



**Applications**

- Electronic ballasts

**Features**

- Long useful life
- High reliability
- Small dimensions
- Extensive field experience  
in standard electronic ballast applications

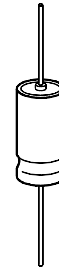
**Construction**

- Charge-discharge proof, polar
- Aluminum case with insulating sleeve
- Negative pole connected to case
- Axial leads, welded to ensure perfect electrical contact

**Taping and packing**

- Bulk
- Pallet package
- Capacitors with  $d \times l \leq 16 \times 30$  mm are also available taped on reel.

For details on taping and packing, refer to page 342.

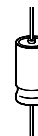


KAL0277-Z



B43697

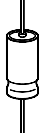
Standard – 105 °C



**Specifications and characteristics in brief**

Rated voltage $U_R$	450 VDC				
Surge voltage $U_S$	495 VDC				
Rated capacitance $C_R$	10 ... 47 $\mu$ F				
Capacitance tolerance	– 10/+ 30 % $\triangle$ Q				
Leakage current $I_L$ (5 min, 20 °C)	$I_L \leq 0,3 \mu\text{A} \cdot \left(\frac{C_R}{\mu\text{F}} \cdot \frac{U_R}{\text{V}}\right)^{0,7} + 4 \mu\text{A}$				
Self-inductance $ESL^1$ )	Diameter $d$	12 mm	14 mm	16 mm	18 mm
	Length $l$	Approx. $ESL$ (nH)			
	25 mm	—	22	26	—
	30 mm	21	24	29	34
	39 mm	—	—	33	38
Useful life 105 °C; $U_R$ ; $I_{\sim R}$ 85 °C; $U_R$ ; $I_{\sim \text{max}}$ 85 °C; $U_R$ ; $I_{\sim R}$ 40 °C; $U_R$ ; 1,85 · $I_{\sim R}$ 40 °C; $U_R$ ; 2,3 · $I_{\sim R}$	450 VDC	420 VDC	Requirements:		
	> 4 000 h	> 11 500 h	$\Delta C/C \leq \pm 30$ % of initial value		
> 9 000 h	> 17 500 h	$ESR \leq 3$ times initial spec. limit			
> 20 000 h	> 58 000 h	$I_L \leq$ initial specified limit			
> 200 000 h	—	Failure percentage: $\leq 1$ %			
—	> 200 000 h	Failure rate: $\leq 20$ fit ( $\leq 20 \cdot 10^{-9}/\text{h}$ ) (for definiton “fit”, refer to chapter “Quality”, page 62)			
Voltage endurance test 105 °C; $U_R$	3 000 h	5 000 h	Post test requirements:		
			$\Delta C/C \leq \pm 10$ % of initial value		
		$ESR \leq 1,3$ % times initial spec. limit			
		$I_L \leq$ initial specified limit			
Vibration resistance	To IEC 60068-2-6, test Fc: displacement amplitude 0,75 mm, frequency range 10 Hz to 55 Hz, acceleration max. 10 g, duration 3 × 2 h				
IEC climatic category	To IEC 60068-1: 40/105/56 (– 40 °C/+ 105 °C/56 days damp heat test)				
Detail specification	Similar to CECC 30301-801				
Sectional specification	IEC 60384-4				

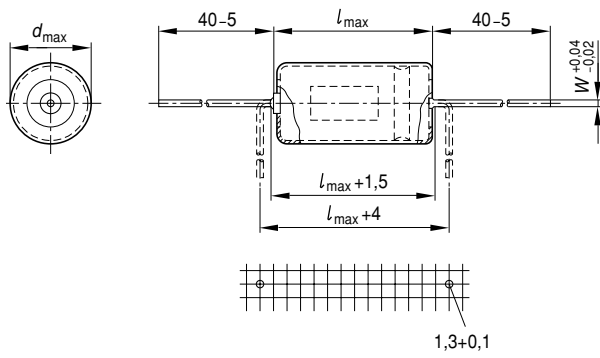
1) If optimum circuit design is used, the values are lower by 30 %.



B43697

Standard – 105 °C

**Dimensional drawings**



KAL0680-9

**Dimensions, weights and packing units**

$d \times l$ mm	$d_{max} \times l_{max}$ mm	Wire $W$ mm	Approx. weight g	Packing units (pieces)		
				Bulk	Reel	Pallet
12 × 30	12,5 × 30,5	0,8	5,1	600	450	288
14 × 30	14,5 × 30,5	0,8	6,8	400	350	200
16 × 30	16,5 × 30,5	0,8	8,9	350	250	180
18 × 30	18,5 × 30,5	1,0	11,1	300	—	160
18 × 39	18,5 × 40	1,0	14,7	250	—	160



