

Aluminum electrolytic capacitors

Snap-in capacitors

Series/Type: **B43658**

Date: March 2025

Snap-in capacitors

B43658

Ultra compact – 105 °C

General-purpose grade capacitors

Applications

- Power supplies
- Frequency converters
- Uninterruptible power supplies
- Solar inverters
- Not for automotive applications unless otherwise specified

Features

- Extremely high CV product, ultra compact
- High reliability
- High ripple current capability
- RoHS-compatible

Construction

- Aluminum case, covered with PET sleeve without insulation sheet at the can bottom
- Snap-in solder pins to hold component in place on PC-board
- Minus pole marking on shrinking sleeve
- Minus pole not insulated from case
- Overload protection by pressure relief device on the base

Terminals

- Standard version with 2 terminals,
2 lengths available: 6.3 and 4.5 mm
- 3 terminals to ensure correct insertion: length 4.5 mm



Snap-in capacitors

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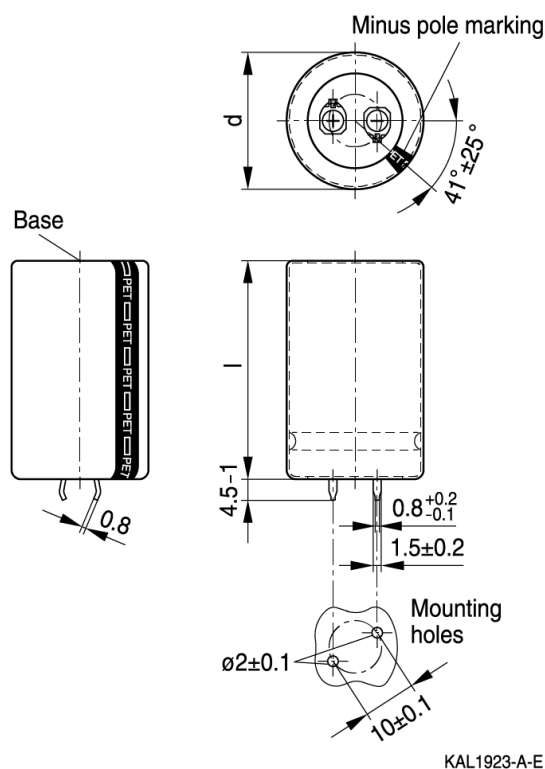
Specifications and characteristics in brief

Rated voltage V _R	420 ... 475 V DC		
Surge voltage V _S	1.10 · V _R (15 ... 35 °C)		
Rated capacitance C _R	150 ... 2060 µF		
Capacitance tolerance	±20% ≙ M		
Dissipation factor tan δ (20 °C, 120 Hz)	≤ 0.20		
Leakage current I _{leak} (5 min, 20 °C)	$I_{leak} \leq 0.3 \mu A \cdot \left(\frac{C_R}{\mu F} \cdot \frac{V_R}{V} \right)^{0.7} + 4 \mu A$		
Self-inductance ESL	Approx. 20 nH		
Useful life ¹⁾ 105 °C; V _R ; I _{AC,R}	> 3000 h	Requirements: ΔC/C ≤ 20% of initial value tan δ ≤ 2 times initial specified limit I _{leak} ≤ initial specified limit	
Vibration resistance test	To IEC 60068-2-6:2007, test Fc: Frequency range 10 ... 55 Hz, displacement amplitude 0.35 mm, acceleration max. 5 g, duration 3 x 2 h. Capacitor mounted by its body which is rigidly clamped to the work surface.		
Characteristics at low temperature	Max. impedance ratio at 100 Hz	V _R	420 ... 475 V DC
		Z _{-25 °C} / Z _{20 °C}	10
		Z _{-40 °C} / Z _{20 °C}	20
IEC climatic category	To IEC 60068-1:2013: 25/105/56 (-25 °C/+105 °C/56 days damp heat test) The capacitors can be operated in the temperature range of -40 °C to +105 °C but the impedance at -40 °C must be taken into consideration.		
Sectional specification	IEC 60384-4:2016		

