



FEATURES:

- AEC-Q200 certified/qualified
- Capacitance range: 0.1pF to 10uF
- Voltage range: 10V to 3000V DC
- Terminations: 100% matte Tin (Sn)
- 3mm minimum bending strength specification



PART NUMBER STRUCTURE

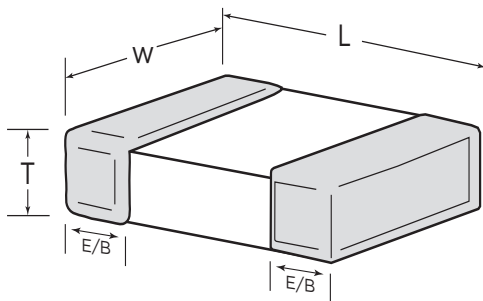
AGC Series	1206 Size	X7R Temperature Characteristic (Dielectric)	500 Rated Voltage 1st two digits are significant followed by number of zeroes. 100 = 10 VDC 160 = 16 VDC 250 = 25 VDC 500 = 50 VDC 101 = 100 VDC 201 = 200 VDC 251 = 250 VDC 501 = 500 VDC 631 = 630 VDC 102 = 1000 VDC 202 = 2000 VDC 302 = 3000 VDC	-	473 Capacitance (picofarads) 1st two digits are significant, followed by number of zeroes. R denotes decimal e.g: 101 = 100pF 104 = 100nF 6R8 = 6.8pF	K Tolerance * A = ±0.05pF * B = ±0.1pF * C = ±0.25pF * D = ±0.5pF F ±1% G = ±2% J = ±5% K = ±10% M = ±20% * For values below 10pF only.	N Termination N = 100% Matte Tin over Nickel over a conductive Polymer X = Soft/Flex termination (5mm)	P Packaging E = Embossed Tape (7" reel) U = Embossed Tape (13" reel) P = Paper Tape (7" reel) R = Paper Tape (13" reel)
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Example P/N: AGC1206X7R500-473KNP

Standard termination finish is 100% matte Tin (Sn) over Nickel.

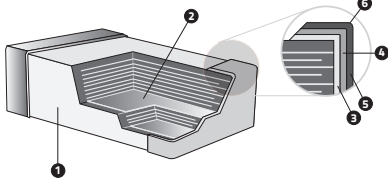
DIMENSIONS

Unit: inches (mm)



SIZE	L	W	E/B	T
0201	0.024 ± 0.001 (0.60 ± 0.03)	0.012 ± 0.001 (0.30 ± 0.03)	0.006 ± 0.002 (0.15 ± 0.05)	Refer to pages 3-13 for item specific thickness
0402	0.039 ± 0.002 (1.00 ± 0.05)	0.020 ± 0.002 (0.5 ± 0.05)	0.010 +0.002/-0.004) (0.25 +0.05/-0.10)	
0603	0.063 ± 0.004 (1.6 ± 0.10)	0.031 ± 0.004 (0.8 ± 0.10)	0.016 ± 0.006 (0.40 ± 0.15)	
	0.063 ± 0.006/-0.004 (1.6 +0.15/-0.10)	0.031 ± 0.006/-0.004 (0.8 + 0.15/-0.10)		
0805	0.079 ± 0.006 (2.0 ± 0.15)	0.049 ± 0.004 (1.25 ± 0.10)	0.020 ± 0.008 (0.50 ± 0.20)	
	0.079 ± 0.008 (2.0 ± 0.20)	0.049 ± 0.008 (1.25 ± 0.20)		
1206	0.126 ± 0.006 (3.2 ± 0.15)	0.063 ± 0.006 (1.6 ± 0.15)	0.024 ± 0.008 (0.60 ± 0.20)	
	0.126 ± 0.008 (3.2 ± 0.20)			
	0.126 ± 0.012/-0.004 (3.2 ± 0.30/-0.10)	0.063 ± 0.012/-0.004 (1.60 ± 0.30/-0.10)		
1210	0.126 ± 0.012 (3.2 ± 0.30)	0.098 ± 0.008 (2.5 ± 0.20)	0.030 ± 0.010 (0.75 ± 0.25)	
	0.126 ± 0.016 (3.2 ± 0.40)	0.098 ± 0.012 (2.5 ± 0.30)		
1812	0.181 ± 0.012 (4.60 ± 0.30)	0.126 ± 0.012 (3.20 ± 0.30)	0.012 (0.30)	
1825	0.181 ± 0.012 (4.60 ± 0.30)	0.250 ± 0.016 (6.35 ± 0.40)	0.012 (0.30)	
2220	0.224 ± 0.016 (5.70 ± 0.40)	0.197 ± 0.016 (5.00 ± 0.40)	0.012 (0.30)	
2225	0.224 ± 0.016 (5.70 ± 0.40)	0.250 ± 0.016 (6.35 ± 0.40)	0.012 (0.30)	

STRUCTURE

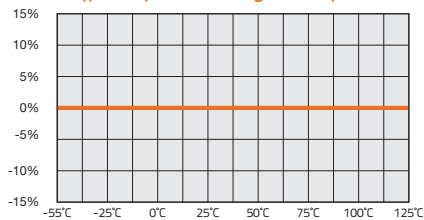


1	Ceramic Body (dielectric)	4	Silver Polymer
2	Inner Electrode	5	Nickel Plating
3	Inner Termination	6	100% Matte Tin (Sn)

ELECTRICAL SPECIFICATION & RANGE

COG/NPO

Typical Capacitance Change vs. Temperature



Operating Temperature Range:
-55°C to +125°C

Temperature Coefficient:
0 ±30PPM/°C

Temperature Voltage Coefficient:
0 ±30PPM/°C

Insulation Resistance:
>1000Ω-F or 100GΩ, for values ≤ 0.047μF
(whichever is less at 25°C, VDCV).
For Capacitance values > 0.047μF, the 500 Ω-F rule applies.
(The IR at 125°C is 10% of the value at 25°C)

Ageing: None

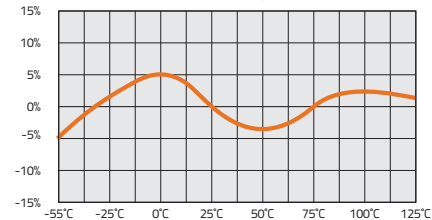
Withstanding Voltage: >2.5 times VDCW

Capacitance Tolerance: A,B,C,D,F,G,J,K

Dissipation Factor: 0.1% max

X7R

Typical Capacitance Change vs. Temperature



Operating Temperature Range:
-55°C to +125°C

Temperature Coefficient:
0 ±15%Δ°C MAX.

Temperature Voltage Coefficient:
X7R not applicable

Insulation Resistance:
>100Ω-F or 1GΩ, whichever is less
at 25°C, VDCW. (10,000Ω at 125°C)

Ageing:
2.5% per decade hour, typical

Withstanding Voltage:
>2.5 times VDCW

Capacitance Tolerance:
J,K,M

Rated Voltage	Insulation Resistance
100V: All X7R; 1210≥3.3μF	1GΩ or 100Ω-F Whichever is smaller
50V: 0402≥0.01μF; 0603≥1μF; 0805≥1μF; 1206≥4.7μF; 1210≥4.7μF	
35V: 0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF	
25V: 0402≥0.22μF; 0603≥2.2μF; 0805≥2.2μF; 1206≥10μF; 1210≥10μF	
16V: 0402≥0.22μF; 0603≥1μF; 0805≥2.2μF; 1206≥10μF; 1210≥47μF	
10V: 0402≥0.47μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥47μF	

Rated Voltage	D.F.≤	Exception of D.F.≤
≥100V	≤2.5%	≤3% 1206≥0.47μF
		≤5% 0805≥0.1μF; 0603≥0.068μF; 1206≥1μF; 1210≥2.2μF
		≤10% 0805≥0.22μF; 1210≥3.3μF
50V	≤2.5%	≤3% 0201(50V); 0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF
		≤5% 0201≥0.01μF; 1210≥4.7μF
		≤10% 0402≥0.012μF; 0603>0.1μF; 0805≥1μF; 1206≥2.2μF; 1210≥10μF
35V	≤3.5%	≤10% 0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF
25V	≤3.5%	≤5% 0201≥0.01μF; 0805≥1μF; 1210≥10μF
		≤7% 0603≥0.33μF
		≤10% 0201≥0.01μF; 0402≥0.10μF & (0402/X7R≥0.056μF); 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF
		≤12.5% 0402≥0.47μF
16V	≤3.5%	≤5% 0201≥0.01μF; 0402≥0.33μF; 0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF; 1210≥4.7μF
		≤10% 0201≥0.01μF; (0201/X7R≥0.022μF); 0402≥0.22μF; 0603≥0.68μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF
10V	≤5%	≤10% 0201≥0.012μF; 0402≥0.33μF (0402/X7R≥0.22μF); 0603≥0.33μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥22μF; 01R5
		≤15% 201≥0.1μF; 0402≥1μF

VOLTAGE AND CAPACITANCE RANGE

COG (NPO) DIELECTRIC (0201 - 0402)

Values that are typically available. (Thickness in mm).

Size (inches)			0201					0402				
VDCW (MAX)			10V	16V	25V	50V	100V	10V	16V	25V	50V	100V
<-----CAPACITANCE CODE----->	<-----CAPACITANCE VALUE----->	OR1	0.1pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		OR2	0.2pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		OR3	0.3pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		OR4	0.4pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		OR5	0.5pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		OR6	0.6pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		OR7	0.7pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		OR8	0.8pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		OR9	0.9pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		1R0	1.0pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		1R2	1.2pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		1R5	1.5pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		1R8	1.8pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		2R2	2.2pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		2R7	2.7pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		3R3	3.3pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		3R9	3.9pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		4R7	4.7pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		5R6	5.6pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		6R8	6.8pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		8R2	8.2pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		100	10pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		120	12pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		150	15pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		180	18pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		220	22pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		270	27pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		330	33pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		390	39pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		470	47pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		560	56pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		680	68pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03		0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		820	82pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03		0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		101	100pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03		0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		121	120pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03		0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		151	150pF						0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		181	180pF						0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		221	220pF						0.50±0.05	0.50±0.05	0.50±0.05	0.50±0.05
		271	270pF						0.50±0.05	0.50±0.05	0.50±0.05	
		331	330pF						0.50±0.05	0.50±0.05	0.50±0.05	
		391	390pF						0.50±0.05	0.50±0.05	0.50±0.05	
		471	470pF						0.50±0.05	0.50±0.05	0.50±0.05	
		561	560pF						0.50±0.05	0.50±0.05	0.50±0.05	
		681	680pF						0.50±0.05	0.50±0.05	0.50±0.05	
		821	820pF						0.50±0.05	0.50±0.05	0.50±0.05	
		102	1000pF						0.50±0.05	0.50±0.05	0.50±0.05	
		122	1200pF									
		152	1500pF									
		182	1800pF									
		222	2200pF									
		272	2700pF									
		332	3300pF									

Note: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available.

VOLTAGE AND CAPACITANCE RANGE

COG (NPO) DIELECTRIC (0603)

Values that are typically available. (Thickness in mm).

