

**SIKOREL® 125, LL grade**

**Extremely high reliability and long useful life**

**Construction**

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

**Features**

- Extremely high reliability and long useful life
- Very wide temperature range
- Can be operated at temperatures of up to 145 °C<sup>1)</sup>
- Outstanding parametric stability
- High ripple current capability
- Shelf life up to 10 years (for B 41 684)

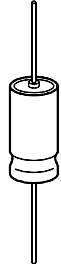
**Applications**

- High-reliability equipment in industrial and automotive electronics

**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.

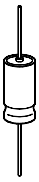


KAL0277-Z

**Specifications and characteristics in brief**

	B 41 684 (SIKOREL)	B 43 684 (LL grade)
Rated voltage $U_R$	10 ... 100 V–	160 ... 400 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 ... 4 700 $\mu$ F	6,8 ... 220 $\mu$ F
Capacitance tolerance	$-10/+50\% \triangleq T$	$-10/+50\% \triangleq T$
Useful life		
40 °C, $U_R$	$> 200\,000$ h ( $3,5 \cdot I_{-R,125^\circ C}$ )	$> 200\,000$ h ( $3,2 \cdot I_{-R,125^\circ C}$ )
85 °C, $U_R$ ; $I_{-max}$	$> 15\,000$ h	$> 10\,000$ h
125 °C, $U_R$ ; $I_{-R}$	$> 3\,000$ h	$> 2\,000$ h
Failure percentage	$\leq 0,5\%$ (during useful life)	$\leq 1\%$ (during useful life)
Failure rate	$\leq 10$ fit ( $\leq 10 \cdot 10^{-9}/h$ )	$\leq 20$ fit ( $\leq 20 \cdot 10^{-9}/h$ )

1) Operation at 145 °C and 0,6  $I_{-R, 125^\circ C}$  permissible for a total of 500 h.

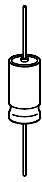


**B 41 684**

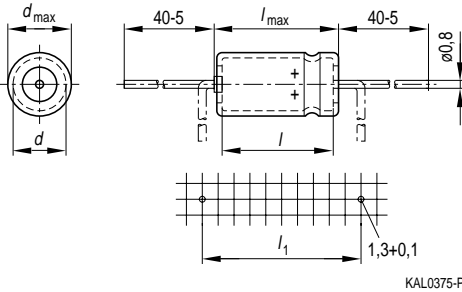
**B 43 684**

### Specifications and characteristics in brief

	B 41 684 (SIKOREL)		B 43 684 (LL grade)		
Voltage endurance test	2 000 h, 125 °C (at $U_R$ )		2 000 h, 125 °C (at $U_R$ )		
Leakage current $I_{lka}$ (5 min, 20 °C)	$I_{lka} \leq 0,3 \mu A \cdot \left( \frac{C_R}{\mu F} \cdot \frac{U_R}{V} \right)^{0,7} + 4 \mu A$				
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 $\leq 100$ V–: 55/125/56 (–55 °C/+125 °C, 56 days damp heat test) $\geq 160$ V–: 25/125/56 (–25 °C/+125 °C, 56 days damp heat test)				
Detail specification	similar to CECC 30 301-802				
Sectional specification	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				



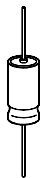
**Dimensional drawing**



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	34,5	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	—



**B 41 684**

**B 43 684**

**Overview of available types**

**Type B 41 684**

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

**Type B 43 684**

$U_R$ (V-)	160	250	350	400
$C_R$ (μF)	Case dimensions $d \times l$ (mm)			
6,8				12 × 20
10			12 × 20	12 × 25
15		12 × 20		
22	12 × 20	12 × 25	14 × 30	14 × 30
33	12 × 25	12 × 30	16 × 30	16 × 30
47	12 × 30	14 × 30	16 × 39	16 × 39
68			18 × 39	18 × 39
100	14 × 30	16 × 39		
150		18 × 39		
220	18 × 39			

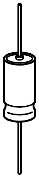
The above capacitance and voltage ratings are available in different cases upon request. Other capacitance and voltage ratings are also available upon request.