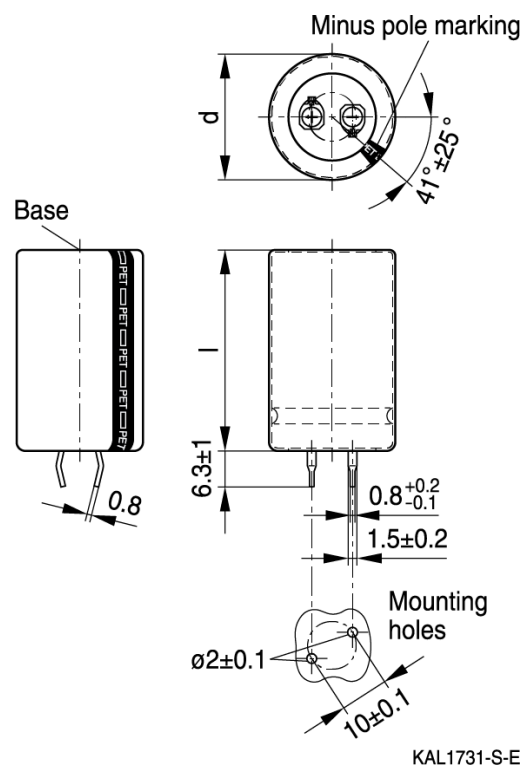
1) Refer to chapter "General technical information, 5 Useful life" on how to interpret useful life.

Dimensional drawings
Snap-in capacitors with PET shrinking sleeve

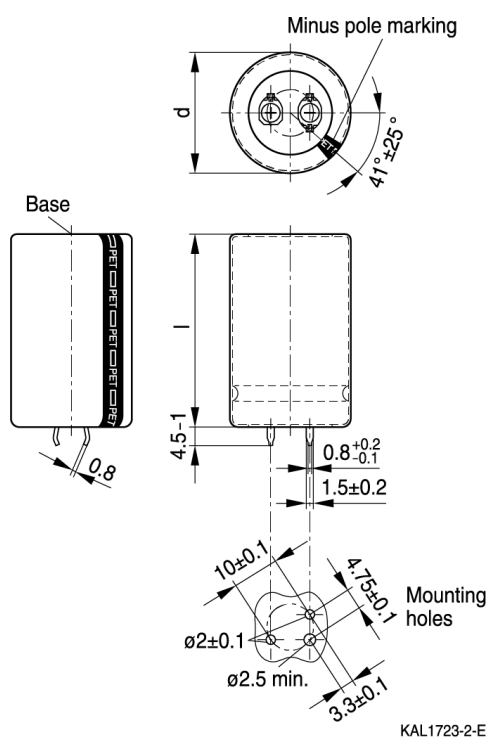
Insulation is marked with “PET” on the sleeve. Pressure relief device on the base.



Snap-in terminals (2 terminals, 4.5 mm)



Snap-in terminals (2 terminals, 6.3 mm)



Snap-in terminals (3 terminals, 4.5 mm)

Snap-in capacitors
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Dimensions and packing units

Dimensions (mm)		Approx. weight (g)	Packing units (pcs.)
d +1	l + 2.5/-2		
22	30	12	160
22	35	15	160
22	40	18	160
22	45	20	160
22	50	24	160

Dimensions (mm)		Approx. weight (g)	Packing units (pcs.)
d +1	l + 2.5/-2		
25.4	30	17	130
25.4	35	19	130
25.4	40	22	130
25.4	45	25	130
25.4	50	29	130
25.4	55	32	130
25.4	60	36	45
25.4	65	39	45
25.4	70	42	45
25.4	75	45	45
25.4	80	48	45

Dimensions (mm)		Approx. weight (g)	Packing units (pcs.)
d +1	l + 2.5/-2		
30	30	23	80
30	35	29	80
30	40	36	80
30	45	41	80
30	50	46	80
30	55	53	80
30	60	58	60
30	65	64	60
30	70	69	60
30	75	74	60
30	80	80	60
30	85	86	60
30	90	92	60
30	95	98	60
30	100	103	60

Dimensions (mm)		Approx. weight (g)	Packing units (pcs.)
d +1	l + 2.5/-2		
35	30	29	60
35	35	36	60
35	40	41	60
35	45	56	60
35	50	70	60
35	55	81	60
35	60	90	36
35	65	102	36
35	70	115	36
35	75	128	36
35	80	142	36
35	85	148	36
35	90	159	36
35	95	171	36
35	100	182	36

Packaging of snap-in capacitors



For ecological reasons the packing is pure cardboard.

Ordering codes for terminal styles and insulation features

Identification in 3rd block of ordering code

Snap-in capacitors

Terminal version	Insulation
	PET sleeve
Snap-in terminals (2 terminals, 4.5 mm)	M*57
Snap-in terminals (3 terminals, 4.5 mm)	M*52
Snap-in terminals (2 terminals, 6.3 mm)	M*50

* Digit used for nominal capacitance indication.

Ordering example:

B43658A5917M057 } snap-in capacitor with 2 pin terminals (4.5 mm) and PET sleeve

B43658A5917M052 } snap-in capacitor with 3 pin terminals and PET sleeve

Overview of available types

The capacitance and voltage ratings listed below are available in different case sizes upon request. Other voltage and capacitance ratings are also available upon request.

