

# Miniature ceramic plate capacitors

## Class 2, 500 V (DC) (flanged types)

### FEATURES

- General purpose
- Coupling and decoupling
- Space saving.

### APPLICATIONS

In electronic circuits where non-linear change of capacitance with temperature is permissible and low losses are not essential, e.g. coupling and decoupling. Because of their small size, the capacitors are ideal for circuitry with high component density.

### 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. The leads are provided with a flange. The flange guarantees that the leads are free of lacquer, and its shape allows soldering gasses to escape freely, ensuring excellent solderability. This makes the capacitors suitable for both hand mounting and automatic insertion.

### QUICK REFERENCE DATA

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

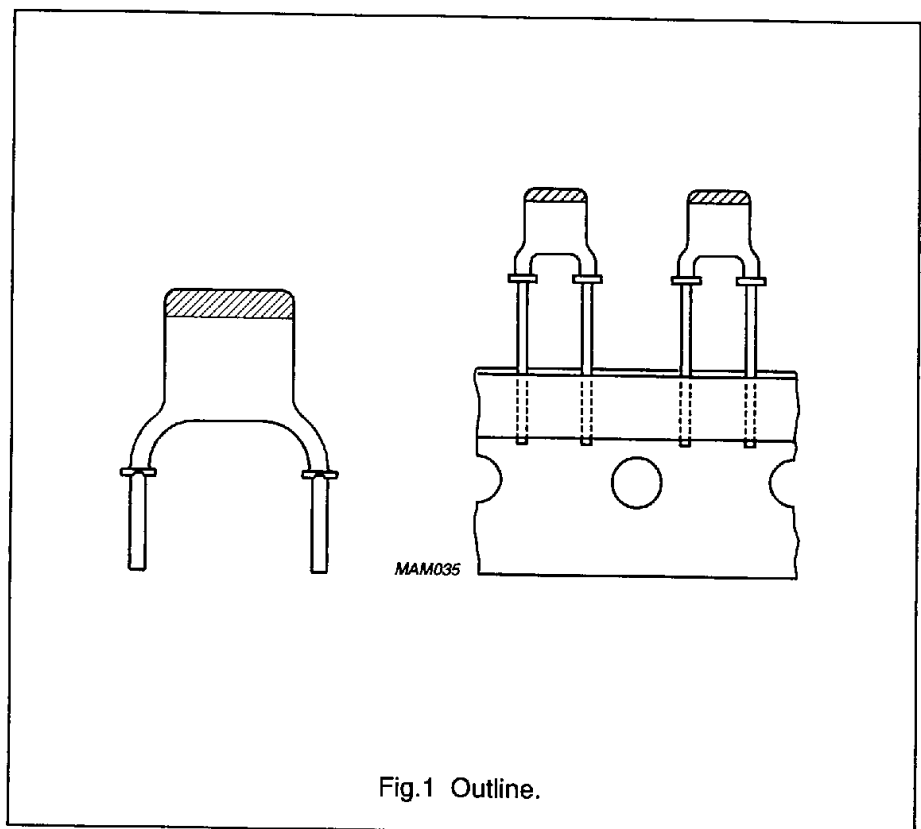
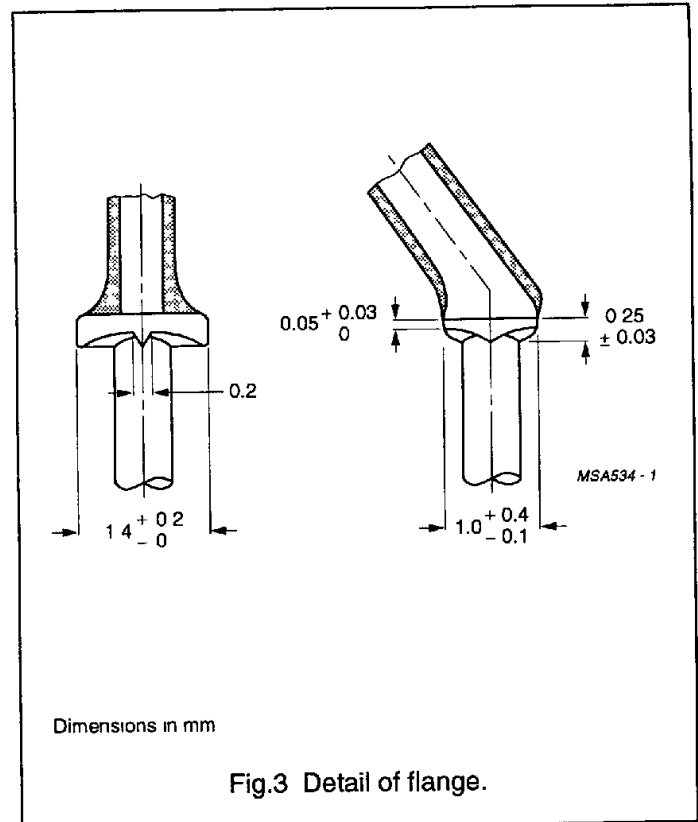
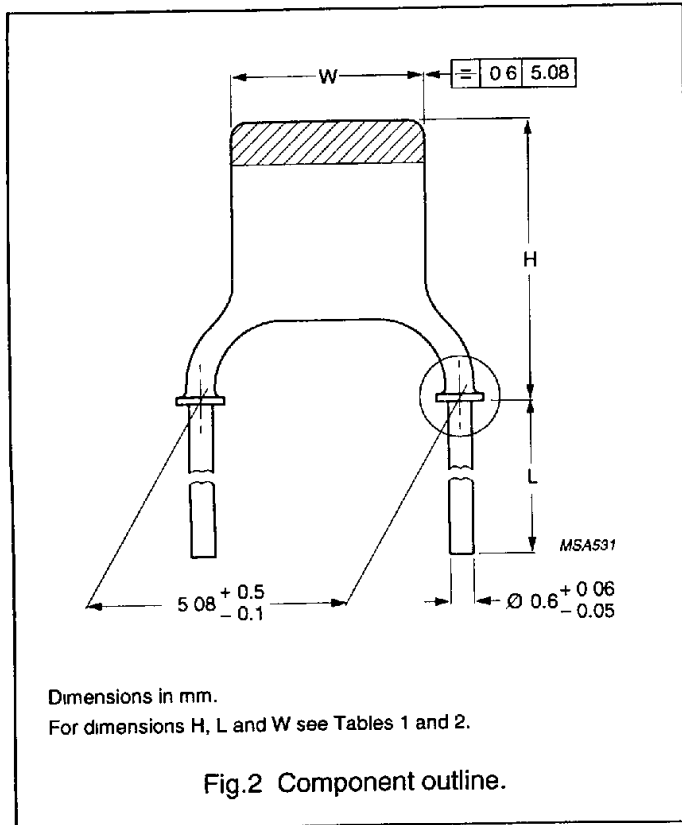


