

For professional industrial electronics equipment

Construction

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

Features

- High reliability and long service life
- Can be operated at temperatures of up to 105 °C¹⁾
- High parametric stability
- High ripple current capability

Applications

- Professional industrial electronics equipment
- Filtering, coupling and pulse circuits
- Automotive electronics
- 450V versions for electronic ballasts
available upon request

Tape packaging

Capacitors with $d \leq 16$ mm are also available in taped packages.

Refer to page 276 for information on tape packages and examples on how to order them.

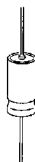


KAL0277-Z

Specifications and characteristics in brief

	B 41 588		B 43 588	
Rated voltage V_R	10 ... 100 Vdc		160 ... 350 Vdc	
Surge voltage V_S	$1,15 \cdot V_R$		$1,15 \cdot V_R$ (for $V_R \leq 250$ Vdc) $1,1 \cdot V_R$ (for $V_R = 350$ Vdc)	
Rated capacitance C_R	4,7 ... 4 700 μ F		1 ... 220 μ F	
Capacitance tolerance	- 10/+ 50 % $\triangleq$ T		- 10/+ 50 % $\triangleq$ T	
Service life	$d \leq 8,5$ mm	$d \geq 10$ mm	$d \leq 8,5$ mm	$d \geq 10$ mm
40 °C, V_R	> 200 000 h ($1,3 \cdot I_{acR,85^\circ C}$)	> 200 000 h ($2,0 \cdot I_{acR,85^\circ C}$)	> 200 000 h ($1,3 \cdot I_{acR,85^\circ C}$)	> 200 000 h ($1,7 \cdot I_{acR,85^\circ C}$)
85 °C, V_R ; I_{acmax}	> 6 000 h	> 10 000 h	> 6 000 h	> 8 000 h
Fraction failure	$\leq 0,5$ % (during the service life)		$\leq 0,5$ % (during the service life)	
Failure rate (1 fit = $1 \cdot 10^{-9}$ /h)	$d \leq 8,5$ mm: ≤ 50 fit $d \geq 10$ mm: ≤ 20 fit		$d \leq 8,5$ mm: ≤ 50 fit $d \geq 10$ mm: ≤ 20 fit	

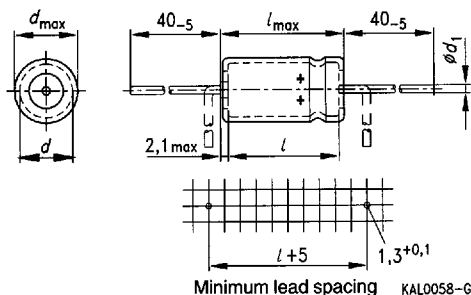
1) Operation at 105 °C and 0,6 $I_{acmax, 85^\circ C}$ permissible for a total of 500 h.



Voltage endurance test	5000 h, 85 °C (at V_R)										
Leakage current I_{lka} (5 min, 20 °C)	$C_R \cdot V_R \leq 1000 \mu C$: $I_{lka} \leq 0,01 \mu A \cdot \left(\frac{C_R}{\mu F} \cdot \frac{V_R}{V} \right)$ or 1 μA (the larger value applies) $1000 \mu C \leq C_R \cdot V_R < 470\,000 \mu C$: $I_{lka} \leq 0,006 \mu A \cdot \left(\frac{C_R}{\mu F} \cdot \frac{V_R}{V} \right) + 4 \mu A$										
Self-inductance <i>ESL</i>	<i>d</i> (mm)	6,5	8,5	10	10	12	14	16	18	21	25
	<i>l</i> (mm)	17,5	17,5	20	25	30	30	30	39,5	40	40
	<i>ESL</i> approx. (nH)	14	17	31	35	37	38	45	57	30	34
IEC climatic category	in accordance with IEC 68-1 40/085/56 (– 40 °C/+ 85 °C)										
Detail specifications	similar to CECC 30 301-801 or CECC 30 301-003 similar to DIN 45 910 part 123										
Sectional specifications	IEC 384-4 DIN 45 910 part 12										
Vibration resistance	in accordance with IEC 68-2-6, test Fc: displacement amplitude 0,35 mm, frequency range 10 ... 55 Hz, acceleration max. 5 g, duration 3 × 2 h										