V _R (V DC)	420	450	475
	Case dimensions d x l (mm)		
C _R (μF)			
150	22 x 25		22 x 30
170		22 x 30	
190			22 x 35
200	22 x 30		
220	25.4 x 25	22 x 35	22 x 40 25.4 x 30
240	22 x 35		
250		25.4 x 30	
260		22 x 40	22 x 45
270			25.4 x 35
280	22 x 40 25.4 x 30		
300		22 x 45	22 x 50
310		25.4 x 35	
320			25.4 x 40
330	22 x 45 30 x 25		
340	25.4 x 35	22 x 50	30 x 30
370	22 x 50	25.4 x 40	25.4 x 45
380		30 x 30	
410	25.4 x 40		30 x 35
420		25.4 x 45	25.4 x 50
430	30 x 30		
440	35 x 25		
450			35 x 30
470	25.4 x 45	30 x 35	25.4 x 55
480		25.4 x 50	
490			30 x 40
510		35 x 30	
520			25.4 x 60
530	25.4 x 50 30 x 35		

Overview of available types

The capacitance and voltage ratings listed below are available in different case sizes upon request. Other voltage and capacitance ratings are also available upon request.

V _R (V DC)	420	450	475
	Case dimensions d x l (mm)		
C _R (μF)			
540		25.4 x 55	
550			25.4 x 65 35 x 35
560		30 x 40	
570	35 x 30		30 x 45
590	25.4 x 55		
600		25.4 x 60	25.4 x 70
610		25.4 x 65	
620	30 x 40		
630		35 x 35	
650		30 x 45	25.4 x 75 30 x 50 35 x 40
660	25.4 x 60		
670		25.4 x 70	
700	35 x 35		25.4 x 80
720	30 x 45	25.4 x 75	
730			30 x 55
740		30 x 50 35 x 40	
750			35 x 45
770		25.4 x 80	
800			30 x 60
810	30 x 50		
820			30 x 65
830	35 x 40	30 x 55	
860		35 x 45	35 x 50
890			30 x 70
910	30 x 55	30 x 60	
930		30 x 65	
960			35 x 55 30 x 75

Snap-in capacitors

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Ultra compact – 105 °C

Overview of available types

The capacitance and voltage ratings listed below are available in different case sizes upon request. Other voltage and capacitance ratings are also available upon request.

V _R (V DC)	420	450	475
	Case dimensions d x l (mm)		
C _R (μF)			
970	35 x 45		
980		35 x 50	
1010	30 x 60	30 x 70	
1030			30 x 80
1060			35 x 60
1090		35 x 55	
1100	35 x 50	30 x 75	30 x 85
1120			35 x 65
1180		30 x 80	30 x 90
1210		35 x 60	
1220			35 x 70
1230	35 x 55		
1250			30 x 95
1260		30 x 85	
1270		35 x 65	
1310			35 x 75
1320			30 x 100
1340		30 x 90	
1360	35 x 60		
1380		35 x 70	
1410			35 x 80
1430		30 x 95	
1500		35 x 75	
1510		30 x 100	35 x 85
1610		35 x 80	35 x 90
1710			35 x 95
1720		35 x 85	
1810			35 x 100
1830		35 x 90	
1940		35 x 95	
2060		35 x 100	

Snap-in capacitors
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Ultra compact – 105 °C
Technical data and ordering codes

