

LL grade
Standard version for entertainment
and industrial electronics

Construction

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

Features

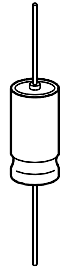
- Can be operated at temperatures of up to 105 °C ¹⁾
- High ripple current capability
- Operating voltage up to 500 V–

Applications

- Standard applications in entertainment and industrial electronics
- For filtering, coupling and pulse circuits

Tape packaging

Capacitors with $d \leq 16$ mm are also available on tape.
Refer to [page 420](#) for information on tapes and examples on how to order them.

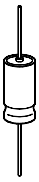


KAL0277-Z

Specifications and characteristics in brief

	B 41 682	B 43 682
Rated voltage U_R	10 ... 100 V–	160 ... 500 V–
Surge voltage U_S	$1,15 \cdot U_R$	$1,15 \cdot U_R$ (for $U_R \leq 250$ V–) $1,10 \cdot U_R$ (for $U_R \geq 350$ V–)
Rated capacitance C_R	47 ... 15 000 μ F	4,7 ... 220 μ F
Capacitance tolerance	$- 10/+ 50 \% \triangleq T$	$- 10/+ 50 \% \triangleq T$
Useful life		
40 °C, U_R	$> 200\,000$ h ($1,5 \cdot I_{-R,85^\circ C}$)	$> 200\,000$ h ($1,5 \cdot I_{-R,85^\circ C}$)
85 °C, U_R ; I_{-R}	$> 5\,000$ h	$> 8\,000$ h
Failure percentage	$\leq 0,5 \%$ (during useful life)	$\leq 0,5 \%$ (during useful life)
Failure rate	≤ 20 fit ($\leq 20 \cdot 10^{-9}/h$)	≤ 20 fit ($\leq 20 \cdot 10^{-9}/h$)
Voltage endurance test	5 000 h, 85 °C (at U_R)	5 000 h, 85 °C (at U_R)

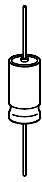
1) Operation at 105 °C and 0,6 $I_{-max, 85^\circ C}$ permissible for a total of 500 h.



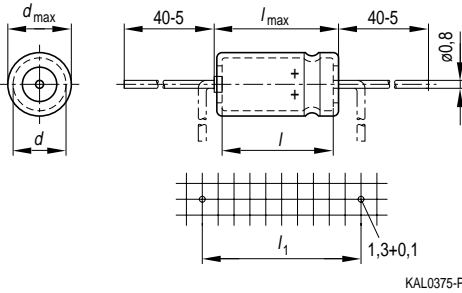
B 41 682
B 43 682

Specifications and characteristics in brief

	B 41 682		B 43 682		
Leakage current I_{lka} (5 min, 20 °C)	$I_{lka} \leq 0,3 \mu\text{A} \cdot \left(\frac{C_R}{\mu\text{F}} \cdot \frac{U_R}{\text{V}} \right)^{0,7} + 4 \mu\text{A}$				
Self-inductance L_{ESL}	Diam. d	12 mm	14 mm	16 mm	18 mm
	Length l	Approx. L_{ESL} (nH)			
	20 mm	29	–	–	–
	25 mm	32	32	–	–
	30 mm	36	35	34	–
	39 mm	–	–	41	40
IEC climatic category	in accordance with IEC 68–1 25/085/56 (–25 °C/+85 °C, 56 days damp heat test)				
Detail specification	similar to CECC 30 301-049				
Sectional specification	DIN IEC 384–4				
Vibration resistance	in accordance with IEC 68–2–6, test Fc: displacement amplitude 0,75 mm, frequency range 10 ... 55 Hz, acceleration max. 10 g, duration 3 × 2 h				



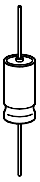
Dimensional drawing



Dimensions (mm)			Approximate weight (g)
$d \times l$	$d_{max} \times l_{max}$	Minimum lead spacing l_1	
12 × 20	12,5 × 21	25	3,5
12 × 25	12,5 × 25,5	29,5	4,2
12 × 30	12,5 × 30,5	34,5	5,1
14 × 25	14,5 × 25,5	34,5	5,7
14 × 30	14,5 × 30,5	34,5	6,8
16 × 30	16,5 × 30,5	44	8,9
16 × 39	16,5 × 40	44	11,7
18 × 39	18,5 × 40	44	14,7

