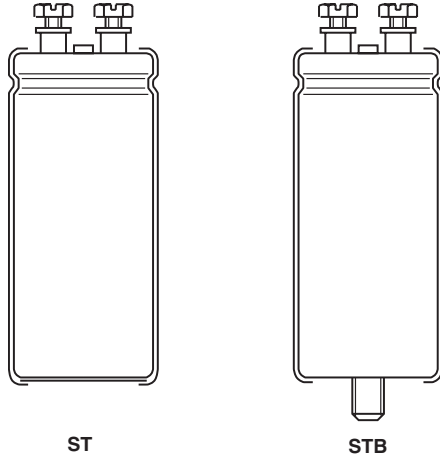


Aluminum Capacitors Power Eurodin Screw Terminals



ST STB
Fig.1 Component outlines.

FEATURES

- Polarized aluminum electrolytic capacitors, non-solid electrolyte
- Large types, cylindrical aluminum case, insulated with a blue sleeve
- Also available in bolt version (106 PED-STB)
- Pressure relief in the sealing
- Charge and discharge proof
- Extremely low ESR and ESL allowing very high ripple current load
- Very long useful life: 20000 hours at 85 °C
- High resistance to shock and vibration



RoHS
COMPLIANT

APPLICATIONS

- Computer, telecommunications and industrial systems
- Smoothing and filtering
- Standard and switched mode power supplies
- Energy storage in pulse systems

MARKING

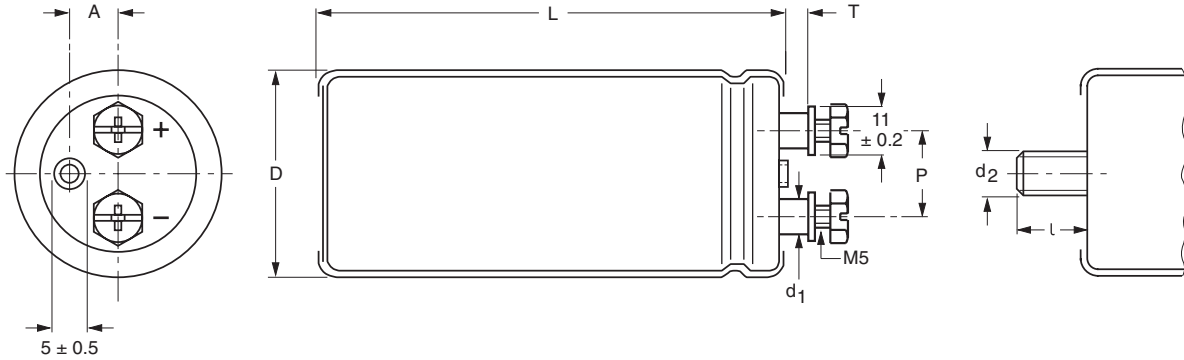
The capacitors are marked with the following information:

- Rated capacitance (in μF)
- Tolerance on rated capacitance, code letter in accordance with IEC 60062 (Q for - 10/+ 30 %)
- Rated voltage (in V)
- Date code (YYMM)
- Name of manufacturer
- Code for factory of origin
- '-' sign to identify the negative terminal, visible from the top and side of the capacitor
- Code number
- Climatic category in accordance with IEC 60068
- "LL" for long life grade

QUICK REFERENCE DATA	
DESCRIPTION	Value
Nominal case size ($\varnothing D \times L$ in mm)	35 × 60 to 76 × 105
Rated capacitance range (E6 series), C_R	1000 to 100000 μF
Tolerance on C_R	- 10 to + 30 %
Rated voltage range, U_R	25 to 100 V
Category temperature range	- 40 to + 85 °C
Endurance test at 85 °C	8000 hours
Useful life at 85 °C	20000 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