C _R 100 Hz 20 °C μF	Case dimensions d x l mm	ESR _{typ} 120 Hz 20 °C mΩ	ESR _{typ} 360 Hz 60 °C mΩ	I _{AC,max} 120 Hz 60 °C A	I _{AC,max} 120 Hz 85 °C A	I _{AC,R} 120 Hz 105 °C A	Ordering code (composition see below)
V _R = 420 V DC							
150	22 x 25	850	210	2.03	1.53	0.84	B43658G0157M05#
200	22 x 30	630	160	2.56	1.93	1.07	B43658G0207M05#
220	25.4 x 25	590	150	2.57	1.93	1.07	B43658G0227M05#
240	22 x 35	530	130	2.98	2.24	1.24	B43658G0247M05#
280	22 x 40	450	110	3.39	2.55	1.41	B43658G0287M05#
280	25.4 x 30	460	120	3.11	2.34	1.29	B43658H0287M05#
330	22 x 45	390	95	3.89	2.93	1.62	B43658G0337M05#
330	30 x 25	410	120	3.15	2.37	1.31	B43658H0337M05#
340	25.4 x 35	380	100	3.65	2.75	1.52	B43658G0347M05#
370	22 x 50	340	85	4.31	3.25	1.80	B43658G0377M05#
410	25.4 x 40	320	85	4.26	3.21	1.77	B43658G0417M05#
430	30 x 30	320	100	3.87	2.91	1.61	B43658G0437M05#
440	35 x 25	330	120	3.52	2.65	1.46	B43658G0447M05#
470	25.4 x 45	280	70	4.79	3.61	2.00	B43658G0477M05#
530	25.4 x 50	240	65	5.31	4.00	2.21	B43658G0537M05#
530	30 x 35	260	80	4.58	3.44	1.91	B43658H0537M05#
570	35 x 30	260	90	4.29	3.23	1.66	B43658G0577M05#
590	25.4 x 55	220	60	5.83	4.39	2.43	B43658G0597M05#
620	30 x 40	220	65	5.21	3.92	2.02	B43658G0627M05#
660	25.4 x 60	200	50	6.43	4.84	2.49	B43658G0667M05#
700	35 x 35	210	75	5.04	3.79	1.95	B43658G0707M05#
720	30 x 45	190	60	5.91	4.44	2.29	B43658G0727M05#
810	30 x 50	170	50	6.54	4.92	2.53	B43658G0817M05#
830	35 x 40	180	65	5.78	4.35	2.24	B43658G0837M05#
910	30 x 55	150	45	7.23	5.44	2.80	B43658G0917M05#
970	35 x 45	150	55	6.56	4.94	2.54	B43658G0977M05#
1010	30 x 60	140	40	7.91	5.95	3.06	B43658G0108M15#
1100	35 x 50	130	50	7.30	5.49	2.83	B43658G0118M05#
1230	35 x 55	120	45	8.03	6.04	3.11	B43658G0128M35#
1360	35 x 60	110	40	8.76	6.58	3.39	B43658G0138M65#

Composition of ordering code

= Terminal style

7 = Snap-in terminals (2 terminals, 4.5 mm)

2 = Snap-in terminals (3 terminals, 4.5 mm)

0 = Snap-in terminals (2 terminals, 6.3 mm)

Snap-in capacitors
B43658
Ultra compact – 105 °C
Technical data and ordering codes

C _R 120 Hz 20 °C μF	Case dimensions d x l mm	ESR _{typ} 120 Hz 20 °C mΩ	ESR _{typ} 360 Hz 60 °C mΩ	I _{AC,max} 120 Hz 60 °C A	I _{AC,max} 120 Hz 85 °C A	I _{AC,R} 120 Hz 105 °C A	Ordering code (composition see below)
V _R = 450 V DC							
170	22 x 30	790	190	2.26	1.70	0.94	B43658A5177M05#
220	22 x 35	610	150	2.80	2.11	1.17	B43658A5227M05#
250	25.4 x 30	550	140	2.87	2.16	1.20	B43658A5257M05#
260	22 x 40	520	130	3.23	2.43	1.34	B43658A5267M05#
300	22 x 45	450	110	3.65	2.75	1.52	B43658A5307M05#
310	25.4 x 35	440	110	3.43	2.58	1.43	B43658A5317M05#
340	22 x 50	390	100	4.07	3.06	1.69	B43658A5347M05#
370	25.4 x 40	370	100	3.97	2.99	1.65	B43658A5377M05#
380	30 x 30	370	110	3.58	2.70	1.49	B43658A5387M05#
420	25.4 x 45	320	85	4.42	3.33	1.84	B43658A5427M05#
470	30 x 35	300	90	4.25	3.20	1.77	B43658A5477M05#
480	25.4 x 50	280	75	4.97	3.74	2.07	B43658A5487M05#
510	35 x 30	290	100	4.13	3.10	1.60	B43658A5517M05#
540	25.4 x 55	250	65	5.51	4.14	2.29	B43658A5547M05#
560	30 x 40	260	75	4.90	3.69	1.90	B43658A5567M05#
600	25.4 x 60	230	60	6.04	4.54	2.34	B43658A5607M05#
610	25.4 x 65	210	55	6.46	4.86	2.51	B43658A5617M05#
630	35 x 35	230	80	4.88	3.67	1.89	B43658A5637M05#
650	30 x 45	220	65	5.56	4.18	2.15	B43658A5657M05#
670	25.4 x 70	190	50	7.02	5.28	2.72	B43658A5677M05#
720	25.4 x 75	180	45	7.49	5.63	2.90	B43658A5727M05#
740	30 x 50	190	55	6.20	4.67	2.40	B43658A5747M05#
740	35 x 40	200	70	5.57	4.19	2.16	B43658B5747M05#
770	25.4 x 80	170	45	7.96	5.99	3.09	B43658A5777M05#
830	30 x 55	170	50	6.84	5.15	2.65	B43658A5837M05#
860	35 x 45	170	60	6.30	4.74	2.44	B43658A5867M05#
910	30 x 60	160	45	7.42	5.59	2.88	B43658A5917M05#
930	30 x 65	140	40	8.03	6.04	3.11	B43658A5937M05#
980	35 x 50	150	55	7.03	5.29	2.72	B43658A5987M05#