**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	$I_{~max}$ 100 Hz 85 °C A	$I_{~R}$ 100 Hz 125 °C A	Ordering code <sup>1)</sup>  Short code
<b>B41684-</b>								
10	470	12 × 20	650	570	1,9	1,4	0,50	-A3477-T
	1 000	12 × 30	310	270	3,2	2,4	0,85	-A3108-T
	2 200	16 × 30	150	130	5,3	3,9	1,4	-A3228-T
	4 700	18 × 39	75	65	8,7	6,4	2,3	-A3478-T
16	330	12 × 20	650	540	1,7	1,3	0,45	-A4337-T
	470	12 × 25	460	380	2,3	1,7	0,60	-A4477-T
	1 000	14 × 30	220	180	4,0	2,9	1,1	-A4108-T
	2 200	16 × 39	105	90	6,8	5,0	1,8	-A4228-T
	3 300	18 × 39	75	65	8,4	6,2	2,2	-A4338-T
25	220	12 × 20	700	550	1,5	1,1	0,40	-A5227-T
	470	12 × 30	330	260	2,9	2,1	0,75	-A5477-T
	1 000	16 × 30	160	130	4,6	3,4	1,2	-A5108-T
	2 200	18 × 39	80	65	8,0	5,9	2,1	-A5228-T
40	150	12 × 20	730	510	1,5	1,1	0,40	-A7157-T
	220	12 × 25	500	350	2,1	1,5	0,55	-A7227-T
	470	14 × 30	240	170	3,4	2,5	0,90	-A7477-T
	1 000	16 × 39	115	80	6,1	4,5	1,6	-A7108-T
63	100	12 × 20	830	570	1,3	1,0	0,35	-A8107-T
	220	14 × 30	360	260	2,7	2,0	0,70	-A8227-T
	470	16 × 39	170	125	4,6	3,4	1,2	-A8477-T
	680	18 × 39	125	90	6,5	4,8	1,7	-A8687-T
100	47	12 × 20	1750	1200	0,90	0,60	0,23	-A9476-T
	100	12 × 30	900	650	1,6	1,1	0,41	-A9107-T
	220	16 × 30	430	310	2,5	1,8	0,65	-A9227-T
	330	18 × 39	250	180	4,2	3,1	1,1	-A9337-T

1) To obtain the required ordering code, prefix the type number to the short code. E. g.: B41684-A3477-T



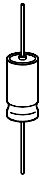
**B 41 684**

**B 43 684**

**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	$I_{\sim \max}$ 100 Hz 40 °C A	$I_{\sim \max}$ 100 Hz 85 °C A	$I_{\sim R}$ 100 Hz 125 °C A	Ordering code <sup>1)</sup>  Short code
<b>B43684-</b>								
160	22	12 × 20	9200	7600	0,60	0,40	0,15	-A1226-T
	33	12 × 25	6200	5100	0,80	0,60	0,20	-A1336-T
	47	12 × 30	4400	3500	1,0	0,70	0,26	-A1476-T
	100	14 × 30	2400	2000	1,5	1,1	0,40	-A1107-T
	220	18 × 39	1000	800	3,0	2,2	0,79	-A1227-T
250	15	12 × 20	11000	8500	0,50	0,40	0,13	-A2156-T
	22	12 × 25	7300	5700	0,60	0,50	0,17	-A2226-T
	33	12 × 30	5000	3900	0,80	0,60	0,22	-A2336-T
	47	14 × 30	3500	2700	1,1	0,80	0,29	-A2476-T
	100	16 × 39	1600	1300	2,0	1,5	0,53	-A2107-T
	150	18 × 39	1100	880	2,6	1,9	0,68	-A2157-T
350	10	12 × 20	12500	9500	0,40	0,30	0,11	-A4106-T
	22	14 × 30	5600	4000	0,80	0,60	0,21	-A4226-T
	33	16 × 30	3800	2700	1,0	0,80	0,27	-A4336-T
	47	16 × 39	2600	1900	1,4	1,0	0,37	-A4476-T
	68	18 × 39	1800	1300	1,7	1,3	0,45	-A4686-T
400	6,8	12 × 20	16500	12000	0,30	0,30	0,09	-A9685-T
	10	12 × 25	11500	8200	0,50	0,30	0,12	-A9106-T
	22	14 × 30	5200	3700	0,80	0,60	0,21	-A9226-T
	33	16 × 30	3500	2500	1,0	0,80	0,27	-A9336-T
	47	16 × 39	2400	1700	1,4	1,1	0,38	-A9476-T
	68	18 × 39	1700	1200	1,8	1,3	0,48	-A9686-T

