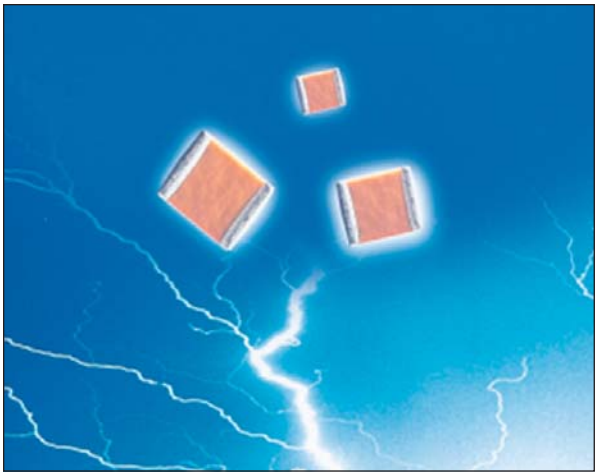
ESD-SAFE™ MLC Chips

ESD Withstanding Automotive Ceramic Capacitor



The ESD-Safe™ series is an enhanced MLC capacitor developed and designed specifically for general ESD protection. (ESD = Electro Static Discharge).

ESD-Safe™ capacitors are utilized for ESD protection of I/O gates. ESD capacitors are used on nearly every pin of an automotive module. Their use at that point averages the voltage that the wiring harness can be charged to and the module voltage.

The small footprint makes them ideal for high density electronic devices.

Capacitance selection is a trade off. Large capacitance values provide better ESD protection however a larger could corrupt the data stream.

ESD-Safe™ Capacitors provide (beside ESD protection) RF filtering function.

GENERAL CHARACTERISTICS

Operating Temperature: -55ºC to 125ºC

Capacitance Variation: ±15% (X7R)

FEATURES

- AEC Q200 Qualified
- ESD Qualified per HBM of AEC Q200-002
- ISO 10605 (uses both 330pf/2kohm and 150pf/2kohm networks)*
- EN61000-4 -2 (uses 150pf/330 Ohm network)*

*Contact factory for ESD performance

APPLICATIONS

- General ESD protection of I/O gates

HOW TO ORDER

ESD	3	3	C	104	K	4	Z	2	A	18
Type ESD Applications	**Case Size** 3 = 0603 5 = 0805 6 = 1206	**Voltage** Z = 10V Y = 16V 3 = 25V 5 = 50V 1 = 100V	**Dielectric** X7R = C	**Capacitance Code (In pF)** 2 Sig. Digits + Number of Zeros e.g. 1000pF =102	**Capacitance Tolerance** J = ±5% K = ±10% M = ±20%	**Failure Rate** 4 = Automotive	**Terminations** T = 100% Sn Z = FLEXITERM®	**Packaging** 2 = 7" Reel 4 = 13" Reel	**Special Code** A = Std. Product	**ESD rating (kV)** 18 = 18kV 20 = 20kV 22 = 22kV 24 = 24kV 26 = 26kV 28 = 28kV 30 = 30kV

ESD-SAFE™ X7R RANGE

Capacitance		0603		0805			1206		
Code	Value	50V	100V	25V	50V	100V	25V	50V	100V
472	4.7 (nF)	18kV G	18kV G	18kV N	18kV N	18kV N	20kV Q	20kV Q	20kV Q
682	6.8	18kV G	18kV G	18kV N	18kV N	18kV N	20kV Q	20kV Q	20kV Q
103	10	18kV G	18kV G	18kV N	18kV N	18kV N	20kV Q	20kV Q	20kV Q
153	15	20kV G		20kV N	20kV N	20kV N	22kV Q	22kV Q	22kV Q
223	22	20kV G		22kV N	22kV N	22kV N	24kV Q	24kV Q	24kV Q
333	33	20kV G		22kV N	22kV N	22kV N	24kV Q	24kV Q	24kV Q
473	47	22kV G		22kV N	22kV N	22kV N	26kV Q	26kV Q	26kV Q
683	68	22kV G		24kV N	24kV N	24kV N	26kV Q	26kV Q	26kV Q
104	100	24kV G		24kV N	24kV N	24kV N	26kV Q	26kV Q	26kV Q
154	150			24kV N	24kV N	24kV N	28kV Q	28kV Q	28kV Q
224	220			26kV N	26kV N	26kV N	28kV Q	28kV Q	28kV Q
334	330			26kV N	26kV N	26kV N	28kV Q	28kV Q	28kV Q
474	470			26kV N	26kV N	26KV N	28kV Q	28kV Q	28kV Q
684	680			26kV N			28kV Q	28kV Q	28kV Q
105	1 (µF)			26kV			28kV Q	28kV Q	28kV Q
155	1.5						30kV Q		
225	2.2						30kV Q		

Letter		G	N	Q
Max.	mm	0.740 ~ 0.850	1.127 ~ 1.400	1.430 ~ 1.780
Thickness	inch.	0.029 ~ 0.035	0.045 ~ 0.055	0.057~ 0.070
		PAPER	EMBOSSED	

LEAD-FREE

LEAD-FREE COMPATIBLE COMPONENT

RoHS COMPLIANT

For RoHS compliant products, please select correct termination style.