Composition of ordering code

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- 0 = Snap-in terminals (2 terminals, 6.3 mm)

Snap-in capacitors
B43658
Ultra compact – 105 °C
Technical data and ordering codes

C_R 120 Hz 20 °C μF	Case dimensions d x l mm	ESR_{typ} 120 Hz 20 °C m Ω	ESR_{typ} 360 Hz 60 °C m Ω	$I_{\text{AC,max}}$ 120 Hz 60 °C A	$I_{\text{AC,max}}$ 120 Hz 85 °C A	$I_{\text{AC,R}}$ 120 Hz 105 °C A	Ordering code (composition see below)
$V_R = 450 \text{ V DC}$							
1010	30 x 70	130	40	8.63	6.49	3.35	B43658A5108M15#
1090	35 x 55	130	45	7.70	5.79	2.98	B43658A5108M95#
1100	30 x 75	120	36	9.30	7.00	3.60	B43658A5118M05#
1180	30 x 80	110	34	9.91	7.45	3.84	B43658A5118M85#
1210	35 x 60	120	45	8.42	6.33	3.26	B43658A5128M15#
1260	30 x 85	110	32	10.50	7.90	4.07	B43658A5128M65#
1270	35 x 65	110	40	9.07	6.82	3.51	B43658A5128M75#
1340	30 x 90	100	30	11.10	8.35	4.30	B43658A5138M45#
1380	35 x 70	100	36	9.76	7.34	3.78	B43658A5138M85#
1430	30 x 95	95	28	11.70	8.85	4.56	B43658A5148M35#
1500	35 x 75	95	32	10.40	7.89	4.06	B43658A5158M05#
1510	30 x 100	90	26	12.30	9.31	4.79	B43658A5158M15#
1610	35 x 80	90	30	11.10	8.40	4.33	B43658A5168M15#
1720	35 x 85	85	28	11.80	8.91	4.59	B43658A5178M25#
1830	35 x 90	80	26	12.50	9.41	4.85	B43658A5188M35#
1940	35 x 95	75	26	13.20	9.92	5.11	B43658A5198M45#
2060	35 x 100	70	24	13.90	10.40	5.39	B43658A5208M65#

Composition of ordering code

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- 0 = Snap-in terminals (2 terminals, 6.3 mm)

Snap-in capacitors
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Ultra compact – 105 °C
Technical data and ordering codes

C _R 120 Hz 20 °C μF	Case dimensions d x l mm	ESR _{typ} 120 Hz 20 °C mΩ	ESR _{typ} 360 Hz 60 °C mΩ	I _{AC,max} 120 Hz 60 °C A	I _{AC,max} 120 Hz 85 °C A	I _{AC,R} 120 Hz 105 °C A	Ordering code (composition see below)
V _R = 475 V DC							
150	22 x 30	1140	210	2.15	1.62	0.89	B43658A0157M05#
190	22 x 35	900	170	2.61	1.97	1.09	B43658A0197M05#
220	22 x 40	780	140	2.96	2.23	1.23	B43658A0227M05#
220	25.4 x 30	790	150	2.73	2.06	1.14	B43658B0227M05#
260	22 x 45	660	120	3.41	2.57	1.42	B43658A0267M05#
270	25.4 x 35	640	120	3.23	2.43	1.34	B43658A0277M05#
300	22 x 50	570	110	3.87	2.91	1.61	B43658A0307M05#
320	25.4 x 40	540	110	3.73	2.80	1.55	B43658A0327M05#
340	30 x 30	530	120	3.47	2.61	1.45	B43658A0347M05#
370	25.4 x 45	470	90	4.21	3.17	1.75	B43658A0377M05#
410	30 x 35	440	100	4.04	3.04	1.68	B43658A0417M05#
420	25.4 x 50	410	80	4.70	3.54	1.96	B43658A0427M05#
450	35 x 30	410	110	3.95	2.97	1.53	B43658A0457M05#
470	25.4 x 55	370	70	5.19	3.90	2.16	B43658A0477M05#
490	30 x 40	370	80	4.68	3.52	1.81	B43658A0497M05#
520	25.4 x 60	330	65	5.67	4.27	2.20	B43658A0527M05#
550	25.4 x 65	300	60	6.15	4.63	2.38	B43658B0557M05#
550	35 x 35	330	85	4.63	3.49	1.79	B43658A0557M05#
570	30 x 45	310	70	5.30	3.99	2.05	B43658A0577M05#
600	25.4 x 70	280	55	6.65	5.00	2.57	B43658A0607M05#
650	30 x 50	280	60	5.93	4.46	2.30	B43658A0657M05#
650	35 x 40	280	75	5.31	3.99	2.06	B43658B0657M05#
650	25.4 x 75	260	50	7.14	5.37	2.77	B43658C0657M05#
700	25.4 x 80	240	45	7.64	5.74	2.96	B43658A0707M05#
730	30 x 55	250	55	6.55	4.93	2.54	B43658A0737M05#
750	35 x 45	240	65	5.97	4.49	2.31	B43658A0757M05#
800	30 x 60	220	50	7.10	5.34	2.75	B43658A0807M05#
820	30 x 65	200	45	7.69	5.78	2.98	B43658A0827M05#
860	35 x 50	210	55	6.70	5.03	2.59	B43658A0867M05#
890	30 x 70	190	40	8.26	6.21	3.20	B43658A0897M05#

