

# 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	'22		6.3V
	4V																					X7T	'23	4V
1206"	100V															X7R	X7S	'23						100V
	50V																	X7R	X7S					50V
	25V																		X7R					25V
	16V																			X7R				16V
	10V																			X7R				10V
	6.3V																				X7R	X7T		6.3V
4V																					X7T		4V	
0805"	100V									COG						X7S	'22							100V
	50V																X7R	X7S	'22					50V
	25V																		X7S					25V
	16V																			X7S				16V
	6.3V																				'22			6.3V
0603"	100V							COG			X7R													100V
	50V															X7R								50V
	25V																			'22				25V
	16V																							16V
	10V																							10V
	6.3V																					'22		6.3V
0402"	100V	COG			X7R																			100V
	50V	COG			COG	X7R																		50V
	25V														X7R									25V
	16V																				'22			16V
	10V															X7S	X7S							10V
	6.3V															X7S	'22							6.3V
0201"	25V										X7R													25V
	16V																							16V
	6.3V											X7R	X7S											6.3V
Size	Voltage	<10p	47p	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

**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

R&D

**Recommended**

Smaller / Higher V available

NRND

# 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	Cap value	B=±0.1pF	R=4V	5=0.5mm	<i>Please see below</i>			C=Cardboard, Tape, 7" Reel
	05=0402"	B=X7R		C=±0.25pF	Q=6.3V	8=0.8mm				D=Cardboard, Tape, 13" Reel
	10=0603"	Y=X7S		D=±0.5pF	P=10V	C=0.85mm				E=Embossed Type, 7" Reel
	21=0805"	Z=X7T		F=±1pF	O=16V	P=1.15mm				F=Embossed Type, 13" Reel
	31=1206"	E=X8L		J=±5%	A=25V	F=1.25mm				
	32=1210"	G=X8G		K=±10%	B=50V	H=1.6mm				
				M=±20%	C=100V	I=2.0mm				
					E=250V	J/V=2.5mm				
					H=630V					
					I=1KV					

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