Size (inches)				0603						
VDCW (MAX)				10V	16V	25V	50V	100V	200V	250V
<----- CAPACITANCE CODE ----->	<----- CAPACITANCE VALUE ----->	0R1	0.1pF							
		0R2	0.2pF							
		0R3	0.3pF							
		0R4	0.4pF							
		0R5	0.5pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		0R6	0.6pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		0R7	0.7pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		0R8	0.8pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		0R9	0.9pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		1R0	1.0pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		1R2	1.2pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		1R5	1.5pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		1R8	1.8pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		2R2	2.2pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		2R7	2.7pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		3R3	3.3pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		3R9	3.9pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		4R7	4.7pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		5R6	5.6pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		6R8	6.8pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		8R2	8.2pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		100	10pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		120	12pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		150	15pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		180	18pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		220	22pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		270	27pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		330	33pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		390	39pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		470	47pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		560	56pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		680	68pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		820	82pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		101	100pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		121	120pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		151	150pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		181	180pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		221	220pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07
		271	270pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80+0.15/-0.10	0.80+0.15/-0.10
		331	330pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80+0.15/-0.10	0.80+0.15/-0.10
		391	390pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80+0.15/-0.10	0.80+0.15/-0.10
		471	470pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80+0.15/-0.10	0.80+0.15/-0.10
		561	560pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80+0.15/-0.10	0.80+0.15/-0.10
		681	680pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80+0.15/-0.10	0.80+0.15/-0.10
		821	820pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80+0.15/-0.10	0.80+0.15/-0.10
		102	1000pF	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07	0.80±0.07		
		122	1200pF	0.80+0.15/-0.10	0.80+0.15/-0.10	0.80+0.15/-0.10	0.80+0.15/-0.10	0.80+0.15/-0.10		
		152	1500pF	0.80+0.15/-0.10	0.80+0.15/-0.10	0.80+0.15/-0.10	0.80+0.15/-0.10	0.80+0.15/-0.10		
		182	1800pF	0.80+0.15/-0.10	0.80+0.15/-0.10	0.80+0.15/-0.10	0.80+0.15/-0.10	0.80+0.15/-0.10		
		222	2200pF	0.80+0.15/-0.10	0.80+0.15/-0.10	0.80+0.15/-0.10	0.80+0.15/-0.10			
		272	2700pF	0.80+0.15/-0.10	0.80+0.15/-0.10	0.80+0.15/-0.10	0.80+0.15/-0.10			
		332	3300pF	0.80+0.15/-0.10	0.80+0.15/-0.10	0.80+0.15/-0.10	0.80+0.15/-0.10			

Note: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available.

VOLTAGE AND CAPACITANCE RANGE

COG (NP0) DIELECTRIC (0805)

Values that are typically available. (Thickness in mm).

SIZE (INCHES)		0805									
VDCW (MAX)		10V	16V	25V	50V	100V	200V	250V	500V	630V	
CAPACITANCE CODE	OR5	0.5pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	OR6	0.6pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	OR7	0.7pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	OR8	0.8pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	OR9	0.9pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	1R0	1.0pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	1R2	1.2pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	1R5	1.5pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	1R8	1.8pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	2R2	2.2pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	2R7	2.7pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	3R3	3.3pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	3R9	3.9pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	4R7	4.7pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	5R6	5.6pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	6R8	6.8pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	8R2	8.2pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	100	10pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	120	12pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	150	15pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	180	18pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	220	22pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	270	27pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	330	33pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	390	39pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	470	47pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	560	56pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	680	68pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10
	820	82pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.80±0.10	0.80±0.10	0.80±0.10
	101	100pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10
	121	120pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10
	151	150pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10
	181	180pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10
	221	220pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10
	271	270pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10
	331	330pF	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	0.60±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10
	391	390pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10
	471	470pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.20	1.25±0.20
	561	560pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.20	1.25±0.20
	681	680pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.20	1.25±0.20
	821	820pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.20	1.25±0.20
	102	1000pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.20	1.25±0.20
	122	1200pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.20	1.25±0.20
	152	1500pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.20	1.25±0.20
	182	1800pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.20	1.25±0.20
	222	2200pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.20	1.25±0.20
	272	2700pF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.20	1.25±0.20		
	332	3300pF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.20	1.25±0.20		
	392	3900pF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.20	1.25±0.20		
	472	4700pF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.20	1.25±0.20		
	562	5600pF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10					
	682	6800pF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10					
	822	8200pF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10					
	103	0.010uF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10					
	123	0.012uF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10					
	153	0.015uF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10					
	183	0.018uF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10					
	223	0.022uF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10					

Note: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available.

VOLTAGE AND CAPACITANCE RANGE

COG (NPO) DIELECTRIC (1206)

Values that are typically available. (Thickness in mm).

SIZE (INCHES)			1206									
VDCW (MAX)			10V	16V	25V	50V	100V	200V	250V	500V	630V	1000V
CAPACITANCE CODE ↑ ↓	1R0	1.0pF										
	1R2	1.2pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	
	1R5	1.5pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10
	1R8	1.8pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10
	2R2	2.2pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10
	2R7	2.7pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10
	3R3	3.3pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10
	3R9	3.9pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10
	4R7	4.7pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10
	5R6	5.6pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10
	6R8	6.8pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10
	8R2	8.2pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10
	100	10pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10
	120	12pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10
	150	15pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10
	180	18pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10
	220	22pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10
	270	27pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10
	330	33pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10
	390	39pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10
	470	47pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10
	560	56pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10
	680	68pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10
	820	82pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10
	101	100pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10
	121	120pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10
	151	150pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10
	181	180pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.60±0.20
	221	220pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.60±0.20
	271	270pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20
	331	330pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20
	391	390pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20
	471	470pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20
	561	560pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.95±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.60±0.20
	681	680pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.95±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.60±0.20
	821	820pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.95±0.10	1.60±0.20	1.60±0.20	1.60±0.20	1.60±0.20
	102	1000pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.95±0.10	1.60±0.20	1.60±0.20	1.60±0.20	1.60±0.20
	122	1200pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.95±0.10	1.60±0.20	1.60±0.20	1.60±0.20	
	152	1500pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.60±0.20	1.60±0.20	1.60±0.20	
	182	1800pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.60±0.20	1.60±0.20	1.60±0.20	
	222	2200pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.60±0.20	1.60±0.20	1.60±0.20	
	272	2700pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.60±0.20	1.60±0.20	1.60±0.20	
	332	3300pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.60±0.20	1.60±0.20	1.60±0.20	
	392	3900pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.60±0.20	1.60±0.20	1.60±0.20	
	472	4700pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.60±0.20	1.60±0.20	1.60±0.20	
	562	5600pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.60±0.20	1.60±0.20	1.60±0.20	1.60±0.20	
	682	6800pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20	1.60±0.20	1.60±0.20	1.60±0.20	
	822	8200pF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.60±0.20	1.60±0.20	1.60±0.20	1.60±0.20	
	103	0.010uF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.60±0.20	1.60±0.20	1.60±0.20	1.60±0.20	

Note: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available.

VOLTAGE AND CAPACITANCE RANGE

COG (NPO) DIELECTRIC (1210)

Values that are typically available. (Thickness in mm).

SIZE (INCHES)			1210										
VDCW (MAX)			10V	16V	25V	50V	100V	200V	250V	500V	630V	1000V	
<----- CAPACITANCE CODE ----->	100	<----- CAPACITANCE VALUE ----->	10pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	
	120		12pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	
	150		15pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	
	180		18pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	
	220		22pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	
	270		27pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	
	330		33pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	
	390		39pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	
	470		47pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	
	560		56pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	
	680		68pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	
	820		82pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	
	101		100pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10
	121		120pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10
	151		150pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10
	181		180pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10
	221		220pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20
	271		270pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20
	331		330pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20
	391		390pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20
	471		470pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20
	561		560pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20
	681		680pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20
	821		820pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20
	102		1000pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.60±0.20
	122		1200pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	2.00±0.20
	152		1500pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	2.00±0.20
	182		1800pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	2.00±0.20
	222		2200pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	2.00±0.20
	272		2700pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	2.00±0.20
	332		3300pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	2.00±0.20
	392		3900pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	2.00±0.20
472	4700pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20	1.60±0.20	1.60±0.20	1.60±0.20	2.00±0.20		
562	5600pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20	1.60±0.20	1.60±0.20	1.60±0.20	2.00±0.20		
682	6800pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20	1.60±0.20	1.60±0.20	1.60±0.20	2.00±0.20		
822	8200pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20	1.60±0.20	1.60±0.20	1.60±0.20	2.00±0.20		
103	0.010μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20	1.60±0.20	2.00±0.20	2.00±0.20	2.50±0.30		
123	0.012μF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	2.00±0.20	2.00±0.20	2.50±0.30	2.50±0.30	2.50±0.30		
153	0.015μF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	2.00±0.20	2.00±0.20	2.50±0.30	2.50±0.30	2.50±0.30		
183	0.018μF	2.00±0.20	2.00±0.20	2.00±0.20	2.00±0.20	2.00±0.20			1.60±0.20	1.60±0.20	1.60±0.20		
223	0.022μF	2.00±0.20	2.00±0.20	2.00±0.20	2.00±0.20	2.00±0.20			1.60±0.20	1.60±0.20	1.60±0.20		
273	0.027μF	2.00±0.20	2.00±0.20	2.00±0.20	2.00±0.20	2.00±0.20							
333	0.033μF	2.00±0.20	2.00±0.20	2.00±0.20	2.00±0.20	2.00±0.20							
393	0.039μF	2.00±0.20	2.00±0.20	2.00±0.20	2.00±0.20	2.00±0.20							
473	0.047μF	2.00±0.20	2.00±0.20	2.00±0.20	2.00±0.20	2.00±0.20							

Note: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available.

VOLTAGE AND CAPACITANCE RANGE

COG (NPO) DIELECTRIC (1812, 1825, 2220)

Values that are typically available. (Thickness in mm).

SIZE (INCHES)			1812	1825	2220			
VDCW (MAX)			1000V	500V	500V	630V	1000V	2000V
CAPACITANCE CODE ----->>								

VOLTAGE AND CAPACITANCE RANGE

X7R DIELECTRIC (0201, 0402)

Values that are typically available. (Thickness in mm).

SIZE (INCHES)			0201				0402			
VDCW (MAX)			10V	16V	25V	50V	10V	16V	25V	50V
CAPACITANCE CODE	CAPACITANCE VALUE	101	100pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05
		121	120pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05
		151	150pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05
		181	180pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05
		221	220pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05
		271	270pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05
		331	330pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05
		391	390pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05
		471	470pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05
		561	560pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05
		681	680pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05
		821	820pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05
		102	1000pF	0.30±0.03	0.30±0.03	0.30±0.03	0.30±0.03	0.50±0.05	0.50±0.05	0.50±0.05
		122	1200pF	0.30±0.03	0.30±0.03	0.30±0.03		0.50±0.05	0.50±0.05	0.50±0.05
		152	1500pF	0.30±0.03	0.30±0.03	0.30±0.03		0.50±0.05	0.50±0.05	0.50±0.05
		182	1800pF	0.30±0.03	0.30±0.03	0.30±0.03		0.50±0.05	0.50±0.05	0.50±0.05
		222	2200pF	0.30±0.03	0.30±0.03	0.30±0.03		0.50±0.05	0.50±0.05	0.50±0.05
		272	2700pF	0.30±0.03	0.30±0.03	0.30±0.03		0.50±0.05	0.50±0.05	0.50±0.05
		332	3300pF	0.30±0.03	0.30±0.03	0.30±0.03		0.50±0.05	0.50±0.05	0.50±0.05
		392	3900pF	0.30±0.03	0.30±0.03	0.30±0.03		0.50±0.05	0.50±0.05	0.50±0.05
		472	4700pF	0.30±0.03	0.30±0.03	0.30±0.03		0.50±0.05	0.50±0.05	0.50±0.05
		562	5600pF	0.30±0.03	0.30±0.03	0.30±0.03		0.50±0.05	0.50±0.05	0.50±0.05
		682	6800pF	0.30±0.03				0.50±0.05	0.50±0.05	0.50±0.05
		822	8200pF	0.30±0.03				0.50±0.05	0.50±0.05	0.50±0.05
		103	0.010μF	0.30±0.03				0.50±0.05	0.50±0.05	0.50±0.05
		123	0.012μF					0.50±0.05	0.50±0.05	
		153	0.015μF					0.50±0.05	0.50±0.05	
		183	0.018μF					0.50±0.05	0.50±0.05	
		223	0.022μF					0.50±0.05	0.50±0.05	
		273	0.027μF					0.50±0.05	0.50±0.05	
		333	0.033μF					0.50±0.05	0.50±0.05	
		393	0.039μF					0.50±0.05	0.50±0.05	
		473	0.047μF					0.50±0.05	0.50±0.05	
		563	0.056μF					0.50±0.05	0.50±0.05	
		683	0.068μF					0.50±0.05	0.50±0.05	
		823	0.082μF					0.50±0.05	0.50±0.05	
		104	0.10μF					0.50±0.05	0.50±0.05	
		124	0.12μF							
		154	0.15μF							
		184	0.18μF							
		224	0.22μF							
		334	0.33μF							

Note: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available.