Packing units

Case dimensions $d \times l$ (mm)	Bulk PU (pcs.)	Reel packing PU (pcs./reel)
12 × 20	750	450
12 × 25	700	450
12 × 30	600	450
14 × 25	500	350
14 × 30	400	350
16 × 30	350	250
16 × 39	300	250
18 × 39	250	—



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Overview of available types

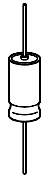
Type B 41 682

U_R (V-)	10	16	25	40	63	100
C_R (μ F)	Case dimensions $d \times l$ (mm)					
47						12 × 20
68						12 × 20
100					12 × 20	12 × 25
150					12 × 20	12 × 30
220			12 × 20	12 × 20	12 × 20	14 × 30
330				12 × 20	12 × 30	16 × 30
470	12 × 20	12 × 20	12 × 20	12 × 25	14 × 30	16 × 39
680			12 × 20	12 × 30	16 × 30	18 × 39
1 000	12 × 20	12 × 20	12 × 25	14 × 30	16 × 39	
1 500	12 × 20	12 × 25	14 × 25	16 × 30	18 × 39	
2 200	12 × 25	12 × 30	14 × 30	16 × 39		
3 300	12 × 30	14 × 30	16 × 30	18 × 39		
4 700	14 × 30	16 × 30	16 × 39			
6 800	16 × 30	16 × 39				
10 000	16 × 39	18 × 39				
15 000	18 × 39					

Type B 43 682

U_R (V-)	160	250	350	400	450	500
C_R (μ F)	Case dimensions $d \times l$ (mm)					
4,7					12 × 20	12 × 20
6,8					12 × 20	
10			12 × 20	12 × 30	12 × 25	12 × 30
22		12 × 20	12 × 30	14 × 30	14 × 30	16 × 30
33	12 × 25	12 × 30	14 × 30	16 × 30	16 × 30	
47	12 × 25	14 × 30	16 × 30	16 × 39	16 × 39	18 × 39
68				18 × 39		
100	16 × 30	16 × 39	18 × 39			
150		18 × 39				
220	16 × 39					

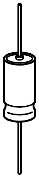
The above capacitance and voltage ratings are available in different cases upon request. Other capacitance and voltage ratings are also available upon request.



Technical data and ordering codes

U_R	C_R	Case dimensions $d \times l$ mm	$R_{ESR, max}$ 100 Hz 20 °C mΩ	Z_{max} 20 kHz 20 °C mΩ	I_{-max} 100 Hz 40 °C A	I_{-R} 100 Hz 85 °C A	Ordering code 1) Short code
B41682-							
10	470	12 × 20	500	420	1,7	0,65	-A3477-T
	1 000	12 × 20	410	360	2,1	0,80	-A3108-T
	1 500	12 × 20	410	360	2,2	0,85	-A3158-T
	2 200	12 × 25	280	240	2,9	1,1	-A3228-T
	3 300	12 × 30	200	170	3,6	1,4	-A3338-T
	4 700	14 × 30	140	115	4,4	1,7	-A3478-T
	6 800	16 × 30	100	87	5,7	2,2	-A3688-T
	10 000	16 × 39	70	59	7,3	2,8	-A3109-T
15 000	18 × 39	55	43	9,4	3,6	-A3159-T	
16	470	12 × 20	520	430	1,7	0,65	-A4477-T
	1 000	12 × 20	430	375	2,0	0,75	-A4108-T
	1 500	12 × 25	290	260	2,6	1,0	-A4158-T
	2 200	12 × 30	200	175	3,4	1,3	-A4228-T
	3 300	14 × 30	150	135	4,4	1,7	-A4338-T
	4 700	16 × 30	100	90	5,2	2,0	-A4478-T
	6 800	16 × 39	70	62	7,0	2,7	-A4688-T
	10 000	18 × 39	60	52	7,8	3,0	-A4109-T
25	220	12 × 20	560	420	1,3	0,50	-A5227-T
	470	12 × 20	400	330	1,8	0,70	-A5477-T
	680	12 × 20	400	350	1,8	0,70	-A5687-T
	1 000	12 × 25	270	240	2,6	1,0	-A5108-T
	1 500	14 × 25	185	165	3,4	1,3	-A5158-T
	2 200	14 × 30	130	120	4,2	1,6	-A5228-T
	3 300	16 × 30	100	93	5,2	2,0	-A5338-T
	4 700	16 × 39	70	65	6,8	2,6	-A5478-T

