

Multilayer Ceramic Chip Capacitor MIL-PRF-55681



KEY BENEFITS

- Broad capacitance range: 1.0 pF to 0.47 μ F
- Voltages: 50 WVDC and 100 WVDC
- Military established reliability failure rates: M, P, R and S
- Federal stock control number, CAGE CODE SHV71
- Available in ten military packages: CDR01, CDR02, CDR03, CDR04, CDR06, CDR31, CDR32, CDR33, CDR34, CDR35
- Wet build process with reliable Noble Metal Electrode (NME) system
- Tin/lead (min. 4 % lead) termination finish available. Termination codes “Z” and “U”
- Lead (Pb)-free termination codes “W”, “Y” and “M”

APPLICATIONS

- Military and high-reliability designs
- Avionic systems
- Sonar systems
- Satellite systems
- Geographical information systems
- Global positioning systems

RESOURCES

- Datasheet: CDR - <http://www.vishay.com/doc?45026>
- For technical questions contact mlcc@vishay.com
- Material categorization: For definitions of compliance please see <http://www.vishay.com/doc?99912>



Note
(1) Pb containing terminations are not RoHS compliant, exemptions may apply

One of the World's Largest Manufacturers of
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MULTILAYER CERAMIC CHIP CAPACITORS

CDR

Multilayer Ceramic Chip Capacitors, Qualified, Type CDR



ELECTRICAL SPECIFICATIONS

Note

- Electrical characteristics at + 25 °C unless otherwise specified

Operating Temperature: - 55 °C to + 125 °C

Capacitance Range: 1.0 pF to 470 nF

Voltage Range: 50 V_{DC} to 100 V_{DC}

Temperature Coefficient of Capacitance (TCC):

BP: 0 ppm/°C ± 30 ppm/°C from - 55 °C to + 125 °C, with 0 V_{DC} applied

BX: ± 15 % from - 55 °C to + 125 °C, with 0 V_{DC} applied

BX: + 15 %, - 25 % from - 55 °C to + 125 °C, with 100 % rated V_{DC} applied

Dissipation Factor (DF):

BP: 0.15 % maximum

BX: 2.50 % maximum

Test frequency:

1 MHz ± 50 kHz for BP capacitors ≤ 1000 pF and for BX capacitors ≤ 100 pF

All other BP and BX at 1 kHz ± 50 Hz

Aging Rate:

BP: 0 % maximum per decade

BX: 1 % maximum per decade

Insulation Resistance (IR):

At + 25 °C and rated voltage 100 000 MΩ minimum or 1000 ΩF, whichever is less

Dielectric Strength Test:

Performed per method 103 of EIA-198-2-E.

Applied test voltages:

≤ 100 V_{DC}-rated: 250 % of rated voltage

ORDERING INFORMATION - MILITARY

CDR31	BX	102	A	K	Y	S	A	T
MILITARY STYLE	DIELECTRIC	CAPACITANCE NOMINAL CODE	DC VOLTAGE RATING ⁽¹⁾	CAPACITANCE TOLERANCE ⁽²⁾	TERMINATION	FAILURE RATE	MARKING	PACKAGING
CDR01 CDR02 CDR03 CDR04 CDR06 CDR31 CDR32 CDR33 CDR34 CDR35	BP and BX	Expressed in picofarads (pF). The first two digits are significant, the third is a multiplier. Examples: 102 = 1000 pF 1R8 = 1.8 pF	A = 50 V B = 100 V	C = ± 0.25 pF D = ± 0.5 pF F = ± 1 % J = ± 5 % K = ± 10 % M = ± 20 %	M = Silver Palladium Y = Ni barrier with 100 % tin W = Ni barrier with 100 % tin Z = Ni barrier with tin/lead plate min. 4 % lead U = Hot solder dipped (min. of 4 % lead) ⁽³⁾	M = 1.0 % P = 0.1 % R = 0.01 % S = 0.001 % Consult factory for failure rate status	A = Unmarked	T = 7" reel/plastic tape J = 7" reel (low quantity) C = 7" reel/paper tape R = 11 1/4"/13" reel/plastic tape P = 11 1/4"/13" reel/paper tape B = Bulk

Notes

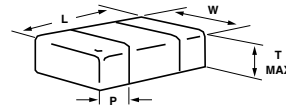
⁽¹⁾ DC voltage rating should not be exceeded in application. Other application factors may affect the MLCC performance.