X7R DIELECTRIC (0603, 0805)

Values that are typically available. (Thickness in mm).

← CAPACITANCE CODE →	← CAPACITANCE VALUE →
152	152
182	182
222	222
272	272
332	332
392	392
472	472
562	562
682	682
822	822
103	103
123	123
153	153
183	183
223	223
273	273
333	333
393	393
473	473
563	563

VOLTAGE AND CAPACITANCE RANGE

X7R DIELECTRIC (1206)

Values that are typically available. (Thickness in mm).

SIZE (INCHES)		1206									
VDCW (MAX)		10V	16V	25V	50V	100V	200V	250V	500V	630V	1000V
101	100pF						1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	
121	120pF						1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	
151	150pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	
181	180pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	
221	220pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	
271	270pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	
331	330pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	
391	390pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	
471	470pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	
561	560pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	
681	680pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	
821	820pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	
102	1000pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.20
122	1200pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.20
152	1500pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.20
182	1800pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.20
222	2200pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.20
272	2700pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.60±0.20
332	3300pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.60±0.20
392	3900pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.60±0.20
472	4700pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.60±0.20
562	5600pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	
682	6800pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	
822	8200pF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	
103	0.010μF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10	
123	0.012μF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10			
153	0.015μF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10			
183	0.018μF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10			
223	0.022μF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10	1.25±0.10			
273	0.027μF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10		0.85±0.15			
333	0.033μF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10		0.85±0.15			
393	0.039μF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10		0.85±0.15			
473	0.047μF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10		1.00±0.10			
563	0.056μF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10		1.00±0.10			
683	0.068μF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10		1.25±0.20			
823	0.082μF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10		1.25±0.20			
104	0.10μF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10		1.60±0.20			
124	0.12μF	0.80±0.10	0.80±0.10	0.80±0.10	0.80±0.10	1.25±0.10					
154	0.15μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20					
184	0.18μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20					
224	0.22μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20					
274	0.27μF	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	1.60±0.20					
334	0.33μF	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	1.60±0.20					
394	0.39μF	0.95±0.10	0.95±0.10	1.15±0.15	1.60±0.3/-0.1	1.60±0.20					
474	0.47μF	1.15±0.15	1.15±0.15	1.15±0.15	1.60±0.3/-0.1	1.60±0.20					
564	0.56μF	1.15±0.15	1.15±0.15	1.15±0.15	1.60±0.3/-0.1	1.60±0.20					
684	0.68μF	1.15±0.15	1.15±0.15	1.15±0.15	1.60±0.3/-0.1	1.60±0.20					
824	0.82μF	1.15±0.15	1.15±0.15	1.15±0.15	1.60±0.3/-0.1	1.60±0.20					
105	1μF	1.15±0.15	1.15±0.15	1.15±0.15	1.60±0.3/-0.1	1.60±0.20					
225	2.2μF			1.60±0.20	1.60±0.3/-0.1	1.60±0.3/-0.1					
475	4.7μF			1.60±0.20	1.60±0.20						
106	10μF										

VOLTAGE AND CAPACITANCE RANGE

X7R DIELECTRIC (1210)

Values that are typically available. (Thickness in mm).

SIZE (INCHES)		1210									
VDCW (MAX)		10V	16V	25V	50V	100V	250V	500V	630V	1000V	2000V
101	100pF						1.25±0.10	1.25±0.10		1.25±0.10	
121	120pF						1.25±0.10	1.25±0.10		1.25±0.10	
151	150pF						1.25±0.10	1.25±0.10		1.25±0.10	
181	180pF						1.25±0.10	1.25±0.10		1.25±0.10	
221	220pF						1.25±0.10	1.25±0.10		1.25±0.10	1.00±0.10
271	270pF						1.25±0.10	1.25±0.10		1.25±0.10	1.00±0.10
331	330pF						1.25±0.10	1.25±0.10		1.25±0.10	1.00±0.10
391	390pF						1.25±0.10	1.25±0.10		1.25±0.10	1.00±0.10
471	470pF						1.25±0.10	1.25±0.10		1.25±0.10	1.00±0.10
561	560pF						1.25±0.10	1.25±0.10		1.25±0.10	1.00±0.10
681	680pF						0.95±0.10	1.25±0.10		1.25±0.10	1.00±0.10
821	820pF						0.95±0.10	1.25±0.10		1.25±0.10	1.00±0.10
102	1000pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10		1.25±0.10	1.25±0.20
122	1200pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10		1.25±0.10	1.25±0.20
152	1500pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10		1.25±0.10	1.60±0.20
182	1800pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10		1.25±0.10	1.60±0.20
222	2200pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10		1.25±0.10	1.60±0.20
272	2700pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10		1.25±0.10	
332	3300pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10		1.25±0.10	
392	3900pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10		1.60±0.20	
472	4700pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	1.00±0.10	1.60±0.20	
562	5600pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	1.00±0.10	1.60±0.20	
682	6800pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	1.00±0.10	1.60±0.20	
822	8200pF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	1.25±0.20	1.60±0.20	
103	0.010μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	1.25±0.20	1.60±0.20	
123	0.012μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	1.25±0.20		
153	0.015μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	1.25±0.20		
183	0.018μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	1.25±0.20		
223	0.022μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	1.25±0.20		
273	0.027μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20	1.60±0.20		
333	0.033μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	2.00±0.20	2.00±0.20		
393	0.039μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	2.00±0.20	2.00±0.20		
473	0.047μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10	2.40±0.20	2.40±0.20		
563	0.056μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.00±0.10				
683	0.068μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.20				
823	0.082μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	1.60±0.20				
104	0.10μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10	2.00±0.20				
124	0.12μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10		2.00±0.20				
154	0.15μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10		2.00±0.20				
184	0.18μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10		2.00±0.20				
224	0.22μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10		2.00±0.20				
274	0.27μF	0.95±0.10	0.95±0.10	0.95±0.10	0.95±0.10						
334	0.33μF	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10						
394	0.39μF	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10						
474	0.47μF	0.95±0.10	0.95±0.10	0.95±0.10	1.25±0.10						
564	0.56μF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10						
684	0.68μF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10						
824	0.82μF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10						
105	1μF	1.25±0.10	1.25±0.10	1.25±0.10	1.25±0.10						
155	1.5μF		2.00±0.20	2.00±0.20	2.00±0.20						
225	2.2μF		2.00±0.20	2.00±0.20	2.50±0.30	2.50±0.30					
475	4.7μF			2.00±0.20	2.50±0.30	2.50±0.30					
106	10μF			2.40±0.20	2.50±0.30						

VOLTAGE AND CAPACITANCE RANGE

X7R DIELECTRIC (1812, 2220, 2225)

Values that are typically available. (Thickness in mm).

SIZE (INCHES)		1812		2220				2225	
VDCW (MAX)		1000V	2000V	630V	1000V	2000V	3000V	630V	1000V
101	100pF								
121	120pF								
151	150pF						1.25±0.20		
181	180pF						1.25±0.20		
221	220pF		1.25±0.20				1.25±0.20		
271	270pF		1.25±0.20				1.25±0.20		
331	330pF	1.25±0.20	1.25±0.20				1.25±0.20		
391	390pF	1.25±0.20	1.25±0.20				1.25±0.20		
471	470pF	1.25±0.20	1.25±0.20				1.25±0.20		
561	560pF	1.25±0.20	1.25±0.20				1.25±0.20		
681	680pF	1.25±0.20	1.25±0.20				1.25±0.20		
821	820pF	1.25±0.20	1.25±0.20				1.25±0.20		
102	1000pF	1.25±0.20	1.25±0.20			2.00±0.20	1.25±0.20		
122	1200pF	1.25±0.20	1.25±0.20			2.00±0.20	1.25±0.20		
152	1500pF	1.25±0.20	1.25±0.20			2.00±0.20	1.25±0.20		
182	1800pF	1.25±0.20	1.25±0.20			2.00±0.20	1.25±0.20		
222	2200pF	1.25±0.20	1.25±0.20			2.00±0.20	1.25±0.20		
272	2700pF	1.25±0.20	1.25±0.20		1.25±0.20	2.00±0.20	1.60±0.20		1.25±0.20
332	3300pF	1.25±0.20	1.25±0.20		1.25±0.20	2.00±0.20	1.60±0.20		1.25±0.20
392	3900pF	1.25±0.20	1.25±0.20		1.25±0.20	2.00±0.20	1.60±0.20		1.25±0.20
472	4700pF	1.25±0.20	1.60±0.20		1.25±0.20	2.00±0.20	1.60±0.20		1.25±0.20
562	5600pF	1.60±0.20	1.60±0.20		1.25±0.20	2.00±0.20	2.00±0.20		1.25±0.20
682	6800pF	1.60±0.20	1.60±0.20		1.25±0.20	2.00±0.20	2.00±0.20		1.25±0.20
822	8200pF	1.60±0.20	2.00±0.20		1.25±0.20	2.00±0.20	2.00±0.20		1.25±0.20
103	0.010μF	1.60±0.20	2.00±0.20		1.60±0.20	2.00±0.20	2.00±0.20		1.25±0.20
123	0.012μF		2.00±0.20		1.60±0.20	2.40±0.20			1.25±0.20
153	0.015μF				1.60±0.20	2.40±0.20			1.25±0.20
183	0.018μF				1.60±0.20	2.40±0.20			1.25±0.20
223	0.022μF			1.25±0.20	1.60±0.20	2.40±0.20		1.25±0.20	1.25±0.20
273	0.027μF			1.25±0.20	1.60±0.20			1.25±0.20	1.25±0.20
333	0.033μF			1.25±0.20	1.60±0.20			1.25±0.20	1.25±0.20
393	0.039μF			1.25±0.20	1.60±0.20			1.25±0.20	1.25±0.20
473	0.047μF			1.25±0.20	1.60±0.20			1.25±0.20	1.60±0.20
563	0.056μF			1.25±0.20	1.60±0.20			1.25±0.20	1.60±0.20
683	0.068μF			1.25±0.20	1.60±0.20			1.25±0.20	1.60±0.20
823	0.082μF			1.25±0.20	2.00±0.20			1.25±0.20	1.60±0.20
104	0.10μF			1.60±0.20	2.00±0.20			1.60±0.20	2.00±0.20
124	0.12μF			2.00±0.20				2.00±0.20	
154	0.15μF			2.00±0.20				2.00±0.20	
184	0.18μF							2.00±0.20	
224	0.22μF							2.00±0.20	
274	0.27μF							2.40±0.20	
334	0.33μF							2.40±0.20	
394	0.39μF							2.80±0.20	
474	0.47μF							2.80±0.20	
564	0.56μF								
684	0.68μF								
824	0.82μF								
105	1μF								
155	1.5μF								
225	2.2μF								
475	4.7μF								
106	10μF								