1) To obtain the required ordering code, prefix the type number to the short code. E. g.: B41682-A3477-T



B 41 682

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Technical data and ordering codes

U_R	C_R	Case dimensions $d \times l$ mm	$R_{ESR, max}$ 100 Hz 20 °C mΩ	Z_{max} 20 kHz 20 °C mΩ	I_{-max} 100 Hz 40 °C A	I_{-R} 100 Hz 85 °C A	Ordering code 1) Short code
V-	μF						
B41682-							
40	220	12 × 20	540	400	1,4	0,55	-A7227-T
	330	12 × 20	520	430	1,6	0,60	-A7337-T
	470	12 × 25	370	300	2,1	0,80	-A7477-T
	680	12 × 30	255	210	2,7	1,1	-A7687-T
	1 000	14 × 30	175	145	3,4	1,3	-A7108-T
	1 500	16 × 30	120	100	4,2	1,6	-A7158-T
	2 200	16 × 39	85	70	5,7	2,2	-A7228-T
	3 300	18 × 39	62	50	6,8	2,6	-A7338-T
63	100	12 × 20	700	500	1,0	0,40	-A8107-T
	150	12 × 20	540	360	1,3	0,50	-A8157-T
	220	12 × 20	520	400	1,4	0,55	-A8227-T
	330	12 × 30	320	250	2,1	0,80	-A8337-T
	470	14 × 30	230	180	2,6	1,0	-A8477-T
	680	16 × 30	160	130	3,4	1,3	-A8687-T
	1 000	16 × 39	110	90	4,7	1,8	-A8108-T
	1 500	18 × 39	80	65	5,7	2,2	-A8158-T
100	47	12 × 20	1200	1000	0,70	0,25	-A9476-T
	68	12 × 20	950	650	0,80	0,30	-A9686-T
	100	12 × 25	650	450	1,2	0,45	-A9107-T
	150	12 × 30	440	310	1,6	0,60	-A9157-T
	220	14 × 30	300	210	2,1	0,80	-A9227-T
	330	16 × 30	205	145	2,6	1,0	-A9337-T
	470	16 × 39	145	100	3,6	1,4	-A9477-T
	680	18 × 39	105	75	4,4	1,7	-A9687-T

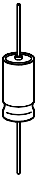
1) To obtain the required ordering code, prefix the type number to the short code. E. g.: B41682-A7227-T



Technical data and ordering codes

U_R	C_R	Case dimensions $d \times l$ mm	$R_{ESR, max}$ 100 Hz 20 °C mΩ	Z_{max} 20 kHz 20 °C mΩ	I_{-max} 100 Hz 40 °C A	I_{-R} 100 Hz 85 °C A	Ordering code 1) Short code
B43682-							
160	33	12 × 25	5000	3500	0,49	0,19	-A1336-T
	47	12 × 25	3600	2500	0,65	0,25	-A1476-T
	100	16 × 30	1700	1200	1,1	0,44	-A1107-T
	220	16 × 39	800	550	2,1	0,79	-A1227-T
250	22	12 × 20	6600	4200	0,42	0,16	-A2226-T
	33	12 × 30	4400	2800	0,60	0,23	-A2336-T
	47	14 × 30	3100	2000	0,81	0,31	-A2476-T
	100	16 × 39	1500	950	1,4	0,55	-A2107-T
	150	18 × 39	1000	650	1,9	0,71	-A2157-T
350	10	12 × 20	12000	6000	0,29	0,11	-A4106-T
	22	12 × 30	5500	2800	0,52	0,20	-A4226-T
	33	14 × 30	3600	1900	0,65	0,25	-A4336-T
	47	16 × 30	2500	1300	0,86	0,33	-A4476-T
	100	18 × 39	1200	650	1,5	0,59	-A4107-T
400	10	12 × 30	12000	6000	0,29	0,11	-A9106-T
	22	14 × 30	5000	2500	0,55	0,21	-A9226-T
	33	16 × 30	3500	1700	0,75	0,29	-A9336-T
	47	16 × 39	2300	1200	1,0	0,39	-A9476-T
	68	18 × 39	1700	950	1,3	0,50	-A9686-T
450	4,7	12 × 20	14000	6000	0,23	0,09	-A5475-T
	6,8	12 × 20	15000	7000	0,23	0,09	-A5685-T
	10	12 × 25	10000	4800	0,31	0,12	-A5106-T
	22	14 × 30	4500	2200	0,57	0,22	-A5226-T
	33	16 × 30	3000	1500	0,70	0,27	-A5336-T
	47	16 × 39	2100	1050	1,0	0,39	-A5476-T
500	4,7	12 × 20	33000	18000	0,18	0,07	-A6475-T
	10	12 × 30	16000	9000	0,34	0,13	-A6106-T
	22	16 × 30	7000	4200	0,57	0,22	-A6226-T
	47	18 × 39	3400	2000	0,99	0,38	-A6476-T

