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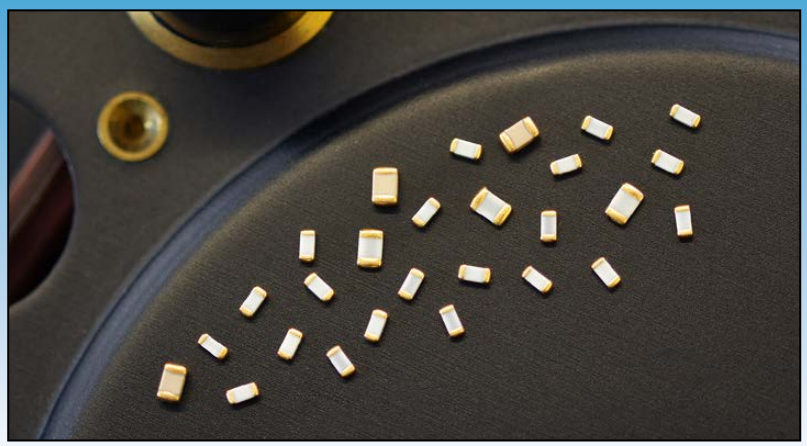
HiT250 range 250°C MLC capacitors

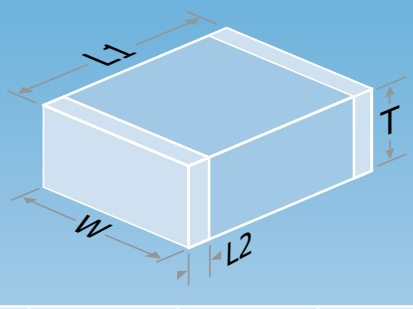


HiT250 features

RoHS Compliant Pb Free Au Finish

- 250°C operating temperature
- 0603 to 2220 chip sizes
- C0G/NP0 (1B) and X7R (2R1) dielectric options
- Capacitance range C0G/NP0 (1B) from 3.9pF up to 39nF
- Capacitance range X7R (2R1) from 1nF up to 2.2µF
- Voltage ratings from 10V to 630V
- RoHS compliant / Pb Free
- Au over Ni termination
- Sample kits available

Dimensions



Size	Length (L1)	Width (W)	Thickness (T) max	Termination Band (L2) min	Termination Band (L2) max
	mm ~ inches	mm ~ inches	mm ~ inches	mm ~ inches	mm ~ inches
0603	1.6 ± 0.15 0.063 ± 0.006	0.8 ± 0.15 0.032 ± 0.006	0.80 ~ 0.032	0.20 ~ 0.004	0.40 ~ 0.016
0805	2.0 ± 0.20 0.079 ± 0.008	1.25 ± 0.20 0.049 ± 0.008	1.37 ~ 0.054	0.25 ~ 0.010	0.75 ~ 0.030
1206	3.2 ± 0.20 0.126 ± 0.008	1.6 ± 0.20 0.063 ± 0.008	1.70 ~ 0.068	0.25 ~ 0.010	0.75 ~ 0.030
1210	3.2 ± 0.20 0.126 ± 0.008	2.5 ± 0.20 0.098 ± 0.008	2.0 ~ 0.080	0.25 ~ 0.010	0.75 ~ 0.030
1808	4.5 ± 0.35 0.180 ± 0.014	2.0 ± 0.30 0.08 ± 0.012	2.0 ~ 0.080	0.25 ~ 0.010	1.0 ~ 0.040
1812	4.5 ± 0.30 0.180 ± 0.012	3.2 ± 0.20 0.126 ± 0.008	2.5 ~ 0.100	0.25 ~ 0.010	1.143 ~ 0.045
2220	5.7 ± 0.40 0.225 ± 0.016	5.0 ± 0.40 0.197 ± 0.016	2.5 ~ 0.100	0.25 ~ 0.010	1.0 ~ 0.040

Description

The HiT250 range of multilayer ceramic capacitors is suitable for a variety of high temperature applications including: oil exploration, geothermal, military, automotive under-hood and avionics.

This range is manufactured to exacting standards using our unique screen printing process. This provides a high quality component suitable for demanding applications.

Specification

Capacitance Values See table for full list of values

C0G/NP0 (1B)	X7R (2R1)
3.9pF - 39nF	1nF - 2.2µF

Operating Temperature

-55°C to +250°C

Temperature Coefficient of Capacitance (Typical)

C0G/NP0 (1B)	X7R (2R1)
30ppm/°C to +125°C	±15% to +125°C

Dielectric Withstand Voltage

≤200V	2.5 times
>200V to <500V	Rated voltage +250V
500V to ≤1kV	1.5 times

Insulation Resistance

Time constant (Ri xCr) (whichever is the least)

25°C	>100GΩ or 1000s
250°C	>100MΩ or 1s

Ageing Rate

C0G/NP0 (1B)	X7R (2R1)
Zero	X7R (2R1) typically less than 2% per time decade

Termination Material

Standard finish is Au plate over Ni undercoat.
See ordering information.

