

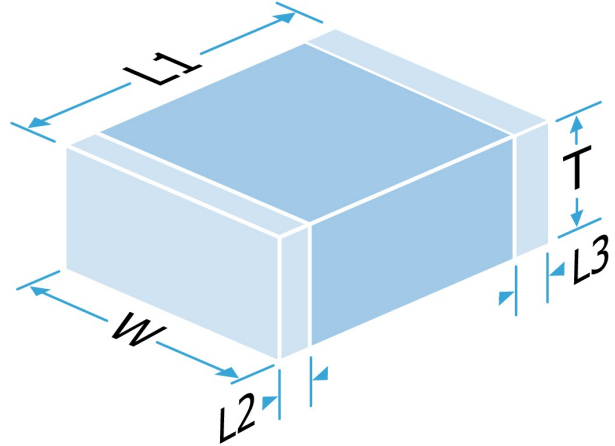
# Multilayer Ceramic Chip Capacitor

**Part Number:** 0402N220J500YT

**Description:** 0402 50Vdc 22pF ±5% C0G/NP0 (1B) - Contains Lead

A range of C0G/NP0 MLC capacitors to suit a variety of applications. Available in a wide selection of chip sizes, working voltages and termination options, including FlexiCap™, the world's first commercially available flexible termination.

Suffix code PXX or PX mandates the use of precious metal electrode (PME) materials. This may incur additional costs.



## Mechanical Specification

Size Code	0402
Length (L1) in mm (")	1.0 ± 0.10 (0.04 ± 0.004)
Width (W) in mm (")	0.50 ± 0.10 (0.02 ± 0.004)
Thickness (T) in mm (")	0.6 Max (0.024 Max)
Minimum Termination Band (L2,L3) in mm (")	0.10 (0.004)
Maximum Termination Band (L2,L3) in mm (")	0.40 (0.016)
Termination Material	Nickel Barrier, Sn/Pb Plated Solder (Min 10% Lead, non RoHS)
Solderability	Per MIL-STD-202, Method 208
Packaging	Tape and Reel, 10000 per reel
Conformal Coating	

## General Electrical Specification

Rated Voltage	50Vdc
Nominal Capacitance Value	22pF
Capacitance Tolerance	±5%
Tangent of Loss Angle (Tan δ)	0.00207
Capacitance and Tan δ Test Conditions	1.0Vrms @ 1MHz
Voltage Proof	125Vdc
(Voltage applied for 5 secs max. @ 50mA max. charge current)	
Min Insulation Resistance (IR)	100.00GOhm @ 50Vdc
Dielectric Classification	C0G/NP0 (1B) - Contains Lead
Rated Temperature Range	-55°C / +125°C
Maximum Capacitance Change over Temperature Range	No DC Voltage 0±30ppm/°C Rated DC Voltage -
Climatic Category (IEC)	-
Ageing Characteristic	Zero

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Data is correct to the best of our knowledge, errors and omissions excepted.

Date: Tuesday, October 03, 2023

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# Multilayer Ceramic Chip Capacitor

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**Description:** 0402 50Vdc 22pF ±5% C0G/NP0 (1B) - Contains Lead

## Environmental

RoHS Compliant to 2011/65/EC as amended by 2015/863/EU  
REACH Compliant  
California Proposition 65

Non Compliant  
Contains 1 to 8% w/w Lead Titanium Oxide (PbTiO<sub>3</sub>, CAS 12060-00-3) and 0.1 to 1.0% w/w Lead (Pb, CAS 7439-92-1)  
Risk of exposure to lead (CAS 7439-92-1)

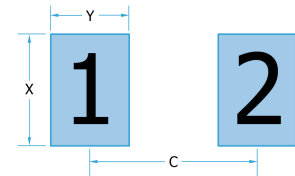
## Board Layout

Knowles' conventional 2-terminal chip capacitors can generally be mounted using pad designs in accordance with international specification IPC-7351, Generic Requirements for Surface Mount Design and Land Pattern Standards, but there are some other factors that have been shown to reduce mechanical stress, such as reducing the pad width to less than the chip width. In addition, the position of the chip on the board should be considered.

Some high voltage parts may require modifications to the board layout and/or the addition of a conformal coating to prevent flashover. Refer to application note AN0043 for further information.

### IPC-7351 pad design

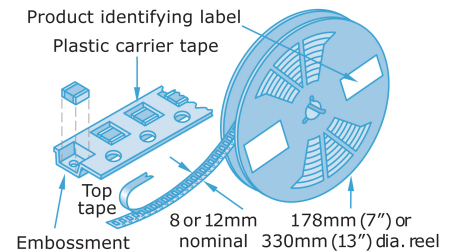
	0402	
C	0.90mm	0.035"
Y	0.65mm	0.026"
X	0.64mm	0.025"



## Packaging

Tape packaging information for tape-and-reel parts:

Tape and reel packing of surface mounting chip capacitors for automatic placement are in accordance with IEC60286-3.



## Soldering

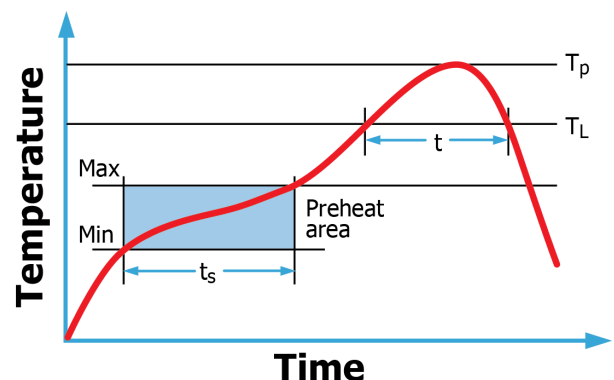
Reflow solder in accordance with IPC-A-610. Recommended reflow profile as laid down in IPC/JEDEC J-STD-020.

Wave soldering is also possible, but care must be taken for case sizes 1210 and larger and component thickness >1.0mm. Trials are encouraged.

Hand soldering is not recommended and can lead to component damage through thermal shock.

PdAg terminations are primarily intended for conductive epoxy attachment - they may be suitable for soldering but trials are recommended.

Application notes with mounting and handling guidance are available on request.



Compex

DLI

Johanson MFG

Novacap

Syfer

Voltronics

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