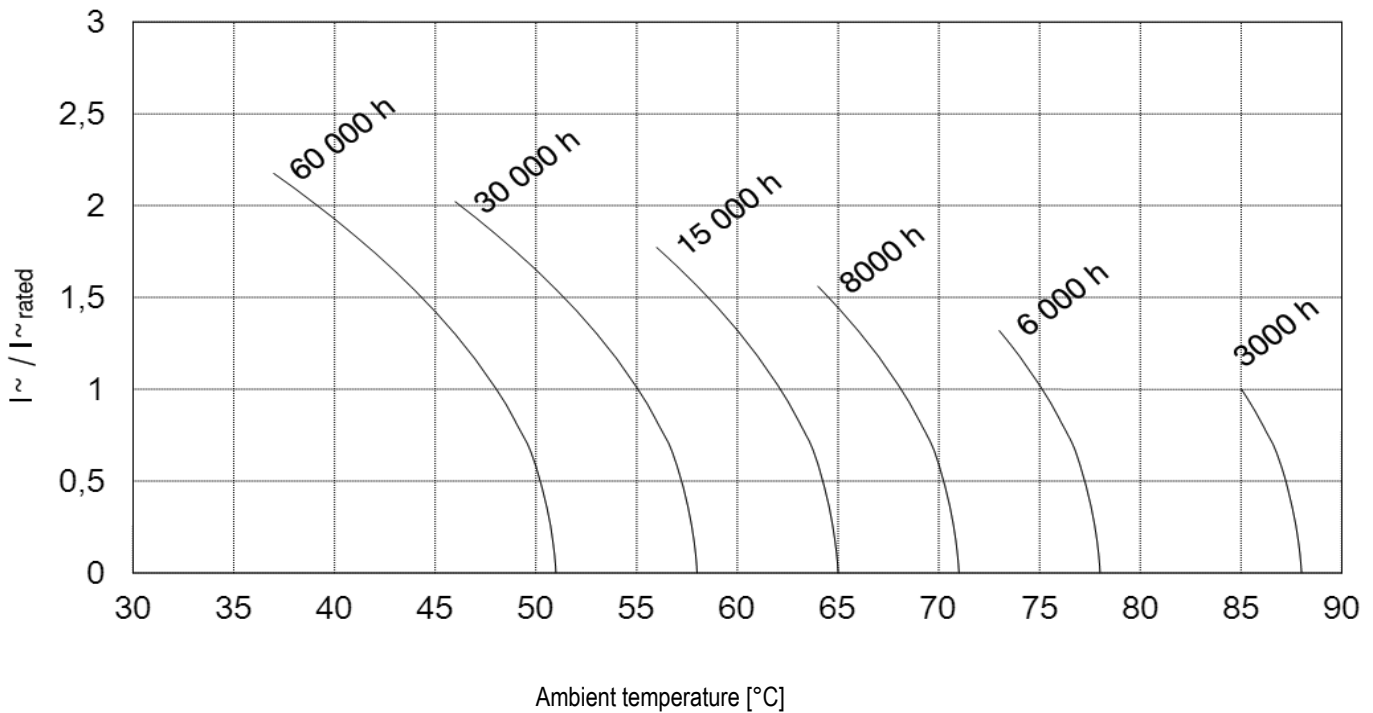


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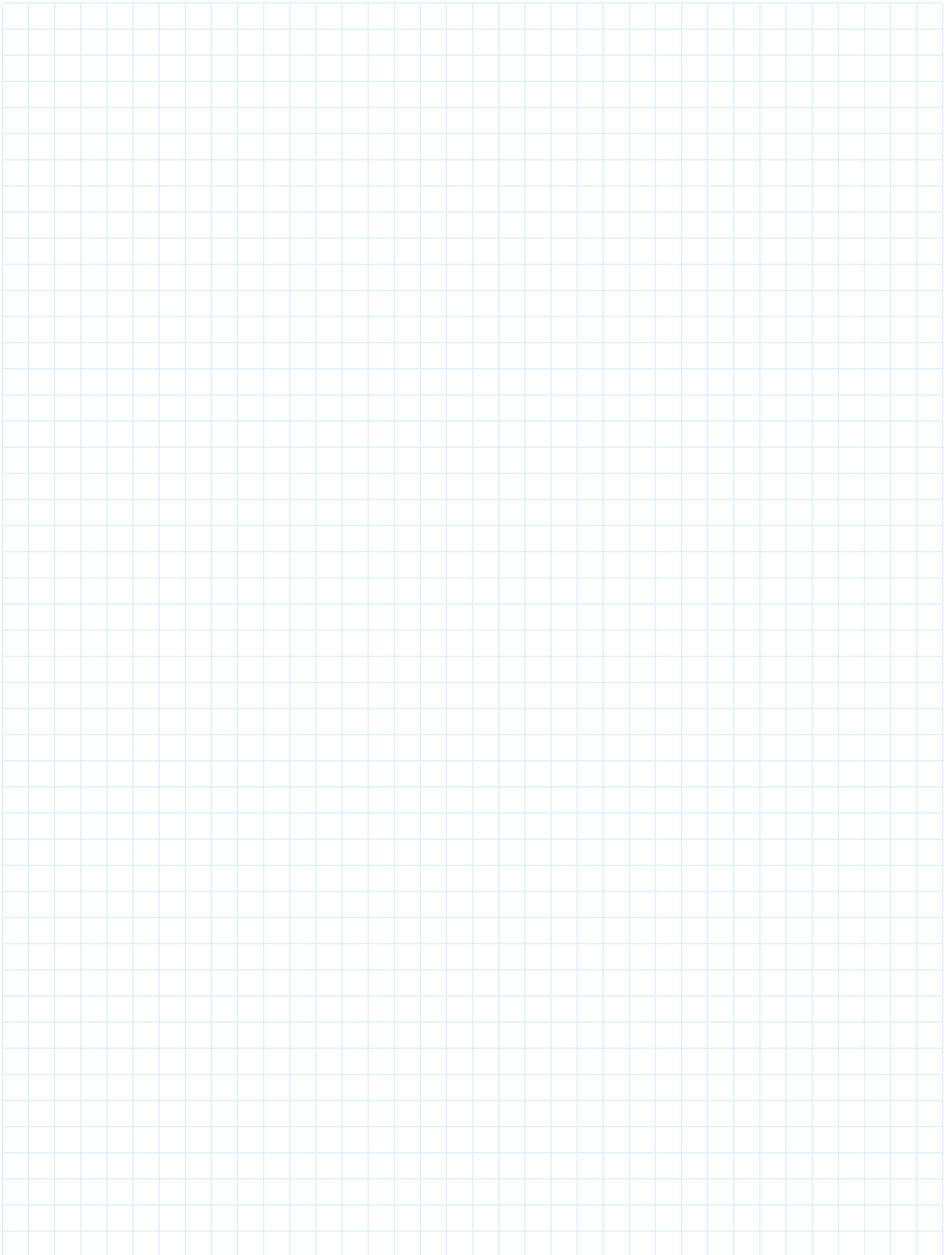
ELECTRICAL DATA AND ORDERING CODE FOR SERIES SZ