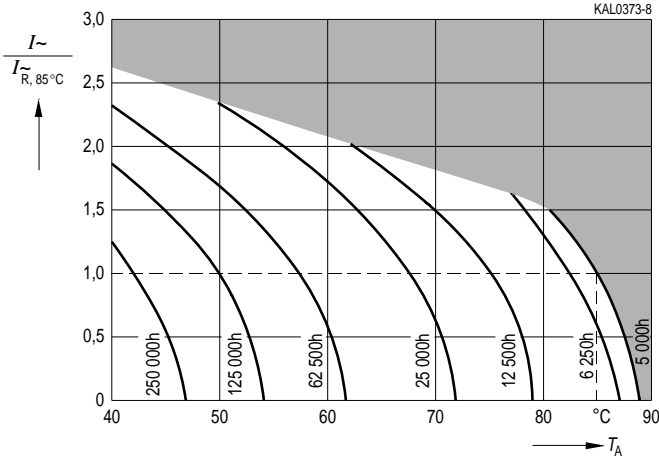
1) To obtain the required ordering code, prefix the type number to the short code. E. g.: B43682-A1336-T



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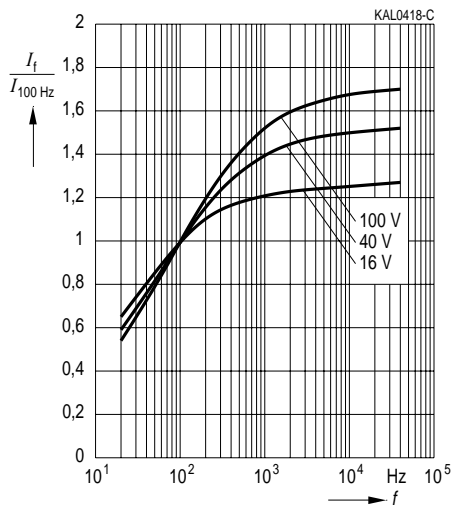
Useful life

versus ambient temperature T_A under ripple current operating conditions ¹⁾



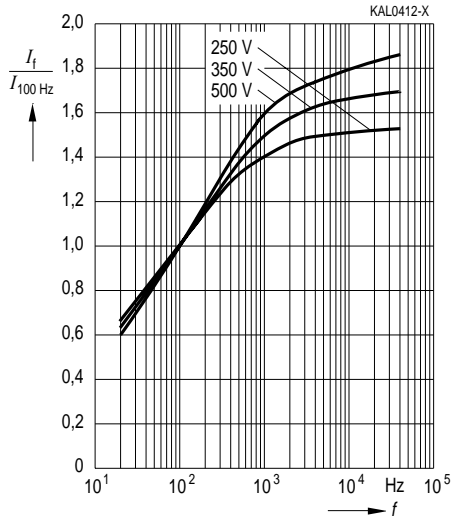
Permissible ripple current I_r versus frequency f