B43697

Standard – 105 °C

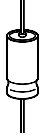


**Case dimensions and ordering codes**

$U_R$ VDC	$C_R$ $\mu\text{F}$	Case dim. $d \times l$ mm	Ordering code		
			Bulk	Pallet package	Reel
450	10	12 × 30	B43697A5106Q000	B43697A5106Q007	B43697A5106Q009
	15	14 × 30	B43697A5156Q000	B43697A5156Q007	B43697A5156Q009
	22	16 × 30	B43697A5226Q000	B43697A5226Q007	B43697A5226Q009
	33	18 × 30	B43697A5336Q000	B43697A5336Q007	
	47	18 × 39	B43697A5476Q000	B43697A5476Q007	

**Technical data**

$C_R$ 100 Hz 20 °C $\mu\text{F}$	$ESR_{\text{typ}}$ 100 Hz 20 °C $\Omega$	$ESR_{\text{max}}$ 100 Hz 20 °C $\Omega$	$ESR_{\text{max}}$ 100 Hz -25 °C $\Omega$	$ESR_{\text{max}}$ 10 kHz 20 °C $\Omega$	$Z_{\text{max}}$ 100 kHz 20 °C $\Omega$	$I_{\sim\text{max}}$ 10 kHz 40 °C A	$I_{\sim\text{max}}$ 10 kHz 85 °C A	$I_{\sim\text{R}}$ 10 kHz 105 °C A
450 VDC								
10	7,5	11,0	300	4,4	4,3	1,20	0,95	0,50
15	4,8	7,6	170	3,0	2,9	1,55	1,20	0,65
22	3,2	5,2	120	2,0	1,9	2,05	1,60	0,85
33	2,1	3,5	95	1,4	1,3	2,45	1,90	1,00
47	1,5	2,6	70	1,0	0,9	3,40	2,65	1,40

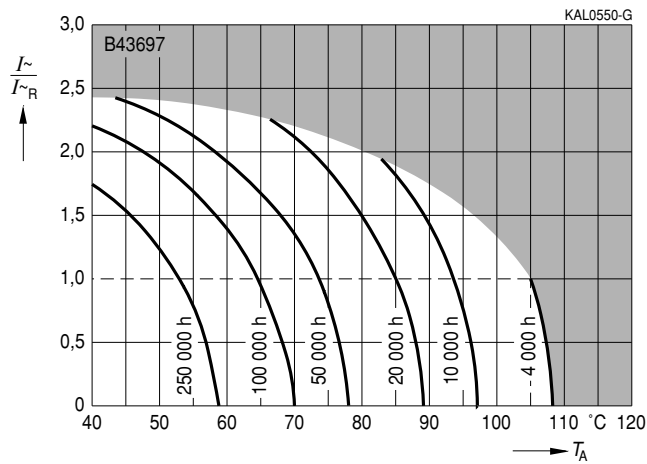


B43697

Standard – 105 °C

**Useful life**

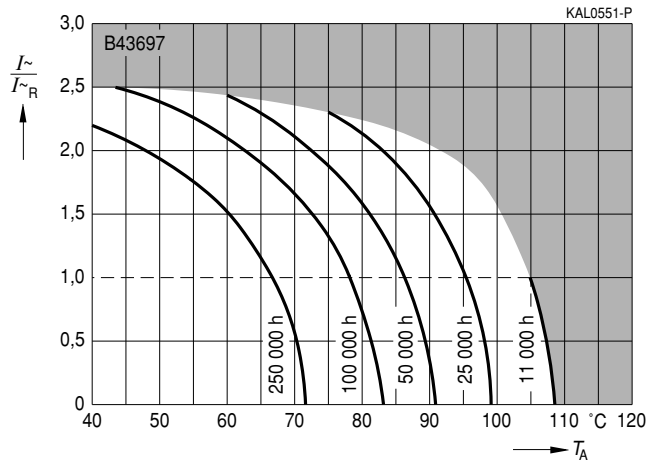
depending on ambient temperature  $T_A$  under ripple current operating conditions at  $U_R$ <sup>1)</sup>



**Useful life**

depending on ambient temperature  $T_A$  under ripple current operating conditions at  $U_{op}$ <sup>1)</sup>

$U_{op} = 420 \text{ V}$



1) Refer to page 40 for an explanation on how to interpret the useful life graphs.