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Dimensions (mm)		Lead wire diameter d_1	Approximate weight (g)
$d \times l$	$d_{\max} \times l_{\max}$		
6,5 × 17,5	7,0 × 19	0,6	1,1
8,5 × 17,5	9,0 × 19		1,8
10 × 20	10,5 × 21,5		2,6
10 × 25	10,5 × 26,5		3,2
12 × 30	12,5 × 32	0,8	5,4
14 × 30	14,5 × 32		7,5
16 × 30	16,5 × 32		9,3
18 × 39,5	18,5 × 40,3		14
21 × 40	21,5 × 41,5		18
25 × 40	25,5 × 41,5		26

Packing units

Case dimensions $d \times l$ (mm)	Bulk PU (pcs.)	Reel packing PU (pcs./reel)	AMMO packing PU (pcs./box)
6,5 × 17,5	2000	1300	1000
8,5 × 17,5	1500	1000	800
10 × 20	900	600	700
10 × 25	900	600	700
12 × 30	600	450	600
14 × 30	400	350	500
16 × 30	350	250	350
18 × 39,5	250	—	—
21 × 40	200	—	—
25 × 40	150	—	—



Overview of available types

Type B 41 588

V_R (Vdc)	10	16	25	40	63	100
C_R (μF)	Case dimensions $d \times l$ (mm)					
4,7					$6,5 \times 17,5$	$8,5 \times 17,5$
10				$6,5 \times 17,5$	$8,5 \times 17,5$	$8,5 \times 17,5$
22				$8,5 \times 17,5$	$8,5 \times 17,5$	10×25
47	$6,5 \times 17,5$	$8,5 \times 17,5$	$8,5 \times 17,5$	$8,5 \times 17,5$	10×25	12×30
100	$8,5 \times 17,5$	$8,5 \times 17,5$	10×20	10×25	12×30	16×30
220	10×20	10×25	12×30	12×30	16×30	$18 \times 39,5$
470	12×30	12×30	14×30	16×30	21×40	25×40
1 000	14×30	16×30	$18 \times 39,5$	21×40	25×40	
2 200	$18 \times 39,5$	$18 \times 39,5$	21×40	25×40		
4 700	25×40	25×40				

Type B 43 588

V_R (Vdc)	160	250	350
C_R (μF)	Case dimensions $d \times l$ (mm)		
1,0			$6,5 \times 17,5$
2,2	$6,5 \times 17,5$	$8,5 \times 17,5$	$8,5 \times 17,5$
4,7	$8,5 \times 17,5$	10×20	10×20
10	10×20	10×25	12×30
22	12×30	14×30	14×30
47	14×30	16×30	$18 \times 39,5$
100	$18 \times 39,5$	21×40	25×40
220	25×40		

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

For electronic ballast applications, we can also provide special versions with rated voltages of 450 Vdc ($V_S = 495$ Vdc) and 450 Vdc ($V_S = 600$ Vdc) upon request.



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Technical data and ordering codes