$U_R \leq 100 \text{ V}$ —

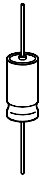


Permissible ripple current I_r versus frequency f

$U_R \geq 160 \text{ V}$ —



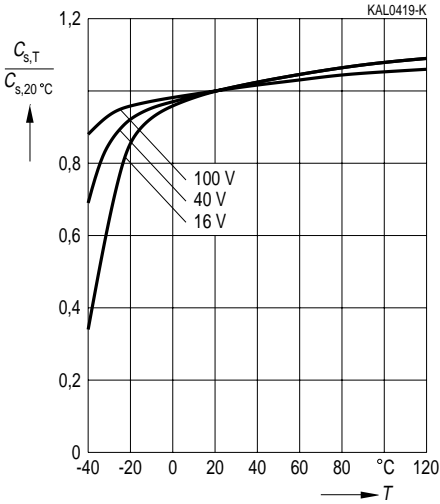
1) Refer to [page 34](#) for an explanation on how to interpret the useful life graphs.



Series capacitance C_s at $f = 100$ Hz
versus temperature T

Typical behavior

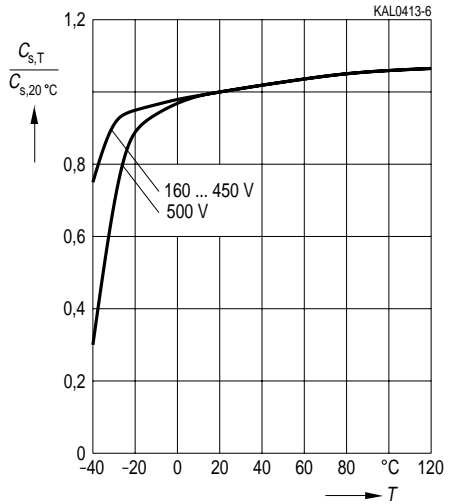
$U_R \leq 100$ V-



Series capacitance C_s at $f = 100$ Hz
versus temperature T

Typical behavior

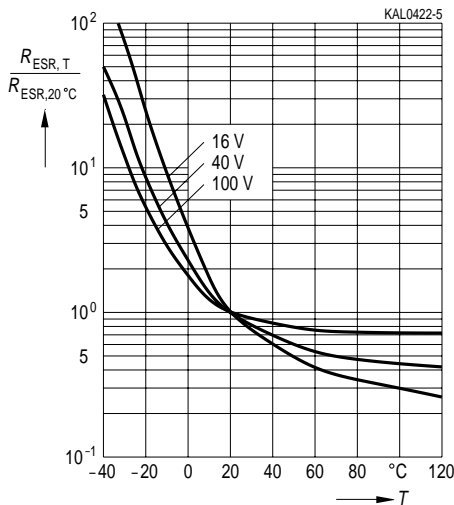
$U_R \geq 160$ V-



Equivalent series resistance R_{ESR}
at $f = 100$ Hz versus temperature T

Typical behavior

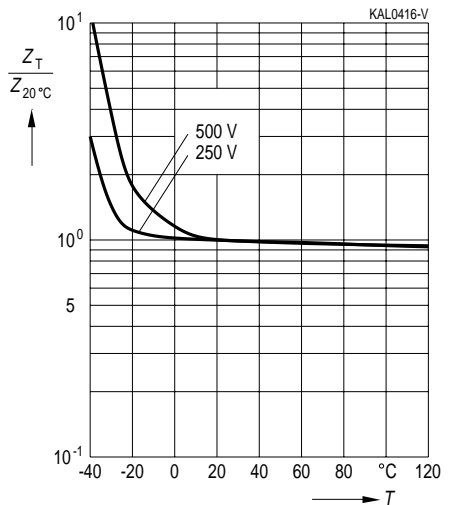
$U_R \leq 100$ V-

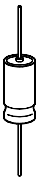


Impedance Z at $f = 100$ Hz
versus temperature T

Typical behavior

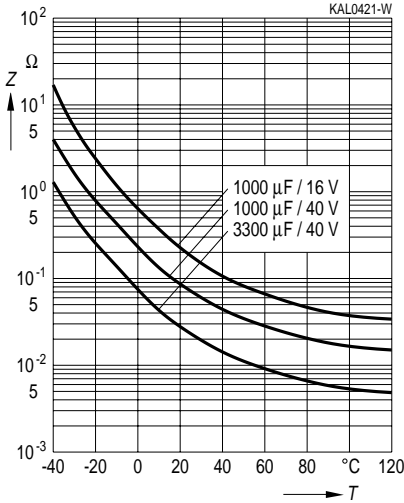
