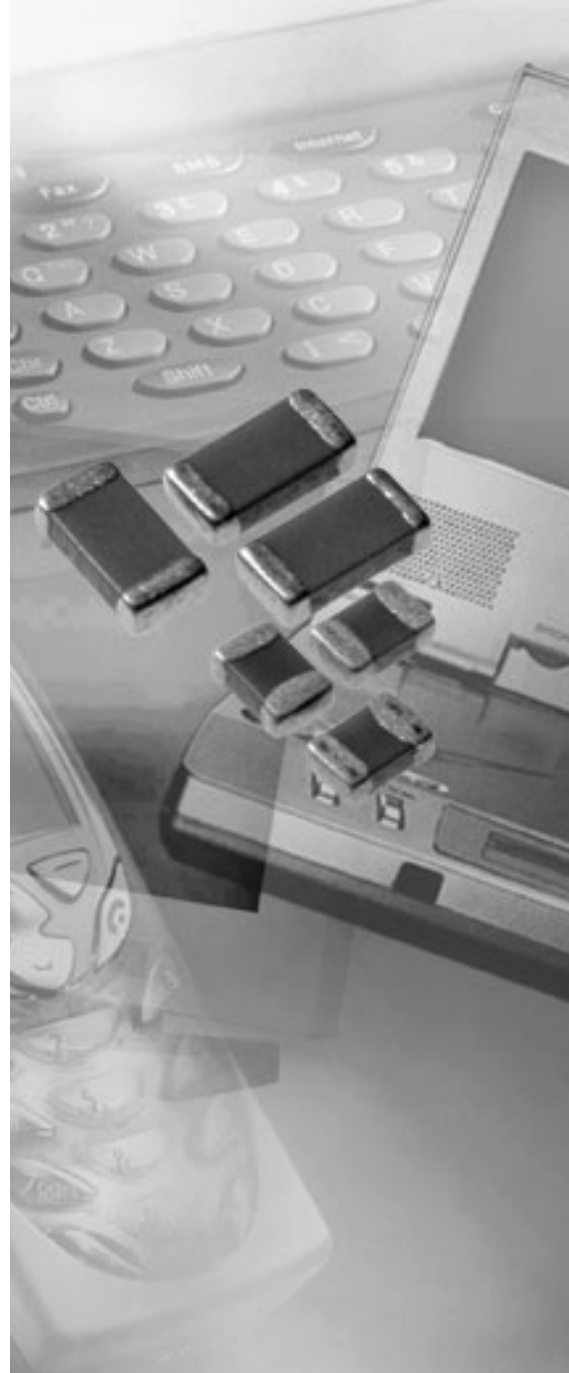


DATA SHEET

SURFACE-MOUNT CERAMIC MULTILAYER CAPACITORS

High Q: Class 1, NP0
50 V



Surface-mount ceramic multilayer capacitors

High Q: Class 1, NP0 50 V

FEATURES

- Size 0402
- High Q value
- Supplied in tape on reel or in bulk
- For high frequency applications
- NiSn terminations.

APPLICATIONS

- Consumer electronics
- Telecommunications
- Automotive
- Data processing.