Solderability

IEC 60068-2-5.8 / MIL-STD-202 METHOD 208.
Passed 3 times reflow profile defined in J-STD-020. Compatible with lead free and high melting point solders. Standard finish is Sn plate over Ni undercoat.

Lead Free Soldering

Pb Free. This range is fully compliant with the RoHS, REACH and WEEE directives and parts are compatible with lead free and high melting point solders. Standard finish is Au plate over Ni undercoat.

Climatic Category

55/250/56

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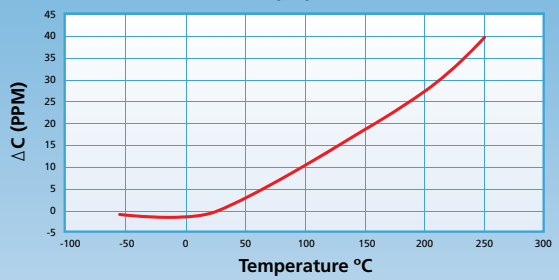
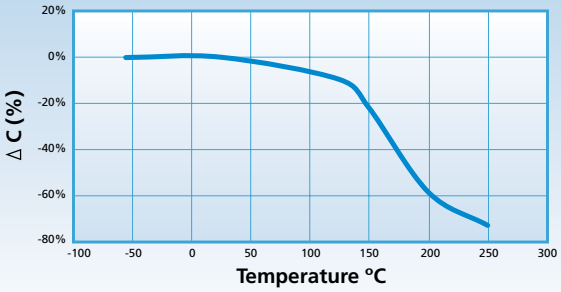
Typical Performance Data

TCC

Ultra Stable C0G/NP0 (1B) dielectric

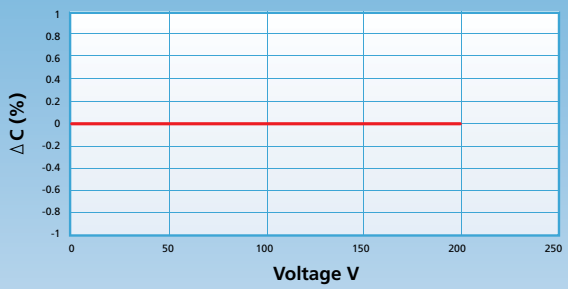


Stable X7R (2R1) dielectric



VCC

Ultra Stable C0G/NP0 (1B) dielectric

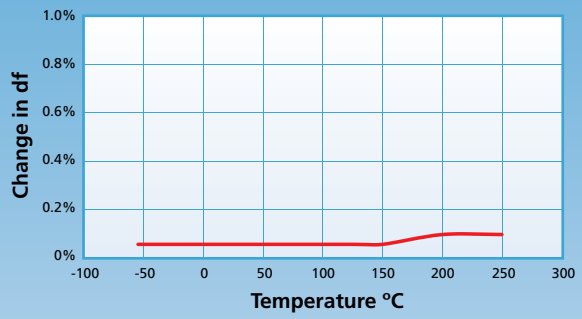


VCC performance of X7R (1B) parts is design specific. Consult factory for more information.

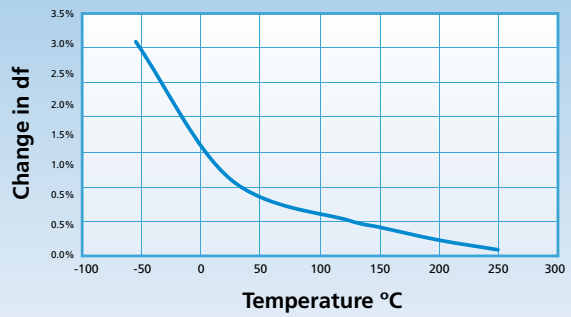
C0G/NP0 (1B) parts life tested at maximum rated voltage and temperature for 4000Hr duration.

df vs Temp.