Consult for questions: mlcc@vishay.com

⁽²⁾ Available tolerances please see rating chart

⁽³⁾ MIL-PRF-55681 "U" termination part numbers have increased dimensions

DIMENSIONS in inches (millimeters)



MIL-PRF-55681	STYLE	LENGTH (L)	WIDTH (W)	MAXIMUM THICKNESS (T)	TERM. (P)	
					MINIMUM	MAXIMUM
/1	CDR01	0.080 ± 0.015 (2.03 ± 0.38)	0.050 ± 0.015 (1.27 ± 0.38)	0.055 (1.40)	0.010 (0.25)	0.030 (0.75)
	CDR02	0.180 ± 0.015 (4.57 ± 0.38)	0.050 ± 0.015 (1.27 ± 0.38)	0.055 (1.40)	0.010 (0.25)	0.030 (0.75)
	CDR03	0.180 ± 0.015 (4.57 ± 0.38)	0.080 ± 0.015 (2.03 ± 0.38)	0.080 (2.03)	0.010 (0.25)	0.030 (0.75)
	CDR04	0.180 ± 0.015 (4.57 ± 0.38)	0.125 ± 0.015 (3.20 ± 0.38)	0.080 (2.03)	0.010 (0.25)	0.030 (0.75)
/3	CDR06	0.225 ± 0.020 (5.72 ± 0.51)	0.250 ± 0.020 (6.35 ± 0.51)	0.080 (2.03)	0.010 (0.25)	0.030 (0.75)
/7	CDR31	0.078 ± 0.008 (2.00 ± 0.20)	0.049 ± 0.008 (1.25 ± 0.20)	0.051 (1.30)	0.012 (0.30)	0.028 (0.70)
/8	CDR32	0.125 ± 0.008 (3.20 ± 0.20)	0.062 ± 0.008 (1.60 ± 0.20)	0.051 (1.30)	0.012 (0.30)	0.028 (0.70)
/9	CDR33	0.125 ± 0.010 (3.20 ± 0.25)	0.098 ± 0.010 (2.50 ± 0.25)	0.059 (1.50)	0.010 (0.25)	0.030 (0.75)
/10	CDR34	0.176 ± 0.010 (4.50 ± 0.25)	0.125 ± 0.010 (3.20 ± 0.25)	0.059 (1.50)	0.010 (0.25)	0.030 (0.75)
/11	CDR35	0.176 ± 0.012 (4.50 ± 0.30)	0.250 ± 0.012 (6.40 ± 0.30)	0.059 (1.50)	0.008 (0.20)	0.032 (0.80)

QUICK REFERENCE DATA

DIELECTRIC	STYLE (CASE)	MAXIMUM VOLTAGE (V)	CAPACITANCE	
			MINIMUM	MAXIMUM
BP	CDR01 (0805)	100	10 pF	180 pF
BX	CDR01 (0805)	100	120 pF	4.7 nF
BP	CDR02 (1805)	100	220 pF	270 pF
BX	CDR02 (1805)	100	3.9 nF	22 nF
BP	CDR03 (1808)	100	330 pF	1.0 nF
BX	CDR03 (1808)	100	12 nF	68 nF
BP	CDR04 (1812)	100	1.2 nF	3.3 nF
BX	CDR04 (1812)	100	39 nF	180 nF
BX	CDR06 (2225)	50	390 nF	470 nF
BP	CDR31 (0805)	100	1.0 pF	680 pF
BX	CDR31 (0805)	100	470 pF	18 nF
BP	CDR32 (1206)	100	1.0 pF	2.2 nF
BX	CDR32 (1206)	100	4.7 nF	39 nF
BP	CDR33 (1210)	100	1.0 nF	3.3 nF
BX	CDR33 (1210)	100	15 nF	100 nF
BP	CDR34 (1812)	100	2.2 nF	10 nF
BX	CDR34 (1812)	100	27 nF	180 nF
BP	CDR35 (1825)	100	4.7 nF	22 nF
BX	CDR35 (1825)	100	56 nF	470 nF

Note

- Detail ratings see selection chart