SELECTION CHART FOR C_R , U_R AND RELEVANT NOMINAL CASE SIZES ($\varnothing D \times L$ in mm)				
C_R (μF)	U_R (V)			
	25	40	63	100
1000	-	-	-	35 × 60
1500	-	-	-	35 × 60
2200	-	-	35 × 60	35 × 80
3300	-	35 × 60	35 × 60	35 × 105
4700	35 × 60	35 × 60	35 × 80	50 × 80
6800	35 × 60	35 × 80	35 × 105	50 × 105
10000	35 × 80	35 × 105	50 × 80	65 × 105
15000	35 × 105	50 × 80	50 × 105	65 × 105
22000	50 × 80	50 × 105	65 × 105	76 × 105
33000	50 × 105	65 × 105	65 × 105	-
47000	65 × 105	65 × 105	76 × 105	-
68000	65 × 105	76 × 105	-	-
100000	76 × 105	-	-	-

DIMENSIONS in millimeters **AND AVAILABLE FORMS**



Maximum permissible torque which may be applied to the termination screws: 2 Nm.
For accessories refer to data sheet "Mounting Accessories".
The capacitors are delivered with screws and washers.

Fig.2 Screw terminal (ST); screw terminal bolt (STB)

Table 1

DIMENSIONS in millimeters, MASS AND PACKAGING QUANTITIES										
NOMINAL CASE SIZE Ø D × L	Ø D _{max}	L _{max}	P ± 0.3	A ± 0.5	d ₁ ± 0.2	T ± 0.5	d ₂ × l	MASS (g)	PACKAGING QUANTITIES (per box)	CARDBOARD BOX DIMENSIONS L × W × H
35 × 60	36	63	13	8	8	5.9	M8 × 12	75	25	196 × 192 × 110
35 × 80	36	81	13	8	8	5.9	M8 × 12	95	25	196 × 192 × 115
35 × 105	36	105	13	8	8	5.9	M8 × 12	130	25	196 × 192 × 140
50 × 80	51.5	83	22	12	8	5.9	M12 × 16	200	25	293 × 273 × 115
50 × 105	51.5	105	22	12	8	5.9	M12 × 16	300	25	293 × 273 × 140
65 × 105	66	105	28.5	16	8	5.9	M12 × 16	480	10	368 × 151 × 140
76 × 105	77	106	32	19	8	5.9	M12 × 16	700	10	418 × 173 × 140



Aluminum Capacitors
Power Eurodin Screw Terminals

Vishay BCcomponents

ELECTRICAL DATA	
SYMBOL	DESCRIPTION
C _R	rated capacitance at 100 Hz, tolerance - 10 to + 30 %
I _R	rated RMS ripple current at 100 Hz, 85 °C
I _{L5}	max. leakage current after 5 minutes at U _R
ESR	max. equivalent series resistance at 100 Hz
Z	impedance at 20 kHz

ORDERING EXAMPLE

Electrolytic capacitor 106 PED-ST series
10000 µF/25 V; - 10/+ 30 %
Nominal case size: Ø 35 × 80 mm; ST version
Catalog number: 2222 106 16103.

Note

- Unless otherwise specified, all electrical values apply at
T_{amb} = 20 °C, P = 86 to 106 kPa, RH = 45 to 75 %.

