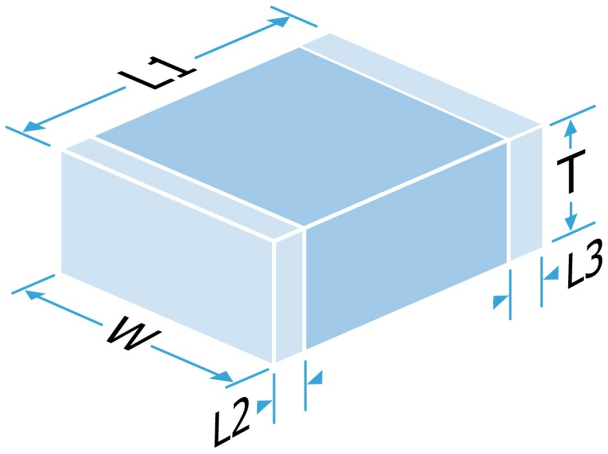
# Multilayer Ceramic Chip Capacitor

**Part Number:** CDR04BX104AKZM

**Description:** 1812 50Vdc 100nF ±10% X7R (2X1) BX - Contains Lead

The MIL-PRF-55681 qualified parts range refers to ceramic capacitors that meet the rigorous standards set forth by the qualifying activity (DLA). This range is designed for use in military and aerospace applications, where high reliability, performance, and environmental endurance are critical.

MIL-PRF-55681 qualified ceramic capacitors are manufactured using advanced ceramic materials and production techniques that meet or exceed military standards. The construction ensures minimal failure rates, even under the most challenging operational conditions.




## Mechanical Specification

| | |
|---|---|
| Size Code | 1812 |
| Length (L1) in mm (") | 4.5 ± 0.30 (0.180 ± 0.012) |
| Width (W) in mm (") | 3.2 ± 0.20 (0.126 ± 0.008) |
| Thickness (T) in mm (") | 2.03 Max (0.080 Max) |
| Minimum Termination Band (L2,L3) in mm (") | 0.25 (0.010) |
| Maximum Termination Band (L2,L3) in mm (") | 1.143 (0.045) |
| Termination Material | Nickel Barrier, Sn/Pb Plated Solder (Min 10% Lead, non RoHS) |
| Solderability | Per MIL-STD-202, Method 208 |
| Packaging | Tape and Reel, 500 per reel |

## General Electrical Specification

| | |
|---|---|
| Rated Voltage | 50Vdc |
| Nominal Capacitance Value | 100nF |
| Capacitance Tolerance | ±10% |
| Tangent of Loss Angle (Tan δ) | ≤0.025 |
| Capacitance and Tan δ Test Conditions | 1.0Vrms @ 1kHz |
| Voltage Proof<br>(Voltage applied for 5 secs max. @ 50mA max. charge current. 50% Max, RH) | 125Vdc |
| Min Insulation Resistance (IR) | 10.00GOhm @ 50Vdc |
| Dielectric Classification | X7R (2X1) BX - Contains Lead |
| Rated Temperature Range | -55°C / +125°C |
| Maximum Capacitance Change over Temperature Range | No DC Voltage ±15%<br>Rated DC Voltage +15% / -25% |
| Climatic Category (IEC) | - |
| 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.



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

Date: Friday, October 24, 2025

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## Environmental

| | |
|---|---|
| RoHS Compliant to 2011/65/EC as amended by 2015/863/EU | Non Compliant |
| REACH Compliant | Contains 1 to 8% w/w Lead Titanium Oxide (PbTiO3, CAS 12060-00-3) and 0.1 to 1.0% w/w Lead (Pb, CAS 7439-92-1) |
| California Proposition 65 | Risk of exposure to lead (CAS 7439-92-1) |

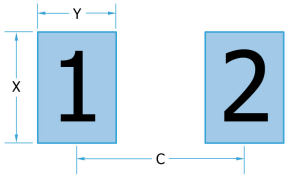
## Board Layout

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, especially under high humidity conditions. Board cleanliness and environmental conditions can also impact this. Refer to application note AN0043 for further information.

IPC-7351 pad design

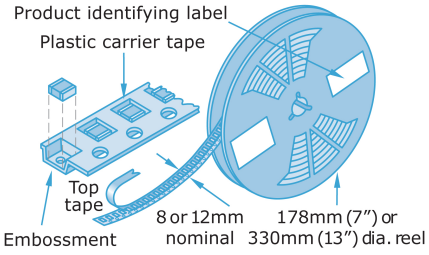
| | 1812 | |
|---|---|---|
| C | 4.00mm | 0.157" |
| Y | 1.55mm | 0.061" |
| X | 3.40mm | 0.134" |




## 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.



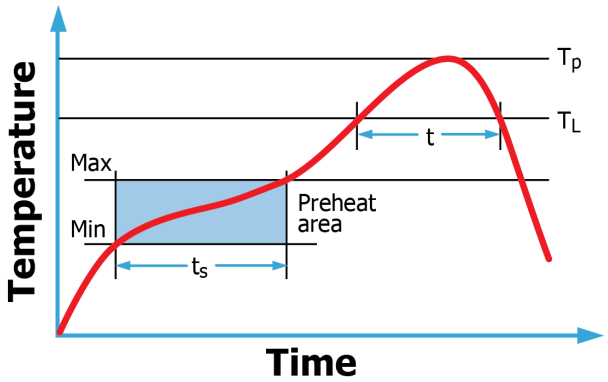

## Soldering

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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