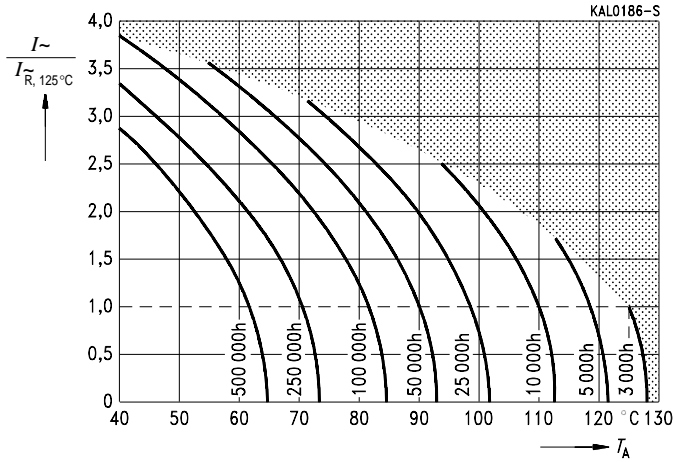
1) To obtain the required ordering code, prefix the type number to the short code. E. g.: B43684-A1226-T



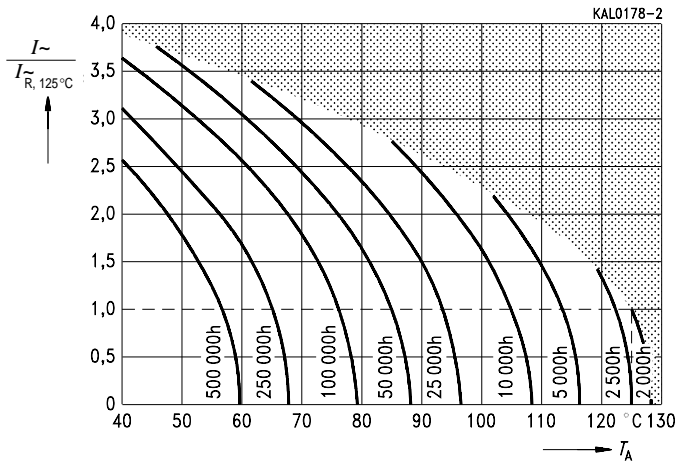
**Useful life**

versus ambient temperature  $T_A$  under ripple current operating conditions <sup>1)</sup>

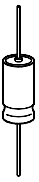
$U_R = 10 \dots 100 \text{ V-}$



$U_R = 160 \dots 400 \text{ V-}$



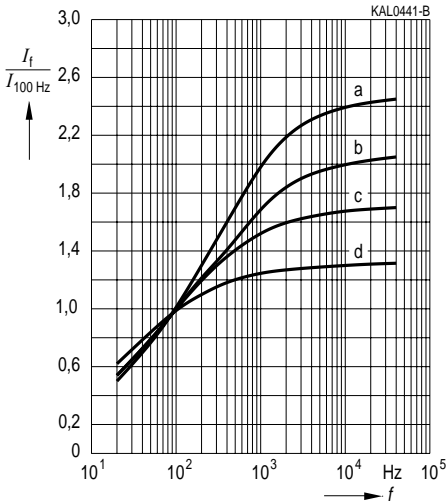
1) Refer to [page 34](#) for an explanation on how to interpret the useful life graphs.



**B 41 684**  
**B 43 684**

**Permissible ripple current  $I_r$**   
 versus frequency  $f$

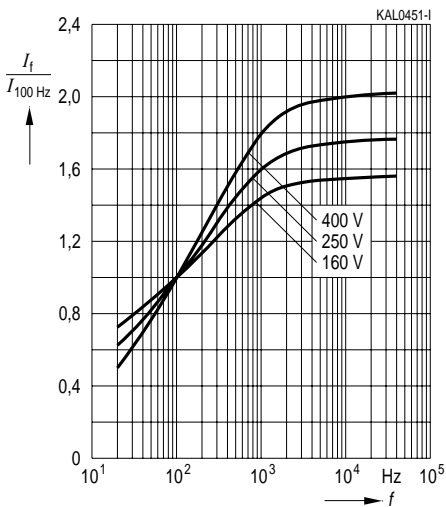
$U_R \leq 100 \text{ V}$ —



Diam. $d$	12 mm	14 mm	16 mm	18 mm
10 V	d	d	d	d
16 V	c	d	d	d
25 V	c	c	d	d
40 V	b	b	c	c
63 V	a	a	b	b
100 V	c	c	c	c

