

DATA SHEET

156 PUM-SI **Aluminum electrolytic capacitors** **Power Ultra Miniature Snap-in**

Product specification
Supersedes data of 13th September 2002
File under BCcomponents, BC01

2003 Feb 20

Aluminum electrolytic capacitors

Power Ultra Miniature Snap-in

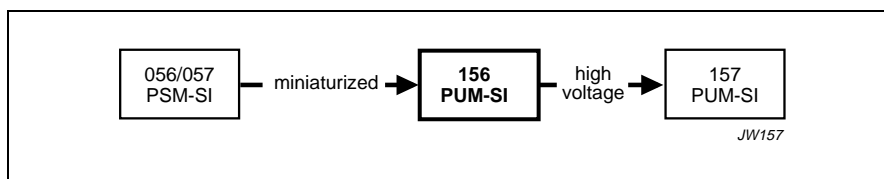
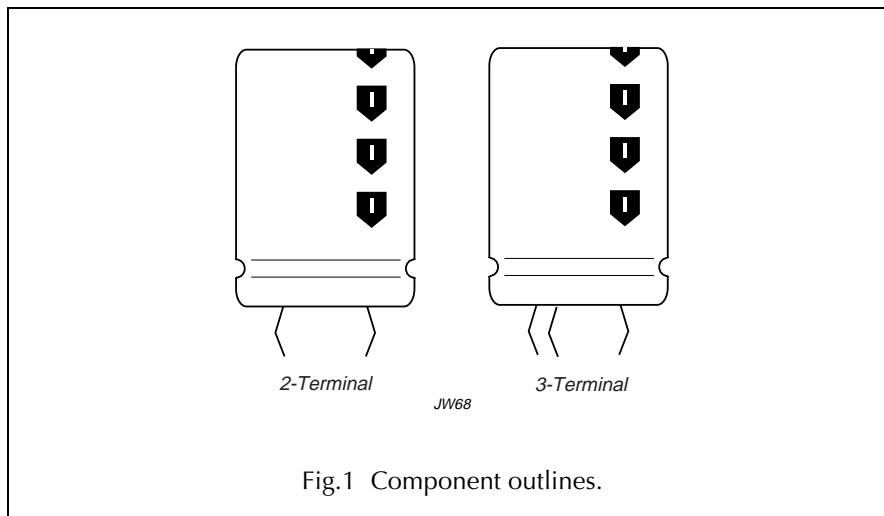
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FEATURES

- Polarized aluminum electrolytic capacitors, non-solid electrolyte
- Large types, very small dimensions, cylindrical aluminum case, insulated with a blue sleeve
- Charge and discharge proof
- Long useful life:
5000 hours at 85 °C
- High ripple current capability
- Keyed polarity version available.

APPLICATIONS

- General purpose, industrial and audio/video systems
- Smoothing and filtering
- Standard and switched mode power supplies
- Energy storage in pulse systems.



QUICK REFERENCE DATA

DESCRIPTION	VALUE
Case size ($\varnothing D_{nom} \times L_{nom}$ in mm)	22 × 25 to 35 × 60
Rated capacitance range (E6 series), C_R	680 to 100000 μF
Tolerance on C_R	±20%
Rated voltage range, U_R	10 to 100 V
Category temperature range	-40 to +85 °C
Endurance test at 85 °C	2000 hours
Useful life at 85 °C	5000 hours
Useful life at 40 °C and $1.4 \times I_R$ applied	90000 hours
Shelf life at 0 V, 85 °C	500 hours
Based on sectional specification	IEC 60384-4/EN130300
Climatic category IEC 60068	40/085/56

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Selection chart for C_R , U_R and relevant nominal case sizes ($\varnothing D \times L$ in mm)

Preferred types (2-terminals) in **bold**.