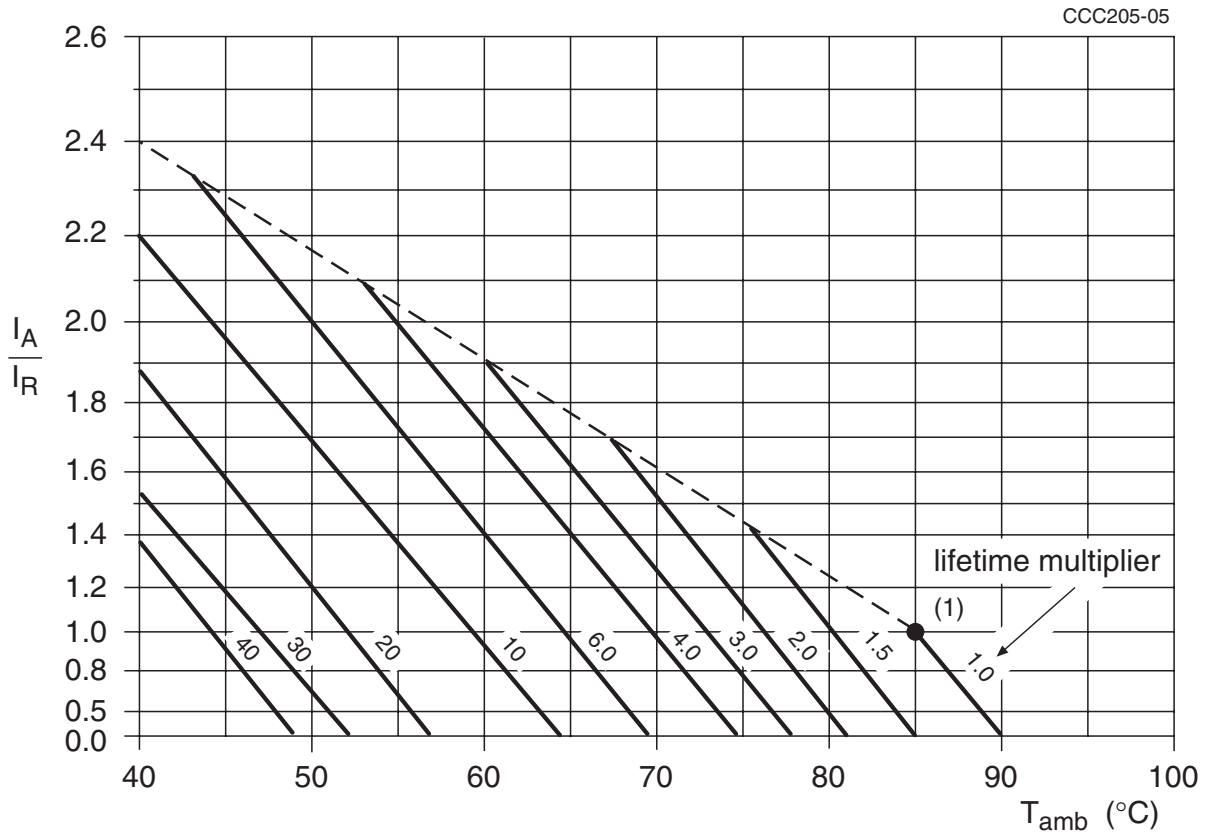
Table 2

ELECTRICAL DATA AND ORDERING INFORMATION								
U _R [V]	C _R 100 Hz [µF]	NOMINAL CASE SIZE D x L [mm]	I _R 100Hz 85 °C [A]	I _{L5} 5 min [mA]	ESR max 100 Hz [mΩ]	Z MAX. 20 kHz [mΩ]	CATALOG NUMBER ST 2222 106	CATALOG NUMBER STB 2222 106
25	4700	35 × 60	6.0	0.24	53	32	16472	56472
	6800	35 × 60	6.5	0.34	43	29	16682	56682
	10000	35 × 80	7.9	0.50	32	22	16103	56103
	15000	35 × 105	9.3	0.75	25	18	16153	56153
	22000	50 × 80	14.0	1.10	15	11	16223	56223
	33000	50 × 105	16.4	1.65	12	9	16333	56333
	47000	65 × 105	23.2	3.35	8	6	16473	56473
	68000	65 × 105	23.5	3.40	8	6	16683	56683
	100000	76 × 105	30.1	5.00	6	5	16104	56104
40	3300	35 × 60	5.7	0.27	56	32	17332	57332
	4700	35 × 60	6.0	0.38	48	31	17472	57472
	6800	35 × 80	7.3	0.55	36	24	17682	57682
	10000	35 × 105	10.9	0.80	19	11	17103	57103
	15000	50 × 80	13.0	1.20	17	12	17153	57153
	22000	50 × 105	15.2	1.76	13	10	17223	57223
	33000	65 × 105	21.6	2.64	9	7	17333	57333
	47000	65 × 105	25.1	3.76	7	5	17473	57473
	68000	76 × 105	27.3	5.44	7	5	17683	57683
63	2200	35 × 60	5.6	0.28	56	32	18222	58222
	3300	35 × 60	7.4	0.42	32	17	18332	58332
	4700	35 × 80	9.0	0.60	24	13	18472	58472
	6800	35 × 105	10.8	0.86	18	10	18682	58682
	10000	50 × 80	14.8	1.26	13	8	18103	58103
	15000	50 × 105	17.5	1.89	10	7	18153	58153
	22000	65 × 105	23.9	2.78	7	5	18223	58223
	33000	65 × 105	23.9	4.16	7	5	18333	58333
	47000	76 × 105	25.4	5.93	8	5	18473	58473
100	1000	35 × 60	3.7	0.20	96	48	19102	59102
	1500	35 × 60	4.8	0.30	59	27	19152	59152
	2200	35 × 80	5.9	0.44	42	20	19222	59222
	3300	35 × 105	7.3	0.66	29	15	19332	59332
	4700	50 × 80	10.1	0.94	22	12	19472	59472
	6800	50 × 105	12.1	1.36	16	9	19682	59682
	10000	65 × 105	16.7	2.00	11	7	19103	59103
	15000	65 × 105	17.6	3.00	10	6	19153	59153
	22000	76 × 105	19.5	4.40	9	6	19223	59223