Fig.1 Outline.

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### MECHANICAL DATA



### Marking

The body of the capacitors is tan coloured. The temperature dependence is indicated by a yellow colour 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.

The capacitors are suitable for mounting on printed-circuit boards (hand mounting or automatic insertion).

### Physical dimensions

Table 1 Capacitor dimensions and mass.

SIZE <sup>(1)</sup>	W <sup>(2)</sup> (mm)	H <sup>(2)</sup> (mm)	MASS (g)
I	3.6 (-1.1)	6.3 (-1.8)	≈0.14
IIA	3.9 (-1.4)	6.7 (-2.0)	≈0.15
IIB	4.5 (-1.8)	7.3 (-2.4)	≈0.15
III	5.3 (-1.8)	8.1 (-2.6)	≈0.17
IV	6.2 (-2.0)	9.0 (-2.7)	≈0.20
V	6.2 (-2.0)	11.2 (-3.1)	≈0.23

### Notes

1. Unless indicated in Table 3, the thickness of the capacitors does not exceed 2.3 mm.
2. Tolerances are given between parentheses.

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## PACKAGING

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

## ORDERING INFORMATION

Table 2 Catalogue numbers.

PITCH P	LEAD DIAMETER d	CATALOGUE NUMBERS <sup>(1)</sup>				
		BULK PACKED		ON TAPE (REEL)	ON TAPE <sup>(2)</sup> (AMMOPACK)	ON TAPE <sup>(3)</sup> (AMMOPACK)
		L ≥ 13 mm	L = 4 ±0.5 mm			
5.08 mm (0.2 in)	0.6 mm (0.024 in)	2222 655 09...	2222 655 19...	2222 655 53...	2222 655 64...	2222 655 63...

## Notes

1. Catalogue numbers to be completed by adding the last 3-digit suffix for required capacitance value, see Table 3.
2. H<sub>0</sub> = 16 mm.
3. H<sub>0</sub> = 18.25 mm.

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Table 3 Preferred range of values.