C_R (μF)	U_R (V)							
	10	16	25	40	50	63	80	100
680	–	–	–	–	–	–	–	22 × 25
820	–	–	–	–	–	–	–	22 × 25
1000	–	–	–	–	–	–	22 × 25	25 × 25
1200	–	–	–	–	–	–	22 × 25	22 × 35
1500	–	–	–	–	–	22 × 25	22 × 30	22 × 40
	–	–	–	–	–	–	25 × 25	25 × 30
	–	–	–	–	–	–	–	30 × 25
1800	–	–	–	–	–	25 × 25	25 × 30	22 × 45
	–	–	–	–	–	–	–	25 × 35
2200	–	–	–	–	22 × 25	22 × 30	22 × 35	22 × 50
	–	–	–	–	–	25 × 25	25 × 30	25 × 40
	–	–	–	–	–	30 × 25	30 × 25	30 × 30
	–	–	–	–	–	–	–	35 × 25
2700	–	–	–	22 × 25	25 × 25	22 × 35	22 × 45	25 × 45
	–	–	–	–	–	25 × 30	25 × 35	30 × 35
3300	–	–	–	25 × 25	22 × 30	22 × 40	22 × 50	30 × 40
	–	–	–	–	–	25 × 35	25 × 40	35 × 30
	–	–	–	–	–	30 × 25	30 × 30	–
	–	–	–	–	–	–	35 × 25	–
3900	–	–	–	22 × 30	22 × 35	22 × 45	25 × 45	30 × 45
	–	–	–	25 × 25	25 × 30	–	30 × 35	35 × 35
4700	–	–	22 × 25	22 × 35	22 × 40	22 × 50	30 × 40	30 × 50
	–	–	–	25 × 30	25 × 35	25 × 45	35 × 30	35 × 40
	–	–	–	–	30 × 25	30 × 30	–	–
	–	–	–	–	–	35 × 25	–	–
5600	–	–	25 × 25	22 × 40	22 × 45	25 × 50	30 × 45	35 × 45
	–	–	–	25 × 30	25 × 40	30 × 35	35 × 35	–
	–	–	–	30 × 25	–	–	–	–
6800	–	22 × 25	22 × 35	22 × 45	25 × 45	30 × 40	30 × 50	35 × 50
	–	–	–	25 × 35	30 × 30	35 × 30	35 × 40	–
	–	–	–	–	35 × 25	–	–	–
8200	–	25 × 25	25 × 35	22 × 50	25 × 50	30 × 45	35 × 45	35 × 60
	–	–	25 × 30	25 × 40	30 × 35	35 × 35	–	–
	–	–	30 × 25	30 × 30	35 × 30	–	–	–
	–	–	–	35 × 25	–	–	–	–
10000	22 × 25	22 × 30	22 × 40	30 × 35	30 × 40	35 × 40	35 × 50	–
	–	–	25 × 35	35 × 30	35 × 35	–	–	–

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C_R (μF)	U_R (V)							
	10	16	25	40	50	63	80	100
12000	22 × 30	22 × 35	22 × 50	30 × 40	30 × 50	35 × 50	35 × 60	–
	25 × 25	25 × 30	25 × 40	35 × 30	35 × 35	–	–	–
	–	30 × 25	30 × 30	–	–	–	–	–
	–	–	35 × 25	–	–	–	–	–
15000	22 × 35	22 × 40	25 × 45	30 × 45	35 × 45	35 × 60	–	–
	30 × 25	25 × 35	30 × 35	35 × 35	–	–	–	–
18000	22 × 40	22 × 50	30 × 40	35 × 40	35 × 50	–	–	–
	25 × 30	25 × 40	35 × 30	–	–	–	–	–
	30 × 25	30 × 30	–	–	–	–	–	–
	–	35 × 25	–	–	–	–	–	–
22000	22 × 45	25 × 45	30 × 45	35 × 45	35 × 60	–	–	–
	25 × 35	30 × 35	35 × 35	–	–	–	–	–
27000	22 × 50	30 × 40	30 × 50	35 × 60	–	–	–	–
	25 × 40	35 × 30	35 × 40	–	–	–	–	–
	30 × 30	–	–	–	–	–	–	–
	35 × 25	–	–	–	–	–	–	–
33000	30 × 35	30 × 45	35 × 45	–	–	–	–	–
	35 × 30	35 × 35	–	–	–	–	–	–
39000	30 × 40	30 × 50	35 × 50	–	–	–	–	–
	35 × 30	35 × 40	–	–	–	–	–	–
47000	30 × 45	35 × 45	35 × 60	–	–	–	–	–
	35 × 35	–	–	–	–	–	–	–
56000	30 × 50	35 × 50	–	–	–	–	–	–
68000	35 × 45	35 × 60	–	–	–	–	–	–
82000	35 × 50	–	–	–	–	–	–	–
100000	35 × 60	–	–	–	–	–	–	–

