

### Applications

- Electronic ballasts

### Features

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

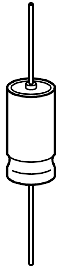
### Construction

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

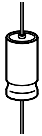
### Taping and packing

- 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.

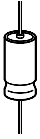


KAL0277-Z


**Specifications and characteristics in brief**

Rated voltage $U_R$	450 VDC				
Surge voltage $U_S$	495 VDC				
Rated capacitance $C_R$	10 ... 47 $\mu\text{F}$				
Capacitance tolerance	– 10/+ 30 % $\triangleq$ 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	450 VDC	420 VDC	Requirements: $\Delta C/C \leq \pm 30$ % of initial value $ESR \leq 3$ times initial spec. limit $I_L \leq$ initial specified limit Failure percentage: $\leq 1$ % Failure rate: $\leq 20$ fit ( $\leq 20 \cdot 10^{-9}/\text{h}$ ) (for definiton "fit", refer to chapter "Quality", page 62)		
105 °C; $U_R$ ; $I_{\sim R}$	> 4 000 h	> 11 500 h			
85 °C; $U_R$ ; $I_{\sim \text{max}}$	> 9 000 h	> 17 500 h			
85 °C; $U_R$ ; $I_{\sim R}$	> 20 000 h	> 58 000 h			
40 °C; $U_R$ ; $1,85 \cdot I_{\sim R}$	> 200 000 h	—			
40 °C; $U_R$ ; $2,3 \cdot I_{\sim R}$	—	> 200 000 h			
Voltage endurance test	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		
105 °C; $U_R$					
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 $3 \times 2$ 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				

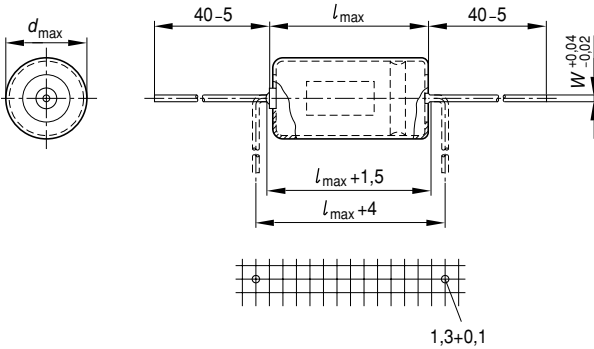
1) If optimum circuit design is used, the values are lower by 30 %.



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Standard – 105 °C

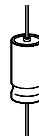
### Dimensional drawings



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


**Case dimensions and ordering codes**

$U_R$	$C_R$	Case dim. $d \times l$	Ordering code		
VDC	$\mu\text{F}$	mm	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**

$C_R$	$ESR_{\text{typ}}$	$ESR_{\text{max}}$	$ESR_{\text{max}}$	$ESR_{\text{max}}$	$Z_{\text{max}}$	$I_{\text{max}}$	$I_{\text{max}}$	$I_{\text{R}}$
100 Hz	100 Hz	100 Hz	100 Hz	10 kHz	100 kHz	10 kHz	10 kHz	10 kHz
20 °C	20 °C	20 °C	-25 °C	20 °C	20 °C	40 °C	85 °C	105 °C
$\mu\text{F}$	$\Omega$	$\Omega$	$\Omega$	$\Omega$	$\Omega$	A	A	A
<b>450 VDC</b>								
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