V_R	C_R	Case dimensions $d \times l$ mm	ESR_{typ} 100 Hz 20 °C Ω	ESR_{max} 100 Hz 20 °C Ω	Z_{max} 10 kHz 20 °C Ω	$I_{ac_{max}}$ 100 Hz 40 °C A	I_{ac_R} 100 Hz 85 °C A	Ordering code
Vdc	μF							Short code
B41588-								
10	47	6,5 × 17,5	2,0	5,0	0,88	0,29	0,10	-C3476-T
	100	8,5 × 17,5	0,95	2,4	0,43	0,49	0,17	-C3107-T
	220	10 × 20	0,43	1,1	0,21	0,83	0,28	-D3227-T
	470	12 × 30	0,20	0,50	0,11	1,59	0,55	-C3477-T
	1 000	14 × 30	0,10	0,25	0,07	2,47	0,85	-E3108-T
	2 200	18 × 39,5	0,06	0,14	0,05	4,13	1,42	-C3228-T
	4 700	25 × 40	0,05	0,07	0,05	5,48	1,88	-A3478-T
16	47	8,5 × 17,5	1,6	4,0	0,82	0,34	0,12	-B4476-T
	100	8,5 × 17,5	0,75	1,9	0,40	0,52	0,18	-C4107-T
	220	10 × 25	0,36	0,90	0,20	0,96	0,33	-D3227-T
	470	12 × 30	0,18	0,45	0,11	1,7	0,57	-D4477-T
	1 000	16 × 30	0,10	0,25	0,06	2,7	0,92	-M4108-T
	2 200	18 × 39,5	0,06	0,12	0,05	4,1	1,42	-D4228-T
	4 700	25 × 40	0,05	0,06	0,05	5,5	1,88	-A4478-T
25	47	8,5 × 17,5	1,3	3,3	0,78	0,41	0,14	-C5476-T
	100	10 × 20	0,60	1,5	0,38	0,70	0,24	-D5107-T
	220	12 × 30	0,28	0,70	0,19	1,3	0,46	-L 5227-T
	470	14 × 30	0,16	0,40	0,10	1,9	0,64	-E5477-T
	1 000	18 × 39,5	0,10	0,19	0,06	3,2	1,11	-D5108-T
	2 200	21 × 40	0,06	0,10	0,05	4,5	1,55	-A5228-T
40	10	6,5 × 17,5	5,0	13	3,3	0,17	0,06	-C7106-T
	22	8,5 × 17,5	2,2	5,5	1,5	0,32	0,11	-C7226-T
	47	8,5 × 17,5	1,0	2,5	0,72	0,46	0,16	-D7476-T
	100	10 × 25	0,50	1,25	0,36	0,81	0,28	-D7107-T
	220	12 × 30	0,25	0,63	0,18	1,4	0,49	-D7227-T
	470	16 × 30	0,13	0,33	0,10	2,2	0,77	-M7477-T
	1 000	21 × 40	0,07	0,16	0,06	4,0	1,39	-D7108-T
	2 200	25 × 40	0,04	0,08	0,05	5,9	2,0	-A7228-T
63	4,7	6,5 × 17,5	9,5	24	6,5	0,15	0,05	-J 8475-T
	10	8,5 × 17,5	4,0	10	3,1	0,23	0,08	-J 8106-T
	22	8,5 × 17,5	1,8	4,5	1,4	0,35	0,12	-J 8226-T
	47	10 × 25	0,80	2,0	0,67	0,64	0,22	-J 8476-T
	100	12 × 30	0,40	1,0	0,33	1,1	0,38	-J 8107-T
	220	16 × 30	0,18	0,45	0,17	1,9	0,65	-B8227-T
	470	21 × 40	0,10	0,25	0,09	3,3	1,13	-J 8477-T
	1 000	25 × 40	0,05	0,12	0,06	5,3	1,8	-A8108-T

For instructions on how to determine ordering codes, refer to page 255.



Technical data and ordering codes

V_R	C_R	Case dimensions $d \times l$ mm	ESR_{typ} 100 Hz 20 °C Ω	ESR_{max} 100 Hz 20 °C Ω	Z_{max} 10 kHz 20 °C Ω	$I_{ac,max}$ 100 Hz 40 °C A	$I_{ac,R}$ 100 Hz 85 °C A	Ordering code Short code
Vdc	μF							
100	4,7	8,5 × 17,5	7,0	18	6,0	0,17	0,06	-B9475-T
	10	8,5 × 17,5	3,0	7,5	2,8	0,26	0,09	-C9106-T
	22	10 × 25	1,3	3,3	1,3	0,52	0,18	-C9226-T
	47	12 × 30	0,60	1,5	0,62	0,90	0,31	-D9476-T
	100	16 × 30	0,32	0,80	0,31	1,4	0,49	-E9107-T
	220	18 × 39,5	0,16	0,40	0,15	2,4	0,83	-D9227-T
	470	25 × 40	0,09	0,23	0,09	4,1	1,39	-A9477-T