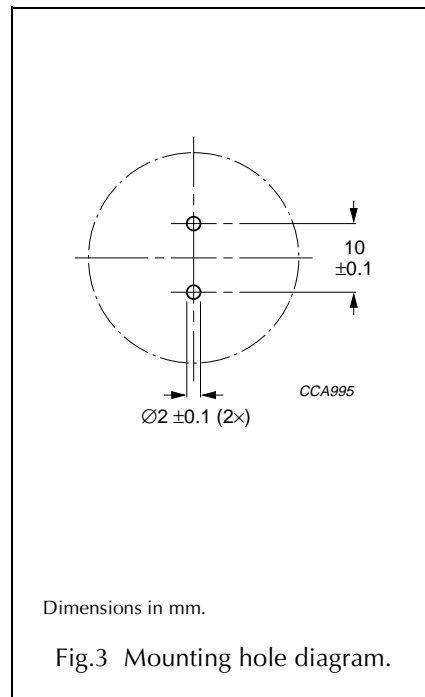
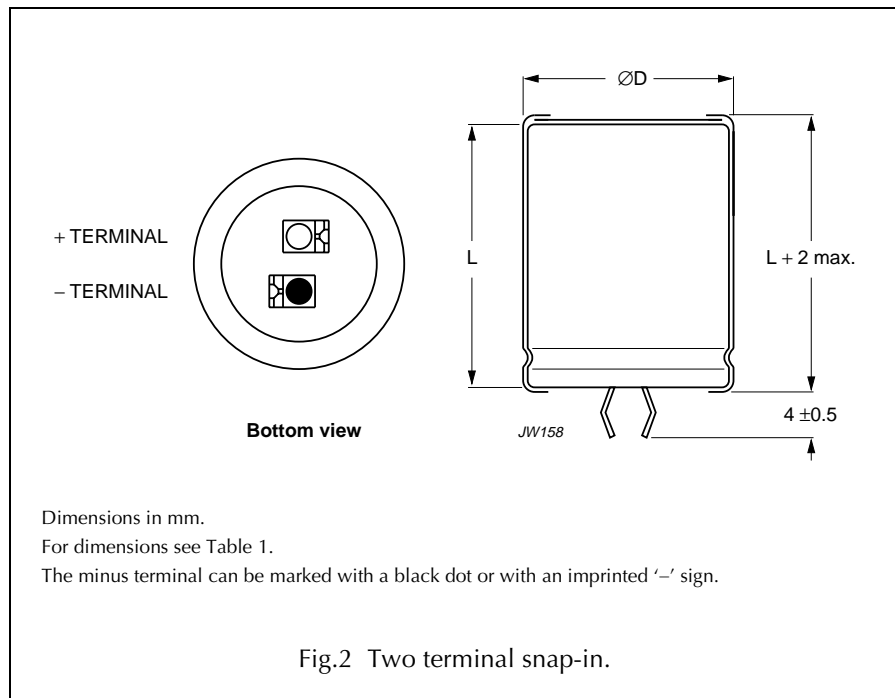
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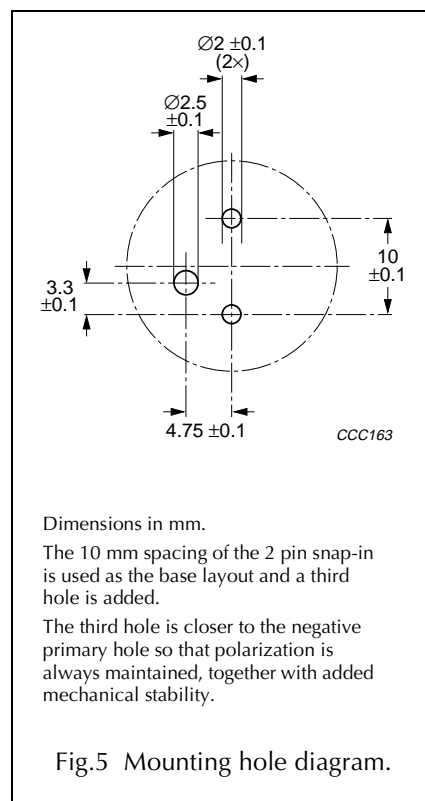
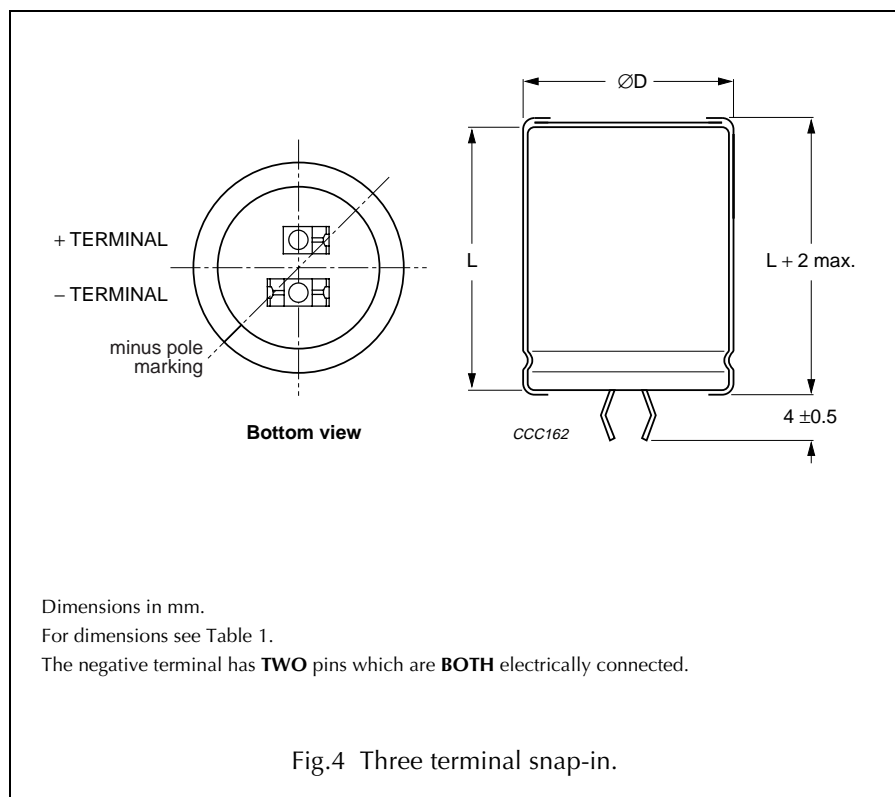
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MECHANICAL DATA AND PACKAGING QUANTITIES

Two terminal snap-in



Three terminal snap-in



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Table 1 Physical dimensions, mass and packaging information; see Figs 2 and 4