RELIABILITY TEST CONDITIONS & REQUIREMENTS

ITEM		AEC-Q200 TEST CONDITION	REQUIREMENTS																																																	
1.	Visual and Mechanical	* Visual Inspection * Measurement by precision caplipers	* No remarkable defect. * Dimensions to conform to individual specification sheet.																																																	
2.	Electrical Characterization - Capacitance	Q/D.F. (Dissipation Factor) Test Temp: Room Temperature. Class I: (NPO) Cap≤1000pF, 1.0±0.2Vrms, 1MHz±10% Cap>1000pF, 1.0±0.2Vrms, 1KHz±10% Class II: (X7R) Cap<10μF, 1.0±0.2Vrms, 1KHz±10% Cap≥10μF, 0.5±0.2Vrms, 120Hz±20%	* Capacitance within the specified tolerance. * Q/D.F. value: NPO: Cap≥30pF, Q≥1000; Cap<30pF, Q≥400+20C. X7R: <table><tr><th>RATED VOL.</th><th>D.F.≤</th><th colspan="2">EXCEPTION OF D.F.≤</th></tr><tr><td rowspan="3">≥100V</td><td rowspan="3">≤2.5%</td><td>≤3%</td><td>1206≥0.47μF</td></tr><tr><td>≤5%</td><td>0603≥0.068μF; 0805>0.1μF; 1206≥1μF; 1210≥2.2μF</td></tr><tr><td>≤10%</td><td>0805>0.22μF; 1210≥3.3μF</td></tr><tr><td rowspan="3">50V</td><td rowspan="3">≤2.5%</td><td>≤3%</td><td>0201(50V);0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF</td></tr><tr><td>≤5%</td><td>0201≥0.01uF;1210≥3.3μF</td></tr><tr><td>≤10%</td><td>0402≥0.012μF; 0603>0.1μF; 0805≥0.47μF; 1206≥2.2μF; 1210≥10μF</td></tr><tr><td>35V</td><td>≤3.5%</td><td>≤10%</td><td>0603≥1μF; 0805≥2.2μF ;1206≥2.2μF; 1210≥10μF</td></tr><tr><td rowspan="4">25V</td><td rowspan="4">≤3.5%</td><td>≤5%</td><td>0201≥0.01μF; 0805≥1μF; 1210≥10μF</td></tr><tr><td>≤7%</td><td>0603≥0.33μF</td></tr><tr><td>≤10%</td><td>0201≥0.1μF; 0402≥0.056μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF</td></tr><tr><td>≤12.5%</td><td>0402≥0.47μF</td></tr><tr><td rowspan="2">16V</td><td rowspan="2">≤3.5%</td><td>≤5%</td><td>0201≥0.01μF; 0402≥0.033μF; 0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF; 1210≥4.7μF</td></tr><tr><td>≤10%</td><td>0201≥0.022μF; 0402≥0.15uF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF</td></tr><tr><td rowspan="2">10V</td><td rowspan="2">≤5%</td><td>≤10%</td><td>0201≥0.012μF; 0402≥0.15μF; 0603≥0.33μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥22μF</td></tr><tr><td>≤15%</td><td>0201≥0.1μF; 0402≥1μF</td></tr></table>				RATED VOL.	D.F.≤	EXCEPTION OF D.F.≤		≥100V	≤2.5%	≤3%	1206≥0.47μF	≤5%	0603≥0.068μF; 0805>0.1μF; 1206≥1μF; 1210≥2.2μF	≤10%	0805>0.22μF; 1210≥3.3μF	50V	≤2.5%	≤3%	0201(50V);0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF	≤5%	0201≥0.01uF;1210≥3.3μF	≤10%	0402≥0.012μF; 0603>0.1μF; 0805≥0.47μF; 1206≥2.2μF; 1210≥10μF	35V	≤3.5%	≤10%	0603≥1μF; 0805≥2.2μF ;1206≥2.2μF; 1210≥10μF	25V	≤3.5%	≤5%	0201≥0.01μF; 0805≥1μF; 1210≥10μF	≤7%	0603≥0.33μF	≤10%	0201≥0.1μF; 0402≥0.056μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF	≤12.5%	0402≥0.47μF	16V	≤3.5%	≤5%	0201≥0.01μF; 0402≥0.033μF; 0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF; 1210≥4.7μF	≤10%	0201≥0.022μF; 0402≥0.15uF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF	10V	≤5%	≤10%	0201≥0.012μF; 0402≥0.15μF; 0603≥0.33μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥22μF	≤15%	0201≥0.1μF; 0402≥1μF
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3.	Electrical Characterization- Insulation Resistance	Test Temp: Room Temperature. To apply rated voltage(500V max.) for max. 120sec.	* IR. ≥10GΩ or RxC≥500Ω-F whichever is smaller. Class II (X7R) <table><tr><th>Rated Voltage</th><th>Insulation Resistance</th></tr><tr><td>100V: All X7R</td><td rowspan="6">10GΩ or RxC ≥100Ω-F whichever is smaller</td></tr><tr><td>50V: 0402≥0.01μF; 0603≥1μF; 0805≥1μF; 1206≥4.7μF; 1210≥4.7μF</td></tr><tr><td>35V: 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF</td></tr><tr><td>25V: 0402≥1μF; 0603≥2.2μF; 0805≥2.2μF; 1206≥10μF; 1210≥10μF</td></tr><tr><td>16V: 0201≥0.1μF; 0402≥0.22μF; 0603≥1μF; 0805≥2.2μF; 1206≥10μF; 1210≥47μF</td></tr><tr><td>10V: 0201≥47nF; 0402≥0.47μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥47μF</td></tr><tr><th>Rated Voltage</th><th>Insulation Resistance</th></tr><tr><td>100V: 1210≥3.3μF</td><td rowspan="6">RxC ≥50Ω-F</td></tr><tr><td>50V: 0402≥0.1μF; 0603≥2.2μF; 0805≥10μF; 1206≥10μF</td></tr><tr><td>35V: 0603≥1μF</td></tr><tr><td>25V: 0201≥0.1μF; 0402≥2.2μF; 0603≥10μF; 0805≥10μF; 1206≥22μF</td></tr><tr><td>16V: 0201≥0.22μF; 0402≥1μF; 0603≥10μF</td></tr><tr><td>10V: 0201≥0.1μF; 0402≥1μF; 0603≥10μF; 0805≥47μF</td></tr></table>				Rated Voltage	Insulation Resistance	100V: All X7R	10GΩ or RxC ≥100Ω-F whichever is smaller	50V: 0402≥0.01μF; 0603≥1μF; 0805≥1μF; 1206≥4.7μF; 1210≥4.7μF	35V: 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF	25V: 0402≥1μF; 0603≥2.2μF; 0805≥2.2μF; 1206≥10μF; 1210≥10μF	16V: 0201≥0.1μF; 0402≥0.22μF; 0603≥1μF; 0805≥2.2μF; 1206≥10μF; 1210≥47μF	10V: 0201≥47nF; 0402≥0.47μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥47μF	Rated Voltage	Insulation Resistance	100V: 1210≥3.3μF	RxC ≥50Ω-F	50V: 0402≥0.1μF; 0603≥2.2μF; 0805≥10μF; 1206≥10μF	35V: 0603≥1μF	25V: 0201≥0.1μF; 0402≥2.2μF; 0603≥10μF; 0805≥10μF; 1206≥22μF	16V: 0201≥0.22μF; 0402≥1μF; 0603≥10μF	10V: 0201≥0.1μF; 0402≥1μF; 0603≥10μF; 0805≥47μF																												
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RELIABILITY TEST CONDITIONS & REQUIREMENTS

	ITEM	AEC-Q200 TEST CONDITION	REQUIREMENTS																																																							
3.	Electrical Characterization-Dielectric Strength	* To apply voltage: ≤100V: ≥250% of rated voltage. 200V ~ 300V: ≥200% of rated voltage. 400V ~ 450V: ≥120% of rated voltage. 500V ~ 999V: ≥150% of rated voltage. 1000V ~ 3000V: ≥120% of rated voltage. *Duration: 1 to 5 sec. *Charge & discharge current less than 50mA. *Temperature Coefficient (with no electrical load) *Operation Temperature: -55-125°C at 25°C	* No evidence of damage or flash over during test. *Temperature Coefficient Capacitance Change: NPO: Within ±30ppm/°C X7R: Within ±15%																																																							
4.	High Temperature Exposure (Storage) MIL-STD-202 Method 108	* Test temp: 150±3°C * Unpowered * Test time: 1000+24/-0 hrs. * Measurement to be made after keeping at room temp. for 24±2 hrs.	* No remarkable damage. * Cap change: NPO: within ±2.5% or ±0.25pF whichever is larger. X7R: within ±10% *Q/D.F. value: NPO: Cap≥30pF, Q≥1000; Cap<30pF, Q≥400+20C. X7R: <table><tr><th>RATED VOLTAGE</th><th>D.F. ≤</th><th colspan="2">EXCEPTION OF D.F. ≤</th></tr><tr><td rowspan="3">≥100V</td><td rowspan="3">≤3%</td><td>≤6%</td><td>1206≥0.47μF</td></tr><tr><td>≤7.5%</td><td>0603≥0.068μF; 0805>0.1μF; 1206≥1μF; 1210≥2.2μF</td></tr><tr><td>≤20%</td><td>0805>0.22μF; 1210≥3.3μF</td></tr><tr><td rowspan="3">50V</td><td rowspan="3">≤3%</td><td>≤6%</td><td>0201(50V): 0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF</td></tr><tr><td>≤10%</td><td>0201≥0.01μF; 1210≥3.3μF</td></tr><tr><td>≤20%</td><td>0402≥0.012μF; 0603≥0.1μF; 0805≥0.47μF; 1206≥2.2μF; 1210≥10μF</td></tr><tr><td>35V</td><td>≤5%</td><td>≤20%</td><td>0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF</td></tr><tr><td rowspan="4">25V</td><td rowspan="4">≤5%</td><td>≤10%</td><td>0201≥0.01μF; 0805≥1μF; 1210≥10μF</td></tr><tr><td>≤14%</td><td>0603≥0.33μF</td></tr><tr><td>≤15%</td><td>0201≥0.1μF; 0402≥0.056μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF</td></tr><tr><td>≤20%</td><td>0402≥0.47μF</td></tr><tr><td rowspan="2">16V</td><td rowspan="2">≤5%</td><td>≤10%</td><td>0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF; 1210≥4.7μF</td></tr><tr><td>≤15%</td><td>0201≥0.22μF; 0402≥0.33μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF</td></tr><tr><td rowspan="2">10V</td><td rowspan="2">≤7.5%</td><td>≤15%</td><td>0201≥0.012μF; 0402≥0.15μF; 0603≥0.33μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥22μF</td></tr><tr><td>≤20%</td><td>0201≥0.1μF; 0402≥1μF</td></tr></table> * I.R.: ≥ 10GΩ or RxC≥500Ω-F whichever is smaller Class II (X7R) <table><tr><th>RATED VOLTAGE</th><th>INSULATION RESISTANCE</th></tr><tr><td>100V: All X7R; 1210≥3.3μF</td><td rowspan="6">1GΩ or RxC ≥10Ω-F whichever is smaller</td></tr><tr><td>50V: 0402≥0.01μF; 0603≥1μF; 0805≥1μF; 1206≥4.7μF; 1210≥4.7μF</td></tr><tr><td>35V: 0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF</td></tr><tr><td>25V: 0201≥0.1μF; 0402≥0.22μF; 0603≥2.2μF; 0805≥2.2μF; 1206≥10μF; 1210≥10μF</td></tr><tr><td>16V: 0201≥0.1μF; 0402≥0.22μF; 0603≥1μF; 0805≥2.2μF; 1206≥10μF; 1210≥47μF</td></tr><tr><td>10V: 0201≥47nF; 0402≥0.47μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥47μF</td></tr></table>	RATED VOLTAGE	D.F. ≤	EXCEPTION OF D.F. ≤		≥100V	≤3%	≤6%	1206≥0.47μF	≤7.5%	0603≥0.068μF; 0805>0.1μF; 1206≥1μF; 1210≥2.2μF	≤20%	0805>0.22μF; 1210≥3.3μF	50V	≤3%	≤6%	0201(50V): 0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF	≤10%	0201≥0.01μF; 1210≥3.3μF	≤20%	0402≥0.012μF; 0603≥0.1μF; 0805≥0.47μF; 1206≥2.2μF; 1210≥10μF	35V	≤5%	≤20%	0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF	25V	≤5%	≤10%	0201≥0.01μF; 0805≥1μF; 1210≥10μF	≤14%	0603≥0.33μF	≤15%	0201≥0.1μF; 0402≥0.056μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF	≤20%	0402≥0.47μF	16V	≤5%	≤10%	0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF; 1210≥4.7μF	≤15%	0201≥0.22μF; 0402≥0.33μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF	10V	≤7.5%	≤15%	0201≥0.012μF; 0402≥0.15μF; 0603≥0.33μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥22μF	≤20%	0201≥0.1μF; 0402≥1μF	RATED VOLTAGE	INSULATION RESISTANCE	100V: All X7R; 1210≥3.3μF	1GΩ or RxC ≥10Ω-F whichever is smaller	50V: 0402≥0.01μF; 0603≥1μF; 0805≥1μF; 1206≥4.7μF; 1210≥4.7μF	35V: 0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF	25V: 0201≥0.1μF; 0402≥0.22μF; 0603≥2.2μF; 0805≥2.2μF; 1206≥10μF; 1210≥10μF	16V: 0201≥0.1μF; 0402≥0.22μF; 0603≥1μF; 0805≥2.2μF; 1206≥10μF; 1210≥47μF	10V: 0201≥47nF; 0402≥0.47μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥47μF
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RELIABILITY TEST CONDITIONS & REQUIREMENTS