Ultra Stable C0G/NP0 (1B) dielectric

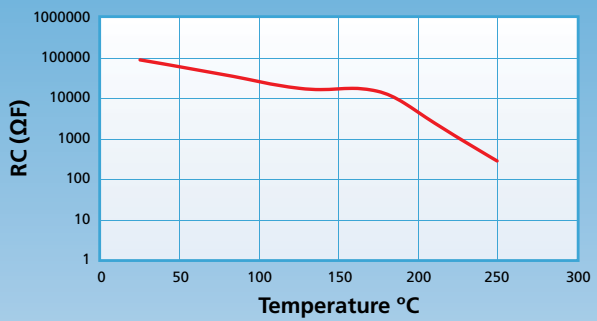


Stable X7R (2R1) dielectric

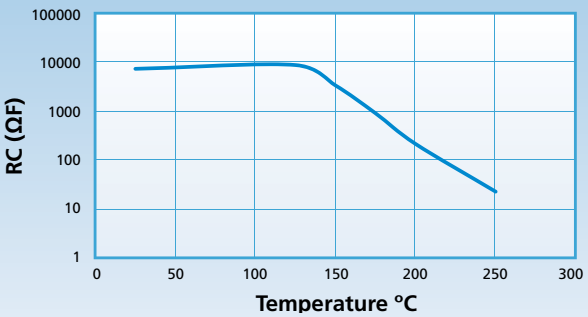


Hot IR result

Ultra Stable C0G/NP0 (1B) dielectric



Stable X7R (2R1) dielectric



Note: Data is typical only and does not constitute a specification. Knowles Precision Devices reserves the right to modify or substitute with equivalent parts that meet or exceed the specification.

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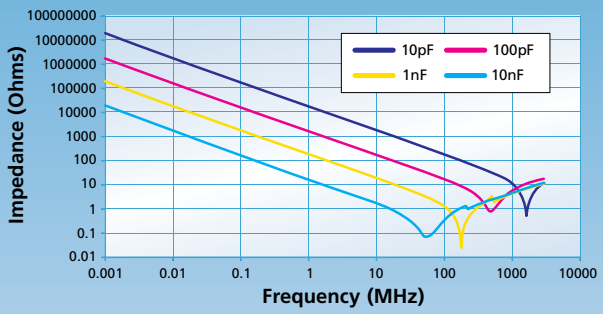
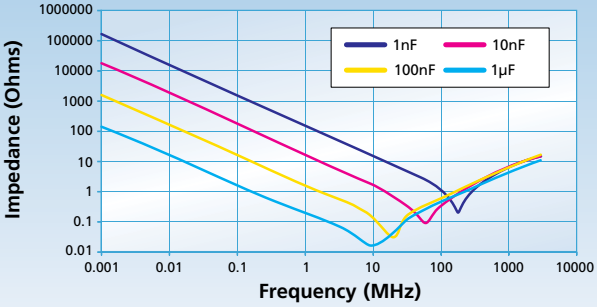
Impedance vs Frequency

Ultra Stable C0G/NP0 (1B) dielectric

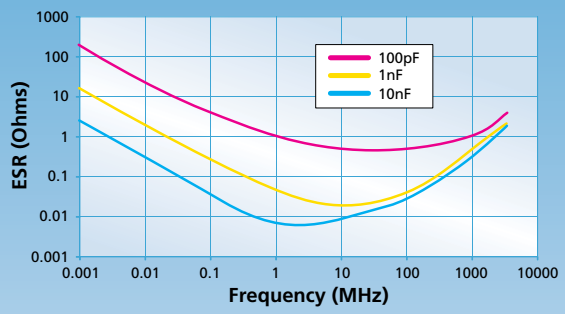


Stable X7R (2R1) dielectric

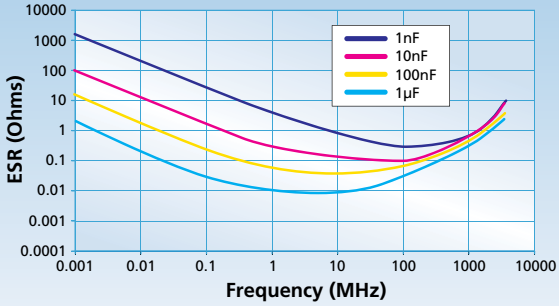


ESR vs Frequency

Ultra Stable C0G/NP0 (1B) dielectric



Stable X7R (2R1) dielectric



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Maximum capacitance values - HiT250 range - 250ºC capacitors