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

## Miniature ceramic plate capacitors

Class 2, 500 V (DC)  
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The capacitors meet the essential requirements of "IEC 384-9". Unless stated otherwise all electrical values apply at an ambient temperature of  $20 \pm 1$  °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	100 to 4700 pF (E12 series)
Tolerance on the capacitance, after 1000 hours	$\pm 10\%$
Dielectric material	K2000
Rated DC voltage	500 V
DC test voltage; duration 1 minute	1250 V
DC test voltage of coating; duration 1 minute	1250 V
Insulation resistance at 500 V (DC) after 1 minute	$>4000 \text{ M}\Omega$
Tan $\delta$ 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.4
Capacitance change as a function of frequency	see Fig.5
Climatic category (IEC 68)	55/125/56
Ageing	typical 1.5% per time decade

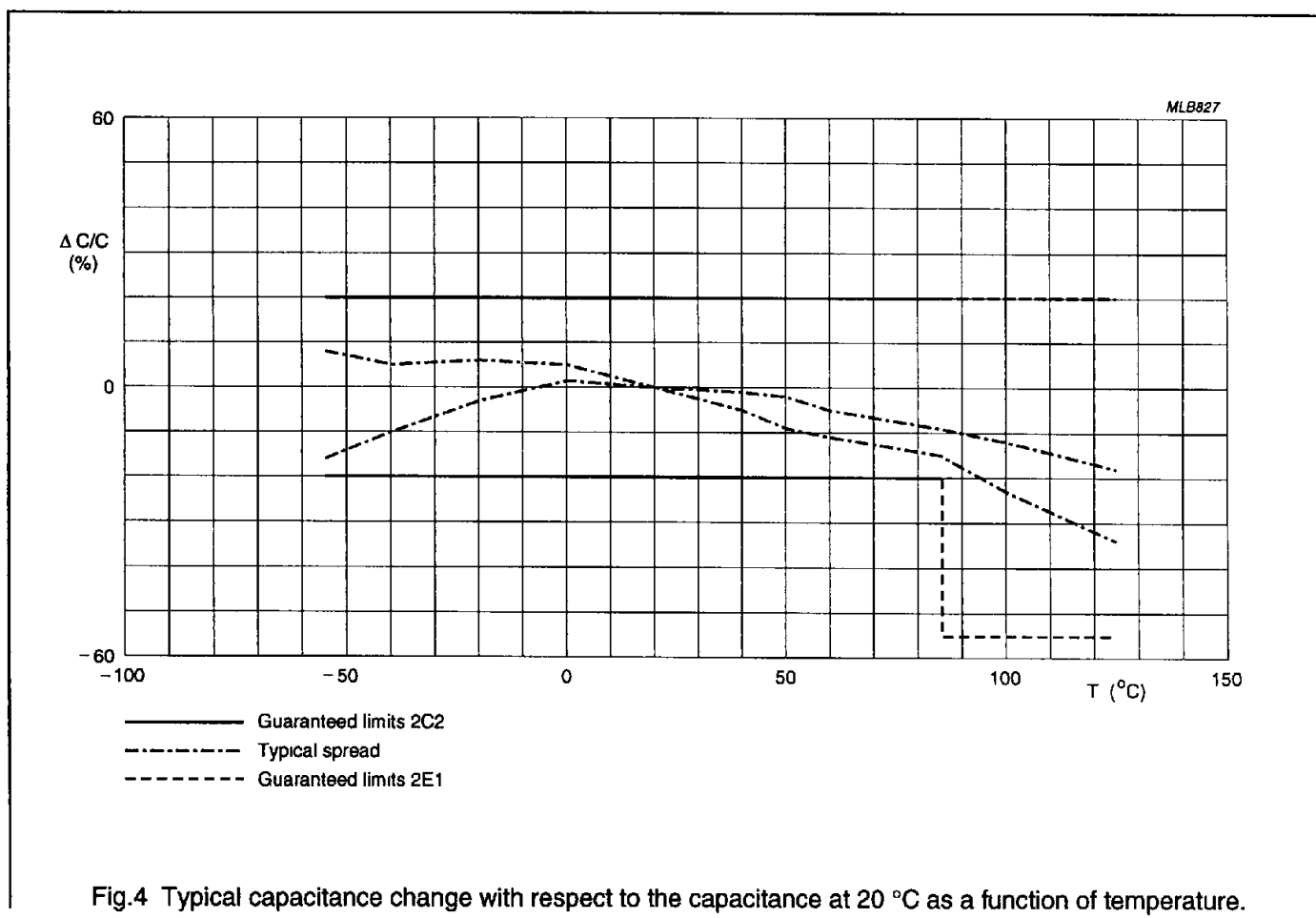


Fig.4 Typical capacitance change with respect to the capacitance at 20 °C as a function of temperature.

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