

# Automotive MLCC Recommendations



Size	Voltage	<10p	<100p	100p	220p	470p	1n	2.2n	4.7n	10n	22n	47n	100n	220n	470n	1u	2.2u	4.7u	10u	22u	47u	100u	Voltage	
1210"	100V																X7R							100V
	50V																							50V
	25V																							25V
	16V																							16V
	6.3V																							6.3V
1206"	100V																							100V
	50V																							50V
	25V																							25V
	16V																							16V
	6.3V																				X7R			6.3V
0805"	100V																							100V
	50V																							50V
	25V																							25V
	16V																							16V
	6.3V																							6.3V
0603"	100V																							100V
	50V																							50V
	25V																							25V
	16V																							16V
	6.3V																							6.3V
0402"	100V																							100V
	50V																							50V
	25V																							25V
	16V																							16V
	6.3V																							6.3V

**COG**

- 5% tolerance is standard
- 50V & 100V are most used
- E6 is recommended

1 | 1.5 | 2.2 | 3.3 | 4.7 | 6.8

**X7R | X7S | X7T**

- 10% tolerance is standard
- 6.3V | 16V | 50V | 100V in focus
- E3 is recommended

1 | 2.2 | 4.7

Under Development  
 Recommended  
 Downsize if possible  
 Not recommended for new design

Use only if ESD, pulse, DC-Bias or other constraints require it  
 No downsizing limitation or higher voltage available

# Automotive MLCC Part Number



SAMSUNG  
ELECTRO-MECHANICS

<u>CL</u>	<u>32</u>	<u>B</u>	<u>476</u>	<u>K</u>	<u>Q</u>	<u>V</u>	<u>V</u>	<u>P</u>	<u>N</u>	<u>E</u>
Series	Size	Diel.	Cap.	Tol.	Volt.	Thick.	Design	Product	Grade	Packaging
	03=0201"	C=C0G	2	B=±0.1pF	R=4V	5=0.5mm	<i>Please see below</i>			
	05=0402"	B=X7R	significant	C=±0.25pF	Q=6.3V	6=0.6mm				C=Cardboard, Tape, 7" Reel
	10=0603"	Y=X7S	digits	D=±0.5pF	P=10V	8=0.8mm				D=Cardboard, Tape, 13" Reel
	21=0805"	Z=X7T	+	F=±1pF	O=16V	C=0.85mm				E=Embossed Type, 7" Reel
	31=1206"	E=X8L	number	or ±1%	A=25V	P=1.15mm				F=Embossed Type, 13" Reel
	32=1210"	G=X8G	of zeros	G=±2%	B=50V	F=1.25mm				
			use "R"	J=±5%	C=100V	H=1.6mm				
			denotes	K=±10%	D=200V	I=2.0mm				
			decimal	M=±20%	E=250V	J/V=2.5mm				
			point		G=500V					
					H=630V					
					I=1KV					
					J=2KV					

Design				Product		Grade		
Internal Design	Outer Termination			<b>P = Automotive Qualified</b> (Based on AEC-Q200)				<b>N = Normal</b> <b>J = 5mm bending Strength</b> <b>E = ESD Protection</b>
	Cu	Metal-Epoxy						
		<b>Ag</b>	<b>Cu</b>					
<b>Normal</b>	<b>1</b>	<b>4</b>	<b>V</b>					
<b>Open</b>		<b>5</b>	<b>W</b>					
<b>Series</b>			<b>X</b>					