| Rated voltage U_R [V] | Rated cap. C_R [μ F] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [m Ω] | $\tan \delta_{100\text{Hz}}$ 20°C max. [%] | Ripple current IR~ 100 Hz, 85°C [A] | Order code s... |
|-------------------------------|-----------------------------------|-------------------------|--|---|--|--------------------|
| 350 | 33+33 | 25 x 40 | 1600 | 15 | 0,2 | 33035025040 |
| | 47+47 | 25 x 40 | 1267 | 15 | 0,2 | 47035025040 |
| | 100+100 | 30 x 54 | 1000 | 15 | 0,3 | 10135030054 |
| 450 | 22+22 | 25 x 40 | 1600 | 15 | 0,2 | 22045025040 |
| | 33+33 | 25 x 54 | 1200 | 15 | 0,3 | 33045025054 |
| | 47+47 | 30 x 54 | 1000 | 15 | 0,3 | 47045030054 |
| | 100+100 | 35 x 54 | 547 | 15 | 0,5 | 10145035054 |

USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



Stand: 12/2019



105°C



SH



CENTRAL MOUNTING

FEATURES

- All contacts welded
- Central mounting
- Soldering lug terminals
- High reliability

APPLICATIONS

- HiFi
- Signalization
- Industrial

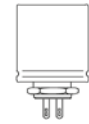
RoHS compliant
REACH compliant

GENERAL SPECIFICATIONS

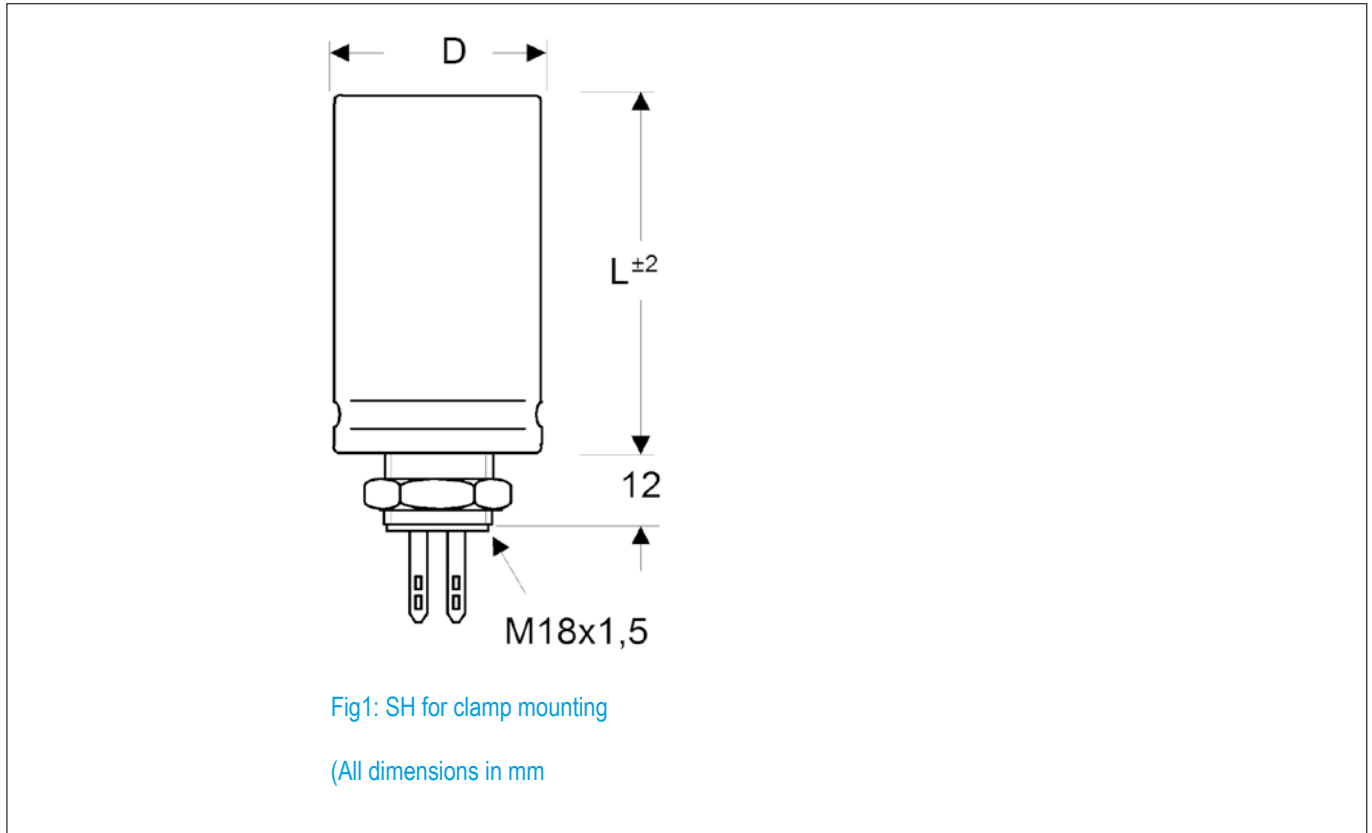
| Items | Characteristics |
|---|---|
| Rated capacitance range C_R | 22... 22.000 μF |
| Capacitance tolerance | -10 +30 % |
| Rated voltage range U | 16 ... 450 V |
| Surge voltage U_S | $U_R \leq 315 \text{ V}: U_S = 1,15 U_R$; $U_R > 315 \text{ V}: U_S = 1,10 U_R$ |
| Max. reverse voltage | 2 V |
| Category temperature range | - 40°C ... + 105 °C |
| Leakage current I_L after 5 min @ U_R | $\leq 0,008 * C_R [\mu\text{F}] * U_R [\text{V}] + 6 \mu\text{A} [\mu\text{A}]$ |
| Useful life 3000 h @ 105 °C ; U_R ; I_R | Requirements $\Delta C/C \leq 30 \%$ of initial value ; ESR $\leq 300 \%$ of specified ; limit $I_L \leq$ specified limit |
| Endurance test 2000 h @ 105 °C , U_R | Requirements $\Delta C/C \leq 20 \%$ of initial value ; ESR $\leq 130 \%$ of specified ; limit $I_L \leq$ specified limit |
| Climatic category IEC 60068 | 40/105/56 |
| Voltage proof of the external insulation | $\geq 2500 \text{ V AC}$ |
| Sectional specification | IEC 60384-4 |