B43588-

160	2,2	6,5 × 17,5	36	80	33	0,07	0,02	-B 1225-T
	4,7	8,5 × 17,5	17	38	15	0,12	0,04	-C 1475-T
	10	10 × 20	8,0	18	7,2	0,19	0,07	-C 1106-T
	22	12 × 30	3,6	8,0	3,3	0,38	0,13	-C 1226-T
	47	14 × 30	1,7	3,8	1,6	0,59	0,20	-D 1476-T
	100	18 × 39,5	0,80	1,8	0,75	1,11	0,38	-D 1107-T
	220	25 × 40	0,40	0,80	0,35	1,97	0,68	-A 1227-T
250	2,2	8,5 × 17,5	29	72	31	0,09	0,03	-B 2225-T
	4,7	10 × 20	14	24	14	0,15	0,05	-B 2475-T
	10	10 × 25	6,4	16	6,8	0,24	0,08	-C 2106-T
	22	14 × 30	2,9	7,2	3,1	0,45	0,15	-D 2226-T
	47	16 × 30	1,4	3,4	1,5	0,70	0,24	-M 2476-T
	100	21 × 40	0,60	1,5	0,70	1,37	0,47	-D 2107-T
350	1,0	6,5 × 17,5	48	120	64	0,06	0,02	-C 4105-T
	2,2	8,5 × 17,5	22	55	29	0,10	0,04	-C 4225-T
	4,7	10 × 20	10	25	14	0,17	0,06	-C 4475-T
	10	12 × 30	4,8	12	6,4	0,33	0,11	-D 4106-T
	22	14 × 30	2,2	5,5	2,9	0,51	0,18	-E 4226-T
	47	18 × 39,5	1,0	2,5	1,4	1,0	0,34	-D 4476-T
	100	25 × 40	0,50	1,3	0,67	1,71	0,59	-A 4107-T

For electronic ballast applications, we can also provide special versions with rated voltages of 450 Vdc ($V_S = 495$ Vdc) and 450 Vdc ($V_S = 600$ Vdc) upon request.

How to determine the ordering code

To obtain the required ordering code, prefix the type number to the short code.
E.g.: B41588-C3476-T

	$V_R = 10 \dots 100$ Vdc	$V_R = 160 \dots 350$ Vdc
Type number	B41588-...	B43588-...

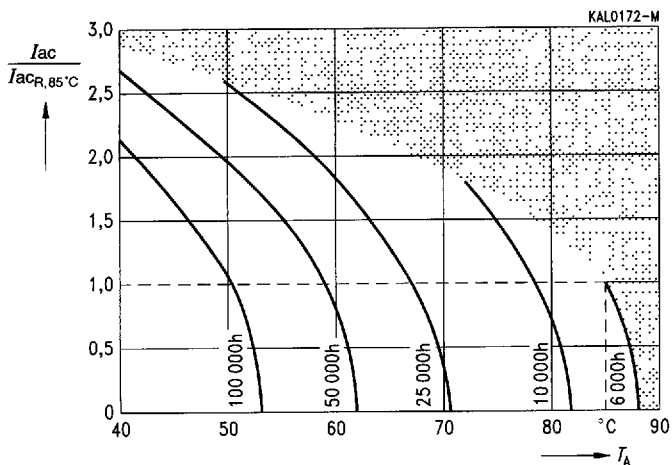


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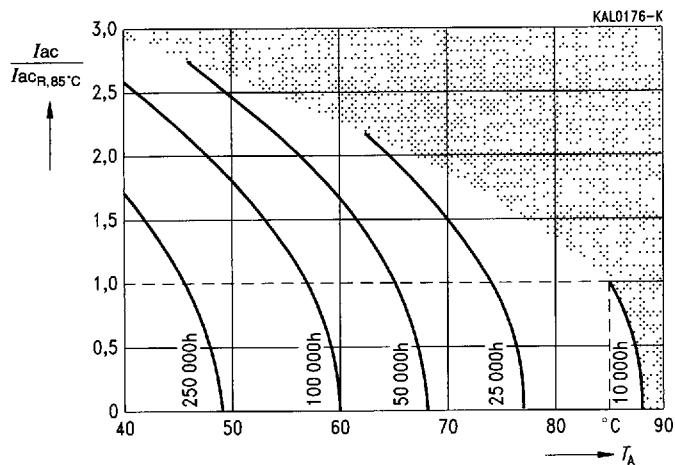
Service life