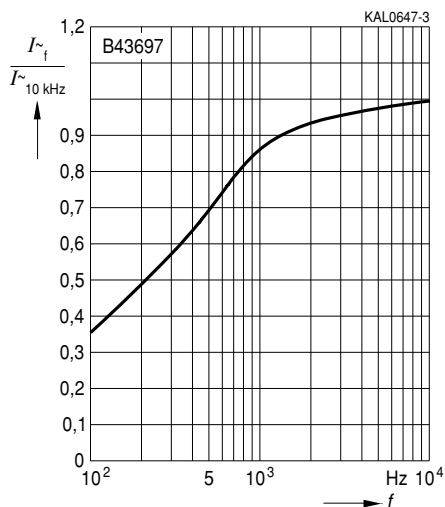


B43697

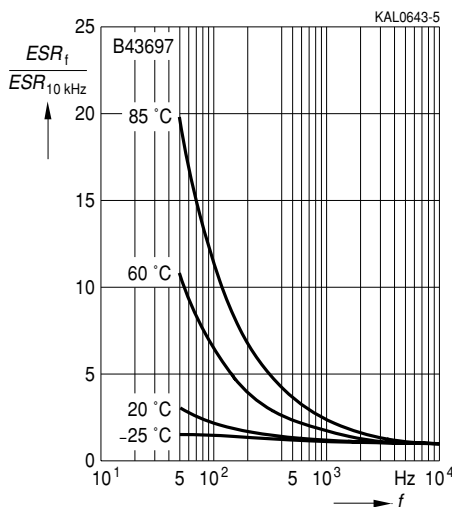
Standard – 105 °C



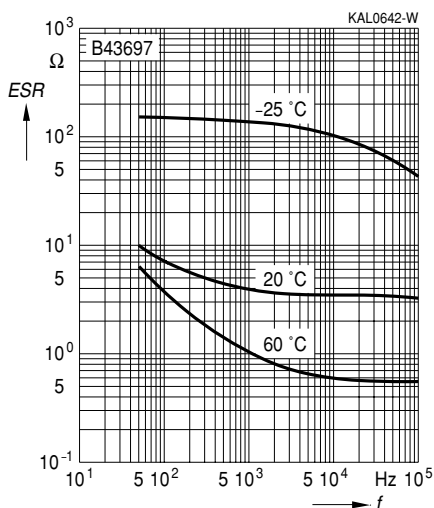
**Frequency factor of permissible ripple current  $I_{\sim}$  versus frequency  $f$**



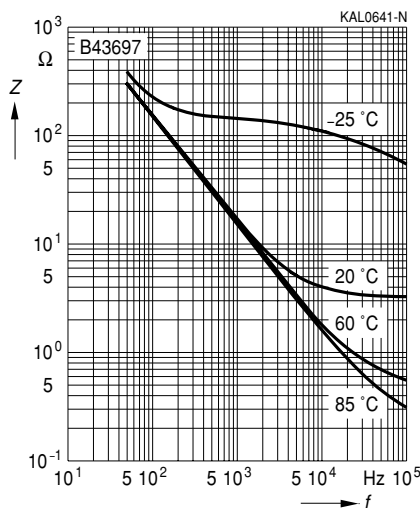
**Frequency characteristics of ESR at different temperatures**  
Typical behavior



**Equivalent series resistance ESR versus frequency  $f$  at different temperatures**  
Typical behavior for 10  $\mu$ F/450 V



**Impedance Z versus frequency  $f$  at different temperatures**  
Typical behavior for 10  $\mu$ F/450 V



**Herausgegeben von EPCOS AG**

**Unternehmenskommunikation, Postfach 80 17 09, 81617 München, DEUTSCHLAND**

**☎ ++49 89 636 09, FAX (0 89) 636-2 26 89**

© EPCOS AG 2002. Vervielfältigung, Veröffentlichung, Verbreitung und Verwertung dieser Broschüre und ihres Inhalts ohne ausdrückliche Genehmigung der EPCOS AG nicht gestattet.

Bestellungen unterliegen den vom ZVEI empfohlenen Allgemeinen Lieferbedingungen für Erzeugnisse und Leistungen der Elektroindustrie, soweit nichts anderes vereinbart wird.

Diese Broschüre ersetzt die vorige Ausgabe.

Fragen über Technik, Preise und Liefermöglichkeiten richten Sie bitte an den Ihnen nächstgelegenen Vertrieb der EPCOS AG oder an unsere Vertriebsgesellschaften im Ausland. Bauelemente können aufgrund technischer Erfordernisse Gefahrstoffe enthalten. Auskünfte darüber bitten wir unter Angabe des betreffenden Typs ebenfalls über die zuständige Vertriebsgesellschaft einzuholen.

**Published by EPCOS AG**

**Corporate Communications, P.O. Box 80 17 09, 81617 Munich, GERMANY**

**☎ ++49 89 636 09, FAX (0 89) 636-2 26 89**

© EPCOS AG 2002. Reproduction, publication and dissemination of this brochure and the information contained therein without EPCOS' prior express consent is prohibited.

Purchase orders are subject to the General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry recommended by the ZVEI (German Electrical and Electronic Manufacturers' Association), unless otherwise agreed.

This brochure replaces the previous edition.

For questions on technology, prices and delivery please contact the Sales Offices of EPCOS AG or the international Representatives.

Due to technical requirements components may contain dangerous substances. For information on the type in question please also contact one of our Sales Offices.