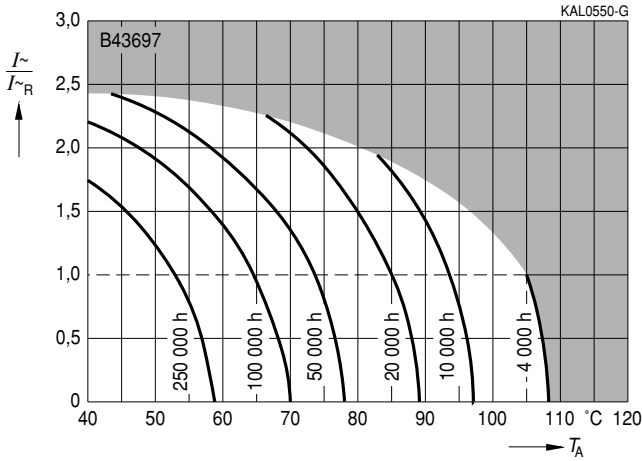


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**Standard – 105 °C**

**Useful life**

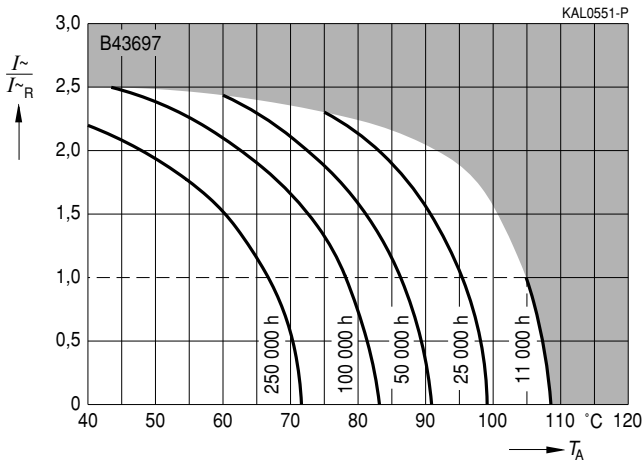
depending on ambient temperature  $T_A$  under ripple current operating conditions at  $U_R^{1)}$



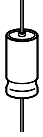
**Useful life**

depending on ambient temperature  $T_A$  under ripple current operating conditions at  $U_{op}^{1)}$

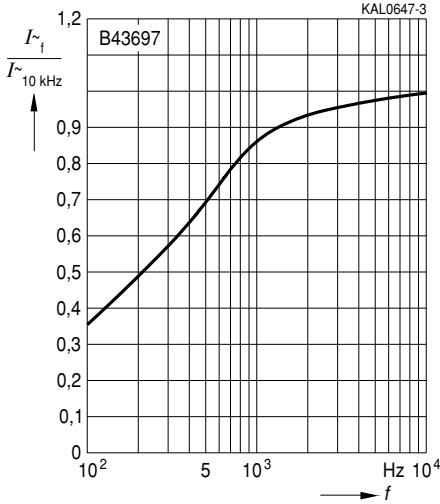
$U_{op} = 420 \text{ V}$



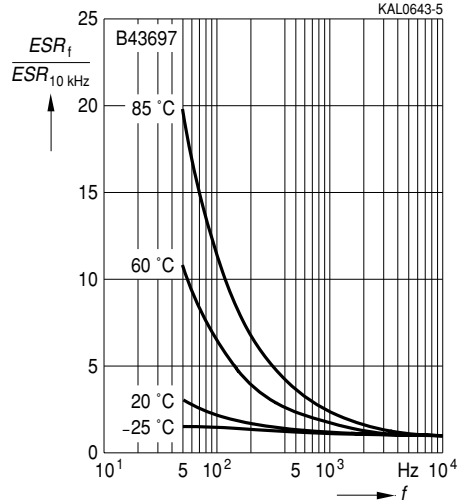
1) Refer to page 40 for an explanation on how to interpret the useful life graphs.



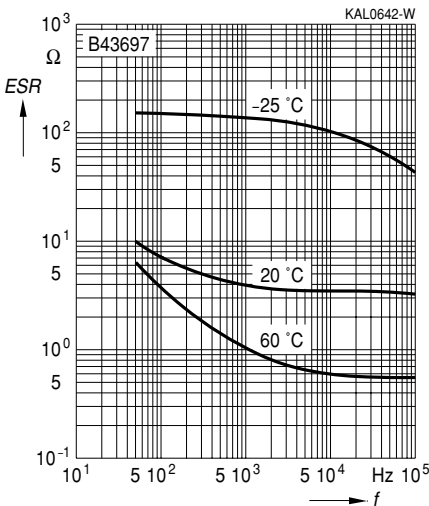
**Frequency factor of permissible ripple current  $I_{\sim}$  versus frequency  $f$**



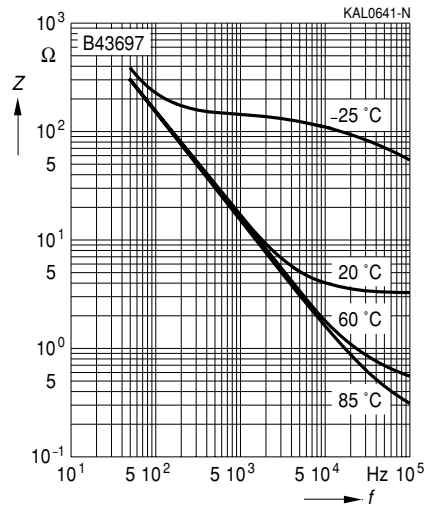
**Frequency characteristics of ESR at different temperatures**  
Typical behavior



**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



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