**Permissible ripple current  $I_r$**   
 versus frequency  $f$

$U_R \geq 160 \text{ V}$ —



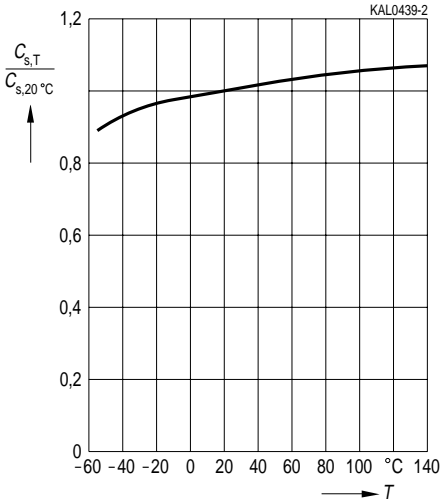




**Series capacitance  $C_s$  at  $f = 100$  Hz**  
versus temperature  $T$

Typical behavior

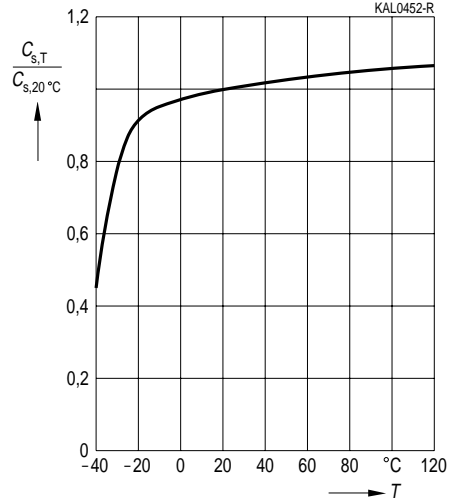
$U_R \leq 100$  V-



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

Typical behavior

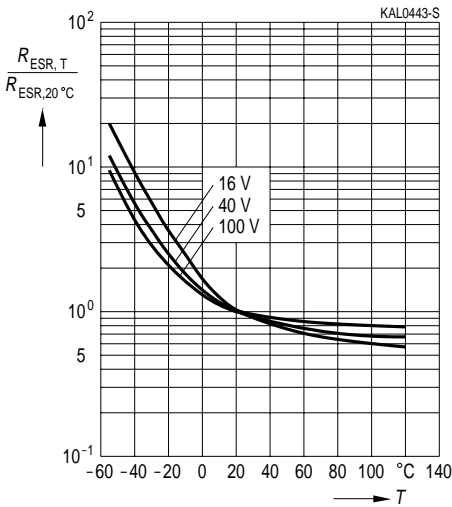
$U_R \geq 160$  V-



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

Typical behavior

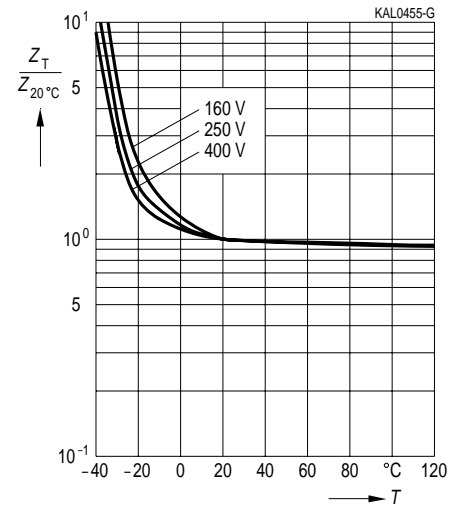
$U_R \leq 100$  V-

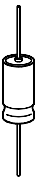


**Impedance  $Z$  at  $f = 100$  Hz**  
versus temperature  $T$

Typical behavior

$U_R \geq 160$  V-



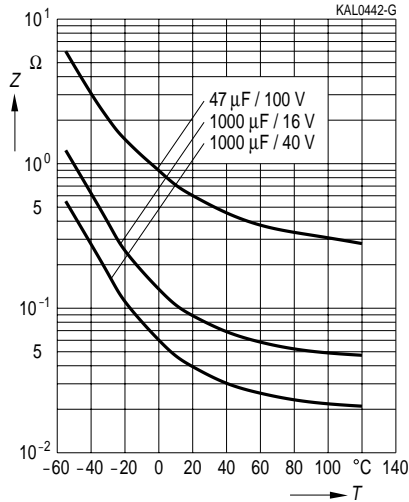


**B 41 684**  
**B 43 684**

**Impedance  $Z$  at  $f = 20$  kHz**  
 versus temperature  $T$