$U_R \geq 160$ V-



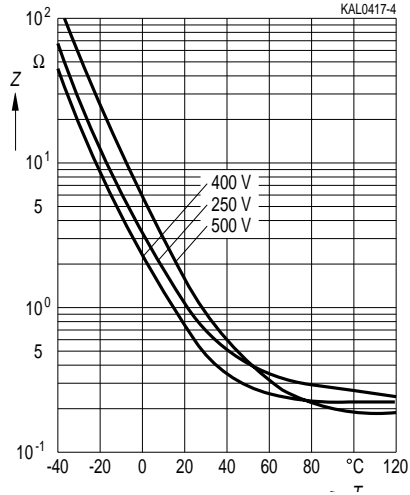


B 41 682
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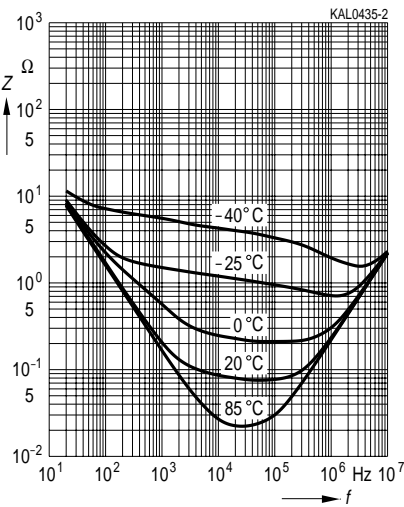
Impedance Z at $f = 20$ kHz
 versus temperature T
 Typical behavior
 $U_R \leq 100$ V-



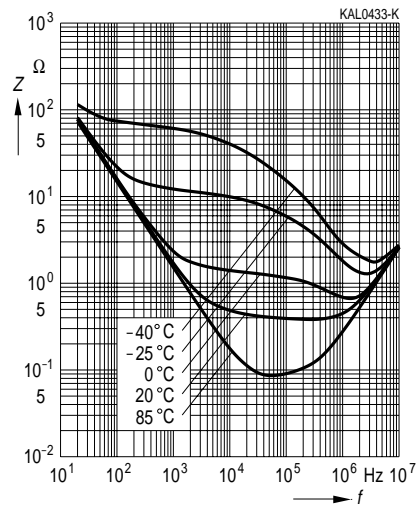
Impedance Z at $f = 20$ kHz
 versus temperature T for 47μF
 Typical behavior
 $U_R \geq 160$ V-

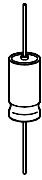


Impedance Z
 versus frequency f
 and temperature T for 1000 μF/40 V-
 Typical behavior



Impedance Z
 versus frequency f
 and temperature T for 100 μF/250 V-
 Typical behavior



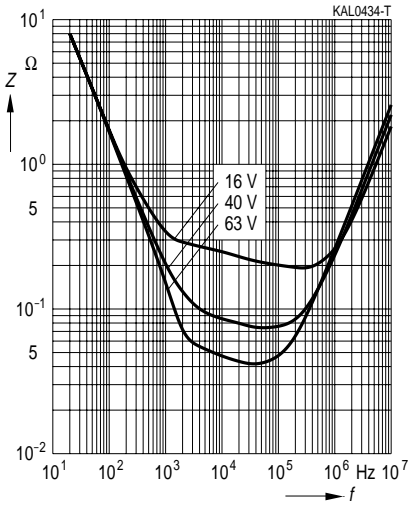


Impedance Z

versus frequency f for 1000 μF

Typical values at 20 °C

$U_R \leq 100 \text{ V}$ –



Impedance Z

versus frequency f for 47 μF

Typical values at 20 °C

$U_R \geq 160 \text{ V}$ –