NOMINAL CASE SIZE $\varnothing D \times L$ (mm)	$\varnothing D_{\max}$ (mm)	L_{\max} (mm)	MASS (g)	PACKAGING QUANTITIES (units per box)	CARDBOARD BOX DIMENSIONS $l \times w \times h$ (mm)
22 × 25	23	27	≈12	100	260 × 250 × 39
22 × 30	23	32	≈16	100	260 × 250 × 44
22 × 35	23	37	≈20	100	260 × 250 × 49
22 × 40	23	42	≈23	100	260 × 250 × 54
25 × 25	26	27	≈20	100	290 × 280 × 39
25 × 30	26	32	≈22	100	290 × 280 × 44
25 × 35	26	37	≈24	100	290 × 280 × 49
25 × 40	26	42	≈27	100	290 × 280 × 54
25 × 45	26	47	≈32	100	290 × 280 × 59
25 × 50	26	52	≈38	100	290 × 280 × 64
30 × 25	31	27	≈25	100	340 × 330 × 39
30 × 30	31	32	≈30	100	340 × 330 × 44
30 × 35	31	37	≈35	100	340 × 330 × 49
30 × 40	31	42	≈40	100	340 × 330 × 54
30 × 45	31	47	≈45	100	340 × 330 × 59
30 × 50	31	52	≈50	100	340 × 330 × 64
35 × 25	36	27	≈33	50	390 × 198 × 39
35 × 30	36	32	≈40	50	390 × 198 × 44
35 × 35	36	37	≈48	50	390 × 198 × 49
35 × 40	36	42	≈55	50	390 × 198 × 54
35 × 45	36	47	≈63	50	390 × 198 × 59
35 × 50	36	52	≈72	50	390 × 198 × 64
35 × 60	36	62	≈82	50	390 × 198 × 74

MARKING

The capacitors are marked (where possible) with the following information:

- Rated capacitance (in μF)
- Tolerance code on rated capacitance (M for $\pm 20\%$)
- Rated voltage (in V)
- Climatic category in accordance with "IEC 60068"
- Date code (year and week) in accordance with "IEC 60062"
- Code for factory of origin
- Name of manufacturer
- '-' sign to indicate the negative terminal, visible from the top and side of the capacitor
- Code number (last 8 digits).

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ELECTRICAL DATA AND ORDERING INFORMATION

Unless otherwise specified, all electrical values in Table 2 apply at $T_{amb} = 20\text{ °C}$, $P = 86$ to 106 kPa , $RH = 45$ to 75% .

SYMBOL	DESCRIPTION
C_R	rated capacitance at 100 Hz
I_R	rated RMS ripple current at 100 Hz and 85 °C
I_{L1}	max. leakage current after 1 minute at U_R
ESR	max. equivalent series resistance at 100 Hz
Z	max. impedance at 10 kHz

Ordering example

Electrolytic capacitor 156 series

10000 $\mu\text{F}/25\text{ V}$; $\pm 20\%$

Nominal case size: $\varnothing 25 \times 35\text{ mm}$

2-TERMINAL SNAP-IN:

Catalogue number: 2222 156 26103.

3-TERMINAL SNAP-IN:

Catalogue number: 2222 156 66103.

Table 2 Electrical data and ordering information; preferred types in **bold**

U_R (V)	C_R 100 Hz (μF)	NOMINAL CASE SIZE $\varnothing D \times L$ (mm)	I_R 100 Hz 85 °C (A)	I_{L1} 1 min (μA)	ESR 100 Hz (m Ω)	Z 10 kHz (m Ω)	CATALOGUE NUMBER 2222 156	
							2-TERM.	3-TERM.
10	10000	22 × 25	2.55	604	91	88	14103	54103
	12000	22 × 30	3.05	724	74	71	14123	54123
	12000	25 × 25	2.81	724	82	79	24123	64123
	15000	22 × 35	3.51	904	60	58	14153	54153
	15000	30 × 25	3.14	904	74	71	24153	64153
	18000	22 × 40	3.94	1084	51	50	14183	54183
	18000	25 × 30	3.46	1084	58	56	24183	64183
	18000	30 × 25	3.11	1084	69	67	34183	74183
	22000	22 × 45	4.39	1324	43	42	14223	54223
	22000	25 × 35	3.96	1324	47	46	24223	64223
	27000	22 × 50	4.84	1624	37	36	14273	54273
	27000	25 × 40	4.44	1624	40	39	24273	64273
	27000	30 × 30	3.79	1624	50	48	34273	74273
	27000	35 × 25	3.19	1624	66	62	44273	84273
	33000	30 × 35	4.34	1984	41	40	14333	54333
	33000	35 × 30	4.00	1984	48	46	24333	64333
	39000	30 × 40	4.84	2344	35	34	14393	54393
	39000	35 × 30	3.88	2344	48	45	24393	64393
	47000	30 × 45	5.29	2824	30	30	14473	54473
	47000	35 × 35	4.46	2824	39	38	24473	64473
56000	30 × 50	5.70	3364	27	26	14563	54563	
68000	35 × 45	5.39	4084	30	28	14683	54683	
82000	35 × 50	5.77	4924	26	26	14823	54823	
100000	35 × 60	6.79	6004	22	22	14104	54104	