ITEM		AEC-Q200 TEST CONDITION		REQUIREMENTS																																																										
5.	Temperature Cycling JESD22 Method JA-104	<table><tr><th>STEP</th><th>TEMP. (°C)</th><th>TIME (MIN.)</th></tr><tr><td>1</td><td>-55°C +0/-3</td><td>5±1</td></tr><tr><td>2</td><td>+125°C +3/-0</td><td>5±1</td></tr></table>		STEP	TEMP. (°C)	TIME (MIN.)	1	-55°C +0/-3	5±1	2	+125°C +3/-0	5±1	* No remarkable damage. * Cap change: NPO: within ±2.5% or ±0.25pF whichever is larger. X7R: within ±10% *Q/D.F. value: NPO: Cap≥30pF, Q≥1000; Cap<30pF, Q≥400+20C. X7R: <table><tr><th>RATED VOLTAGE</th><th>D.F. ≤</th><th colspan="2">EXCEPTION OF D.F. ≤</th></tr><tr><td rowspan="3">≥100V</td><td rowspan="3">≤3%</td><td>≤6%</td><td>1206≥0.47μF</td></tr><tr><td>≤7.5%</td><td>0603≥0.068μF; 0805>0.1μF; 1206≥1μF; 1210≥2.2μF</td></tr><tr><td>≤20%</td><td>0805>0.22μF; 1210≥3.3μF</td></tr><tr><td rowspan="3">50V</td><td rowspan="3">≤3%</td><td>≤6%</td><td>0201(50V): 0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF</td></tr><tr><td>≤10%</td><td>0201≥0.01μF; 1210≥3.3μF</td></tr><tr><td>≤20%</td><td>0402≥0.012μF; 0603≥0.1μF; 0805≥0.47μF; 1206≥2.2μF; 1210≥10μF</td></tr><tr><td>35V</td><td>≤5%</td><td>≤20%</td><td>0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF</td></tr><tr><td rowspan="4">25V</td><td rowspan="4">≤5%</td><td>≤10%</td><td>0201≥0.01μF; 0805≥1μF; 1210≥10μF</td></tr><tr><td>≤14%</td><td>0603≥0.33μF</td></tr><tr><td>≤15%</td><td>0201≥0.1μF; 0402≥0.056μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF</td></tr><tr><td>≤20%</td><td>0402≥0.47μF</td></tr><tr><td rowspan="2">16V</td><td rowspan="2">≤5%</td><td>≤10%</td><td>0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF; 1210≥4.7μF</td></tr><tr><td>≤15%</td><td>0201≥0.22μF; 0402≥0.33μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF</td></tr><tr><td rowspan="2">10V</td><td rowspan="2">≤7.5%</td><td>≤15%</td><td>0201≥0.012μF; 0402≥0.15μF; 0603≥0.33μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥22μF</td></tr><tr><td>≤20%</td><td>0201≥0.1μF; 0402≥1μF</td></tr></table>				RATED VOLTAGE	D.F. ≤	EXCEPTION OF D.F. ≤		≥100V	≤3%	≤6%	1206≥0.47μF	≤7.5%	0603≥0.068μF; 0805>0.1μF; 1206≥1μF; 1210≥2.2μF	≤20%	0805>0.22μF; 1210≥3.3μF	50V	≤3%	≤6%	0201(50V): 0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF	≤10%	0201≥0.01μF; 1210≥3.3μF	≤20%	0402≥0.012μF; 0603≥0.1μF; 0805≥0.47μF; 1206≥2.2μF; 1210≥10μF	35V	≤5%	≤20%	0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF	25V	≤5%	≤10%	0201≥0.01μF; 0805≥1μF; 1210≥10μF	≤14%	0603≥0.33μF	≤15%	0201≥0.1μF; 0402≥0.056μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF	≤20%	0402≥0.47μF	16V	≤5%	≤10%	0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF; 1210≥4.7μF	≤15%	0201≥0.22μF; 0402≥0.33μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF	10V	≤7.5%	≤15%	0201≥0.012μF; 0402≥0.15μF; 0603≥0.33μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥22μF	≤20%	0201≥0.1μF; 0402≥1μF
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RELIABILITY TEST CONDITIONS & REQUIREMENTS

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6.	Moisture Resistance MIL-STD-202 Method 106	* Test temp.: 25-65°C * Humidity: 80-100% RH * Test time: 10 cycles, t=24hrs/cycle. * Measurement to be made after keeping at room temp. for 24±2 hrs.	* No remarkable damage. * Cap change: NPO: within ±3.0% or ±0.30pF whichever is larger. X7R: within ±12.5% * Q/D.F. value: NPO: More than 30pF Q≥350; 10pF≤Cap<30pF, Q≥275+2.5C. Less than 10pF Q≥200+10C X7R: <table><tr><th>RATED VOLTAGE</th><th>D.F. ≤</th><th colspan="2">EXCEPTION OF D.F. ≤</th></tr><tr><td rowspan="3">≥100V</td><td rowspan="3">≤3%</td><td>≤6%</td><td>1206≥0.47μF</td></tr><tr><td>≤7.5%</td><td>0603≥0.068μF; 0805>0.1μF; 1206≥1μF; 1210≥2.2μF</td></tr><tr><td>≤20%</td><td>0805>0.22μF; 1210≥3.3μF</td></tr><tr><td rowspan="3">50V</td><td rowspan="3">≤3%</td><td>≤6%</td><td>0201(50V): 0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF</td></tr><tr><td>≤10%</td><td>0201≥0.01μF; 1210≥3.3μF</td></tr><tr><td>≤20%</td><td>0402≥0.012μF; 0603≥0.1μF; 0805≥0.47μF; 1206≥2.2μF; 1210≥10μF</td></tr><tr><td>35V</td><td>≤5%</td><td>≤20%</td><td>0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF</td></tr><tr><td rowspan="4">25V</td><td rowspan="4">≤5%</td><td>≤10%</td><td>0201≥0.01μF; 0805≥1μF; 1210≥10μF</td></tr><tr><td>≤14%</td><td>0603≥0.33μF</td></tr><tr><td>≤15%</td><td>0201≥0.1μF; 0402≥0.056μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF</td></tr><tr><td>≤20%</td><td>0402≥0.47μF</td></tr><tr><td rowspan="2">16V</td><td rowspan="2">≤5%</td><td>≤10%</td><td>0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF; 1210≥4.7μF</td></tr><tr><td>≤15%</td><td>0201≥0.022μF; 0402≥0.033μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF</td></tr><tr><td rowspan="2">10V</td><td rowspan="2">≤7.5%</td><td>≤15%</td><td>0201≥0.012μF; 0402≥0.15μF; 0603≥0.33μF; 0805≥2.2μF;1206≥2.2μF;1210≥22μF</td></tr><tr><td>≤20%</td><td>0201≥0.1μF; 0402≥1μF</td></tr></table> * I.R.: ≥ 10GΩ or RxC≥500Ω-F whichever is smaller Class II (X7R) <table><tr><th>RATED VOLTAGE</th><th>INSULATION RESISTANCE</th></tr><tr><td>100V: All X7R; 1210≥3.3μF</td><td rowspan="6">1GΩ or RxC ≥10Ω-F whichever is smaller</td></tr><tr><td>50V: 0402≥0.01μF; 0603≥1μF; 0805≥1μF; 1206≥4.7μF; 1210≥4.7μF</td></tr><tr><td>35V: 0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF</td></tr><tr><td>25V: 0201≥0.1μF; 0402≥0.22μF; 0603≥2.2μF; 0805≥2.2μF; 1206≥10μF; 1210≥10μF</td></tr><tr><td>16V: 0201≥0.1μF; 0402≥0.22μF; 0603≥1μF; 0805≥2.2μF: 1206≥10μF; 1210≥47μF</td></tr><tr><td>10V: 0201≥47nF; 0402≥0.47μF; 0603≥0.47μF; 0805≥2.2μF: 1206≥4.7μF; 1210≥47μF</td></tr></table>	RATED VOLTAGE	D.F. ≤	EXCEPTION OF D.F. ≤		≥100V	≤3%	≤6%	1206≥0.47μF	≤7.5%	0603≥0.068μF; 0805>0.1μF; 1206≥1μF; 1210≥2.2μF	≤20%	0805>0.22μF; 1210≥3.3μF	50V	≤3%	≤6%	0201(50V): 0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF	≤10%	0201≥0.01μF; 1210≥3.3μF	≤20%	0402≥0.012μF; 0603≥0.1μF; 0805≥0.47μF; 1206≥2.2μF; 1210≥10μF	35V	≤5%	≤20%	0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF	25V	≤5%	≤10%	0201≥0.01μF; 0805≥1μF; 1210≥10μF	≤14%	0603≥0.33μF	≤15%	0201≥0.1μF; 0402≥0.056μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF	≤20%	0402≥0.47μF	16V	≤5%	≤10%	0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF; 1210≥4.7μF	≤15%	0201≥0.022μF; 0402≥0.033μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF	10V	≤7.5%	≤15%	0201≥0.012μF; 0402≥0.15μF; 0603≥0.33μF; 0805≥2.2μF;1206≥2.2μF;1210≥22μF	≤20%	0201≥0.1μF; 0402≥1μF	RATED VOLTAGE	INSULATION RESISTANCE	100V: All X7R; 1210≥3.3μF	1GΩ or RxC ≥10Ω-F whichever is smaller	50V: 0402≥0.01μF; 0603≥1μF; 0805≥1μF; 1206≥4.7μF; 1210≥4.7μF	35V: 0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF	25V: 0201≥0.1μF; 0402≥0.22μF; 0603≥2.2μF; 0805≥2.2μF; 1206≥10μF; 1210≥10μF	16V: 0201≥0.1μF; 0402≥0.22μF; 0603≥1μF; 0805≥2.2μF: 1206≥10μF; 1210≥47μF	10V: 0201≥47nF; 0402≥0.47μF; 0603≥0.47μF; 0805≥2.2μF: 1206≥4.7μF; 1210≥47μF
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7.	Biased Humidity MIL-STD-202 Method 103	* Test temp.: 85±3°C * Humidity: 85% RH * Test time: 1000+24/-0 hrs. * To apply voltage: rated voltage and 1.3-1.5Vdc. (add 100k ohm resistor). * Before initial measurement (Class II only): To apply test voltage for 1hr at test temp. and then set for 24±2hrs at room temp. * Measurement to be made after keeping at room temp. for 24±2 hrs.	* No remarkable damage. * Cap change: NPO: within ±3.0% or ±0.30pF whichever is larger. X7R: within ±12.5% *Q/D.F. value: NPO: Cap≥30pF, Q≥200; Cap<30pF, Q≥100+10/3C. 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RELIABILITY TEST CONDITIONS & REQUIREMENTS

