

# Ceramic Capacitors

## EC5 - Chip Multilayer Ceramic Capacitors

EIECSOUND®

### Features:

The choice of dielectric is largely determined by the temperature stability required:

**NPO (COG)** Ultra stable Class I dielectric, with negligible dependence of electrical properties on temperature, voltage, frequency and time, Used in circuits requiring stable performance.

**X7R** Stable Class II dielectric, with predictable change of properties with temperature, voltage, frequency and time. Used 5 Uas blocking, coupling, by-passing and frequency discriminating elements. This dielectric is ferroelectric and offers higher capacitance ranges than Class I .

**Y5V(Z5U)** General purpose Class II dielectric with highest dielectric constant and greater variation of properties with temperature and test conditions. Very high capacitance per unit volume and suited for application as well as filtering, transient suppression blocking, and charge storage application.

### General Specifications

	NPO		X7R				Y5V, Z5U				
Capacitance Range	OR5 to 104		331 to 104				103 to 106				
Temperature Coefficient	0±30PPm/°C	(-55 to +125)	±15% (-55°C to 125°C)				+30%~80% (-25°C to 85°C)				
	0±60PPm/°C						+22%~56% (+10°C to 85°C)				
Insulation Resistance	C ≤10nF R ≥ 10000MΩ		C ≤25nF R ≥ 4000MΩ				C >25nF C. R ≥ 100S				
	C >10nF C. R ≥ 100S										
With Standing	2.5 × W V D C										
Dissipation factor	0.15%max		2.5%max				5.0%max				
	(20°C, 1MHZ, 1VDC)		(20°C, 1kHz, 1VDC)				(20°C, 1kHz, 0.3VDC)				
Rated	25, 50, 63, 100VDC										
Capacitance Tolerance	B=±0.1PF	C=±0.1PF	C≤25nF				IR≥4000MΩ				
	D=±1PF	F=±1PF	K=±10%				M=±20%		S=	50	%
	G=±2%	J=±5%	S=	50	%	M=±20%	Z=	80		%	
	K=±10%	M=±20%		-20			-20	-20			
Life Test (1000hours)	200% Rated Voltage at +125°C 1000h					150% Rated Voltage at +85°C 1000h					
Soderability	SJ/10211-91	4.11	SJ/10211-91				4.11				
Resistance to Soldering	SJ/T10211-91	4.10	SJ/T10211-91				4.10				
Mechanical	SJ/T10211-91	4.9	SJ/T10211-91				4.9				
Temperature Cycling	SJ/T10211-91	4.12	SJ/T10211-91				4.12				
Moisture Resistance	SJ/T10211-91	4.14	SJ/T10211-91				4.14				
Termination adhesion strength	SJ/T10211-91	4.9	SJ/T10211-91				4.9				
Environment Testing	SJ/T10211-91	4.13	SJ/T10211-91				4.13				

### How To Order

EC5	0805	Y	104	Z	500	T
Type	Size	Dielectric	Capacitance	Tolerance	Voltage	Package
EC7	(mm) L×W	N=NPO	104=100000(pF)		250=25V	T =Tape/Reel package
EC7 Class II	0805=2.0×	B=X7R		C=±0.25pF	500=50V	
	1206=3.2×1.6	Y=Y5V		D=±0.50pF	101=100V	
	1210=3.2×2.5	(Z5U)		J=±5.0%		
	1812=4.5×3.2			K=±10%		
	2225=5.7×6.4			M=±20%		
	3035=7.6×9.0			Z=+80%/-20%		

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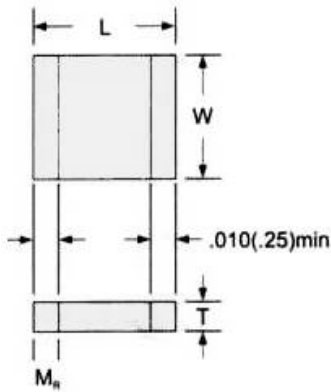
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	Size code								
	0603	0805	1206	1210	1808	1812	2225	3012	3035
L	1.6±0.1	2.00±0.20	3.20±0.30	3.20±0.30	5.70±0.20	4.50±0.40	5.70±0.50	7.06±0.50	7.06±0.5
W	0.8±0.1	1.25±0.20	1.6±0.20	2.00±0.20	4.50±0.20	3.20±0.10	6.4±0.50	3.20±0.10	9.00±0.5
Tmax	0.8±0.1	1.25±0.15	1.25(0,-0.2)	1.6(+0.05,-	2.5	2.5	2.5	2.5	3
MB	0.3±0.10	0.5±0.25	0.5±0.25	0.75±0.25	0.75±0.25	0.75±0.25	1.00±0.25	1.00±0.25	1.00±0.25

Material	Rated voltage	Specification capacitance PF								
		0603	0805	1206	1210	1808	1812	2225	3012	3035
COG (NPO)	25V	OR5~102	OR5~332	OR5~472	561~103	561~103	102~103	102~473	102~473	102~104
	50V	OR5~102	OR5~222	OR5~392	561~562	561~562	102~103	102~223	100~183	102~473
X7R	100V	OR5~821	OR5~102	OR5~302	100~472	100~472	100~103	100~273	100~183	102~333
	200V	OR5~331	OR5~821	OR5~202	100~332	100~272	100~562	100~123	100~822	100~103
	500V		OR5~561	OR5~102	100~202	100~182	100~392	100~682	100~472	100~822
	1000V			OR5~681	100~821	100~821	100~122	100~222	100~162	100~472
	2000V			OR5~101	100~471	100~221	100~391	100~102	100~681	100~222
	3000V					100~151	100~271	100~681	100~471	100~681
	4000V					100~101	100~221	100~561	100~331	100~471
	25V	101~473	221~105	102~105	102~334	561~335	103~474	103~105	102~155	103~225
	50V	101~273	221~105	102~105	102~224	561~205	103~334	103~105	151~105	103~225
	100V	101~103	151~333	102~683	151~224	151~224	103~224	151~105	151~684	103~105
200V	101~682	151~223	151~473	151~104	151~104	151~154	151~474	151~394	100~105	
500V		151~103	151~223	151~333	151~393	151~104	151~334	151~274	100~684	
1000V			151~562	151~103	151~103	151~273	151~563	151~393	100~474	
2000V			151~152	151~682	151~682	151~103	151~273	151~223	102~104	
3000V					151~152	151~222	151~392	151~332	151~103	
4000V					151~102	151~152	151~332	151~272	151~822	
Y5V	25V	222~334	103~105	103~125	104~155	104~155	154~225	684~475	684~335	105~106
(Z5U)	50V	222~104	103~684	103~105	104~155	104~155	154~225	684~335	684~155	105~685
	100V	222~683	103~104	103~334	104~824	103~824	104~155	103~205	103~155	103~335
	200V		103~563	103~154	104~391	103~394	103~474	103~684	103~564	103~824
	250V		103~563	103~154	103~391	103~394	103~474	103~684	103~564	103~684