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U _R (V)	C _R 100 Hz (μF)	NOMINAL CASE SIZE ∅D × L (mm)	I _R 100 Hz 85 °C (A)	I _{L1} 1 min (μA)	ESR 100 Hz (mΩ)	Z 10 kHz (mΩ)	CATALOGUE NUMBER 2222 156	
							2-TERM.	3-TERM.
16	6800	22 × 25	2.48	657	96	90	15682	55682
	8200	25 × 25	2.75	791	86	81	15822	55822
	10000	22 × 30	3.09	964	67	64	15103	55103
	12000	22 × 35	3.53	1156	57	54	15123	55123
	12000	25 × 30	3.39	1156	60	58	25123	65123
	12000	30 × 25	3.09	1156	71	68	35123	75123
	15000	22 × 40	3.99	1444	46	45	15153	55153
	15000	25 × 35	3.89	1444	50	47	25153	65153
	18000	22 × 50	4.71	1732	39	37	15183	55183
	18000	25 × 40	4.36	1732	42	41	25183	65183
	18000	30 × 30	3.77	1732	51	49	35183	75183
	18000	35 × 25	3.20	1732	67	62	45183	85183
	22000	25 × 45	4.82	2116	36	34	15223	55223
	22000	30 × 35	4.32	2116	42	41	25223	65223
	27000	30 × 40	4.80	2596	36	34	15273	55273
	27000	35 × 30	3.86	2596	49	46	25273	65273
	33000	30 × 45	5.25	3172	31	30	15333	55333
	33000	35 × 35	4.43	3172	40	38	25333	65333
	39000	30 × 50	5.66	3748	28	27	15393	55393
	39000	35 × 40	4.94	3748	34	32	25393	65393
47000	35 × 45	5.37	4516	30	29	15473	55473	
56000	35 × 50	5.76	5380	27	26	15563	55563	
68000	35 × 60	6.79	6532	22	22	15683	55683	

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U _R (V)	C _R 100 Hz (μF)	NOMINAL CASE SIZE ∅D × L (mm)	I _R 100 Hz 85 °C (A)	I _{L1} 1 min (μA)	ESR 100 Hz (mΩ)	Z 10 kHz (mΩ)	CATALOGUE NUMBER 2222 156	
							2-TERM.	3-TERM.
25	4700	22 × 25	2.37	709	99	89	16472	56472
	5600	25 × 25	2.63	844	89	80	16562	56562
	6800	22 × 35	3.23	1024	67	61	16682	56682
	8200	22 × 35	3.37	1234	59	53	16822	56822
	8200	25 × 30	3.26	1234	63	58	26822	66822
	8200	30 × 25	2.99	1234	74	68	36822	76822
	10000	22 × 40	3.81	1504	50	45	16103	56103
	10000	25 × 35	3.73	1504	52	47	26103	66103
	12000	22 × 50	4.49	1804	41	38	16123	56123
	12000	25 × 40	4.18	1804	44	41	26123	66123
	12000	30 × 30	3.65	1804	53	49	36123	76123
	12000	35 × 25	3.13	1804	70	62	46123	86123
	15000	25 × 45	4.64	2254	38	34	16153	56153
	15000	30 × 35	4.19	2254	43	41	26153	66153
	18000	30 × 40	4.67	2704	38	34	16183	56183
	18000	35 × 30	3.79	2704	50	46	26183	66183
	22000	30 × 45	5.11	3304	32	30	16223	56223
	22000	35 × 35	4.35	3304	42	38	26223	66223
	27000	30 × 50	5.51	4054	29	26	16273	56273
	27000	35 × 40	4.82	4054	35	32	26273	66273
	33000	35 × 45	5.23	4954	31	28	16333	56333
	39000	35 × 50	5.62	5854	28	26	16393	56393
47000	35 × 60	6.64	7054	23	22	16473	56473	

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U _R (V)	C _R 100 Hz (μF)	NOMINAL CASE SIZE ∅D × L (mm)	I _R 100 Hz 85 °C (A)	I _{L1} 1 min (μA)	ESR 100 Hz (mΩ)	Z 10 kHz (mΩ)	CATALOGUE NUMBER 2222 156	
							2-TERM.	3-TERM.
40	2700	22 × 25	2.20	652	110	94	17272	57272
	3300	25 × 25	2.46	796	97	83	17332	57332
	3900	22 × 30	2.74	940	78	66	17392	57392
	3900	25 × 25	2.52	940	88	77	27392	67392
	4700	22 × 35	3.14	1132	65	56	17472	57472
	4700	25 × 30	3.04	1132	70	60	27472	67472
	5600	22 × 40	3.54	1348	55	47	17562	57562
	5600	25 × 30	3.11	1348	63	55	27562	67562
	5600	30 × 25	2.60	1348	78	68	37562	77562
	6800	22 × 45	3.95	1636	47	41	17682	57682
	6800	25 × 35	3.57	1636	52	46	27682	67682
	8200	22 × 50	4.36	1972	40	35	17822	57822
	8200	25 × 40	4.01	1972	44	39	27822	67822
	8200	30 × 30	3.43	1972	56	50	37822	77822
	8200	35 × 25	2.87	1972	78	65	47822	87822
	10000	30 × 35	3.94	2404	46	41	17103	57103
	10000	35 × 30	3.46	2404	72	69	27103	67103
	12000	30 × 40	4.40	2884	39	35	17123	57123
	12000	35 × 30	3.50	2884	56	47	27123	67123
	15000	30 × 45	4.82	3604	34	30	17153	57153
15000	35 × 35	4.01	3604	46	39	27153	67153	
18000	35 × 40	4.48	4324	39	34	17183	57183	
22000	35 × 45	4.86	5284	34	30	17223	57223	
27000	35 × 60	6.38	6484	26	22	17273	57273	