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8.	Operational Life MIL-STD-202 Method 108	* Test temp.: 125±3°C * To apply voltage: (1) 10V≤Ur≤250V: 200% of rated voltage. (2) 150% of rated voltage: a) 500V b) 0603/X7R/50V/Cap.≥0.1μF c) 0805/X7R/50V/Cap.≥0.68μF d) 1206/X7R/100V/Cap.≥1.0μF e) 1210/X7R/50V&100V/Cap.≥2.2μF (3) 630V≤Ur≤1000V: 120% of rated voltage. * Test time: 1000+24/-0 hrs. * Before initial measurement (X7R only): To apply test voltage for 1hr at 125°C. Remove and let set for 24±2 hrs at room temp. * Measurement to be made after keeping at room temp. for 24±2 hrs.	* No remarkable damage. * Cap change: NPO: within ±3.0% or ±0.30pF whichever is larger. X7R: within ±12.5% *Q/D.F. value: NPO: More than 30pF Q≥350; 10pF≤Cap<30pF, Q≥275+2.5C. Less than 10pF Q≥200+10C X7R: <table><tr><th>RATED VOLTAGE</th><th>D.F. ≤</th><th colspan="2">EXCEPTION OF D.F. ≤</th></tr><tr><td rowspan="3">≥100V</td><td rowspan="3">≤3%</td><td>≤6%</td><td>1206≥0.47μF</td></tr><tr><td>≤7.5%</td><td>0603≥0.068μF; 0805>0.1μF; 1206≥1μF; 1210≥2.2μF</td></tr><tr><td>≤20%</td><td>0805>0.22μF; 1210≥3.3μF</td></tr><tr><td rowspan="3">50V</td><td rowspan="3">≤3%</td><td>≤6%</td><td>0201(50V): 0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF</td></tr><tr><td>≤10%</td><td>0201≥0.01μF; 1210≥3.3μF</td></tr><tr><td>≤20%</td><td>0402≥0.012μF; 0603≥0.1μF; 0805≥0.47μF; 1206≥2.2μF; 1210≥10μF</td></tr><tr><td>35V</td><td>≤5%</td><td>≤20%</td><td>0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF</td></tr><tr><td rowspan="4">25V</td><td rowspan="4">≤5%</td><td>≤10%</td><td>0201≥0.01μF; 0805≥1μF; 1210≥10μF</td></tr><tr><td>≤14%</td><td>0603≥0.33μF</td></tr><tr><td>≤15%</td><td>0201≥0.1μF; 0402≥0.056μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF</td></tr><tr><td>≤20%</td><td>0402≥0.47μF</td></tr><tr><td rowspan="2">16V</td><td rowspan="2">≤5%</td><td>≤10%</td><td>0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF; 1210≥4.7μF</td></tr><tr><td>≤15%</td><td>0201≥0.022μF; 0402≥0.033μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF</td></tr><tr><td rowspan="2">10V</td><td rowspan="2">≤7.5%</td><td>≤15%</td><td>0201≥0.012μF; 0402≥0.15μF; 0603≥0.33μF; 0805≥2.2μF;1206≥2.2μF;1210≥22μF</td></tr><tr><td>≤20%</td><td>0201≥0.1μF; 0402≥1μF</td></tr></table> * I.R.: ≥ 1GΩ or RxC≥50Ω·F whichever is smaller Class II (X7R) <table><tr><th>RATED VOLTAGE</th><th>INSULATION RESISTANCE</th></tr><tr><td>100V: All X7R; 1210≥3.3μF</td><td rowspan="6">1GΩ or RxC ≥10Ω·F whichever is smaller</td></tr><tr><td>50V: 0402≥0.01μF; 0603≥1μF; 0805≥1μF; 1206≥4.7μF; 1210≥4.7μF</td></tr><tr><td>35V: 0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF</td></tr><tr><td>25V: 0201≥0.1μF; 0402≥0.22μF; 0603≥2.2μF; 0805≥2.2μF; 1206≥10μF; 1210≥10μF</td></tr><tr><td>16V: 0201≥0.1μF; 0402≥0.22μF; 0603≥1μF; 0805≥2.2μF; 1206≥10μF; 1210≥47μF</td></tr><tr><td>10V: 0201≥47nF; 0402≥0.47μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥47μF</td></tr></table>	RATED VOLTAGE	D.F. ≤	EXCEPTION OF D.F. ≤		≥100V	≤3%	≤6%	1206≥0.47μF	≤7.5%	0603≥0.068μF; 0805>0.1μF; 1206≥1μF; 1210≥2.2μF	≤20%	0805>0.22μF; 1210≥3.3μF	50V	≤3%	≤6%	0201(50V): 0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF	≤10%	0201≥0.01μF; 1210≥3.3μF	≤20%	0402≥0.012μF; 0603≥0.1μF; 0805≥0.47μF; 1206≥2.2μF; 1210≥10μF	35V	≤5%	≤20%	0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF	25V	≤5%	≤10%	0201≥0.01μF; 0805≥1μF; 1210≥10μF	≤14%	0603≥0.33μF	≤15%	0201≥0.1μF; 0402≥0.056μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF	≤20%	0402≥0.47μF	16V	≤5%	≤10%	0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF; 1210≥4.7μF	≤15%	0201≥0.022μF; 0402≥0.033μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF	10V	≤7.5%	≤15%	0201≥0.012μF; 0402≥0.15μF; 0603≥0.33μF; 0805≥2.2μF;1206≥2.2μF;1210≥22μF	≤20%	0201≥0.1μF; 0402≥1μF	RATED VOLTAGE	INSULATION RESISTANCE	100V: All X7R; 1210≥3.3μF	1GΩ or RxC ≥10Ω·F whichever is smaller	50V: 0402≥0.01μF; 0603≥1μF; 0805≥1μF; 1206≥4.7μF; 1210≥4.7μF	35V: 0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF	25V: 0201≥0.1μF; 0402≥0.22μF; 0603≥2.2μF; 0805≥2.2μF; 1206≥10μF; 1210≥10μF	16V: 0201≥0.1μF; 0402≥0.22μF; 0603≥1μF; 0805≥2.2μF; 1206≥10μF; 1210≥47μF	10V: 0201≥47nF; 0402≥0.47μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥47μF
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9.	External Visual MIL-STD-883 Method 2009	* Visual Inspection	* No remarkable defect.																																																							
10.	Physical Dimension JESD22 Method JB-100	* Using by calipers	* Within the specified dimensions																																																							

RELIABILITY TEST CONDITIONS & REQUIREMENTS

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11.	Resistance to Solvents MIL-STD-202 Method 215	* Temperature.: 25±5°C * Time: 3+0.5/-0 min. * Solvent: Iso-propyl alcohol.	* No remarkable damage. * Cap.: within the specified tolerance. * Q/D.F. value: NPO: Cap≥30pF, Q≥1000; Cap<30pF, Q≥400+20C. X7R:																																																	
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RELIABILITY TEST CONDITIONS & REQUIREMENTS

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12.	Mechanical Shock MIL-STD-202 Method 213	* Peak value: 1500g's	* No remarkable damage. * Cap.: within the specified tolerance. * Q/D.F. value: NPO: Cap≥30pF, Q≥1000; Cap<30pF, Q≥400+20C. X7R:																																														
		* Wave: 1/2 sine.																																															
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RELIABILITY TEST CONDITIONS & REQUIREMENTS

