

Automotive Lineup & Roadmap

SAMSUNG

Electro-Mechanics

—
Nov., 2023

Roadmap

[Part Numbering]

SEMCO MLCC Part Numbering

CL	10	B	105	K	B	9	V	P	N	C
Series	Size	Dielectric	Capacitance	Tolerance	Voltage	Thickness	Design	Product	Grade	Packaging
	03=0201" 05=0402" 10=0603" 21=0805" 31=1206" 32=1210"	C=COG B=X7R Y=X7S Z=X7T E=X8L G=X8G	2 significant digits + number of zeros use "R" denotes decimal point	B=±0.1pF C=±0.25pF D=±0.5pF F=±1pF or ±1% G=±2% J=±5% K=±10% M=±20%	R=4V Q=6.3V P=10V O=16V A=25V B=50V C=100V E=250V,H=630V,I=1KV	5=0.5mm 8=0.8mm C=0.85mm P=1.15mm F=1.25mm H=1.6mm I=2.0mm J=2.5mm	<i>Please see below</i>			C=Cardboard Tape, 7" Reel D=Cardboard Tape, 13" Reel E=Embossed Type, 7" Reel F=Embossed Type, 13" Reel

Form Factor	Series	Remark		Structure	Strength	
 Size 0603~3225m Capacitance ~100µF Rated Voltage ~1kV	VPN	General MLCC		 [General]	3mm Bending (competitor 2mm)	
	VPE	ESD MLCC (1.0~10nF)			 [Open Mode]	High ESD Level
	VPJ	Fail Safe	High bending Stress			5mm Bending
	WPN/ WPJ		Open Mode		 [Series Structure]	Prevent Short Circuit
	XPN/ XPJ	Series Mode (Floating)			Prevent Short Circuit	
	1IN	For Car Infotainment only		 [I code]	2mm Bending (0603i↓ 1mm Bending)	
	Low ESL	LICC (Reversed), 3-Terminal MLCC			Low ESL	

Roadmap

X7_ PN Series (AEC-Q200 Compliant)



-55°C~125°C

X7R : ±15% // X7S : ±22% // X7T : +22% / -33%

Size (Inch/mm)	Rated Voltage (V)	Capacitance (nF)									Capacitance (µF)						
		1	2.2	4.7	10	22	47	100	220	470	1	2.2	4.7	10	22	47	100
0201 /0603	25																
	16																
	10																
	6.3					X7S	X7S	X7S									
	4.0							X7S				X7T					
	2.5											X7T					
0402 /1005	100																
	50																
	25																
	16																
	10								X7S	X7S	X7S						
	6.3								X7S	X7S	X7S						
0603 /1608	2.5																
	100																
	50																
	25											X7S					
	16											X7S					
	10												X7S				
	6.3												X7S	X7S	X7T		
4.0														X7T	X7T(New)		
0805 /2012	2.5															X7T	
	100										X7S						
	50																
	35																
	25														X7S		
	16														X7S		
	10																
6.3																X7T	
4.0																X7T	

Roadmap

X7_PN Series (AEC-Q200 Compliant)



-55°C~125°C

X7R : ±15% // X7S : ±22% // X7T : +22% / -33%

Size (Inch/mm)	Rated Voltage (V)	Capacitance (nF)									Capacitance (μF)								
		1	2.2	4.7	10	22	47	100	220	470	1	2.2	4.7	10	22	47	100	220	
1206 /3216	100											X7S							
	50													X7S X7R(Q4.23)					
	35																		
	25														X7S				
	16														X7S				
	10																		
	6.3																X7T		
	4.0																X7T		
1210 /3225	100													X7S					
	50																		
	35																		
	25														X7S				
	16																		
	10															X7S			
	6.3																X7T		
	4.0																X7T		
	2.5																	X7T	

* Schedules can be changed according to customer request and subject to change without prior notice.

Roadmap

X7_PN Series (AEC-Q200 Compliant, For High Voltage) -55°C~125°C X7R : ±15% // X7S : ±22% // X7T : +22% / -33%

Size (Inch/mm)	Rated Voltage (V)	Capacitance (nF)															
		1	1.5	2.2	2.7	3.3	4.7	10	15	22	33	47	100	150	220	330	470
0805/2012	250																
	1000																
1206/3216	630																
	250																
1210/3225	1000																
	630																
	250																

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Roadmap

■ (Grade 1) X7_ PJ Series (High Bending Strength 5mm) -55°C~125°C X7R : ±15% // X7S : ±22% // X7T : +22% / -33%

Size (inch/mm)	Rated Voltage (V)	Capacitance (nF)									Capacitance (μF)						
		1	2.2	4.7	10	22	47	100	220	470	1	2.2	4.7	10	22	47	100
0402 /1005	50																
	25																
	16																
	10									X7S	X7S						
0603 /1608	100																
	50																
	25																
	16																
	10																
0805 /2012	100																
	50																
	25																
	16																
	10																
1206 /3216	6.3																
	4																
	100																
	50																
	25																
	16																
1210 /3225	10																
	6.3																
	4																
	100																
	50																
	25																

❏ (Grade 2) X6S IN Series (AEC-Q200 Compliant, for Infotainment)

-55°C~105°C
X6S : ±22%

Size (Inch/mm)	Rated Voltage (V)	Capacitance (nF)			Capacitance (μF)							
		100	220	470	1.0	2.2	4.7	10	22	47	100	
0201/0603	25											
	16											
	10		New									
	6.3											
0402/1005	35											
	25											
	16											
	10											
	6.3											
	4.0											
0603/1608	25											
	16											
	10											
	6.3											
	4											
	35											
0805/2012	16											
	10											
1206/3216	50											
	35											
	25											
	16											
	6.3											

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Roadmap

■ (Grade 3) X5R IN Series (AEC-Q200 Compliant, for Infotainment) -55°C~85°C X5R : ±15%

Size (Inch/mm)	Rated Voltage (V)	Capacitance (nF)			Capacitance (μF)							
		100	220	470	1.0	2.2	4.7	10	22	47	100	
0201/0603	35											
	25											
	16											
	10											
	6.3											
0402/1005	35											
	25											
	10											
	6.3											
0603/1608	50											
	35											
	25											
	16											
0805/2012	25											
	16											
1206/3216	50											
	25											
	10											

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Roadmap

C0G PN Series (AEC-Q200 Compliant) -55°C~125°C C0G : 0 ±30ppm/°C

Size (Inch/mm)	Rated Voltage (V)	Capacitance (pF)												Capacitance (nF)													
		10	15	22	33	47	68	100	150	220	330	470	680	1	1.5	2.2	3.3	4.7	6.8	10	15	22	33	47	56	68	100
0402/1005	100									New																	
	50																										
	25																										
0603/1608	100													New													
	50																										
0805/2012	100																										
	75																										
	50																										

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Roadmap

C0G PN Series (AEC-Q200 Compliant, for High Voltage) -55°C~125°C C0G : 0 ±30ppm/°C

Size (Inch/mm)	Rated Voltage (V)	Capacitance (pF)							Capacitance (nF)												
		10	22	47	100	220	330	470	1	1.5	2.2	3.3	3.9	4.7	6.8	8.2	10	15	22	33	
0603/1608	250																				
0805/2012	630																				
	250																				
1206/3216	1000																				
	630																				
	250																				
1210/3225	1000																				New
	630																				

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