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand: 12/2019



■ DRAWINGS FOR SERIES SH



■ ELECTRICAL DATA AND ORDERING CODE FOR SERIES SH

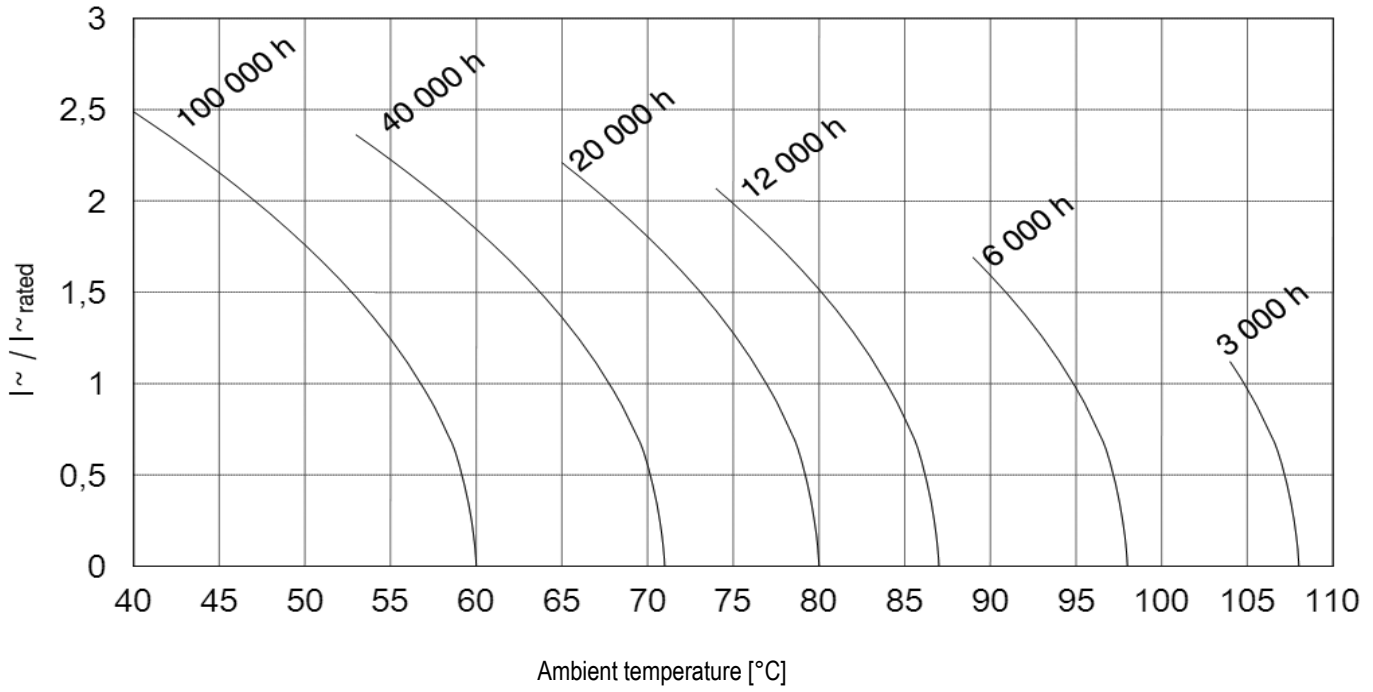
| Rated voltage U_R [V] | Rated cap. C_R [μ F] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [m Ω] | $\tan \delta_{100\text{Hz}}$ 20°C max. [%] | Ripple current IR~ 100 Hz, 85°C [A] | Order code SH... |
|-------------------------------|-----------------------------------|----------------------------|--|---|---|---------------------|
| 16 | 10000 | 30 x 40 | 30 | 30 | 1,9 | 10301630040 |
| | 22000 | 35 x 54 | 20 | 36 | 2,8 | 22301635054 |
| 25 | 2200 | 25 x 40 | 32 | 15 | 1,7 | 22202525040 |
| | 4700 | 25 x 40 | 30 | 18 | 1,7 | 47202525040 |
| | 10000 | 30 x 54 | 27 | 22 | 2,2 | 10302530054 |
| | 22000 | 35 x 54 | 17 | 30 | 3,0 | 22302535054 |
| 40 | 1000 | 25 x 40 | 50 | 11 | 1,3 | 10204025040 |
| | 2200 | 25 x 40 | 45 | 12 | 1,4 | 22204025040 |
| | 4700 | 30 x 40 | 40 | 14 | 1,6 | 47204030040 |
| | 10000 | 35 x 54 | 23 | 20 | 2,6 | 10304035054 |
| 63 | 470 | 25 x 40 | 113 | 10 | 0,9 | 47106325040 |
| | 1000 | 25 x 40 | 93 | 10 | 1,0 | 10206325040 |
| | 2200 | 25 x 40 | 63 | 12 | 1,2 | 22206325040 |
| | 4700 | 30 x 54 | 37 | 13 | 1,9 | 47206330054 |
| | 10000 | 35 x 70 | 21 | 14 | 3,1 | 10306335070 |
| 100 | 220 | 25 x 40 | 233 | 8 | 0,6 | 22110025040 |
| | 470 | 25 x 40 | 167 | 9 | 0,7 | 47110025040 |
| | 560 | 25 x 40 | 140 | 10 | 0,8 | 56110025040 |

| Rated voltage U_R [V] | Rated cap. C_R [μ F] | Case size D x L [mm] | Typ. ESR 100 Hz, 20°C [m Ω] | $\tan \delta_{100\text{Hz}}$ 20°C max. [%] | Ripple current IR~ 100 Hz, 85°C [A] | Order code SH... |
|-------------------------------|-----------------------------------|----------------------------|--|---|---|---------------------|
| 100 | 1000 | 25 x 54 | 107 | 10 | 1,0 | 10210025054 |
| | 2200 | 35 x 54 | 60 | 12 | 1,6 | 22210035054 |
| 160 | 100 | 25 x 40 | 500 | 8 | 0,7 | 10116025040 |
| | 220 | 25 x 40 | 400 | 9 | 0,8 | 22116025040 |
| | 470 | 30 x 54 | 200 | 9 | 1,4 | 47116030054 |
| | 1000 | 35 x 70 | 93 | 10 | 2,5 | 10216035070 |
| 250 | 100 | 25 x 40 | 493 | 7 | 0,7 | 10125025040 |
| | 220 | 25 x 54 | 347 | 8 | 1,0 | 22125025054 |
| | 470 | 35 x 54 | 167 | 8 | 1,7 | 47125035054 |
| 350 | 47 | 25 x 40 | 1267 | 7 | 0,5 | 47035025040 |
| | 100 | 25 x 40 | 1000 | 7 | 0,5 | 10135025040 |
| | 220 | 25 x 54 | 387 | 7 | 0,9 | 22135025054 |
| | 470 | 35 x 70 | 187 | 8 | 1,8 | 47135035070 |
| 450 | 22 | 25 x 40 | 1600 | 8 | 0,4 | 22045025040 |
| | 33 | 25 x 40 | 1200 | 8 | 0,5 | 33045025040 |
| | 47 | 25 x 40 | 1000 | 8 | 0,5 | 47045025040 |
| | 100 | 30 x 54 | 547 | 8 | 0,8 | 10145030054 |
| | 220 | 35 x 54 | 213 | 8 | 1,5 | 22145035054 |

