

Long-life grade capacitors
Lowest impedance

Applications

- Circuits that requires very high ambient temperature environments and heavy duty services
- Automotive
- Industrial
- High-temperature environments

Features

- Lowest impedance at high frequency
- Lowest *ESR*
- High reliability and long useful life
- High ripple current capability
- Wide temperature range

Construction

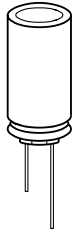
- Radial leads
- Charge-discharge proof, polar
- Aluminum case with insulating sleeve
- Minus pole marking on the insulating sleeve
- Case with safety vent
- Stand off rubber seal

Delivery mode

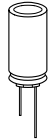
Special terminal configurations and packing:

- Bulk
- Taped, Ammo pack
- Cut
- PAPR (protection against polarity reversal)
- Kinked

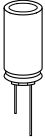
Refer to page 503 for further details and ordering example.



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Specifications and characteristics in brief

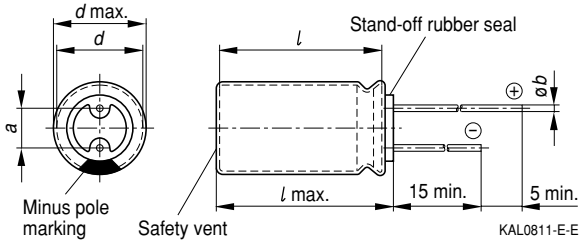
Rated voltage U_R	10 ... 50 VDC	
Surge voltage U_S	$1,15 \cdot U_R$	
Rated capacitance C_R	100 ... 4 700 μ F	
Capacitance tolerance	$\pm 20 \% \triangleq M$	
Useful life 150 °C; U_R ; I_R	> 1 000 h	Requirements: $\Delta C/C \leq \pm 45 \%$ of initial value $ESR \leq 3$ times initial specified limit $I_L \leq$ initial specified limit Failure percentage: $\leq 1 \%$ Failure rate: ≤ 10 fit ($\leq 10 \cdot 10^{-9}/h$) (for definition "fit", refer to chapter "Quality", page 62)
Voltage endurance test 150 °C; U_R	1 000 h	Post test requirements: $\Delta C/C \leq \pm 30 \%$ of initial value $\tan \delta \leq 3$ times initial specified limit $I_L \leq$ initial specified limit
Vibration resistance	To IEC 60068-2-6, test Fc: displacement amplitude 0,75 mm, frequency range 10 ... 2000 Hz, acceleration max. 10 g, duration 3×2 h	
IEC climatic category	To IEC 60068-1: 55/150/56 (– 55 °C/+ 150 °C/56 days damp heat test)	
Sectional specification	IEC 60384-4	



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150 °C

Dimensional drawing



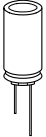
Dimensions and weights

Dimensions (mm)				Approx. weight g
$d \times l$	$d_{\max} \times l_{\max}$	$a \pm 0,5$	b	
12,5 × 25	13 × 27	5,0	$0,60 \pm 0,05$	4,5
16 × 25	16,5 × 27	7,5	$0,80 \pm 0,05$	7,5
16 × 31,5	16,5 × 33,5	7,5	$0,80 \pm 0,05$	7,8
18 × 31,5	18,5 × 32,5	7,5	$0,80 \pm 0,1$	11
18 × 35	18,5 × 36	7,5	$0,80 \pm 0,1$	13
18 × 40	18,5 × 41	7,5	$0,80 \pm 0,1$	16
20 × 40	20,5 × 42	10,0	$0,80 \pm 0,1$	20

Overview of available types

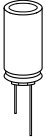
U_R (VDC)	10	16	25	35	50
C_R (µF)	Case dimensions $d \times l$ (mm)				
100				12,5 × 25	12,5 × 25
220			12,5 × 25	12,5 × 25	16 × 25
330		12,5 × 25	12,5 × 25	16 × 25	16 × 31,5
470	12,5 × 25	12,5 × 25	16 × 25	16 × 31,5	18 × 35
1 000	12,5 × 25	16 × 25	16 × 31,5	18 × 40	20 × 40
2 200	16 × 31,5	18 × 31,5	18 × 35	20 × 40	
3 300	18 × 35	18 × 40	20 × 40		
4 700	18 × 40	20 × 40			

Other voltage and capacitance ratings are also available upon request.


