Miniature ceramic plate capacitors

Class 2, 500 V (DC) (non-flanged types)

FEATURES

- Coupling and decoupling
- Space saving.

APPLICATIONS

Ceramic plate capacitors without flanges are not intended for new design projects. They are recommended for maintenance purposes only. The electrical properties are identical to capacitors with flanged leads.

DESCRIPTION

The capacitors consist of a thin rectangular ceramic plate, both sides of which are metallized. The tinned connecting leads are secured using a high melting point solder. The capacitors are encapsulated in epoxy lacquer, which is resistant to all commonly used cleaning solvents. They have small dimensions and narrow tolerances on the lead spacing.

QUICK REFERENCE DATA

DESCRIPTION	VALUE
Capacitance range (E12 series)	100 to 4700 pF
Tolerance on capacitance	±10%
Dielectric material	K2000
Rated DC voltage	500 V
Sectional specification	IEC 384-9 (2C2 and 2E1)
Climatic category (IEC 68)	55/125/56

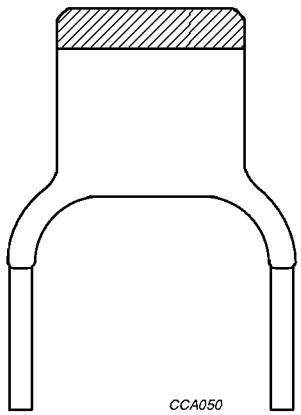

Fig.1 Outline.

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MECHANICAL DATA

Marking

The body of the capacitors is tan coloured. The temperature dependence is indicated by a yellow coloured cap. Capacitance value and voltage are indicated by a marking code in a contrasting colour on the body.

Refer to Table 3 for marking codes.

Mounting

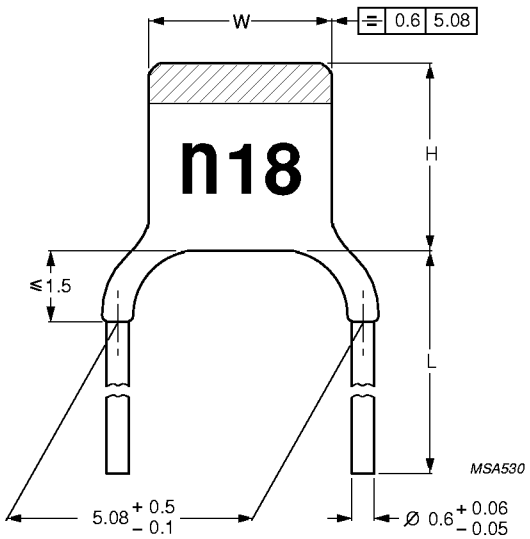
When bending, cutting or flattening, the leads should be relieved of the applied load by supporting them at the capacitor body.

Soldering conditions:

max. 265 °C, max. 10 s.

Lacquer on the leads

When the capacitors are mounted on printed-circuit boards with a thickness of 1.5 mm and with holes of 1.3 mm diameter or on printed-circuit boards with a thickness of 1 mm and with holes of 0.8 mm diameter there will be no lacquer on the leads at the lower side of the board. For the capacitance value indicated by note 1 in Table 3, the lacquer on the leads is less than 2 mm.



Dimensions in mm.
For dimensions H, L and W see Tables 1 and 2.

Fig.2 Component outline.

Physical dimensions

Table 1 Capacitor dimensions and mass

SIZE(1)	W(2) (mm)	H(2) (mm)	MASS (g)
I	3.6 (–1.1)	3.7 (–1.2)	≈0.14
IIA	3.9 (–1.4)	4.0 (–1.5)	≈0.15
IIB	4.5 (–1.8)	4.7 (–2.0)	≈0.16
III	5.3 (–1.8)	5.5 (–2.0)	≈0.17
IV	6.2 (–2.0)	6.4 (–2.2)	≈0.20
V	6.2 (–2.0)	8.6 (–2.6)	≈0.23

Notes

1. Unless indicated in the Table 3, the thickness of the capacitors does not exceed 2.3 mm. The H_{max} of capacitors with thickness exceeding 2.3 mm is 4.5 mm.
2. Tolerances are given between parentheses.

PACKAGING

For details refer to this handbook, Chapter *"Miniature ceramic plate capacitors"*, Section *"General data"*.

ORDERING INFORMATION

Table 2 Catalogue numbers

PITCH P	LEAD DIAMETER d	CATALOGUE NUMBERS(1)	
		L ≥ 15 mm	L = 6 +0/−2 mm
5.08 mm (0.2 in)	0.6 mm (0.024 in)	2222 655 03...	2222 655 06...