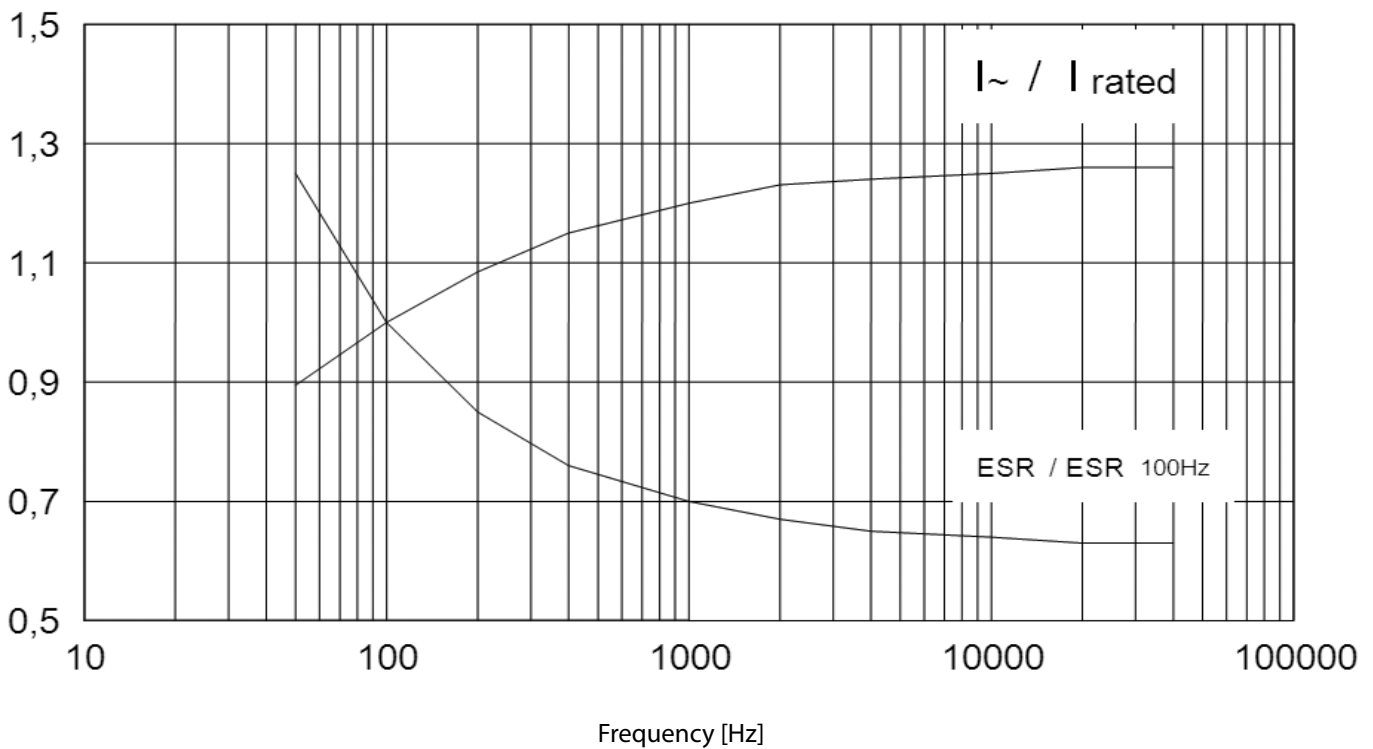
Stand: 12/2019



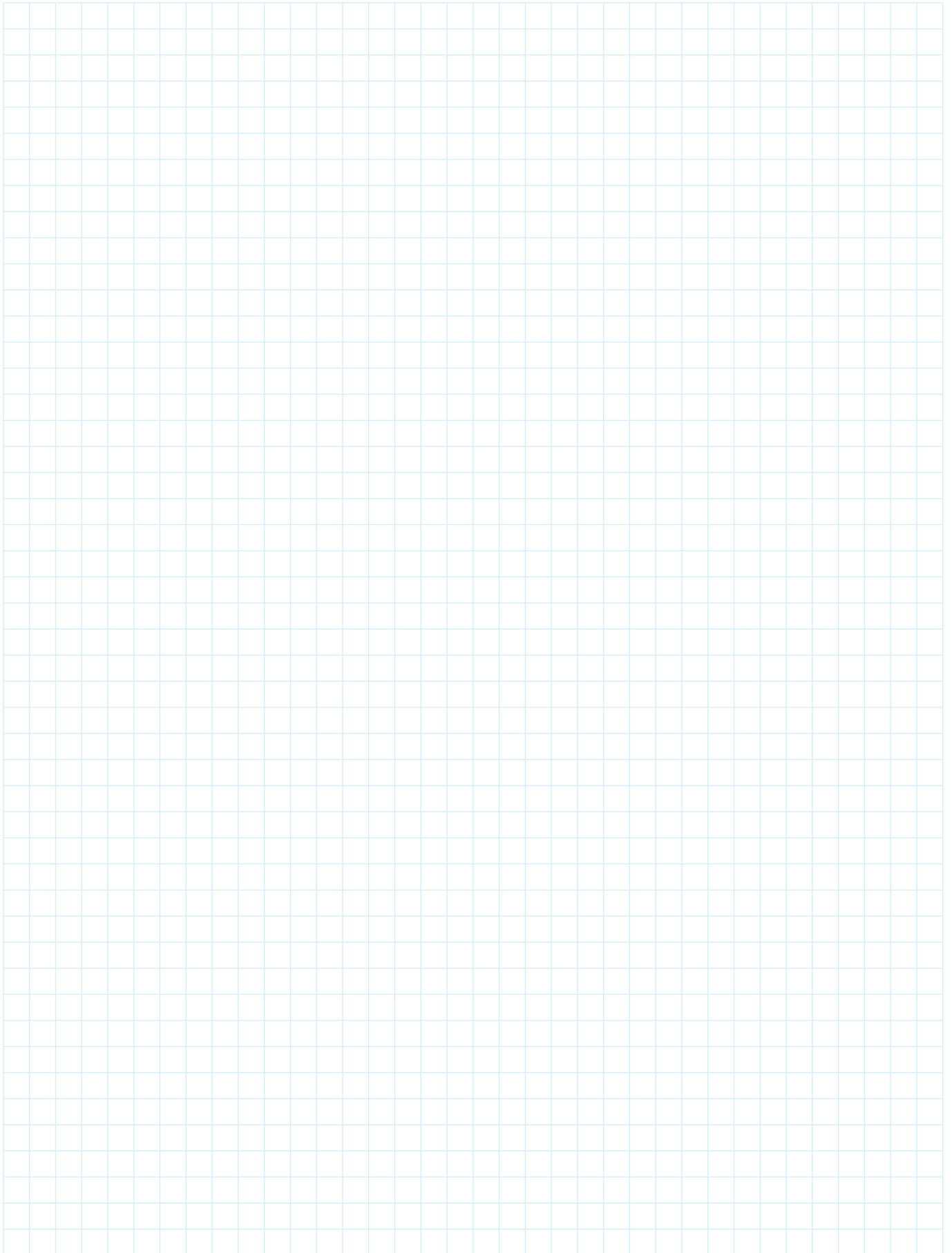
■ USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT

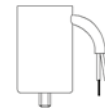


■ RIPPLE CURRENT AND ESR AS A FUNCTION OF FREQUENCY F



Stand: 12/2019





MOTORSTART CAPACITOR IN DOUBLE CAN

OUTSIDE CAN IS INSULATED

CLASS IP 54

■ FEATURES

- Insulated aluminium can
- Protection according to IP 54
- Connecting cable
- Double potted design
- VDE approval for selected products

