

# Chip Monolithic Ceramic Capacitors



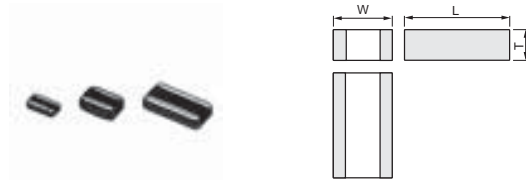
## Low ESL LLL/LLA/LLM Series

### ■ Features (Reversed geometry Low ESL Type)

1. Low ESL, good for noise reduction for high frequency
2. Small, high cap

### ■ Applications

1. High speed micro processor
2. High frequency digital equipment



Part Number	Dimensions (mm)		
	L	W	T
LLL185	1.6 ±0.1	0.8 ±0.1	0.6 max.
LLL216	2.0 ±0.1	1.25 ±0.1	0.6 ±0.1
LLL219			0.85 ±0.1
LLL317	3.2 ±0.15	1.6 ±0.15	0.7 ±0.1
LLL31M			1.15 ±0.1

## Reversed geometry Low ESL Type

Part Number	LLL18						LLL21						LLL31					
L x W	1.6x0.8						2.0x1.25						3.2x1.6					
TC	X7R (R7)			X7S (C7)			X7R (R7)			X7S (C7)			X7R (R7)			X5R (R6)		
Rated Volt.	50 (1H)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	6.3 (0J)
Capacitance (Capacitance part numbering code) and T (mm) Dimension (T Dimension part numbering code)																		
2200pF (222)	0.5 (5)																	
3300pF (332)	0.5 (5)																	
4700pF (472)	0.5 (5)						0.6 (6)											
6800pF (682)		0.5 (5)					0.6 (6)											
10000pF (103)		0.5 (5)	0.5 (5)				0.6 (6)						0.7 (7)					
15000pF (153)		0.5 (5)	0.5 (5)				0.6 (6)						0.7 (7)	0.7 (7)				
22000pF (223)		0.5 (5)	0.5 (5)				0.6 (6)	0.6 (6)					0.7 (7)	0.7 (7)				
33000pF (333)			0.5 (5)				0.85 (9)	0.6 (6)	0.6 (6)				0.7 (7)	0.7 (7)				
47000pF (473)			0.5 (5)					0.6 (6)	0.6 (6)				0.7 (7)	0.7 (7)				
68000pF (683)			0.5 (5)					0.6 (6)	0.6 (6)				0.7 (7)	0.7 (7)				
0.10μF (104)				0.5 (5)				0.6 (6)	0.6 (6)				1.15 (M)	0.7 (7)				
0.15μF (154)					0.5 (5)			0.85 (9)	0.6 (6)				1.15 (M)	0.7 (7)				
0.22μF (224)					0.5 (5)					0.6 (6)				1.15 (M)				
0.33μF (334)						0.5 (5)				0.6 (6)				1.15 (M)	0.7 (7)			
0.47μF (474)						0.5 (5)				0.85 (9)				1.15 (M)	0.7 (7)			

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Part Number	LLL18						LLL21						LLL31					
L x W	1.6x0.8						2.0x1.25						3.2x1.6					
TC	X7R (R7)			X7S (C7)			X7R (R7)			X7S (C7)			X7R (R7)			X5R (R6)		
Rated Volt.	50 (1H)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	6.3 (0J)
Capacitance (Capacitance part numbering code) and T (mm) Dimension (T Dimension part numbering code)																		
0.68μF (684)												0.85 (9)				1.15 (M)	0.7 (7)	
1.0μF (105)						0.5 (5)						0.85 (9)				1.15 (M)	0.7 (7)	
1.5μF (155)												0.85 (9)				1.15 (M)	0.7 (7)	
2.2μF (225)												0.85 (9)				1.15 (M)	0.7 (7)	
4.7μF (475)																	1.15 (M)	
10μF (106)																		1.25 (B)

The part numbering code is shown in ( ).  
 Dimensions are shown in mm and Rated Voltage in Vdc.

### Reversed geometry Low ESL Type Low Profile

Part Number	LLL18				LLL21						LLL31			
L x W	1.6x0.8				2.0x1.25						3.2x1.6			
TC	X7R (R7)		X7S (C7)		X7R (R7)			X7S (C7)			X7R (R7)			
Rated Volt.	25 (1E)	16 (1C)	10 (1A)	4 (0G)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	50 (1H)	25 (1E)	16 (1C)	10 (1A)
Capacitance (Capacitance part numbering code) and T (mm) Dimension (T Dimension part numbering code)														
680pF(681)					0.5(5)									
1000pF(102)					0.5(5)									
1500pF(152)					0.5(5)									
2200pF(222)					0.5(5)									
3300pF(332)					0.5(5)									
4700pF(472)					0.5(5)									
6800pF(682)					0.5(5)									
10000pF(103)	0.5(5)	0.5(5)			0.5(5)	0.5(5)					0.5(5)			
15000pF(153)	0.5(5)	0.5(5)			0.5(5)	0.5(5)					0.5(5)	0.5(5)		
22000pF(223)		0.5(5)				0.5(5)	0.5(5)				0.5(5)	0.5(5)		
33000pF(333)		0.5(5)				0.5(5)	0.5(5)				0.5(5)	0.5(5)		
47000pF(473)		0.5(5)					0.5(5)					0.5(5)	0.5(5)	
68000pF(683)			0.5(5)				0.5(5)					0.5(5)	0.5(5)	
0.10μF(104)			0.5(5)				0.5(5)					0.5(5)	0.5(5)	
0.15μF(154)								0.5(5)						0.5(5)
0.22μF(224)				0.5(5)				0.5(5)						0.5(5)
0.33μF(334)				0.5(5)				0.5(5)						0.5(5)
0.47μF(474)									0.5(5)					0.5(5)
0.68μF(684)														0.5(5)
1.0μF(105)										0.5(5)				