Composition of ordering code

- # = Terminal style
- 7 = Snap-in terminals (2 terminals, 4.5 mm)
- 2 = Snap-in terminals (3 terminals, 4.5 mm)
- 0 = Snap-in terminals (2 terminals, 6.3 mm)

Snap-in capacitors

B43658

Ultra compact – 105 °C

Technical data and ordering codes

C _R 120 Hz 20 °C μF	Case dimensions d x l mm	ESR _{typ} 120 Hz 20 °C mΩ	ESR _{typ} 360 Hz 60 °C mΩ	I _{AC,max} 120 Hz 60 °C A	I _{AC,max} 120 Hz 85 °C A	I _{AC,R} 120 Hz 105 °C A	Ordering code (composition see below)
V _R = 475 V DC							
960	35 x 55	190	50	7.35	5.53	2.85	B43658A0967M05#
960	30 x 75	170	40	8.84	6.65	3.42	B43658B0967M05#
1030	30 x 80	160	36	9.42	7.08	3.65	B43658A0108M35#
1060	35 x 60	170	45	8.01	6.02	3.10	B43658A0108M65#
1100	30 x 85	150	34	9.99	7.51	3.87	B43658A0118M05#
1120	35 x 65	160	40	8.76	6.58	3.39	B43658A0118M25#
1180	30 x 90	140	32	10.60	7.99	4.12	B43658A0118M85#
1220	35 x 70	140	38	9.43	7.09	3.65	B43658A0128M25#
1250	30 x 95	130	30	11.20	8.43	4.34	B43658A0128M55#
1310	35 x 75	130	34	10.00	7.55	3.89	B43658A0138M15#
1320	30 x 100	130	28	11.70	8.85	4.56	B43658A0138M25#
1410	35 x 80	120	32	10.70	8.06	4.15	B43658A0148M15#
1510	35 x 85	120	30	11.30	8.56	4.41	B43658A0158M15#
1610	35 x 90	110	28	12.00	9.07	4.67	B43658A0168M15#
1710	35 x 95	100	26	12.70	9.56	4.92	B43658A0178M15#
1810	35 x 100	100	26	13.40	10.00	5.19	B43658A0188M15#

Composition of ordering code

= Terminal style

7 = Snap-in terminals (2 terminals, 4.5 mm)

2 = Snap-in terminals (3 terminals, 4.5 mm)

0 = Snap-in terminals (2 terminals, 6.3 mm)

Useful life¹⁾

For useful life calculations, please use our web-based "AlCap Useful Life Calculation Tool", which can be found on the Internet under the following link:

www.tdk-electronics.tdk.com/alcap

The AlCap Useful Life Calculation Tool provides calculations of useful life as well as additional data for selected capacitor types under operating conditions defined by the user.

In addition, it is possible to calculate useful life expectancies based on temperatures measured by the user in the application.

1) Refer to chapter "General technical information, 5 Useful life" on how to interpret useful life."

Cautions and warnings

Personal safety

The electrolytes used have been optimized both with a view to the intended application and with regard to health and environmental compatibility. They do not contain any solvents that are detrimental to health, e.g. dimethyl formamide (DMF) or dimethyl acetamide (DMAC). Furthermore, some of the high-voltage electrolytes used are self-extinguishing.

As far as possible, we do not use any dangerous chemicals or compounds to produce operating electrolytes, although in exceptional cases, such materials must be used in order to achieve specific physical and electrical properties because no alternative materials are currently known. We do, however, restrict the amount of dangerous materials used in our products to an absolute minimum.

Materials and chemicals used in our aluminum electrolytic capacitors are continuously adapted in compliance with the TDK Electronics Corporate Environmental Policy and the latest EU regulations and guidelines such as RoHS, REACH/SVHC, GADSL, and ELV.