Technical data and ordering codes

U_R	C_R	Case dimensions $d \times l$ mm	I_L 5 min 20 °C μA	$\tan\delta_{\max}$ 120 Hz 20 °C	ESR_{\max} 120 Hz 20 °C Ω	$I_{\sim R}$ 100 kHz 150 °C mA	Ordering code ¹⁾	
VDC	10	470	12,5 × 25	141	0,20	0,71	385	B41868A3477M00*
	1 000	12,5 × 25	300	0,20	0,33	550	B41868A3108M00*	
	2 200	16 × 31,5	660	0,22	0,17	1000	B41868A3228M00*	
	3 300	18 × 35	990	0,24	0,12	1200	B41868A3338M00*	
	4 700	18 × 40	1410	0,26	0,09	1300	B41868A3478M00*	
16	330	12,5 × 25	159	0,16	0,80	380	B41868A4337M00*	
	470	12,5 × 25	226	0,16	0,56	430	B41868A4477M00*	
	1 000	16 × 25	480	0,16	0,27	750	B41868A4108M00*	
	2 200	18 × 31,5	1056	0,18	0,14	1200	B41868A4228M00*	
	3 300	18 × 40	1584	0,20	0,10	1300	B41868A4338M00*	
	4 700	20 × 40	2256	0,22	0,08	1400	B41868A4478M00*	
25	220	12,5 × 25	165	0,14	1,06	370	B41868A5227M00*	
	330	12,5 × 25	248	0,14	0,70	400	B41868A5337M00*	
	470	16 × 25	353	0,14	0,49	550	B41868A5477M00*	
	1 000	16 × 31,5	750	0,14	0,23	850	B41868A5108M00*	
	2 200	18 × 35	1650	0,16	0,12	1150	B41868A5228M00*	
	3 300	18 × 40	2475	0,18	0,09	1400	B41868A5338M00*	
35	100	12,5 × 25	105	0,12	1,99	300	B41868A7107M00*	
	220	12,5 × 25	231	0,12	0,90	350	B41868A7227M00*	
	330	16 × 25	347	0,12	0,60	500	B41868A7337M00*	
	470	16 × 31,5	494	0,12	0,42	650	B41868A7477M00*	
	1 000	18 × 40	1050	0,12	0,20	1100	B41868A7108M00*	
	2 200	20 × 40	2310	0,14	0,11	1500	B41868A7228M00*	
50	100	12,5 × 25	150	0,10	1,66	300	B41868A6107M00*	
	220	16 × 25	330	0,10	0,75	430	B41868A6227M00*	
	330	16 × 31,5	495	0,10	0,50	550	B41868A6337M00*	
	470	18 × 35	705	0,10	0,35	750	B41868A6477M00*	
	1 000	20 × 40	1500	0,10	0,17	1200	B41868A6108M00*	

1) * = "0" for bulk version. For taping versions, other lead configurations and packing information see page 503.



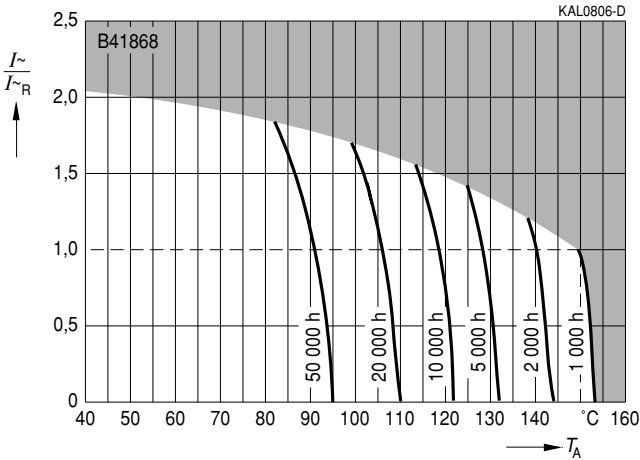
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150 °C

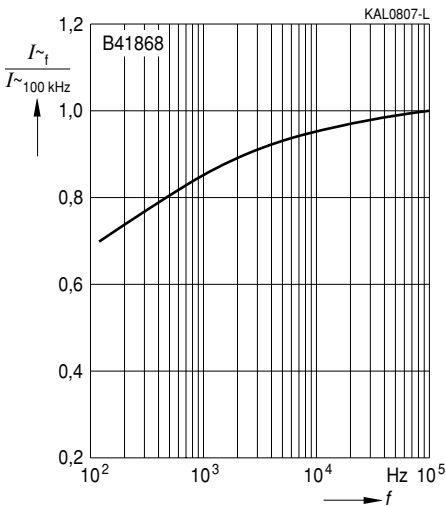
Useful life

depending on ambient temperature T_A under ripple current operating conditions¹⁾

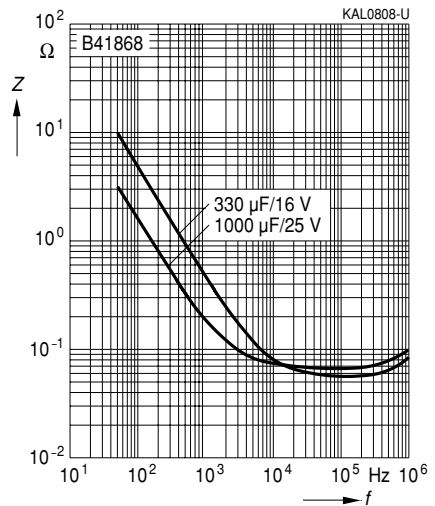
$U_R = 10 \dots 50 \text{ VDC}$



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



Impedance Z versus frequency f
Typical behavior at 20 °C



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

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