ITEM		AEC-Q200 TEST CONDITION	REQUIREMENTS																																														
13.	Vibration MIL-STD-202 Method 204	* Vibration frequency: 10-2000Hz/min. (5g's for 20min) * Total amplitude: 1.5mm. * 12 cycles each of 3 orientations (36 times)	* No remarkable damage. * Cap.: within the specified tolerance. * Q/D.F. value: NPO: Cap≥30pF, Q≥1000; Cap<30pF, Q≥400+20C. X7R:																																														
			<table><tr><th>RATED VOLTAGE</th><th>D.F. ≤</th><th colspan="2">EXCEPTION OF D.F. ≤</th></tr><tr><td rowspan="3">≥100V</td><td rowspan="3">≤2.5%</td><td>≤3%</td><td>1206≥0.47μF</td></tr><tr><td>≤5%</td><td>0603≥0.068μF; 0805>0.1μF; 1206≥1μF; 1210≥2.2μF</td></tr><tr><td>≤10%</td><td>0805>0.22μF; 1210≥3.3μF</td></tr><tr><td rowspan="3">50V</td><td rowspan="3">≤2.5%</td><td>≤3%</td><td>0201(50V): 0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF</td></tr><tr><td>≤5%</td><td>0201≥0.01μF; 1210≥3.3μF</td></tr><tr><td>≤10%</td><td>0402≥0.012μF; 0603≥0.1μF; 0805≥0.47μF; 1206≥2.2μF; 1210≥10μF</td></tr><tr><td>35V</td><td>≤3.5%</td><td>≤10%</td><td>0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF</td></tr><tr><td rowspan="4">25V</td><td rowspan="4">≤3.5%</td><td>≤5%</td><td>0201≥0.01μF; 0805≥1μF; 1210≥10μF</td></tr><tr><td>≤7%</td><td>0603≥0.33μF</td></tr><tr><td>≤10%</td><td>0201≥0.1μF; 0402≥0.056μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF</td></tr><tr><td>≤12.5%</td><td>0402≥0.47μF</td></tr><tr><td rowspan="2">16V</td><td rowspan="2">≤3.5%</td><td>≤5%</td><td>0201≥0.01μF; 0402≥0.033μF; 0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF; 1210≥4.7μF</td></tr><tr><td>≤10%</td><td>0201≥0.022μF; 0402≥0.15μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF</td></tr><tr><td rowspan="2">10V</td><td rowspan="2">≤5%</td><td>≤10%</td><td>0201≥0.012μF; 0402≥0.15μF; 0603≥0.33μF; 0805≥2.2μF;1206≥2.2μF;1210≥22μF</td></tr><tr><td>≤15%</td><td>0201≥0.1μF; 0402≥1μF</td></tr></table>	RATED VOLTAGE	D.F. ≤	EXCEPTION OF D.F. ≤		≥100V	≤2.5%	≤3%	1206≥0.47μF	≤5%	0603≥0.068μF; 0805>0.1μF; 1206≥1μF; 1210≥2.2μF	≤10%	0805>0.22μF; 1210≥3.3μF	50V	≤2.5%	≤3%	0201(50V): 0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF	≤5%	0201≥0.01μF; 1210≥3.3μF	≤10%	0402≥0.012μF; 0603≥0.1μF; 0805≥0.47μF; 1206≥2.2μF; 1210≥10μF	35V	≤3.5%	≤10%	0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF	25V	≤3.5%	≤5%	0201≥0.01μF; 0805≥1μF; 1210≥10μF	≤7%	0603≥0.33μF	≤10%	0201≥0.1μF; 0402≥0.056μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF	≤12.5%	0402≥0.47μF	16V	≤3.5%	≤5%	0201≥0.01μF; 0402≥0.033μF; 0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF; 1210≥4.7μF	≤10%	0201≥0.022μF; 0402≥0.15μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF	10V	≤5%	≤10%	0201≥0.012μF; 0402≥0.15μF; 0603≥0.33μF; 0805≥2.2μF;1206≥2.2μF;1210≥22μF	≤15%	0201≥0.1μF; 0402≥1μF
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RELIABILITY TEST CONDITIONS & REQUIREMENTS

ITEM	AEC-Q200 TEST CONDITION	REQUIREMENTS
14. Resistance to Soldering Heat MIL-STD-202 Method 210	* Solder temperature: 260±5°C	* No remarkable damage.
	* Dipping time: 10±1 sec	* Cap. change: NPO: within ±2.5% or 0.25pF whichever is larger X7R: within ±7.5%
	* Before initial measurement (X7R only): Perform 150+0/-10°C for 1 hr and then set for 24±2 hrs at room temp.	* Q/D.F. value: NPO: Cap≥30pF, Q≥1000; Cap<30pF, Q≥400+20C. X7R:
	* Measurement to be made after keeping at room temp. for 24±2 hrs	
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RELIABILITY TEST CONDITIONS & REQUIREMENTS

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15.	Thermal Shock MIL-STD-202 Method 107	* Conduct 300 cycles according to the temperatures and time. <table><tr><th>STEP</th><th>TEMP. (°C)</th><th>TIME (MIN.)</th></tr><tr><td>1</td><td>-55°C +0/-3</td><td>15±3</td></tr><tr><td>2</td><td>+125°C +3/-0</td><td>15±3</td></tr></table> * Before initial measurement (X7R only): Perform 150+0/-10°C for 1hr and then set for 24±2 hrs at room temp. * Measurement to be made after keeping at room temp. for 24±2 hrs. * Max. transfer time: 20 sec.	STEP	TEMP. (°C)	TIME (MIN.)	1	-55°C +0/-3	15±3	2	+125°C +3/-0	15±3	* No remarkable damage. * Cap change: NPO: within ±2.5% or ±0.25pF whichever is larger. X7R: within ±10% * Q/D.F. value: NPO: Cap≥30pF, Q≥1000; Cap<30pF, Q≥400+20C. X7R: <table><tr><th>RATED VOLTAGE</th><th>D.F. ≤</th><th colspan="2">EXCEPTION OF D.F. ≤</th></tr><tr><td rowspan="3">≥100V</td><td rowspan="3">≤3%</td><td>≤6%</td><td>1206≥0.47μF</td></tr><tr><td>≤7.5%</td><td>0603≥0.068μF; 0805>0.1μF; 1206≥1μF; 1210≥2.2μF</td></tr><tr><td>≤20%</td><td>0805>0.22μF; 1210≥3.3μF</td></tr><tr><td rowspan="3">50V</td><td rowspan="3">≤3%</td><td>≤6%</td><td>0201(50V): 0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF</td></tr><tr><td>≤10%</td><td>0201≥0.01μF; 1210≥3.3μF</td></tr><tr><td>≤20%</td><td>0402≥0.012μF; 0603≥0.1μF; 0805≥0.47μF; 1206≥2.2μF; 1210≥10μF</td></tr><tr><td>35V</td><td>≤5%</td><td>≤20%</td><td>0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF</td></tr><tr><td rowspan="4">25V</td><td rowspan="4">≤5%</td><td>≤10%</td><td>0201≥0.01μF; 0805≥1μF; 1210≥10μF</td></tr><tr><td>≤14%</td><td>0603≥0.33μF</td></tr><tr><td>≤15%</td><td>0201≥0.1μF; 0402≥0.056μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF</td></tr><tr><td>≤20%</td><td>0402≥0.47μF</td></tr><tr><td rowspan="2">16V</td><td rowspan="2">≤5%</td><td>≤10%</td><td>0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF; 1210≥4.7μF</td></tr><tr><td>≤15%</td><td>0201≥0.022μF; 0402≥0.033μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF</td></tr><tr><td rowspan="2">10V</td><td rowspan="2">≤7.5%</td><td>≤15%</td><td>0201≥0.012μF; 0402≥0.15μF; 0603≥0.33μF; 0805≥2.2μF;1206≥2.2μF;1210≥22μF</td></tr><tr><td>≤20%</td><td>0201≥0.1μF; 0402≥1μF</td></tr></table>	RATED VOLTAGE	D.F. ≤	EXCEPTION OF D.F. ≤		≥100V	≤3%	≤6%	1206≥0.47μF	≤7.5%	0603≥0.068μF; 0805>0.1μF; 1206≥1μF; 1210≥2.2μF	≤20%	0805>0.22μF; 1210≥3.3μF	50V	≤3%	≤6%	0201(50V): 0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF	≤10%	0201≥0.01μF; 1210≥3.3μF	≤20%	0402≥0.012μF; 0603≥0.1μF; 0805≥0.47μF; 1206≥2.2μF; 1210≥10μF	35V	≤5%	≤20%	0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF	25V	≤5%	≤10%	0201≥0.01μF; 0805≥1μF; 1210≥10μF	≤14%	0603≥0.33μF	≤15%	0201≥0.1μF; 0402≥0.056μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF	≤20%	0402≥0.47μF	16V	≤5%	≤10%	0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF; 1210≥4.7μF	≤15%	0201≥0.022μF; 0402≥0.033μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF	10V	≤7.5%	≤15%	0201≥0.012μF; 0402≥0.15μF; 0603≥0.33μF; 0805≥2.2μF;1206≥2.2μF;1210≥22μF	≤20%	0201≥0.1μF; 0402≥1μF
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16.	Solerability J-STD-002 JESD22-B102E	* Condition A Un-mounted chips 4hrs/155°C* dry then completely immersed for 5±.5 sec in solder bath at 235±5°C.	* All terminations shall exhibit a continuous solder coating free from defects from a minimum of 95% of the critical surface area of any individual termination.																																																							
		* Condition B Un-mounted chips steam 8hrs then completely immersed for 10±1 sec in solder bath at 215±5/-0°C.																																																								
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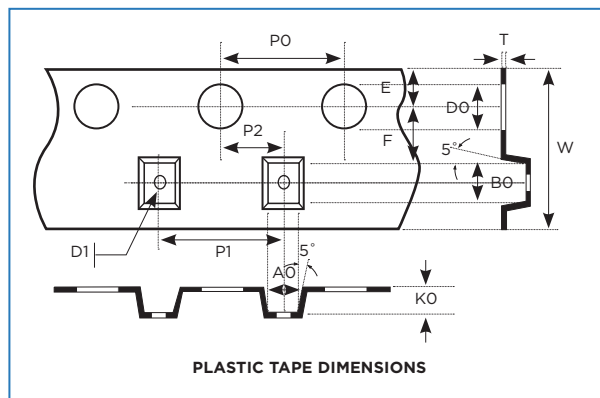
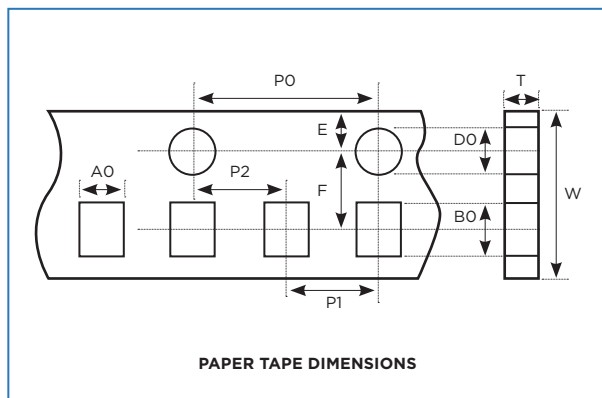
RELIABILITY TEST CONDITIONS & REQUIREMENTS

ITEM		AEC-Q200 TEST CONDITION	REQUIREMENTS																																														
17.	ESD AEC-Q200-002	* Per AEC-Q200-002	* No remarkable damage. * Cap. change: within the specified tolerance. * Q/D.F. value: NPO: Cap≥30pF, Q≥1000; Cap<30pF, Q≥400+20C. X7R:																																														
			<table><tr><th>RATED VOLTAGE</th><th>D.F. ≤</th><th colspan="2">EXCEPTION OF D.F. ≤</th></tr><tr><td rowspan="3">≥100V</td><td rowspan="3">≤2.5%</td><td>≤3%</td><td>1206≥0.47μF</td></tr><tr><td>≤5%</td><td>0603≥0.068μF; 0805>0.1μF; 1206≥1μF; 1210≥2.2μF</td></tr><tr><td>≤10%</td><td>0805>0.22μF; 1210≥3.3μF</td></tr><tr><td rowspan="3">50V</td><td rowspan="3">≤2.5%</td><td>≤3%</td><td>0201(50V): 0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF</td></tr><tr><td>≤5%</td><td>0201≥0.01μF; 1210≥3.3μF</td></tr><tr><td>≤10%</td><td>0402≥0.012μF; 0603≥0.1μF; 0805≥0.47μF; 1206≥2.2μF; 1210≥10μF</td></tr><tr><td>35V</td><td>≤3.5%</td><td>≤10%</td><td>0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF</td></tr><tr><td rowspan="4">25V</td><td rowspan="4">≤3.5%</td><td>≤5%</td><td>0201≥0.01μF; 0805≥1μF; 1210≥10μF</td></tr><tr><td>≤7%</td><td>0603≥0.33μF</td></tr><tr><td>≤10%</td><td>0201≥0.1μF; 0402≥0.056μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF</td></tr><tr><td>≤12.5%</td><td>0402≥0.47μF</td></tr><tr><td rowspan="2">16V</td><td rowspan="2">≤3.5%</td><td>≤5%</td><td>0201≥0.01μF; 0402≥0.033μF; 0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF; 1210≥4.7μF</td></tr><tr><td>≤10%</td><td>0201≥0.022μF; 0402≥0.15μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF</td></tr><tr><td rowspan="2">10V</td><td rowspan="2">≤5%</td><td>≤10%</td><td>0201≥0.012μF; 0402≥0.15μF; 0603≥0.33μF; 0805≥2.2μF;1206≥2.2μF;1210≥22μF</td></tr><tr><td>≤15%</td><td>0201≥0.1μF; 0402≥1μF</td></tr></table>	RATED VOLTAGE	D.F. ≤	EXCEPTION OF D.F. ≤		≥100V	≤2.5%	≤3%	1206≥0.47μF	≤5%	0603≥0.068μF; 0805>0.1μF; 1206≥1μF; 1210≥2.2μF	≤10%	0805>0.22μF; 1210≥3.3μF	50V	≤2.5%	≤3%	0201(50V): 0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF	≤5%	0201≥0.01μF; 1210≥3.3μF	≤10%	0402≥0.012μF; 0603≥0.1μF; 0805≥0.47μF; 1206≥2.2μF; 1210≥10μF	35V	≤3.5%	≤10%	0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF	25V	≤3.5%	≤5%	0201≥0.01μF; 0805≥1μF; 1210≥10μF	≤7%	0603≥0.33μF	≤10%	0201≥0.1μF; 0402≥0.056μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF	≤12.5%	0402≥0.47μF	16V	≤3.5%	≤5%	0201≥0.01μF; 0402≥0.033μF; 0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF; 1210≥4.7μF	≤10%	0201≥0.022μF; 0402≥0.15μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF	10V	≤5%	≤10%	0201≥0.012μF; 0402≥0.15μF; 0603≥0.33μF; 0805≥2.2μF;1206≥2.2μF;1210≥22μF	≤15%	0201≥0.1μF; 0402≥1μF
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RELIABILITY TEST CONDITIONS & REQUIREMENTS