Note

1. Catalogue numbers to be completed by adding the last 3-digit suffix for required capacitance value, see Table 3.

Table 3 Range of values

CAPACITANCE VALUE (pF)	SIZE (see Table 1)	MARKING CODE		SUFFIX OF CATALOGUE NUMBERS (see Table 2)
		VALUE	VOLTAGE(3) (V)	
100	I(1)	n10	500	101
120	I(2)	n12	500	121
150	I	n15	500	151
180	I	n18	500	181
220	I	n22	500	221
270	I	n27	500	271
330	I	n33	500	331
390	I	n39	500	391
470	IIA	n47	500	471
560	IIA	n56	500	561
680	IIB	n68	500	681
820	IIB	n82	500	821
1000	IIB	1n0	500	102
1200	IIB	1n2	500	122
1500	III	1n5	500	152
1800	III	1n8	500	182
2200	IV	2n2	500	222
2700	IV	2n7	500	272
3300	V	3n3	500	332
3900	V	3n9	500	392
4700	V	4n7	500	472

Notes

1. Maximum thickness 2.7 mm.
2. Maximum thickness 2.5 mm.
3. The voltage code may be marked on the front or side of the capacitor.

ELECTRICAL CHARACTERISTICS

The capacitors meet the essential requirements of *"IEC 384-9"*. Unless stated otherwise all electrical values apply at an ambient temperature of 20 ±1 °C, an atmospheric pressure of 86 to 106 kPa and a relative humidity of 63 to 67%.

DESCRIPTION	VALUE
Capacitance values measured at 1 kHz, 1 V	see Table 3
Tolerance on the capacitance, after 1 000 hours	±10%
Dielectric material	K2000
Rated DC voltage	500 V
DC test voltage; duration 1 minute	1 250 V
DC test voltage of coating; duration 1 minute	1 250 V
Insulation resistance at 500 V (DC) after 1 minute	>4 000 MΩ
Tan δ measured at 1 kHz, 1 V	<3.5%
Category temperature range	–55 to +85 °C (2C2) and –55 to +125 °C (2E1)
Storage temperature range	–55 to +85 °C
Capacitance change as a function of temperature	see Fig.3
Capacitance change as a function of frequency	see Fig.4
Climatic category (IEC 68)	55/125/56
Ageing	typical 1.5% per time decade

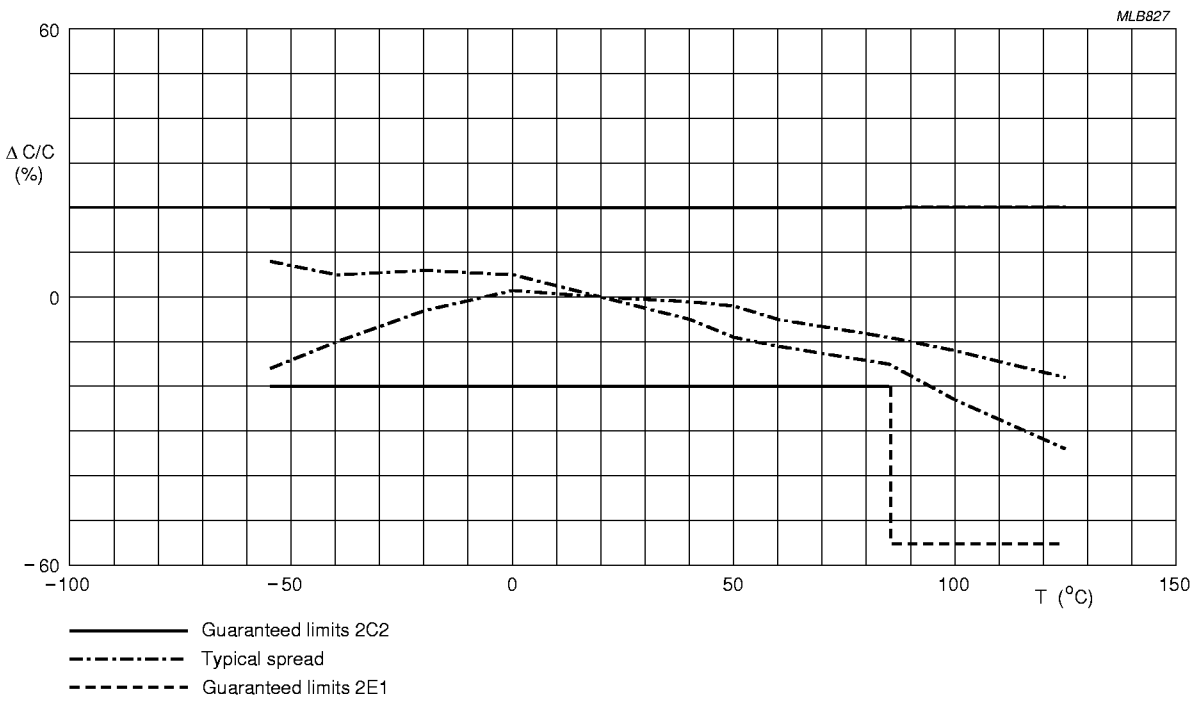
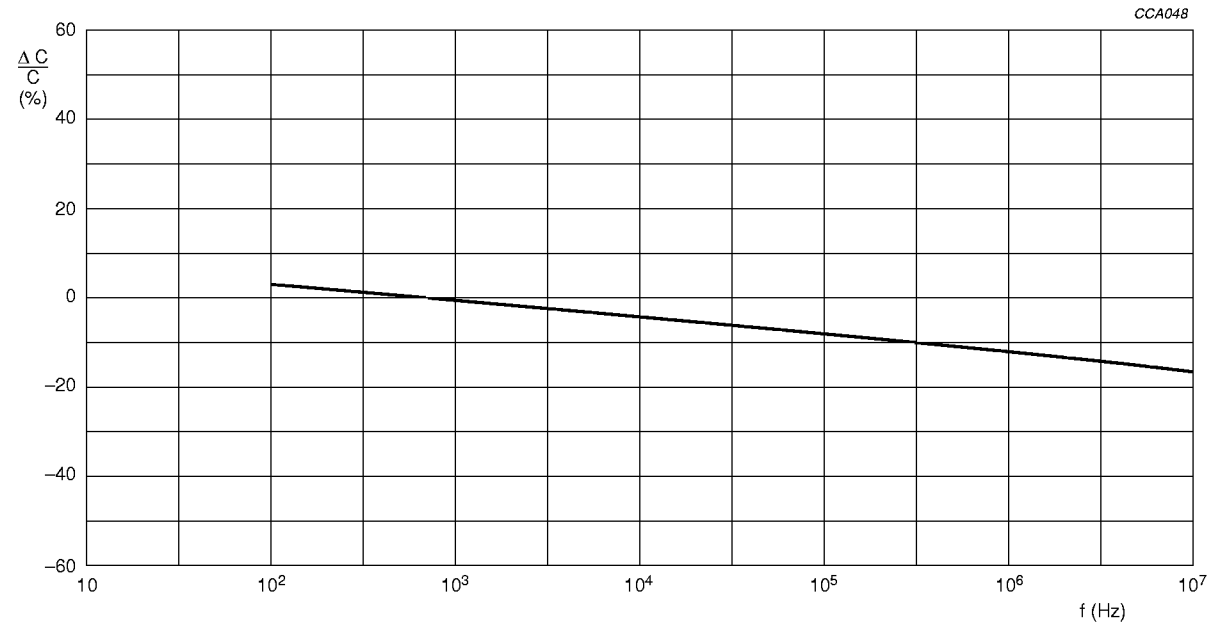