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U _R (V)	C _R 100 Hz (μF)	NOMINAL CASE SIZE ∅D × L (mm)	I _R 100 Hz 85 °C (A)	I _{L1} 1 min (μA)	ESR 100 Hz (mΩ)	Z 10 kHz (mΩ)	CATALOGUE NUMBER 2222 156	
							2-TERM.	3-TERM.
50	2200	22 × 25	2.13	664	112	90	11222	51222
	2700	25 × 25	2.39	814	98	81	11272	51272
	3300	22 × 30	2.68	994	78	63	11332	51332
	3900	22 × 35	3.06	1174	66	54	11392	51392
	3900	25 × 30	2.96	1174	70	58	21392	61392
	4700	22 × 40	3.45	1414	55	46	11472	51472
	4700	25 × 35	3.39	1414	58	48	21472	61472
	4700	30 × 25	2.70	1414	80	67	31472	71472
	5600	22 × 45	3.84	1684	47	39	11562	51562
	5600	25 × 40	3.81	1684	50	42	21562	61562
	6800	25 × 45	4.23	2044	42	36	11682	51682
	6800	30 × 30	3.32	2044	58	49	21682	61682
	6800	35 × 25	2.78	2044	81	65	31682	71682
	8200	25 × 50	4.64	2464	37	31	11822	51822
	8200	30 × 35	3.83	2464	47	41	21822	61822
	8200	35 × 30	3.52	2464	57	48	31822	71822
	10000	30 × 40	4.28	3004	40	34	11103	51103
	10000	35 × 35	4.05	3004	46	39	21103	61103
	12000	30 × 50	5.13	3604	32	28	11123	51123
	12000	35 × 35	3.92	3604	47	39	21123	61123
15000	35 × 45	4.90	4504	34	30	11153	51153	
18000	35 × 50	5.26	5404	31	26	11183	51183	
22000	35 × 60	6.22	6604	26	22	11223	51223	

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U _R (V)	C _R 100 Hz (μF)	NOMINAL CASE SIZE ∅D × L (mm)	I _R 100 Hz 85 °C (A)	I _{L1} 1 min (μA)	ESR 100 Hz (mΩ)	Z 10 kHz (mΩ)	CATALOGUE NUMBER 2222 156	
							2-TERM.	3-TERM.
63	1500	22 × 25	1.78	571	190	162	18152	58152
	1800	25 × 25	2.03	684	164	142	18182	58182
	2200	22 × 30	2.25	836	131	113	18222	58222
	2200	25 × 25	2.12	836	142	123	28222	68222
	2200	30 × 25	2.35	836	142	123	38222	78222
	2700	22 × 35	2.59	1025	108	93	18272	58272
	2700	25 × 30	2.55	1025	112	98	28272	68272
	3300	22 × 40	2.95	1251	90	77	18332	58332
	3300	25 × 35	2.93	1251	92	80	28332	68332
	3300	30 × 25	2.47	1251	114	101	38332	78332
	3900	22 × 45	3.30	1478	77	66	18392	58392
	4700	22 × 50	3.67	1781	65	57	18472	58472
	4700	25 × 45	3.69	1781	66	58	28472	68472
	4700	30 × 30	3.04	1781	81	73	38472	78472
	4700	35 × 25	2.63	1781	103	90	48472	88472
	5600	25 × 50	4.07	2121	58	50	18562	58562
	5600	30 × 35	3.50	2121	67	60	28562	68562
	6800	30 × 40	3.92	2574	57	51	18682	58682
	6800	35 × 30	3.23	2574	74	66	28682	68682
	8200	30 × 45	4.33	3104	49	44	18822	58822
8200	35 × 35	3.73	3104	60	54	28822	68822	
10000	35 × 40	4.16	3784	51	46	18103	58103	
12000	35 × 50	5.00	4540	40	37	18123	58123	
15000	35 × 60	5.91	5674	34	30	18153	58153	

