

Automotive MLCC Recommendations



Size	Voltage	<10p	<100p	100p	220p	470p	1n	2.2n	4.7n	10n	22n	47n	100n	220n	470n	1μ	2.2μ	4.7μ	10μ	22μ	47μ	100μ	220μ	Voltage
1210"	100V																X7R	X7S						100V
	50V																		X7S					50V
	25V																			X7S				25V
	16V																			X7R				16V
	6.3V																				X7R	'21		6.3V
	4V																					X7R	'21	'23
1206"	100V															X7R	X7S	'23						100V
	50V																	X7R	X7S					50V
	25V																		X7R					25V
	16V																			X7R				16V
	10V																				X7R			10V
	6.3V																				X7R	'22		6.3V
4V																					X7T			4V
0805"	100V									COG						X7S								100V
	50V																X7R	X7S	'22					50V
	25V																			X7S				25V
	16V																			X7S				16V
	6.3V																				'21			6.3V
0603"	100V									COG						X7R								100V
	50V																						'21	50V
	25V																						'22	25V
	16V																							16V
	10V																							10V
	6.3V																						'21	6.3V
0402"	100V									COG						X7R								100V
	50V																							50V
	25V																							25V
	16V																						'22	16V
	10V																							10V
	6.3V																						'21	6.3V
0201"	25V												X7R											25V
	16V																							16V
	6.3V																						X7R	X7S

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

Recommended	Smaller size or higher voltage available	Use only if ESD, pulse, DC-Bias or other constraints require it
Under Development	Not recommended for new design	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	Please see below			
	05=0402"	B=X7R	significant	C=±0.25pF	Q=6.3V	8=0.8mm				C=Cardboard, Tape, 7" Reel
	10=0603"	Y=X7S	digits	D=±0.5pF	P=10V	C=0.85mm				D=Cardboard, Tape, 13" Reel
	21=0805"	Z=X7T	+	F=±1pF	O=16V	P=1.15mm				E=Embossed Type, 7" Reel
	31=1206"	E=X8L	number	or ±1%	A=25V	F=1.25mm				F=Embossed Type, 13" Reel
	32=1210"	G=X8G	of zeros	G=±2%	B=50V	H=1.6mm				
			use "R"	J=±5%	C=100V	I=2.0mm				
			denotes	K=±10%	D=200V	J/V=2.5mm				
			decimal	M=±20%	E=250V					
			point		G=500V					
					H=630V					
					I=1KV					
					J=2KV					

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