versus ambient temperature T_A under ripple current operating conditions¹⁾

$V_R = 10 \dots 350 \text{ Vdc}$ ($d \leq 8,5 \text{ mm}$)



$V_R = 10 \dots 100 \text{ Vdc}$ ($d \geq 10 \text{ mm}$)



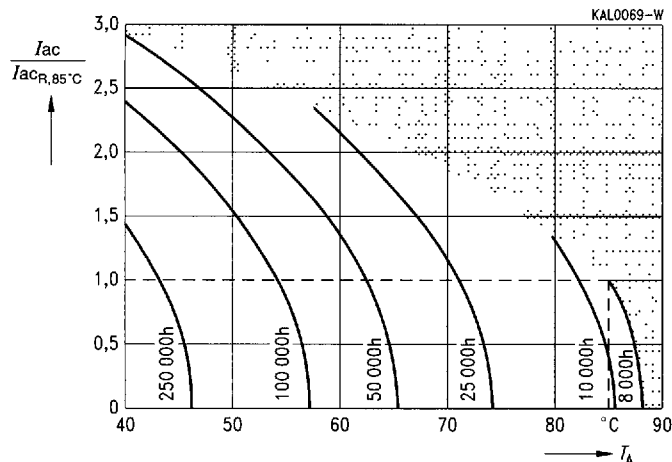
1) Refer to page 31 for an explanation on how to interpret the service life graphs.



Service life

versus ambient temperature T_A under ripple current operating conditions¹⁾

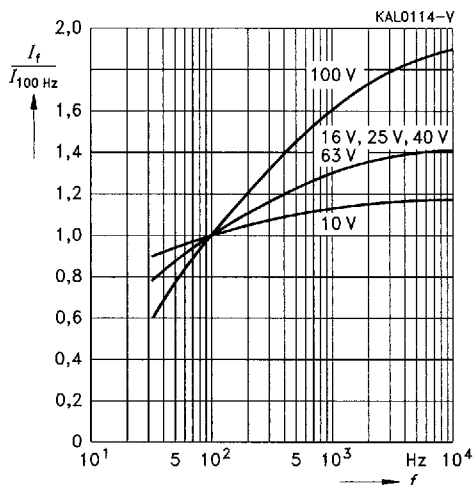
$V_R = 160 \dots 350 \text{ Vdc}$ ($d \geq 10 \text{ mm}$)