RoHS compliant
REACH compliant

■ APPLICATIONS

- Motorstart
- Whitegood motorcontrol

■ GENERAL SPECIFICATIONS

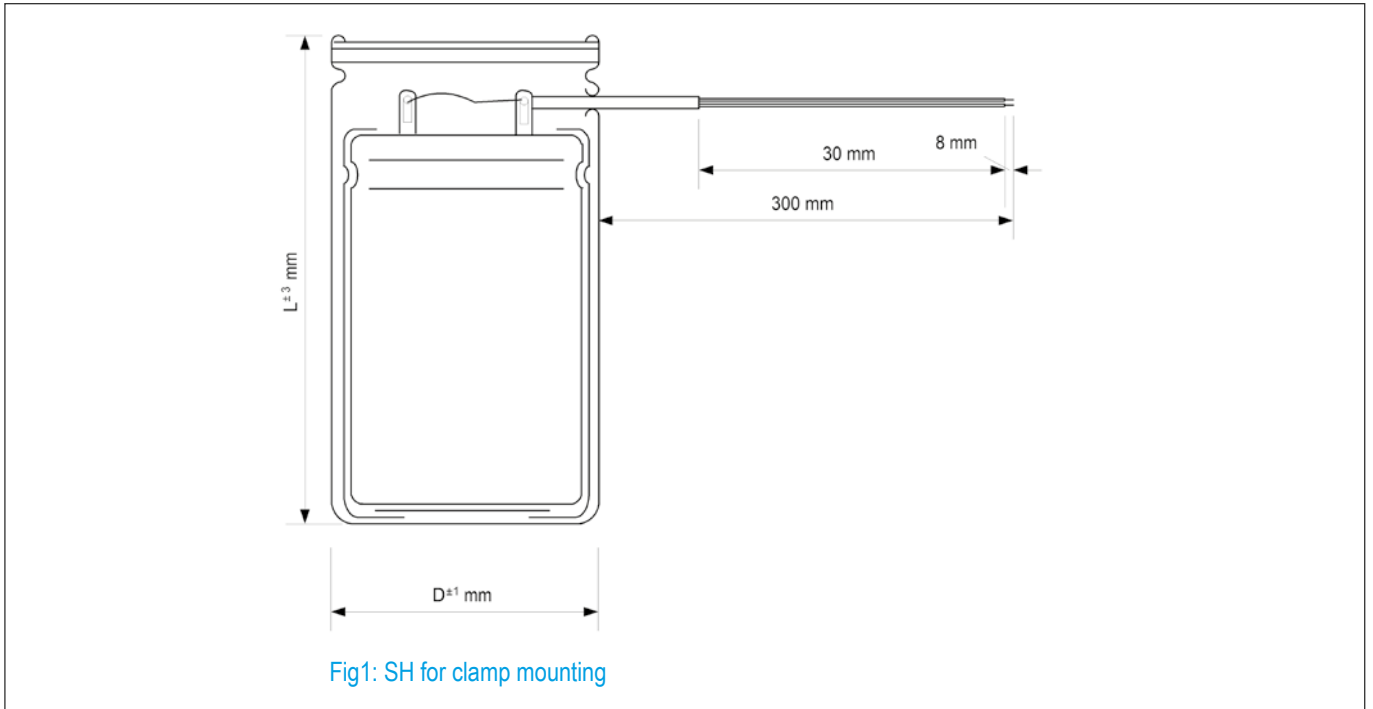
| Items | Characteristics |
|--|--|
| Clima category | 10/060/21 |
| Tolerance | ±10% |
| Specs. for selected items | VDE DIN EN 60252-2 |
| Content of supply | If mounting stud then with fixing nut |
| Terminals | Connection cable: normal length 300mm or custom-tailored |
| The alternated current load may occur at most 20 times per hour with the following values: | |
| Percentage duty cycle | Ripple current loading |
| AB 0,55 % ED | 20 turn-ons with each 1,0 sec duration |
| AB 1,50 % ED | 20 turn-ons with each 2,7 sec duration |
| AB 1,70 % ED | 20 turn-ons with each 3,0 sec duration |

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand: 12/2019



■ DRAWINGS FOR SERIES MDK



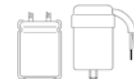
■ STANDARD VALUES TYPE MDK

| U _R ~ 50-60 Hz [V] | C _R [μF] | DC @50 Hz [%] | DC @60 Hz [%] | Dx L [mm] | VDE sign | Order code | |
|--|------------------------|------------------------|------------------------|--------------|-------------|---------------------------|---------------|
| | | | | | | Plain base: MDKA... | |
| | | | | | | Stud mounting: MDKB... | |
| 160 V ~ | 100 | 1,70 | 1,36 | 36,8 x 69 | - | 10116036,8069 | |
| | 125 | 1,70 | 1,36 | 36,8 x 69 | - | 2116036,8069 | |
| | 140 | 1,70 | 1,36 | 36,8 x 69 | - | 14116036,8069 | |
| | 160 | 1,70 | 1,36 | 36,8 x 69 | - | 16116036,8069 | |
| | 180 | 1,70 | 1,36 | 36,8 x 69 | - | 18116036,8069 | |
| | 200 | 1,70 | 1,36 | 36,8 x 69 | - | 20116036,8069 | |
| | 250 | 1,70 | 1,36 | 36,8 x 83 | - | 25116036,8083 | |
| | 300 | 1,70 | 1,36 | 36,8 x 83 | - | 30116036,8083 | |
| | 350 | 1,70 | 1,36 | 36,8 x 83 | - | 35116036,8083 | |
| | 400 | 1,70 | 1,36 | 41,8 x 83 | - | 40116041,8083 | |
| | 450 | 1,70 | 1,36 | 41,8 x 83 | - | 45116041,8083 | |
| | 500 | 1,70 | 1,36 | 41,8 x 83 | - | 50116041,8083 | |
| | 850 | 1,70 | 1,36 | 51,8 x 118 | - | 85116051,8118 | |
| | 320 V ~ | 70 | 0,55 | 0,44 | 36,8 x 83 | - | 70032036,8083 |
| 80 | | 0,55 | 0,44 | 36,8 x 83 | - | 80032036,8083 | |
| 90 | | 0,55 | 0,44 | 36,8 x 83 | - | 90032036,8083 | |
| 100 | | 0,55 | 0,44 | 36,8 x 83 | - | 10132036,8083 | |
| 125 | | 0,55 | 0,44 | 36,8 x 83 | - | 12132036,8083 | |
| 140 | | 0,55 | 0,44 | 36,8 x 83 | - | 14132036,8083 | |
| 160 | | 0,55 | 0,44 | 41,8 x 83 | - | 16132041,8083 | |