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U _R (V)	C _R 100 Hz (μF)	NOMINAL CASE SIZE ∅D × L (mm)	I _R 100 Hz 85 °C (A)	I _{L1} 1 min (μA)	ESR 100 Hz (mΩ)	Z 10 kHz (mΩ)	CATALOGUE NUMBER 222 156	
							2-TERM.	3-TERM.
80	1000	22 × 25	1.41	484	471	461	12102	52102
	1200	22 × 25	1.54	580	382	609	12122	52122
	1500	22 × 30	1.84	724	303	295	12152	52152
	1500	25 × 25	1.78	724	316	309	22152	62152
	1800	25 × 30	2.11	868	258	252	12182	52182
	2200	22 × 35	2.27	1060	212	207	12222	52222
	2200	25 × 30	2.24	1060	218	214	22222	62222
	2200	30 × 25	2.15	1060	238	234	32222	72222
	2700	22 × 45	2.75	1300	171	167	12272	52272
	2700	25 × 35	2.58	1300	179	175	22272	62272
	3300	22 × 50	3.09	1588	143	140	12332	52332
	3300	25 × 40	2.93	1588	148	145	22332	62332
	3300	30 × 30	2.67	1588	164	162	32332	72332
	3300	35 × 25	2.39	1588	192	190	42332	82332
	3900	25 × 45	3.27	1876	126	124	12392	52392
	3900	30 × 35	3.07	1876	137	135	22392	62392
	4700	30 × 40	3.45	2260	114	113	12472	52472
	4700	35 × 30	2.94	2260	137	135	22472	62472
	5600	30 × 45	3.82	2692	98	97	12562	52562
	5600	35 × 35	3.39	2692	113	111	22562	62562
6800	30 × 50	4.20	3268	84	83	12682	52682	
6800	35 × 40	3.80	3268	95	93	22682	62682	
8200	35 × 45	4.17	3940	81	81	12822	52822	
10000	35 × 50	4.52	4804	70	69	12103	52103	
12000	35 × 60	5.37	5764	58	58	12123	52123	

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U _R (V)	C _R 100 Hz (μF)	NOMINAL CASE SIZE ∅D × L (mm)	I _R 100 Hz 85 °C (A)	I _{L1} 1 min (μA)	ESR 100 Hz (mΩ)	Z 10 kHz (mΩ)	CATALOGUE NUMBER 2222 156	
							2-TERM.	3-TERM.
100	680	22 × 25	1.36	412	469	435	19681	59681
	820	22 × 25	1.46	496	397	369	19821	59821
	1000	22 × 30	1.73	604	322	299	19102	59102
	1000	25 × 25	1.68	604	335	313	29102	69102
	1200	22 × 35	1.98	724	268	249	19122	59122
	1500	22 × 40	2.29	904	217	202	19152	59152
	1500	25 × 30	2.13	904	227	213	29152	69152
	1500	30 × 25	2.06	904	247	234	39152	79152
	1800	22 × 45	2.59	1084	182	170	19182	59182
	1800	25 × 35	2.44	1084	189	177	29182	69182
	2200	22 × 50	2.91	1324	151	141	19222	59222
	2200	25 × 40	2.78	1324	156	147	29222	69222
	2200	30 × 30	2.56	1324	172	163	39222	79222
	2200	35 × 25	2.31	1324	201	191	49222	89222
	2700	25 × 45	3.14	1624	130	122	19272	59272
	2700	30 × 35	2.95	1624	140	133	29272	69272
	3300	30 × 40	3.33	1984	117	111	19332	59332
	3300	35 × 30	2.85	1984	140	133	29332	69332
	3900	30 × 45	3.69	2344	100	95	19392	59392
	3900	35 × 35	3.28	2344	116	111	29392	69392
4700	30 × 50	4.05	2824	86	82	19472	59472	
4700	35 × 40	3.68	2824	97	93	29472	69472	
5600	35 × 45	4.05	3364	84	80	19562	59562	
6800	35 × 50	4.40	4084	73	70	19682	59682	
8200	35 × 60	5.23	4924	60	58	19822	59822	

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Additional electrical data

PARAMETER	CONDITIONS	VALUE
Voltage		
Surge voltage		$U_s = 1.15 \times U_R$
Reverse voltage		$U_{rev} \leq 1 \text{ V}$
Current		
Leakage current	after 1 minute at U_R	$I_{L1} \leq 0.006C_R \times U_R + 4 \mu\text{A}$
	after 5 minutes at U_R	$I_{L5} \leq 0.002C_R \times U_R + 4 \mu\text{A}$
Inductance		
Equivalent series inductance (ESL)	all case sizes	typ. 19 nH
		max. 25 nH