Permissible ripple current I_{ac}

versus frequency f

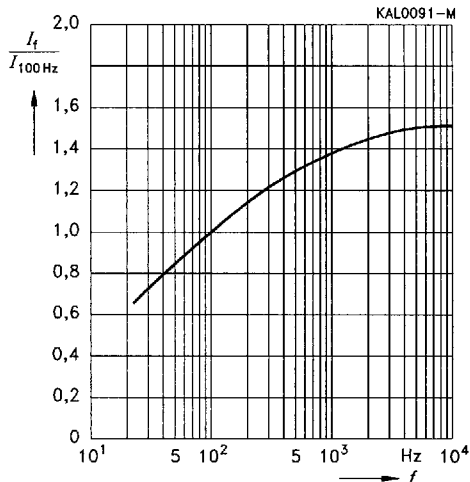
$V_R \leq 100 \text{ Vdc}$



Permissible ripple current I_{ac}

versus frequency f

$V_R \geq 160 \text{ Vdc}$

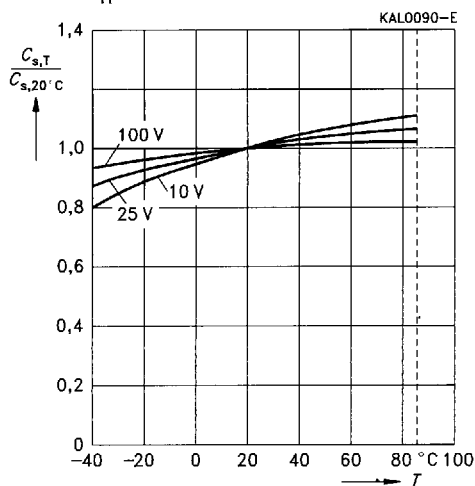


1) Refer to page 31 for an explanation on how to interpret the service life graphs.

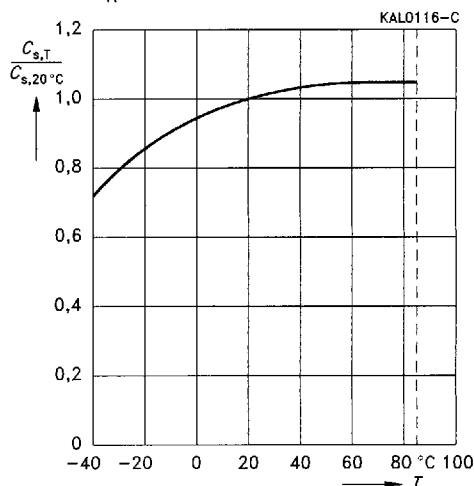


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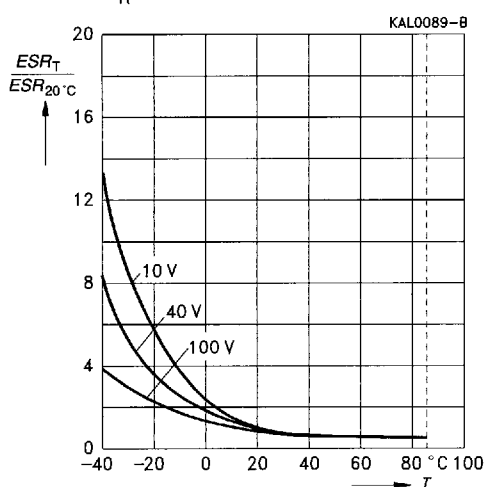
Series capacitance C_s at $f = 100$ Hz
versus temperature T
Typical behavior
 $V_R \leq 100$ Vdc



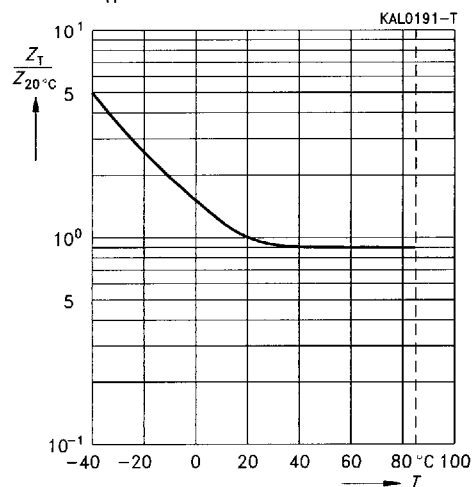
Series capacitance C_s at $f = 100$ Hz
versus temperature T
Typical behavior
 $V_R \geq 160$ Vdc



Equivalent series resistance ESR
at $f = 100$ Hz versus temperature T
Typical behavior
 $V_R \leq 100$ Vdc

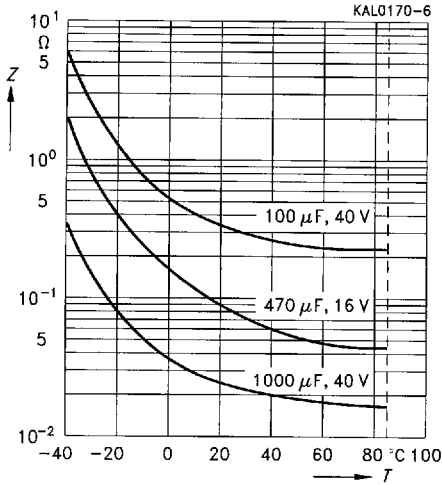


Impedance Z at $f = 100$ Hz
versus temperature T
Typical behavior
 $V_R \geq 160$ Vdc