| U _R ~ 50-60 Hz [V] | C _R [μF] | DC @50 Hz [%] | DC @60 Hz [%] | Dx L [mm] | VDE sign | Order code | |
|--|------------------------|------------------------|------------------------|--------------|-------------|---------------------------|--|
| | | | | | | Plain base: MDKA... | |
| | | | | | | Stud mounting: MDKB... | |
| 320 V ~ | 180 | 0,55 | 0,44 | 41,8 x 83 | - | 18132041,8083 | |
| | 200 | 0,55 | 0,44 | 41,8 x 83 | - | 20132041,8083 | |
| | 250 | 0,55 | 0,44 | 51,8 x 118 | - | 25132051,8118 | |
| | 300 | 0,55 | 0,44 | 51,8 x 118 | - | 30132051,8118 | |
| | 10 | 1,70 | 1,36 | 36,8 x 72 | yes | 10032036,8072 | |
| | 15 | 1,70 | 1,36 | 36,8 x 72 | yes | 15032036,8072 | |
| | 20 | 1,70 | 1,36 | 36,8 x 72 | yes | 20032036,8072 | |
| | 25 | 1,70 | 1,36 | 36,8 x 72 | yes | 25032036,8072 | |
| | 30 | 1,70 | 1,36 | 36,8 x 72 | yes | 30032036,8072 | |
| | 40 | 1,70 | 1,36 | 36,8 x 72 | yes | 40032036,8072 | |
| | 50 | 1,70 | 1,36 | 36,8 x 85 | yes | 50032036,8085 | |
| | 60 | 1,70 | 1,36 | 36,8 x 85 | yes | 60032036,8085 | |
| | 70 | 1,70 | 1,36 | 36,8 x 85 | yes | 70032036,8085 | |
| | 80 | 1,70 | 1,36 | 41,8 x 85 | yes | 80032041,8085 | |
| | 90 | 1,70 | 1,36 | 41,8 x 85 | yes | 90032041,8085 | |
| | 100 | 1,70 | 1,36 | 41,8 x 85 | yes | 10132041,8085 | |
| | 125 | 1,70 | 1,36 | 51,8 x 85 | yes | 12132051,8085 | |
| | 140 | 1,70 | 1,36 | 51,8 x 118 | - | 14132051,8118 | |
| | 160 | 1,70 | 1,36 | 51,8 x 118 | - | 16132051,8118 | |
| | 180 | 1,70 | 1,36 | 51,8 x 118 | - | 18132051,8118 | |

Please state additionally to your order:

- cable length (normal: 300mm)
- with or without discharge resistor (22/47/100kΩ)
- with or without stud



MOTORSTART CAPACITOR IN
DOUBLE CAN

SHRINK SLEEVE

INSULATED

■ FEATURES

- With cap and connecting cable or plug in tags
- With clamp attachment or mounting stud
- Cable outcoming radial or axial
- VDE approval for selected products

RoHS compliant
REACH compliant

■ APPLICATIONS

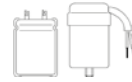
- Motorstart
- Whitegood motorcontrol

■ GENERAL SPECIFICATIONS

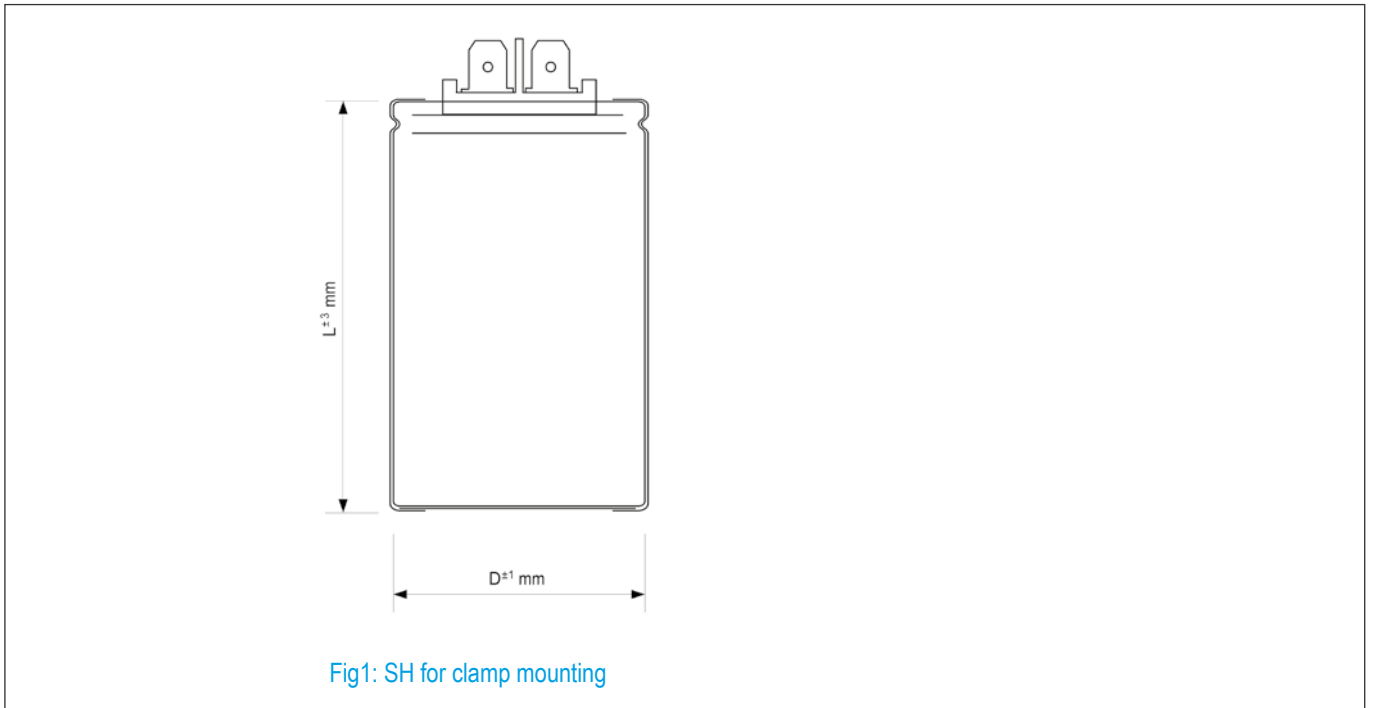
| Items | Characteristics |
|--|--|
| Clima category | 10/060/21 |
| Tolerance | ±10% |
| Specs. for selected items | VDE DIN EN 60252-2 |
| Content of supply | If mounting stud then with fixing nut |
| Terminals | Cap and cable or faston tags 4,8 mm, 6,3 mm single and double |
| The alternated current load may occur at most 20 times per hour with the following values: | |
| Percentage duty cycle | Ripple current loading |
| AB 0,55 % ED | 20 turn-ons with each 1,0 sec duration |
| AB 1,50 % ED | 20 turn-ons with each 2,7 sec duration |
| AB 1,70 % ED | 20 turn-ons with each 3,0 sec duration |