MDS (Material Data Sheets) are available on our website for all types listed in the data book. MDS for customer specific capacitors are available upon request.

Nevertheless, the following rules should be observed when handling aluminum electrolytic capacitors: No electrolyte should come into contact with eyes or skin. If electrolyte does come into contact with the skin, wash the affected areas immediately with running water. If the eyes are affected, rinse them for 10 minutes with plenty of water. If symptoms persist, seek medical treatment. Avoid inhaling electrolyte vapor or mists. Workplaces and other affected areas should be well ventilated. Clothing that has been contaminated by electrolyte must be changed and rinsed in water.

Product safety

The table below summarizes the safety instructions that must be observed without fail. A detailed description can be found in the relevant sections of separate file chapter "General technical information".

Topic	Safety information	Reference chapter "General technical information"
Polarity	Make sure that polar capacitors are connected with the right polarity.	1 "Basic construction of aluminum electrolytic capacitors"
Reverse voltage	Voltages of opposite polarity should be prevented by connecting a diode.	3.1.6 "Reverse voltage"
Mounting position of capacitors with screw or multi-pin terminals	Multi-pin capacitors with pressure relief vent on the can base must not be mounted with terminals facing up unless otherwise specified.	11.1 "Mounting positions of capacitors with screw or multi-pin terminals"
Robustness of terminals	The following maximum tightening torques must not be exceeded when connecting screw terminals: M5: 2.5 Nm M6: 4.0 Nm	11.2 "Mounting torques"
Mounting of single-ended capacitors	The internal structure of single-ended capacitors might be damaged if excessive force is applied to the lead wires. Avoid any compressive, tensile or flexural stress. Do not move the capacitor after soldering to PC board. Do not pick up the PC board by the soldered capacitor. Do not insert the capacitor on the PC board with a hole space different to the lead space specified.	11.3 "Mounting considerations for single-ended capacitors"
Soldering	Do not exceed the specified time or temperature limits during soldering.	11.5 "Soldering"
Soldering, cleaning agents	Do not allow halogenated hydrocarbons to come into contact with aluminum electrolytic capacitors.	11.6 "Cleaning agents"
Upper category temperature	Do not exceed the upper category temperature.	7.2 "Maximum permissible operating temperature"
Passive flammability	Avoid external energy, e.g. fire.	8.1 "Passive flammability"

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Topic	Safety information	Reference chapter "General technical information"
Active flammability	Avoid overload of the capacitors.	8.2 "Active flammability"
Maintenance	Make periodic inspections of the capacitors. Before the inspection, make sure that the power supply is turned off and carefully discharge the capacitors. Do not apply excessive mechanical stress to the capacitor terminals when mounting.	10 "Maintenance"
Storage	Do not store capacitors at high temperatures or high humidity. Capacitors should be stored at +5 to +35 °C and a relative humidity of $\leq 75\%$.	7.3 "Shelf life and storage conditions"
		Reference chapter "Capacitors with screw terminals"
Breakdown strength of insulating sleeves	Do not damage the insulating sleeve, especially when ring clips are used for mounting.	"Screw terminals – accessories"

Display of ordering codes for TDK Electronics products

The ordering code for one and the same product can be represented differently in data sheets, data books, other publications, on the company website, or in order-related documents such as shipping notes, order confirmations and product labels. The varying representations of the ordering codes are due to different processes employed and do not affect the specifications of the respective products.

Detailed information can be found on the Internet under www.tdk-electronics.tdk.com/orderingcodes.

