

Multilayer Ceramic Chip Capacitor

Legacy - Not Recommended for New Designs - See Enhanced Range

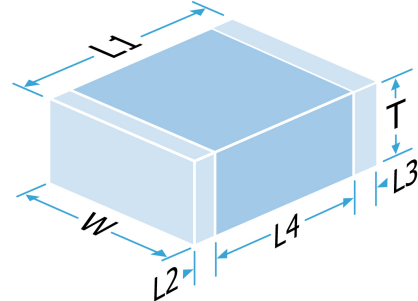
Part Number: 2220JA250472KXTB16

Description: 2220 250Vac 50/60Hz 4.7nF ±10% X7R (2R1)

Approval Specifications: IEC/EN60384-14:2013+A1
UL-60384-14:2014
CAN/CSA E60384-14:2014

Certification: TÜV R60150396 / ID1111226226
UL/cUL E228790-20120110

Classification: TÜV Y2 / X1 (Type A)
UL/cUL FOWX2, FOWX8 (Type A)



Component Marking and Certification Bodies:

Material Group I : CTI >= 600



Mechanical Specification

Size Code	2220
Length (L1) in mm (")	5.7 ± 0.40 (0.225 ± 0.016)
Width (W) in mm (")	5.0 ± 0.40 (0.197 ± 0.016)
Thickness (T) in mm (")	2.54 Max (0.1 Max)
Minimum Termination Band (L2,L3) in mm (")	0.25 (0.010)
Maximum Termination Band (L2,L3) in mm (")	1.00 (0.040)
Minimum Band Gap (L4) in mm (") (per IEC/EN 60384-14)	4.0 (0.158)
Termination Material	Nickel Barrier, Sn Plated Solder (RoHS compliant)
Solderability	IEC-60068-2-58
Packaging	7" Reel Horizontal Orientation, 500 per reel

General Electrical Specification

Rated Voltage	250Vac 50/60Hz, 5kV impulse
Humidity Grade	Not applicable
Maximum DC Working Voltage	-
Nominal Capacitance Value	4.7nF
Capacitance Tolerance	±10%
Tangent of Loss Angle (Tan δ)	≤0.025
Capacitance and Tan δ Test Conditions	1.0Vrms @ 1kHz
Voltage Proof (50mA max charging current for DC tests)	100% test: 3000Vdc 1s min / 5s max AQL test: 3000Vdc / 2000Vac 60s min / 5kV 1.2x50µs impulse
Min Insulation Resistance (IR)	100.00GOhm @ 100Vdc
Dielectric Classification	X7R (2R1)
Rated Temperature Range	-55°C / +125°C
Maximum Capacitance Change over Temperature Range	No DC Voltage ±15% Rated DC Voltage -
Climatic Category (IEC)	55/125/56
Ageing Characteristic	<2% per decade (nominal capacitance is 1000 hour value)

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This datasheet is for a standard item and is confirmed valid on the date generated, the latest published data for this part may differ and is available at <http://www.knowlescapacitors.com> or by contacting us.

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

Date: Friday, May 17, 2024

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Environmental

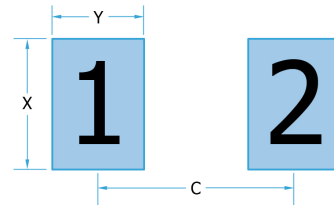
RoHS Compliant to 2011/65/EC as amended by 2015/863/EU	Compliant
REACH Compliant	240 compliant
California Proposition 65	No exposure risk

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.

IPC-7351 pad design

	2220	
C	5.30mm	0.209"
Y	1.50mm	0.059"
X	5.40mm	0.213"



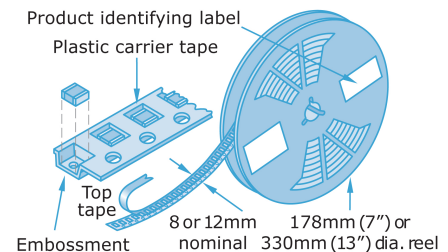
Some high voltage parts may require modifications to the board layout and/or the addition of a conformal coating to prevent flashover. Refer to application note AN0043 for further information.

Dimensions given are for guidance. It is ultimately the customers responsibility to confirm that the circuit layout is in accordance with their own product requirements.

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.



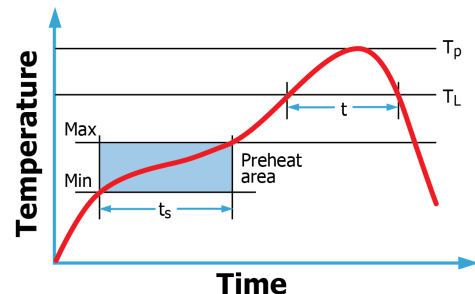
Soldering

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.

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



Compex

DLI

Johanson MFG

Novacap

Syfer

Voltronics

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