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand: 12/2019



■ DRAWINGS FOR SERIES MEK



■ STANDARD VALUES TYPE MEK

| $U_R \sim$ 50-60 Hz [V] | C_R [μ F] | DC @50 Hz [%] | DC @60 Hz [%] | Dx L [mm] | VDE sign | Order code MEK... |
|----------------------------------|---------------------|------------------------|------------------------|--------------|-------------|----------------------|
| 320 V ~ | 10 | 1,70 | 1,36 | 35x51 / 70 | yes | 10032035051 |
| | 15 | 1,70 | 1,36 | 35x66 / 85 | yes | 15032035066 |
| | 20 | 1,70 | 1,36 | 35x66 / 85 | yes | 20032035066 |
| | 25 | 1,70 | 1,36 | 35x66 / 85 | yes | 25032035066 |
| | 30 | 1,70 | 1,36 | 35x66 / 85 | yes | 30032035066 |
| | 40 | 1,70 | 1,36 | 35x66 / 85 | yes | 40032035066 |
| | 50 | 1,70 | 1,36 | 35x66 / 85 | yes | 50032035066 |
| | 60 | 1,70 | 1,36 | 35x66 / 85 | yes | 60032035066 |
| | 70 | 1,70 | 1,36 | 35x66 / 85 | yes | 70032035066 |
| | 80 | 1,70 | 1,36 | 40x66 / 85 | yes | 80032040066 |
| | 90 | 1,70 | 1,36 | 40x66 / 85 | yes | 90032040066 |
| | 100 | 1,70 | 1,36 | 40x66 / 85 | yes | 10132040066 |
| | 125 | 1,70 | 1,36 | 50x66 / 112 | yes | 12132050066 |
| | 140 | 1,70 | 1,36 | 50x96 / 112 | - | 14132050096 |
| | 160 | 1,70 | 1,36 | 50x96 / 112 | - | 16132050096 |
| | 180 | 1,70 | 1,36 | 50x96 / 112 | - | 18132050096 |
| 200 | 1,70 | 1,36 | 50x96 / 112 | - | 20132050096 | |

■ SPECIAL VALUES TYPE MEK

| $U_R \sim$ 50-60 Hz [V] | C_R [μ F] | DC @50 Hz [%] | Dx L [mm] | VDE sign | Order code MEK... |
|----------------------------------|---------------------|---------------------|--------------|-------------|----------------------|
| 320 V ~ | 95 | 0,60 | 35 x 66 | - | 95032035066 |
| 250 V ~ | 220 | 0,60 | 35 x 66 | - | 22125035076 |

Please state additionally to your order:

- cable length (normal: 300mm)
- with or without discharge resistor (22/47/100k Ω)
- with or without cap

Stand: 12/2019



PULSE AND PHOTOFLASH CAPCITORS

OUTSTANDING CHARGE-DISCHARGE CHARACTERISTIC

HIGH RELIABILITY

A, SI, LF AND G TERMINALS AVAILABLE

FEATURES

- All contacts welded
- Charge/discharge proof
- High CV product
- High flash frequencies

APPLICATIONS

- Photoflash
- Warning and safety lamps
- Laser
- Hair removal

RoHS compliant
REACH compliant

GENERAL SPECIFICATIONS

| Items | Characteristics |
|--|--|
| Rated capacitance range C_R | 10/060/21 |
| Capacitance tolerance | $\pm 10\%$; $-10\%/+30\%$ |
| U_R rated voltage | Up to 500 V |
| Number of flashes | Depending on application |
| Category temperature range | $-55^\circ\text{C} \dots +60/+70/+85/+105^\circ\text{C}$ |
| Climatic category IEC 60068 | 55/105/56 |
| Voltage proof of the external insulation | $\geq 2500 \text{ V AC}$ |

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand: 12/2019

OVERVIEW OF COMMON PHOTOFLASH CAPACITORS AND PULSE CAPACITORS

Photoflash capacitors are specially adapted to the application. Hence, the following overview included only some examples of possible capacitance / voltage / dimension -combinations. For further information please contact our technical service.

AXIAL CASE

| Voltage [V] | Capacitance [μ F] | Stored energy [Ws] | $\varnothing \times L$ [mm] |
|-------------|------------------------|--------------------|-----------------------------|
| 250 | 100 | 3,1 | 16 x 39 |
| 350 | 12 | 0,7 | 12 x 30 |
| 350 | 22 | 1,3 | 12 x 30 |
| 350 | 47 | 3,0 | 16 x 39 |
| 350 | 120 | 7,8 | 25 x 49 |
| 350 | 220 | 14 | 30 x 49 |
| 400 | 27 | 2,2 | 16 x 30 |
| 500 | 33 | 4,1 | 18 x 39 |
| 500 | 47 | 5,9 | 25 x 38 |
| 500 | 55 | 6,9 | 30 x 49 |

RADIAL CASE (WARNING BEACON)

| Voltage [V] | Capacitance [μ F] | Stored energy [Ws] | $\varnothing \times L$ [mm] |
|-------------|------------------------|--------------------|-----------------------------|
| 350 | 330 | 20,0 | 30 x 55 |
| 360 | 100 | 6,5 | 25 x 36 |
| 360 | 220 | 14,3 | 30 x 50 |

RADIAL CASE (PROFESSIONAL PULSE CAPACITORS)

| Voltage [V] | Capacitance [μ F] | Stored energy [Ws] | $\varnothing \times L$ [mm] |
|-------------|------------------------|--------------------|-----------------------------|
| 360 | 1600 | 103,7 | 35 x 66 |
| 360 | 2200 | 142,6 | 35 x 85 |
| 360 | 3300 | 214,0 | 50 x 85 |
| 360 | 3900 | 252,7 | 50 x 100 |
| 400 | 1600 | 128,0 | 45 x 70 |
| 400 | 3200 | 256,0 | 45 x 105 |
| 500 | 100 | 12,5 | 35 x 53 |
| 500 | 220 | 27,5 | 45 x 42 |
| 500 | 600 | 75,0 | 35 x 80 |
| 500 | 950 | 188,8 | 50 x 80 |
| 500 | 1600 | 200,0 | 50 x 100 |
| 500 | 2400 | 300,0 | 50 x 145 |

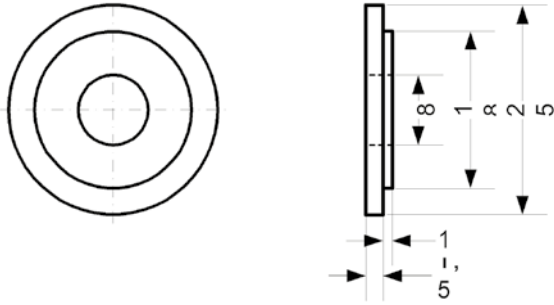
CHARGE CAPACITORS (SKS/SKP)

Bipolar charge capacitors are often used capacitive resistors to charge large photoflash capacitors banks. The bipolar construction is favorable for low thermal losses. Fischer & Tausche Capacitors is offering SKS an SKP types. These capacitors are designed on request.