Symbols and terms

Symbol	English	German
C	Capacitance	Kapazität
C _R	Rated capacitance	Nennkapazität
C _S	Series capacitance	Serienkapazität
C _{S,T}	Series capacitance at temperature T	Serienkapazität bei Temperatur T
C _f	Capacitance at frequency f	Kapazität bei Frequenz f
d	Case diameter, nominal dimension	Gehäusedurchmesser, Nennmaß
d _{max}	Maximum case diameter	Maximaler Gehäusedurchmesser
ESL	Self-inductance	Eigeninduktivität
ESR	Equivalent series resistance	Ersatzserienwiderstand
ESR _f	Equivalent series resistance at frequency f	Ersatzserienwiderstand bei Frequenz f
ESR _T	Equivalent series resistance at temperature T	Ersatzserienwiderstand bei Temperatur T
f	Frequency	Frequenz
I	Current	Strom
I _{AC}	Alternating current (ripple current)	Wechselstrom
I _{AC,RMS}	Root-mean-square value of alternating current	Wechselstrom, Effektivwert
I _{AC,f}	Ripple current at frequency f	Wechselstrom bei Frequenz f
I _{AC,max}	Maximum permissible ripple current	Maximal zulässiger Wechselstrom
I _{AC,R}	Rated ripple current	Nennwechselstrom
I _{leak}	Leakage current	Reststrom
I _{leak,op}	Operating leakage current	Betriebsreststrom
l	Case length, nominal dimension	Gehäuselänge, Nennmaß
l _{max}	Maximum case length (without terminals and mounting stud)	Maximale Gehäuselänge (ohne Anschlüsse und Gewindebolzen)
R	Resistance	Widerstand
R _{ins}	Insulation resistance	Isolationswiderstand
R _{symm}	Balancing resistance	Symmetrierwiderstand
T	Temperature	Temperatur
ΔT	Temperature difference	Temperaturdifferenz
T _A	Ambient temperature	Umgebungstemperatur
T _B	Capacitor base temperature	Temperatur des Gehäusebodens
T _C	Case temperature	Gehäusetemperatur
t	Time	Zeit
Δt	Period	Zeitraum
t _b	Service life (operating hours)	Brauchbarkeitsdauer (Betriebszeit)
V	Voltage	Spannung
V _F	Forming voltage	Formierspannung
V _{op}	Operating voltage	Betriebsspannung
V _R	Rated voltage, DC voltage	Nennspannung, Gleichspannung
V _S	Surge voltage	Spitzenspannung
X _C	Capacitive reactance	Kapazitiver Blindwiderstand

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Symbol	English	German
X_L	Inductive reactance	Induktiver Blindwiderstand
Z	Impedance	Scheinwiderstand
Z_T	Impedance at temperature T	Scheinwiderstand bei Temperatur T
$\tan \delta$	Dissipation factor	Verlustfaktor
λ	Failure rate	Ausfallrate
ε_0	Absolute permittivity	Elektrische Feldkonstante
ε_r	Relative permittivity	Dielektrizitätszahl
ω	Angular frequency; $2 \cdot \pi \cdot f$	Kreisfrequenz; $2 \cdot \pi \cdot f$

Note:

All dimensions are given in mm.

Important notes

The following applies to all products named in this publication:

1. Some parts of this publication contain **statements about the suitability of our products for certain areas of application**. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application**. As a rule we are either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether a product with the properties described in the product specification is suitable for use in a particular customer application.
2. We also point out that **in individual cases, a malfunction of electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified**. In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of an electronic component could endanger human life or health (e.g. in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of an electronic component.
3. **The warnings, cautions and product-specific notes must be observed.**
4. In order to satisfy certain technical requirements, **some of the products described in this publication may contain substances subject to restrictions in certain jurisdictions (e.g. because they are classed as hazardous)**. Useful information on this will be found in our Material Data Sheets on the Internet (www.tdk-electronics.tdk.com/material). Should you have any more detailed questions, please contact our sales offices.
5. We constantly strive to improve our products. Consequently, **the products described in this publication may change from time to time**. The same is true of the corresponding product specifications. Please check therefore to what extent product descriptions and specifications contained in this publication are still applicable before or when you place an order.
We also **reserve the right to discontinue production and delivery of products**. Consequently, we cannot guarantee that all products named in this publication will always be available. The aforementioned does not apply in the case of individual agreements deviating from the foregoing for customer-specific products.
6. Unless otherwise agreed in individual contracts, **all orders are subject to our General Terms and Conditions of Supply**.

Important notes

7. **Our manufacturing sites serving the automotive business apply the IATF 16949 standard.**
The IATF certifications confirm our compliance with requirements regarding the quality management system in the automotive industry. Referring to customer requirements and customer specific requirements ("CSR") TDK always has and will continue to have the policy of respecting individual agreements. Even if IATF 16949 may appear to support the acceptance of unilateral requirements, we hereby like to emphasize that **only requirements mutually agreed upon can and will be implemented in our Quality Management System**. For clarification purposes we like to point out that obligations from IATF 16949 shall only become legally binding if individually agreed upon.
8. The trade names EPCOS, CarXield, CeraCharge, CeraDiode, CeraLink, CeraPad, CeraPlas, CSMP, CTVS, DeltaCap, DigiSiMic, FilterCap, FormFit, InsuGate, LeaXield, MediPlas, MiniBlue, MiniCell, MKD, MKK, ModCap, MotorCap, PCC, PhaseCap, PhaseCube, PhaseMod, PhiCap, PiezoBrush, PlasmaBrush, PowerHap, PQSine, PQvar, SIFERRIT, SIFI, SIKOREL, SilverCap, SIMDAD, SiMic, SIMID, SineFormer, SIOV, SurfIND, ThermoFuse, WindCap, XieldCap are **trademarks registered or pending** in Europe and in other countries. Further information will be found on the Internet at www.tdk-electronics.tdk.com/trademarks.

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