Fig.3 Typical capacitance change with respect to the capacitance at 20 °C as a function of temperature.



U = 1 V.

Fig.4 Typical capacitance change with respect to the capacitance at 1 kHz as a function of frequency.

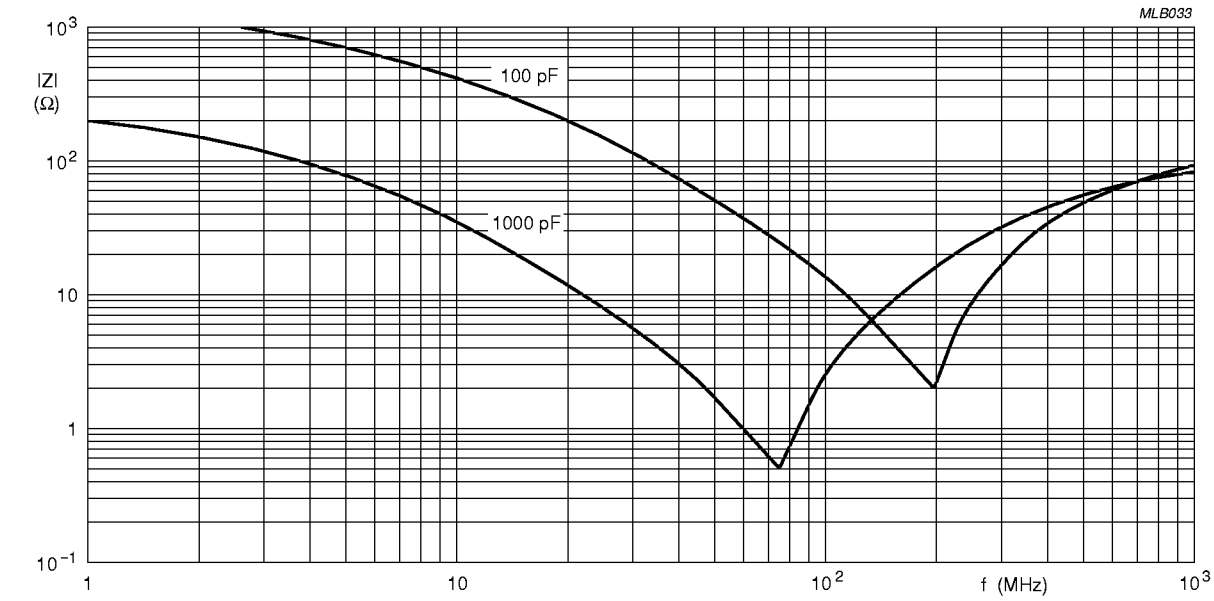


Fig.5 Typical impedance |Z| as a function of frequency.