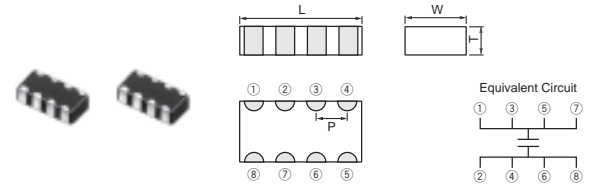
The part numbering code is shown in ( ).  
 Dimensions are shown in mm and Rated Voltage in Vdc.

### ■ Features (Eight Terminals Low ESL Type)

1. Low ESL (100pH) , suitable to decoupling capacitor for 1GHz clock speed IC.
2. Small, large cap

### ■ APPLICATIONS

1. High speed micro processor
2. High frequency digital equipment.



Part Number	Dimensions (mm)			
	L	W	T	P
LLA185	1.6 ±0.1	0.8 ±0.1	0.5 +0.05/-0.1	0.4 ±0.1
LLA215	2.0 ±0.1	1.25 ±0.1	0.5 +0.05/-0.1	0.5 ±0.05
LLA219	2.0 ±0.1	1.25 ±0.1	0.85 ±0.1	0.5 ±0.05
LLA315	3.2 ±0.15	1.6 ±0.15	0.5 +0.05/-0.1	0.8 ±0.1
LLA319	3.2 ±0.15	1.6 ±0.15	0.85 ±0.1	0.8 ±0.1
LLA31M	3.2 ±0.15	1.6 ±0.15	1.15±0.1	0.8 ±0.1

## Eight Terminals Low ESL Type

Part Number	LLA21					LLA31			
L x W	2.0x1.25					3.2x1.6			
TC	X7S (C7)		X7R (R7)			X7S (C7)	X7R (R7)		
Rated Volt.	4 (0G)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	16 (1C)	10 (1A)	4 (0G)
Capacitance (Capacitance part numbering code) and T (mm) Dimension (T Dimension part numbering code)									
10000pF(103)		0.85(9)							
15000pF(153)		0.85(9)							
22000pF(223)		0.85(9)							
33000pF(333)		0.85(9)							
47000pF(473)		0.85(9)							
68000pF(683)			0.85(9)						
0.10μF(104)			0.85(9)				0.85(9)		
0.15μF(154)			0.85(9)				1.15(M)		
0.22μF(224)			0.85(9)				0.85(9)		
0.33μF(334)	0.5(5)			0.85(9)			0.85(9)		
0.47μF(474)	0.5(5)			0.85(9)			0.85(9)		
0.68μF(684)				0.85(9)			0.85(9)		
1.0μF(105)	0.5(5)				0.85(9)			0.85(9)	
1.5μF(155)					0.85(9)			0.85(9)	
2.2μF(225)						0.85(9)			0.85(9)
4.7μF(475)						0.85(9)			

The part numbering code is shown in ( ).  
 Dimensions are shown in mm and Rated Voltage in Vdc.

## Eight Terminals Low ESL Type Low Profile

Part Number	LLA21					LLA31			
L x W	2.0x1.25					3.2x1.6			
TC	X7R (R7)			X7S (C7)		X7R (R7)			
Rated Volt.	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	16 (1C)	10 (1A)	6.3 (0J)	
Capacitance (Capacitance part numbering code) and T (mm) Dimension (T Dimension part numbering code)									
10000pF(103)	0.5(5)								
15000pF(153)	0.5(5)								
22000pF(223)	0.5(5)								
33000pF(333)		0.5(5)							
47000pF(473)		0.5(5)							
68000pF(683)		0.5(5)							
0.10μF(104)		0.5(5)				0.5(5)			
0.15μF(154)			0.5(5)	0.5(5)		0.5(5)			
0.22μF(224)			0.5(5)	0.5(5)		0.5(5)			