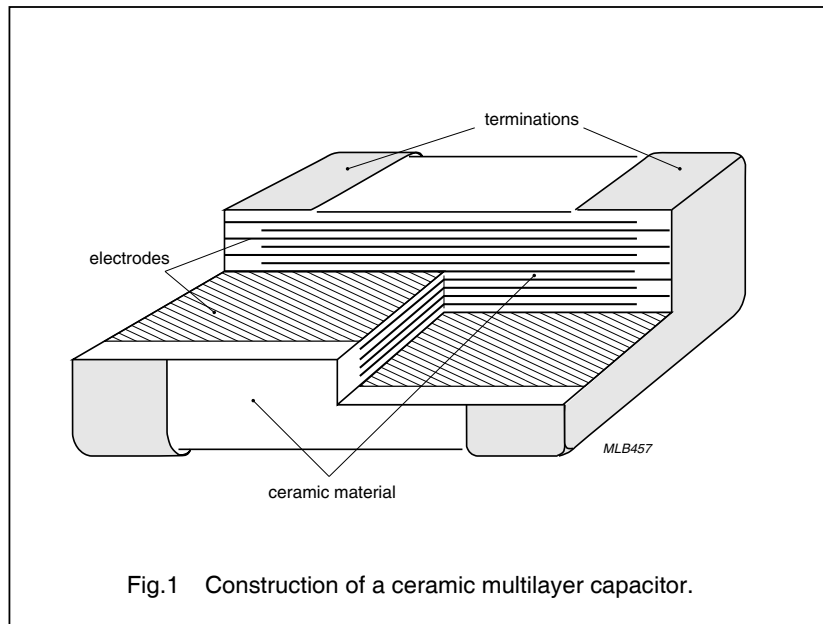
DESCRIPTION

The capacitor consists of a rectangular block of ceramic dielectric in which a number of interleaved precious metal electrodes are contained. This structure gives rise to a high capacitance per unit volume.

The inner electrodes are connected to the two terminations, either by silver palladium (AgPd) alloy, or silver dipped with a barrier layer of plated nickel and finally covered with a layer of plated tin (NiSn). A cross section of the structure is shown in Fig.1.

QUICK REFERENCE DATA

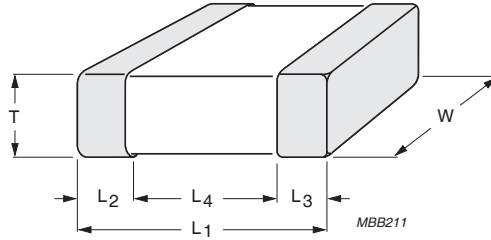
DESCRIPTION	VALUE
Rated voltage U_R (DC)	50 V (IEC)
Capacitance range (E12 series) 50 V	10 pF to 33 pF
Tolerance on capacitance: $10 \text{ pF} \leq C \leq 33 \text{ pF}$	$\pm 5\%$; $\pm 2\%$; $\pm 1\%$
Test voltage (DC) for 1 minute: 50 V	$2.5 \times U_R$
Sectional specifications	IEC 60384-10 second edition 1989-04; also based on CECC 32 100
Detailed specification	based on CECC 32 101-801
Climatic category (IEC 60068)	55/125/56



Surface-mount ceramic multilayer capacitors

High Q: Class 1, NP0 50 V

MECHANICAL DATA



For dimensions see Table 1.

Fig.2. Component outline.

Physical dimensions

Table 1 Capacitor dimensions

CASE SIZE	L ₁	W	T		L ₂ and L ₃		L ₄ MIN.
			MIN.	MAX.	MIN.	MAX.	
Dimensions in millimetres							
0402	1.0 ±0.05	0.5 ±0.05	0.45	0.55	0.20	0.30	0.40
Dimensions in inches							
0402	0.040 ±0.002	0.020 ±0.002	0.018	0.022	0.008	0.012	0.016

**Surface-mount ceramic
multilayer capacitors**
**High Q: Class 1, NP0
50 V**
SELECTION CHART FOR 50 V

C (pF)	LAST THREE DIGITS OF 12NC	50 V
		0402
10	109	0.5 ±0.05
12	129	
15	159	
18	189	
22	229	
27	279	
33	339	

Note

1. Values in shaded cells indicate thickness class.

Thickness classification and packing quantities

THICKNESS CLASSIFICATION (mm)	8 mm TAPE WIDTH QUANTITY PER REEL				QUANTITY PER BULK CASE
	Ø180 mm; 7"		Ø330 mm; 13"		
	PAPER	BLISTER	PAPER	BLISTER	0402
0.5 ±0.05	10 000	–	50 000	–	50 000

