High Temperature Caps - up to 150°C X8R, Commercial, AEC-Q200

The X8R dielectric will operate from -55°C to +150°C, with a maximum capacitance change ±15% (without applied voltage).

The devices are available in sizes 0805 to 2225, with voltage ranges from 25V to 3kV and capacitance values from 100pF to 1.8µF.

The capacitors have been developed by Knowles to meet demand from various applications in the automotive and industrial markets and in other electronic equipment exposed to high temperatures. The increased use of electronics in automotive "under the hood" applications has created demand for this product range.

The X8R range incorporates a specially formulated termination with a nickel barrier finish that has been designed to enhance the mechanical performance of these SMD chip capacitors in harsh environments typically present in automotive applications.

For information, X8R dielectric contains lead within the ceramic and parts rated less than 250Vdc are not compliant with the EU 2011/65/EU RoHS directive.

Capacitance Range
100pF to 1.8µF (0805 to 2225)

Temperature Coefficient of Capacitance (TCC)
±15% from -55°C to +150°C

Dissipation Factor (DF)
≤ 0.025

Termination
Nickel Barrier Tin Plated

Insulation Resistance (IR)
100G Ω or 1000secs (whichever is the less).

Dielectric Withstand Voltage (DWV)
2.5 x rated voltage for 5±1 seconds,
50mA charging current maximum.

Ageing Rate
1% per decade (typical)

X8R High Temperature Capacitors - minimum / maximum cap. values according to the rated d.c. voltage

	0805	1206	1210	1808	1812	2220	2225	4540*	7565*
Min cap	100pF	100pF	100pF	100pF	150pF	220pF	330pF	1nF	2.2nF
25V	56nF	180nF	330nF	470nF	680nF	1.5µF	1.8µF	5.6µF	15µF
50V	33nF	120nF	220nF	270nF	470nF	680nF	1µF	4.7µF	12µF
100V	15nF	56nF	120nF	150nF	220nF	470nF	560nF	3.9µF	10µF
200/250V	10nF	33nF	68nF	82nF	120nF	220nF	330nF	2.7µF	6.9µF
500V	3.9nF	18nF	39nF	47nF	100nF	180nF	270nF	1.2µF	3.2µF
630V	1.8nF	3.9nF	10nF	12nF	33nF	150nF	180nF	-	-
1kV	1nF	2.2nF	4.7nF	5.6nF	18nF	39nF	56nF	-	-
1.2kV	-	1.8nF	3.9nF	4.7nF	12nF	33nF	39nF	-	-
1.5kV	-	1.2nF	2.2nF	2.7nF	8.2nF	22nF	27nF	-	-
2kV	-	470pF	1.2nF	1.8nF	4.7nF	12nF	18nF	-	-
2.5kV	-	-	-	1nF	2.7nF	6.8nF	10nF	-	-
3kV	-	-	-	680pF	2.2nF	4.7nF	5.6nF	-	-

Notes: = X8R ranges in yellow available as qualified AEC-Q200. *Only available as Novacap parts.

Ordering information - Syfer X8R High Temperature Capacitors

1206	Y	100	0473	K	N	T
Chip size	Termination	Voltage d.c.	Capacitance in picofarads (pF)	Capacitance tolerance	Dielectric codes	Packaging
0805 **1206** **1210** **1808** **1812** **2220** **2225**	**Y** = FlexiCap™ termination base with nickel barrier (100% matte tin plating).	**025** = 25V **050** = 50V **100** = 100V **200** = 200V **250** = 250V **500** = 500V **630** = 630V **1K0** = 1kV **1K2** = 1.2kV **1K5** = 1.5kV **2K0** = 2kV **2K5** = 2.5kV **3K0** = 3kV	First digit is 0. Second and third digits are significant figures of capacitance code. The fourth digit is number of zeros following. Example: **0473** = 47000pF = 47nF	**J** = ±5% **K** = ±10% **M** = ±20%	**N** = X8R **T** = X8R AEC-Q200	**T** = 178mm (7") reel **R** = 330mm (13") reel **B** = Bulk pack - tubs or trays

Ordering information - Novacap High Temperature Capacitors

4540	S	125	K	501	N	T	M
Chip size	Dielectric codes	Capacitance in picofarads (pF)	Capacitance tolerance code	Voltage code	Termination codes	Packaging	Marking
0805 **1206** **1210** **1812** **1825** **2225** **4540** **7565**	**S** = X8R High Temp. (up to 150°C)	Value in Picofarads. Two significant figures, followed by number of zeros: **125** = 1.2nF	**J** = ±5% (X8R) **K** = ±10% (Class II) **M** = ±20% (Class II)	Two significant figures, followed by number of zeros: **250** = 25 Volts **500** = 50 Volts **101** = 100 Volts **251** = 250 Volts **501** = 500 Volts	**P** = Palladium Silver **PR** = Palladium Silver* **K** = Solderable Palladium Silver* **N** = Nickel Barrier* 100% tin **Y** = Nickel Barrier* 90% tin, 10% lead **C** = FlexiCap™/Nickel Barrier* 100% tin **D** = FlexiCap™/Nickel Barrier* 90% tin, 10% lead **S** = Solderable Silver* *Indicates RoHS terminations	**None** = Bulk **T** = Tape & Reel **W** = Waffle Pack	**None** = Unmarked **M** = Marked

Should be ordered as Novacap or Syfer parts.