Typical behavior

$U_R \leq 100$  V–

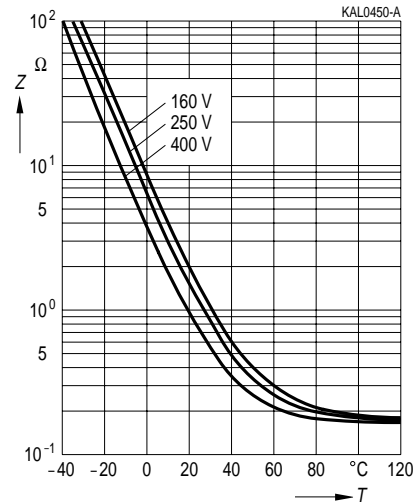


**Impedance  $Z$  at  $f = 20$  kHz**

versus temperature  $T$  for  $47 \mu\text{F}$

Typical behavior

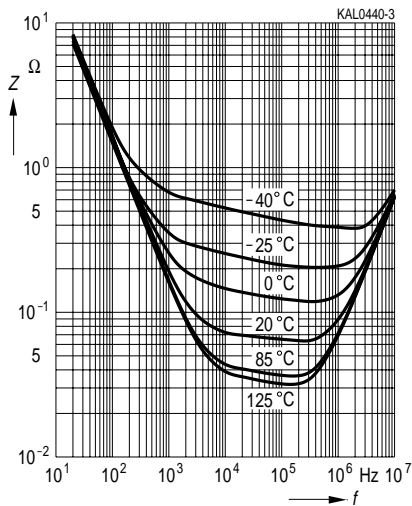
$U_R \geq 160$  V–



**Impedance  $Z$**   
 versus frequency  $f$

and temperature  $T$  for  $1000 \mu\text{F}/25$  V–

Typical behavior

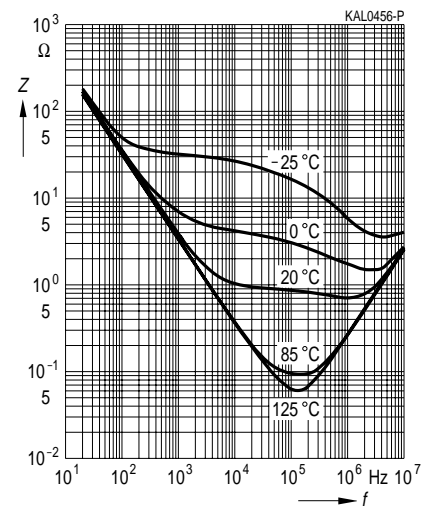


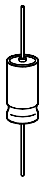
**Impedance  $Z$**

versus frequency  $f$

and temperature  $T$  for  $47 \mu\text{F}/400$  V–

Typical behavior



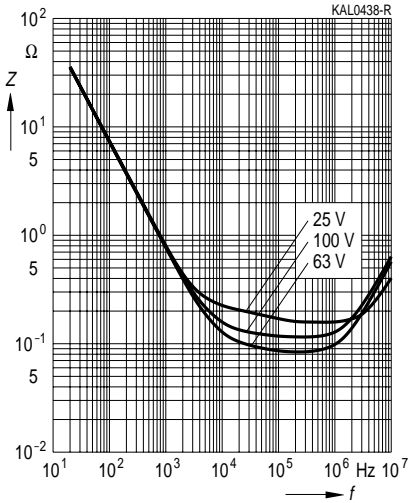


**Impedance  $Z$**

versus frequency  $f$  for 220  $\mu\text{F}$

Typical values at 20 °C

$U_R \leq 100 \text{ V-}$



**Impedance  $Z$**

versus frequency  $f$  for 47  $\mu\text{F}$

Typical values at 20 °C

$U_R \leq 160 \text{ V-}$