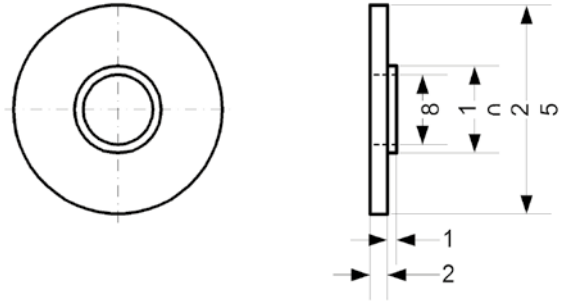
■ DRAWINGS FOR SERIES MEK

■ INSULATING DISKS AND NUTS

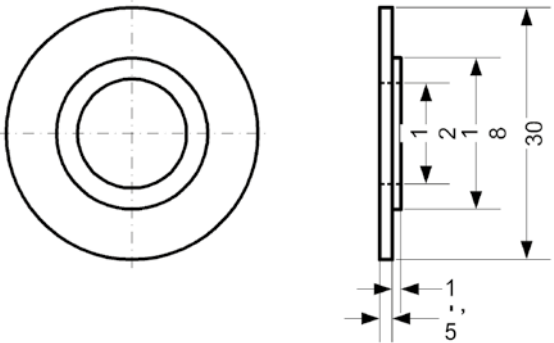
- Insulation disc for stud M8
- 18 mm mounting hole
- Order code: 18 - 18



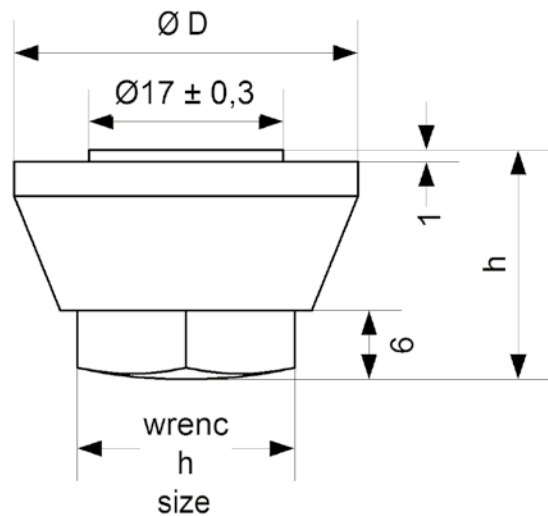
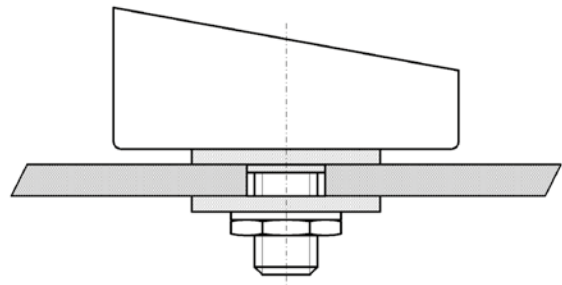
- Insulation disc for stud M8
- 10 mm mounting hole
- Order code: 18 - 10



- Insulation disc for stud M8
- 18 mm mounting hole
- Order code: 12 - 18
- Material PAG ULVO



■ MOUNTING EXAMPLE



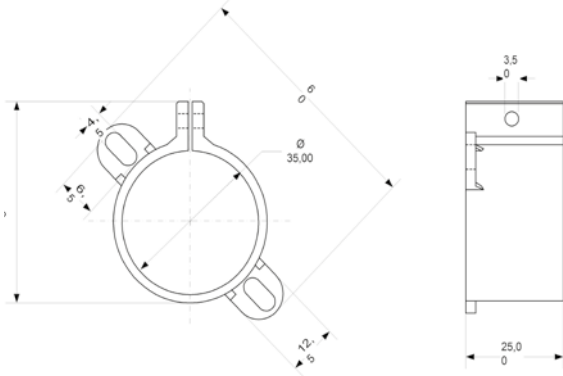
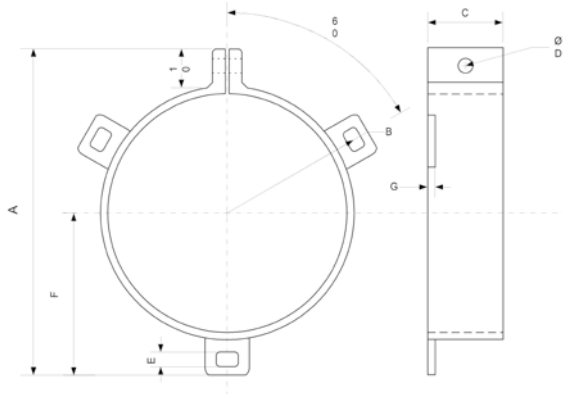
■ NYLON CAP NUTS

- For stud M8 order code: HM 8
- For stud M12 order code: HM 12

| | D | h | W |
|-------|------|--------|----|
| HM 8 | 25mm | 15mm | 17 |
| HM 12 | 30mm | 17,5mm | 19 |

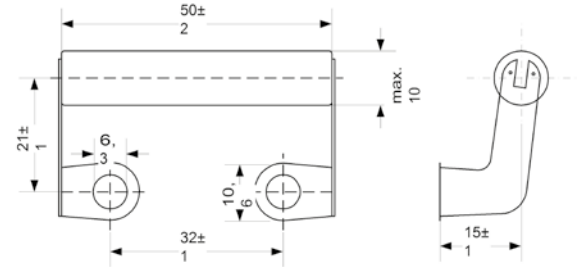
■ NYLON CLAMPS

- Can diameter e.g. 35mm
- Order code: NRS 35



■ DISCHARGE / BALANCING RESISTOR

- Resistor for discharge and/or voltage balancing
- Suitable for can diameter 65/75/90 mm
- Other values on request



| Order Code | Can Ø | A | B | C | D | E | F | G |
|------------|-------|-----|------|----|-----|-----|------|-----|
| NRS 35 | 35 | 60 | | 25 | 3,5 | 4,5 | | 2,5 |
| NRS 50 | 50 | 74 | 32 | 25 | 4 | 4,7 | 37 | 2,5 |
| NRS 65 | 65 | 87 | 38,5 | 25 | 4 | 4,7 | 43,5 | 2,5 |
| NRS 75 | 75 | 100 | 45 | 25 | 4 | 4,7 | 50 | 2,5 |
| NRS 90 | 90 | 115 | 60 | 25 | 4 | 4,7 | 65 | 2,5 |

Material: Nylon
All dimensions in mm



FTCAP

FISCHER & TAUSCHE
CAPACITORS



Headquarter: Husum, Germany



Subsidiary: Yverdon-les-Bains, Switzerland

TOP-QUALITY CAPACITORS „MADE IN GERMANY“ OR „SWISS MADE“ – SINCE 1948

Since 1948 the name Fischer & Tausche stands for high quality aluminum electrolytic capacitors and film capacitors which are produced in our main-factory in Husum.

By taking over the capacitors-section of the Leclanché-company in Switzerland in 2004 we were able to develop our productivity and product-flexibility for our clients even more effectively.

Today FTCap is in the best condition to further ensure the high quality production requirements our clients are used to.

FTCap guarantees you innovative power, a wide range of products and a unique expertise in developing client-oriented product solutions. Our strength is to create individual requirements for difficult installation-situations.



HEADQUARTER

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