Aluminum electrolytic capacitors

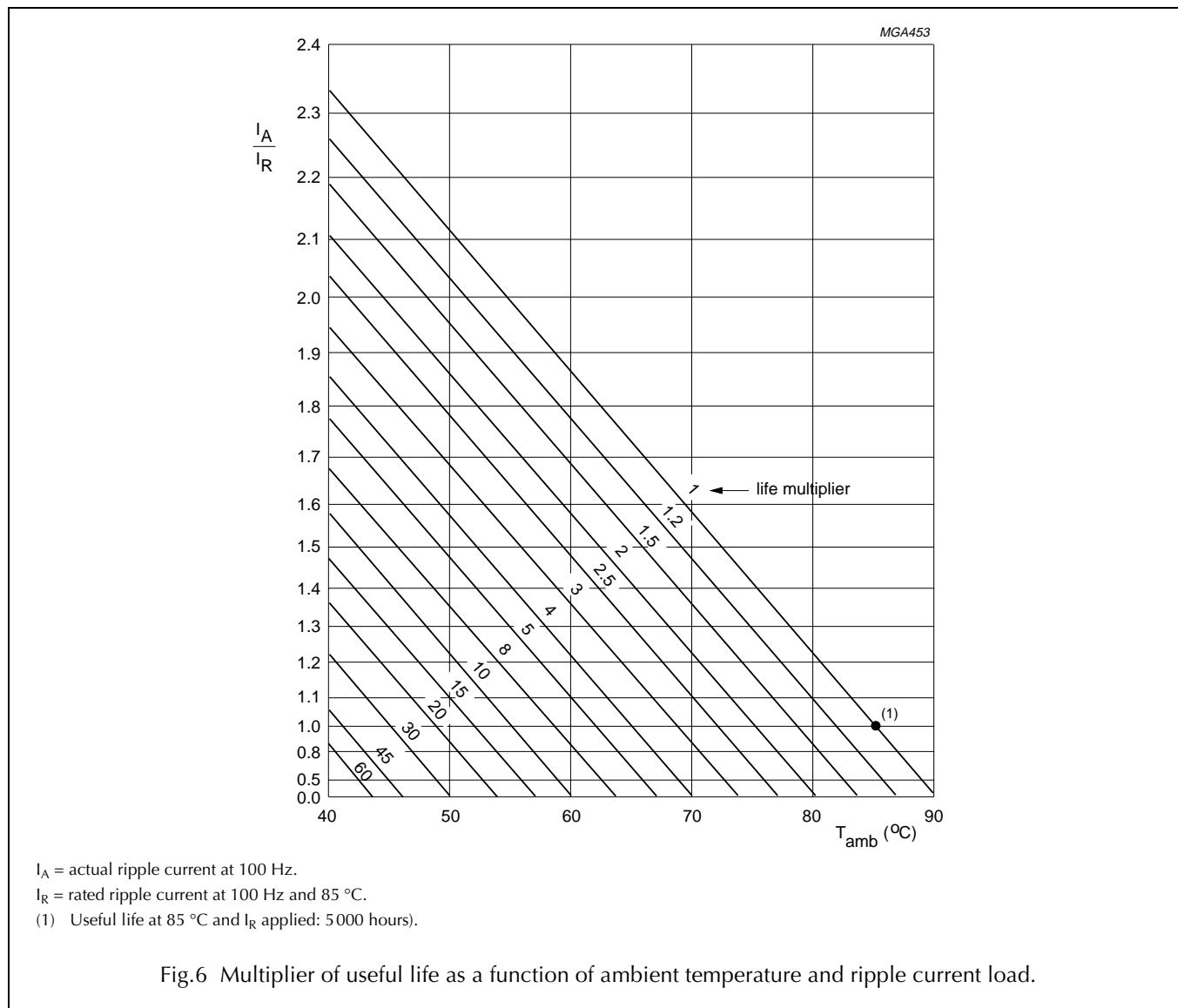
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RIPPLE CURRENT AND USEFUL LIFE

Table 3 Multiplier of ripple current (I_R) as a function of frequency

FREQUENCY (Hz)	I_R MULTIPLIER	
	$U_R = 10$ to 25 V	$U_R = 40$ to 100 V
50	0.93	0.91
100	1.00	1.00
200	1.04	1.05
400	1.07	1.09
1000	1.11	1.13
2000	1.13	1.15
4000	1.15	1.18
≥ 10000	1.18	1.22



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SPECIFIC TESTS AND REQUIREMENTS

General tests and requirements are specified in data handbook BC01, section "Tests and Requirements".

Table 4 Test procedures and requirements

TEST		PROCEDURE (quick reference)	REQUIREMENTS
NAME OF TEST	REFERENCE		
Endurance	IEC 60384-4/ EN130300 subclause 4.13	$T_{amb} = 85\text{ °C}$; U_R applied: 2000 hours	$\Delta C/C: \pm 15\%$ $ESR \leq 1.3 \times \text{spec. limit}$ $Z \leq 2 \times \text{spec. limit}$ $I_{L5} \leq \text{spec. limit}$
Useful life	CECC 30301 subclause 1.8.1	$T_{amb} = 85\text{ °C}$; U_R and I_R applied: 5000 hours	$\Delta C/C: \pm 15\%$ $ESR \leq 3 \times \text{spec. limit}$ $Z \leq 3 \times \text{spec. limit}$ $I_{L5} \leq \text{spec. limit}$ no short or open circuit, no visible damage total failure percentage: $\leq 1\%$
Shelf life (storage at high temperature)	IEC 60384-4/ EN130300 subclause 4.17	$T_{amb} = 85\text{ °C}$; no voltage applied; 500 hours after test: U_R to be applied for 30 minutes, 24 to 48 hours before measurement	$\Delta C/C: \pm 10\%$ $ESR \leq 1.2 \times \text{spec. limit}$ $I_{L5} \leq 2 \times \text{spec. limit}$