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	$I_{L1} \leq 0.006 C_R \times U_R + 4 \mu\text{F}$
	after 5 minutes at U_R	$I_{L5} \leq 0.002 C_R \times U_R + 4 \mu\text{F}$
Inductance		
Equivalent series inductance (ESL)	case $\varnothing D = 35 \text{ mm}$	typ. 13 nH
	case $\varnothing D = 50 \text{ mm}$	typ. 16 nH
	case $\varnothing D = 65 \text{ mm}$	typ. 19 nH
	case $\varnothing D = 76 \text{ mm}$	typ. 20 nH

RIPPLE CURRENT AND USEFUL LIFE



I_A = actual ripple current at 100 Hz.
 I_R = actual ripple current at 100 Hz and 85 °C.
 With an absolute maximum of 50 A at 85 °C.
 (1) Useful life at 85 °C and I_R applied: 20000 hours

Fig. 3 Multiplier of useful life as a function of ambient temperature and ripple current load

Table 3

MULTIPLIER OF RIPPLE CURRENT (I_R) AS A FUNCTION OF FREQUENCY	
FREQUENCY (Hz)	I_R MULTIPLIER
50	0.83
100	1.00
200	1.10
400	1.15
1000	1.19
≥ 2000	1.20

Table 4

TEST PROCEDURES AND REQUIREMENTS			
TEST		PROCEDURE (quick reference)	REQUIREMENTS
NAME OF TEST	REFERENCE		
Endurance	IEC 60384-4/ EN130300 subclause 4.13	$T_{amb} = 85\text{ }^\circ\text{C}$; U_R applied; 8000 hours	$\Delta C/C: \pm 15\%$ $\tan \delta \leq 1.3 \times \text{spec. limit}$ $Z \leq 2 \times \text{spec. limit}$ $I_{L5} \leq \text{spec. limit}$
Useful life	CECC 30301 subclause 1.8.1	$T_{amb} = 85\text{ }^\circ\text{C}$; U_R and I_R applied; 20000 hours	$\Delta C/C: \pm 4.5\%$ $\tan \delta \leq 3 \times \text{spec. limit}$ $Z \leq 3 \times \text{spec. limit}$ $I_{L5} \leq \text{spec. limit}$ 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	$T_{amb} = 85\text{ }^\circ\text{C}$; no voltage applied; 500 hours after test: U_R to be applied for 30 minutes, 24 to 48 hours before measurement	$\Delta C/C: \pm 10\%$ $\tan \delta \leq 1.2 \times \text{spec. limit}$ $I_{L5} \leq 2 \times \text{spec. limit}$



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