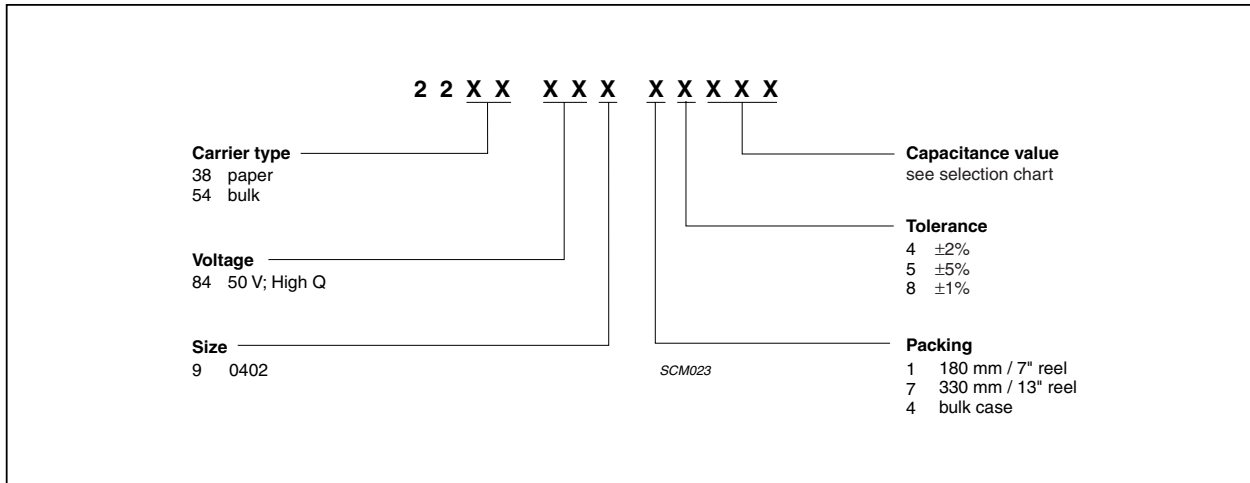
Surface-mount ceramic multilayer capacitors

High Q: Class 1, NP0 50 V

ORDERING INFORMATION FOR 50 V

Components may be ordered by using either a Phycomp's unique 12NC or simple 15-digit clear text code.

Ordering code 12NC (preferred)



Clear text code

Example: 0402CG330J9B20Q

Size Code	Temp. Char.	Capacitance	Tol.	Vol.	Termination	Packing	Marking	Series
0402	CG = NP0	330 = 33 pF; the third digit signifies the multiplying factor: 0 = × 1	F = ±1 % G = ±2% J = ±5%	9 = 50 V	B = NiSn	2 = 180 mm; 7" paper 3 = 330 mm; 13" paper P = bulk case	0 = no marking	Q = High Q

Surface-mount ceramic multilayer capacitors

High Q: Class 1, NP0 50 V

ELECTRICAL CHARACTERISTICS

Class 1 capacitors; NP0 dielectric; NiSn terminations

Unless otherwise stated 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%.