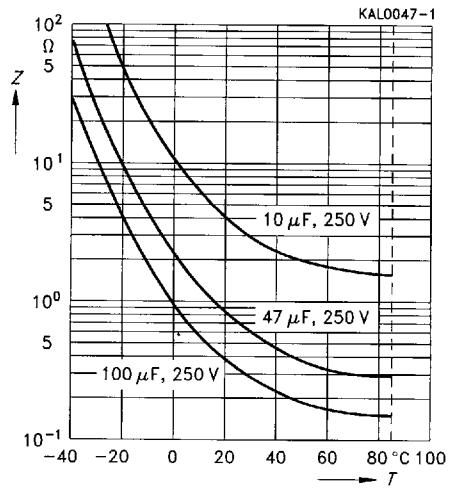




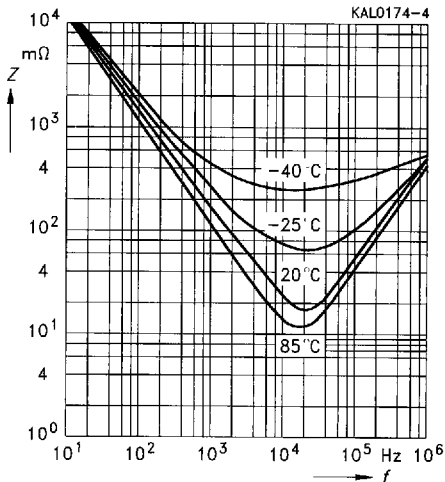
Impedance Z at $f = 10$ kHz
versus temperature T
Typical behavior
 $V_R \leq 100$ Vdc



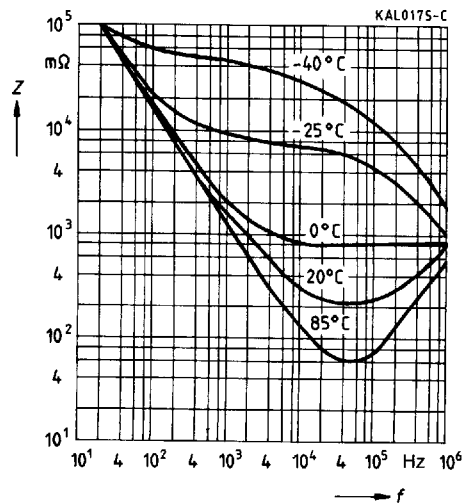
Impedance Z at $f = 10$ kHz
versus temperature T
Typical behavior
 $V_R \geq 160$ Vdc



Impedance Z
versus frequency f
and temperature T for 1000 μ F/40 Vdc
Typical behavior



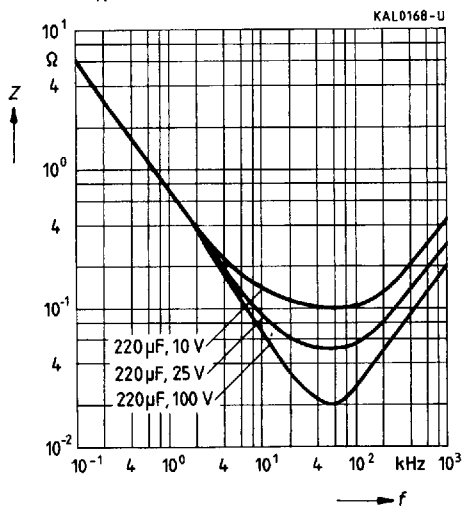
Impedance Z
versus frequency f
and temperature T for 100 μ F/250 Vdc
Typical behavior





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Impedance Z
 versus frequency f
 Typical values at 20 °C
 $V_R \leq 100$ Vdc



Impedance Z
 versus frequency f
 Typical values at 20 °C
 $V_R \geq 160$ Vdc