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Part Number	LLA21					LLA31		
L x W	2.0x1.25					3.2x1.6		
TC	X7R (R7)				X7S (C7)	X7R (R7)		
Rated Volt.	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	16 (1C)	10 (1A)	6.3 (0J)
Capacitance (Capacitance part numbering code) and T (mm) Dimension (T Dimension part numbering code)								
0.33μF(334)			0.5(5)	0.5(5)			0.5(5)	
0.47μF(474)				0.5(5)			0.5(5)	
0.68μF(684)				0.5(5)			0.5(5)	
1.0μF(105)					0.5(5)			0.5(5)
1.5μF(155)					0.5(5)			0.5(5)
2.2μF(225)					0.5(5)			0.5(5)

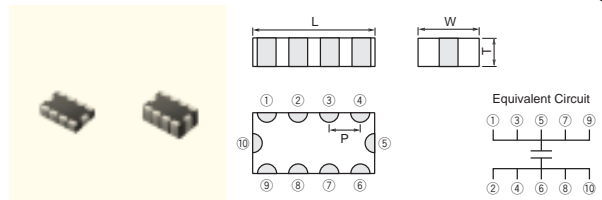
The part numbering code is shown in ( ).  
 Dimensions are shown in mm and Rated Voltage in Vdc.

### ■ Features (Ten Terminals Low ESL Type)

1. Low ESL (45pH), suitable to decoupling capacitor for 2GHz clock speed IC.
2. Small, large cap

### ■ APPLICATIONS

1. High speed micro processor
2. High frequency digital equipment



Part Number	Dimensions (mm)			
	L	W	T	P
<b>LLM215</b>	2.0 ±0.1	1.25 ±0.1	0.5 +0.05/-0.1	0.5 ±0.05
<b>LLM219</b>	2.0 ±0.1	1.25 ±0.1	0.85 ±0.1	0.5 ±0.05
<b>LLM315</b>	3.2 ±0.15	1.6 ±0.15	0.5 +0.05/-0.1	0.8 ±0.1
<b>LLM31M</b>	3.2 ±0.15	1.6 ±0.15	1.15 ±0.1	0.8 ±0.1

## Ten Terminals Low ESL Type

Part Number	LLM21				LLM31		
L x W	2.0x1.25				3.2x1.6		
TC	X7R (R7)		X7S (C7)		X7R (R7)		
Rated Volt.	25 (1E)	16 (1C)	6.3 (0J)	4 (0G)	16 (1C)	10 (1A)	6.3 (0J)
Capacitance (Capacitance part numbering code) and T (mm) Dimension (T Dimension part numbering code)							
10000pF(103)	0.85(9)						
15000pF(153)	0.85(9)						
22000pF(223)	0.85(9)						
33000pF(333)	0.85(9)						
47000pF(473)	0.85(9)						
68000pF(683)		0.85(9)					
0.10μF(104)		0.85(9)			1.15(M)		
0.15μF(154)		0.85(9)			1.15(M)		
0.22μF(224)		0.85(9)			1.15(M)		
0.33μF(334)			0.85(9)		1.15(M)		
0.47μF(474)			0.85(9)		1.15(M)		
0.68μF(684)			0.85(9)		1.15(M)		
1.0μF(105)			0.85(9)		1.15(M)		
1.5μF(155)			0.85(9)			1.15(M)	
2.2μF(225)				0.85(9)		1.15(M)	
3.3μF(335)							1.15(M)
4.7μF(475)							1.15(M)

The part numbering code is shown in ( ).  
 Dimensions are shown in mm and Rated Voltage in Vdc.

## Ten Terminals Low ESL Type Low Profile

Part Number	LLM21				LLM31		
L x W	2.0x1.25				3.2x1.6		
TC	X7R (R7)		X7S (C7)		X7R (R7)		
Rated Volt.	25 (1E)	16 (1C)	6.3 (0J)	4 (0G)	16 (1C)	10 (1A)	6.3 (0J)
Capacitance (Capacitance part numbering code) and T (mm) Dimension (T Dimension part numbering code)							
10000pF(103)	0.5(5)						
15000pF(153)	0.5(5)						
22000pF(223)	0.5(5)						
33000pF(333)		0.5(5)					
47000pF(473)		0.5(5)					
68000pF(683)		0.5(5)					
0.10μF(104)		0.5(5)			0.5(5)		
0.15μF(154)			0.5(5)		0.5(5)		

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Part Number	LLM21				LLM31		
L x W	2.0x1.25				3.2x1.6		
TC	X7R (R7)		X7S (C7)		X7R (R7)		
Rated Volt.	25 (1E)	16 (1C)	6.3 (0J)	4 (0G)	16 (1C)	10 (1A)	6.3 (0J)
Capacitance (Capacitance part numbering code) and T (mm) Dimension (T Dimension part numbering code)							
0.22μF(224)			0.5(5)		0.5(5)		
0.33μF(334)			0.5(5)			0.5(5)	
0.47μF(474)			0.5(5)			0.5(5)	
0.68μF(684)			0.5(5)			0.5(5)	
1.0μF(105)				0.5(5)			
1.5μF(155)				0.5(5)			
2.2μF(225)				0.5(5)			0.5(5)

The part numbering code is shown in ( ).  
 Dimensions are shown in mm and Rated Voltage in Vdc.