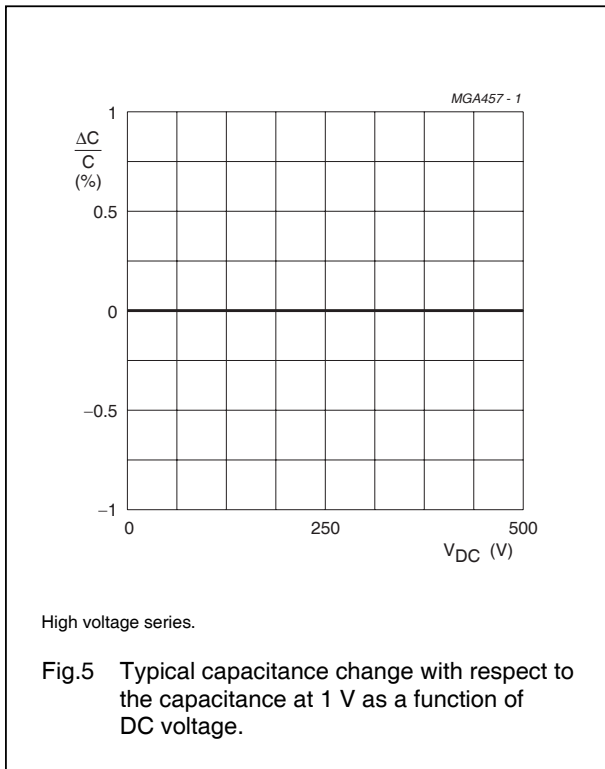
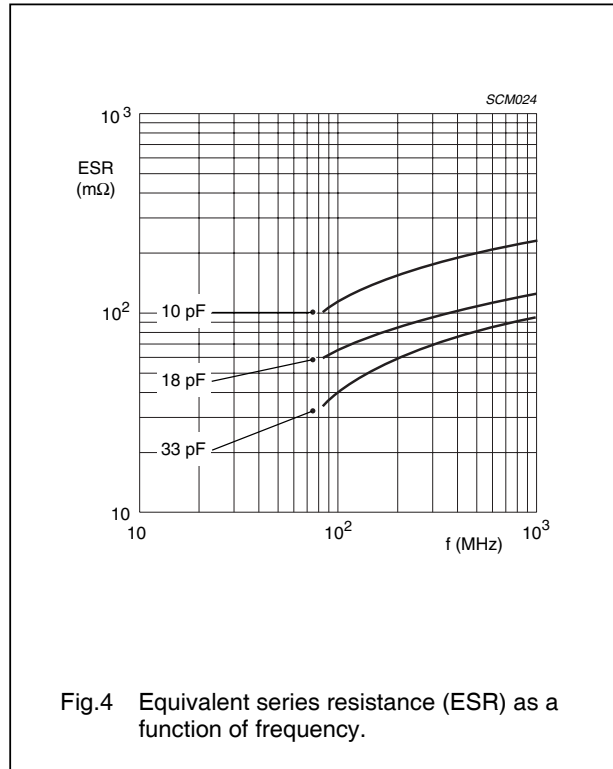
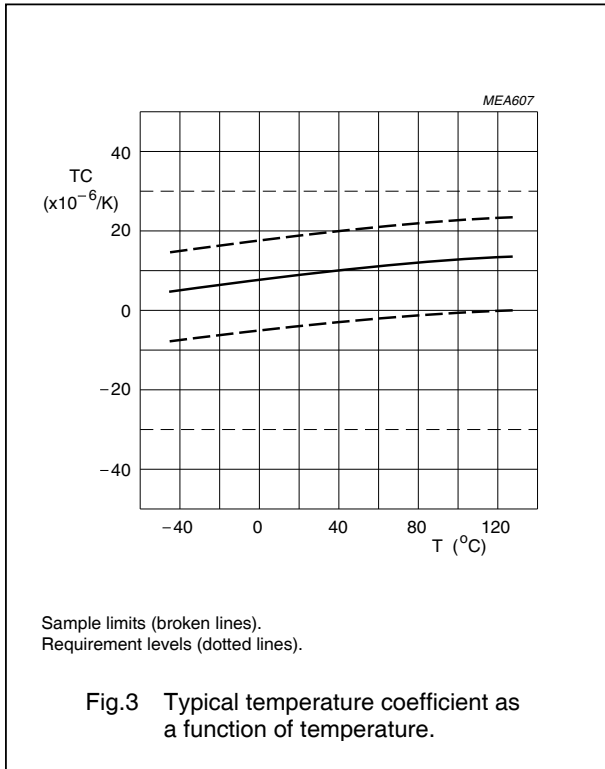
DESCRIPTION	VALUE
Capacitance range (E12 series); note 1 50 V	10 pF to 33 pF
Tolerance on capacitance after 1000 hours $10 \text{ pF} \leq C \leq 33 \text{ pF}$	$\pm 5\%$; $\pm 2\%$; $\pm 1\%$
Q; note 1 Q	$\geq 5\,000$
Insulation resistance after 1 minute at U_R (DC)	$R_{\text{ins}} \geq 100 \text{ G}\Omega$ or $R_{\text{ins}} \times C \geq 1000$ seconds whichever is smaller
Temperature coefficient: $10 \text{ pF} \leq C \leq 33 \text{ pF}$	$(0 \pm 30) \times 10^{-6}/\text{K}$
Ageing	not applicable
Operation temperature range	-55 °C to $+125$ °C

Notes

1. Measured at 20 °C; 1 V, 1 MHz, using a four-gauge method.

**Surface-mount ceramic
multilayer capacitors**

**High Q: Class 1, NP0
50 V**



**Surface-mount ceramic
multilayer capacitors****High Q: Class 1, NP0
50 V**

REVISION HISTORY

Revision	Date	Change Notification	Description
Rev.0	2003 Dec 09	-	-