Rated Voltage	Chip Size													
	0603		0805		1206		1210		1808		1812		2220	
	C0G/NP0 (1B)	X7R (2R1)	C0G/NP0 (1B)	X7R (2R1)	C0G/NP0 (1B)	X7R (2R1)	C0G/NP0 (1B)	X7R (2R1)	C0G/NP0 (1B)	X7R (2R1)	C0G/NP0 (1B)	X7R (2R1)	C0G/NP0 (1B)	X7R (2R1)
Min Cap	3.9pF	1.0nF	4.7pF	4.7nF	10pF	15nF	22pF	33nF	22pF	100nF	47pF	82nF	68pF	470nF
10V	390pF	100nF	1.5nF	150nF	3.3nF	330nF	5.6nF	680nF	5.6nF	560nF	12nF	1.5uF	39nF	2.2uF
16V	390pF	33nF	1.5nF	100nF	3.3nF	180nF	5.6nF	470nF	5.6nF	330nF	12nF	1.0uF	39nF	1.5uF
25V	390pF	10nF	1.5nF	47nF	3.3nF	150nF	5.6nF	330nF	5.6nF	270nF	12nF	680nF	39nF	1.0uF
50V	390pF	-	1.5nF	-	3.3nF	-	5.6nF	-	5.6nF	-	12nF	-	39nF	-
100V	330pF	-	1.0nF	-	2.7nF	-	3.9nF	-	4.7nF	-	10nF	-	27nF	-
200V	120pF	-	560pF	-	1.2nF	-	2.7nF	-	2.7nF	-	6.8nF	-	15nF	-
250V	68pF		330pF		680pF		1.8nF		1.8nF	-	4.7nF	-	10nF	-
500V	33pF	-	120pF	-	390pF	-	820pF	-	1.0nF	-	2.2nF	-	4.7nF	-
630V	-	-	39pF	-	150pF	-	470pF	-	470pF	-	1.5nF	-	2.2nF	-

Note: Other capacitance values may become available, please contact the Sales Office if you need values other than those shown in the above table.
For dimensions and soldering information, please go to our website www.knowlescapacitors.com

Taped quantities - HiT250 range - 250ºC capacitors

Chip Size	0603	0805	1206	1210	1808	1812	2220
7" Reel	4,000	3,000	2,500	2,000	1,500	500	500
13" Reel	16,000	12,000	10,000	8,000	6,000	2,000	2,000

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HiT250 range 250°C MLC capacitors

Ordering information (Syfer Brand) - HiT250 range - 250ºC capacitors

1812	G	630	0182	J		G	T	H25
Chip size	Termination	Voltage	Capacitance in picofarads (pF)	Capacitance tolerance		Dielectric	Packaging	Suffix Code
0603 **0805** **1206** **1210** **1808** **1812** **2220**	**G** = Nickel barrier with Gold Flash. RoHS compliant. Lead free.	**010** = 10V **016** = 16V **025** = 25V **050** = 50V **063** = 63V **100** = 100V **200** = 200V **250** = 250V **500** = 500V **630** = 630V	≥1.0pF & <10pF Insert a P for the decimal point as the second character. e.g., 8P20 = 8.2pF ≥10pF First digit is 0. Second and third digits are significant figures of capacitance code. The fourth digit is the number of zeros following. e.g., **0101** = 100pF	**C0G/NP0 (1B)** **B** = ±0.10pF **C** = ±0.25pF **D** = ±0.50pF **F** = ±1% **G** = ±2% **J** = ±5% **K** = ±10% **M** = ±20%	**X7R (2R1)** **J** = ±5% **K** = ±10% **M** = ±20%	**G** = C0G/NP0 (1B) (BME) **X** = X7R (2R1)	**T** = 178mm (7") reel **R** = 330mm (13") reel **B** = Bulk pack - tubs	**H25** HiT250 range

Ordering information (Novacap Brand) - HiT250 - 250ºC capacitors

1206	HD	331	J		501	NG	H	T
Case size	Dielectric	Capacitance in picofarads (pF)	Capacitance tolerance		Voltage	Termination	Screening	Packaging
0603 **0805** **1206** **1210** **1808** **1812** **2220**	**HD** = C0G/NP0 (1B) (250ºC) **HE** = X7R (2R1) (250ºC)	First and Second digits are significant figures of capacitance code. The fourth digit is number of 0's following. Example: **103** = 10000pF R = decimal	**C0G/NP0 (1B)** **B** = ±0.10pF **C** = ±0.25pF **D** = ±0.50pF **F** = ±1% **G** = ±2% **J** = ±5% **K** = ±10% **M** = ±20%	**X7R (2R1)** **J** = ±5% **K** = ±10% **M** = ±20%	**100** = 10V **160** = 16V **250** = 25V **500** = 50V **101** = 100V **201** = 200V **251** = 250V **501** = 500V **631** = 630V	**NG =** Nickel barrier with Gold Flash. RoHS compliant. Lead free.	**H =** High Temp Screening - if required	**T** = 178mm (7") reel 330mm (13") reel **None** = Bulk pack - tubs

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