	ITEM	AEC-Q200 TEST CONDITION	REQUIREMENTS																																														
18.	Terminal Strength AEC-Q200-006	* Pressurizing force: 2N (0201 & 0402), 10N(0603), 18N(≥0805). * Test time: 60±1 sec.	* No remarkable damage or removal of the terminations. * Capacitance within the specified tolerance. * Q/D.F. value: NPO: Cap≥30pF, Q≥1000; Cap<30pF, Q≥400+20C. X7R: <table> <tr> <th>RATED VOLTAGE</th><th>D.F. ≤</th><th colspan="2">EXCEPTION OF D.F. ≤</th></tr> <tr> <td rowspan="3">≥100V</td><td rowspan="3">≤2.5%</td><td>≤3%</td><td>1206≥0.47μF</td></tr> <tr> <td>≤5%</td><td>0603≥0.068μF; 0805>0.1μF; 1206≥1μF; 1210≥2.2μF</td></tr> <tr> <td>≤10%</td><td>0805>0.22μF; 1210≥3.3μF</td></tr> <tr> <td rowspan="3">50V</td><td rowspan="3">≤2.5%</td><td>≤3%</td><td>0201(50V): 0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF</td></tr> <tr> <td>≤5%</td><td>0201≥0.01μF; 1210≥3.3μF</td></tr> <tr> <td>≤10%</td><td>0402≥0.012μF; 0603≥0.1μF; 0805≥0.47μF; 1206≥2.2μF; 1210≥10μF</td></tr> <tr> <td>35V</td><td>≤3.5%</td><td>≤10%</td><td>0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF</td></tr> <tr> <td rowspan="4">25V</td><td rowspan="4">≤3.5%</td><td>≤5%</td><td>0201≥0.01μF; 0805≥1μF; 1210≥10μF</td></tr> <tr> <td>≤7%</td><td>0603≥0.33μF</td></tr> <tr> <td>≤10%</td><td>0201≥0.1μF; 0402≥0.056μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF</td></tr> <tr> <td>≤12.5%</td><td>0402≥0.47μF</td></tr> <tr> <td rowspan="2">16V</td><td rowspan="2">≤3.5%</td><td>≤5%</td><td>0201≥0.01μF; 0402≥0.033μF; 0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF; 1210≥4.7μF</td></tr> <tr> <td>≤10%</td><td>0201≥0.022μF; 0402≥0.15μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF</td></tr> <tr> <td rowspan="2">10V</td><td rowspan="2">≤5%</td><td>≤10%</td><td>0201≥0.012μF; 0402≥0.15μF; 0603≥0.33μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥22μF</td></tr> <tr> <td>≤15%</td><td>0201≥0.1μF; 0402≥1μF</td></tr> </table>	RATED VOLTAGE	D.F. ≤	EXCEPTION OF D.F. ≤		≥100V	≤2.5%	≤3%	1206≥0.47μF	≤5%	0603≥0.068μF; 0805>0.1μF; 1206≥1μF; 1210≥2.2μF	≤10%	0805>0.22μF; 1210≥3.3μF	50V	≤2.5%	≤3%	0201(50V): 0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF	≤5%	0201≥0.01μF; 1210≥3.3μF	≤10%	0402≥0.012μF; 0603≥0.1μF; 0805≥0.47μF; 1206≥2.2μF; 1210≥10μF	35V	≤3.5%	≤10%	0603≥1μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥10μF	25V	≤3.5%	≤5%	0201≥0.01μF; 0805≥1μF; 1210≥10μF	≤7%	0603≥0.33μF	≤10%	0201≥0.1μF; 0402≥0.056μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF	≤12.5%	0402≥0.47μF	16V	≤3.5%	≤5%	0201≥0.01μF; 0402≥0.033μF; 0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF; 1210≥4.7μF	≤10%	0201≥0.022μF; 0402≥0.15μF; 0603≥0.47μF; 0805≥2.2μF; 1206≥4.7μF; 1210≥22μF	10V	≤5%	≤10%	0201≥0.012μF; 0402≥0.15μF; 0603≥0.33μF; 0805≥2.2μF; 1206≥2.2μF; 1210≥22μF	≤15%	0201≥0.1μF; 0402≥1μF
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19.	Board Flex AEC-Q200-005	* The middle part of substrate shall be pressurized by means of the pressurizing rod at a rate of about 1 mm per second until the deflection becomes 3mm (2mm for X7R) and then the pressure shall be maintained for 60±1 sec. * Measurement to be made after keeping at room temp. for 24±2 hrs.	* No remarkable damage * Cap change: NPO: within ±5% or ±0.5pF whichever is larger. X7R: within ±12.5% (This capacitance change means the change of capacitance under specified flexure of substrate from the capacitance measured before the test.)																																														
20.	Beam Load Test AEC-Q200-003	* Break strength test * Beam speed: 2.5±.25mm/sec	* The chip endures following force (1) Chip length ≤2.5mm: Thickness>0.5mm (20N), ≤0.5mm (8N) (2) Chip length ≥3.2mm: Thickness≥1.25mm (54.5N), <1.25mm (15N)																																														
21.	Destructive Physical Analysis EIA-469	* Per EIA-469	* No defects or abnormalities.																																														

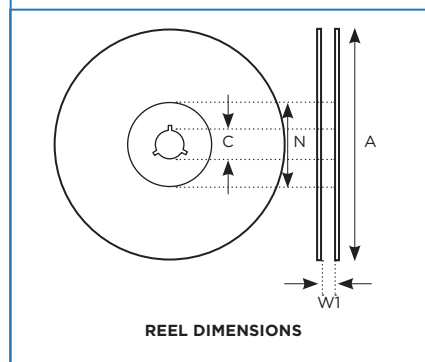
TAPE AND REEL SPECIFICATIONS



SIZE	0201	0402	0603	0805			1206			1210	
Thickness (mm)	0.30±0.03	0.50±0.05	0.80±0.07/ 0.80±0.15/-0.1	0.60±0.10	0.80±0.10	1.25±0.10/ 1.25±0.20	0.80±0.10	0.95±0.10/ 1.15±0.15/ 1.25±0.10	1.60±0.20/ 1.60±0.30/-0.1	0.95±0.10/ 1.25±0.10/ 1.60±0.20/ 2.00±0.20	2.50±0.30
A0	0.40±0.10	0.70±0.20	1.05±0.30	1.50±0.20	1.50±0.20	< 1.80	1.90±0.50	< 2.00	< 2.30	< 3.05	< 3.20
B0	0.70±0.10	1.20±0.20	1.80±0.30	2.30±0.20	2.30±0.20	< 2.70	3.50±0.50	< 3.70	< 4.00	< 3.80	< 4.00
T	≤0.55	≤0.80	≤1.20	≤1.15	≤1.20	0.23±0.1	≤1.20	0.23±0.1	0.23±0.1	0.23±0.1	0.23±0.1
K0	-	-	-	-	-	< 2.50	-	< 2.50	< 2.50	< 2.50	< 3.20
W	8.00±0.30	8.00±0.30	8.00±0.30	8.00±0.30	8.00±0.30	8.00±0.30	8.00±0.30	8.00±0.30	8.00±0.30	8.00±0.30	8.00±0.30
P0	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10
P1	2.00±0.05	2.00±0.05	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10
P2	2.00±0.05	2.00±0.05	2.00±0.05	2.00±0.05	2.00±0.05	2.00±0.05	2.00±0.05	2.00±0.05	2.00±0.05	2.00±0.05	2.00±0.05
D0	1.50+0.1/-0	1.50+0.1/-0	1.50+0.1/-0	1.50+0.1/-0	1.50+0.1/-0	1.50+0.1/-0	1.50+0.1/-0	1.50+0.1/-0	1.50+0.1/-0	1.50+0.1/-0	1.50+0.1/-0
D1	-	-	-	-	-	1.00±0.10	-	1.00±0.10	1.00±0.10	1.00±0.10	1.00±0.10
E	1.75±0.10	1.75±0.10	1.75±0.10	1.75±0.10	1.75±0.10	1.75±0.10	1.75±0.10	1.75±0.10	1.75±0.10	1.75±0.10	1.75±0.10
F	3.50±0.05	3.50±0.05	3.50±0.05	3.50±0.05	3.50±0.05	3.50±0.05	3.50±0.05	3.50±0.05	3.50±0.05	3.50±0.05	3.50±0.05

SIZE	1812	1825	2220	2225
Thickness (mm)	1.25±0.20 1.60±0.20 2.00±0.20 2.40±0.20	1.25±0.20 1.60±0.20 2.00±0.20 2.40±0.20	1.25±0.20 1.60±0.20 2.00±0.20 2.40±0.20 3.20±0.20	1.25±0.20 1.60±0.20 2.00±0.20 2.40±0.20 2.80±0.20
A0	3.60±0.20	6.90±0.20	5.40±0.20	6.90±0.20
B0	4.90±0.20	4.90±0.20	6.10±0.20	6.10±0.20
T	≤0.30	≤0.30	≤0.30	≤0.30
K0	≤4.00	≤4.00	≤4.00	≤4.00
W	12.00±0.30	12.00±0.30	12.00±0.30	12.00±0.30
P0	4.00±0.10	4.00±0.10	4.00±0.10	4.00±0.10
P1	8.00±0.10	8.00±0.10	8.00±0.10	8.00±0.10
P2	2.00±0.05	2.00±0.05	2.00±0.05	2.00±0.05
D0	1.50+0.1/-0	1.50+0.1/-0	1.50+0.1/-0	1.50+0.1/-0
D1	1.50±0.10	1.50±0.10	1.50±0.10	1.50±0.10
E	1.75±0.10	1.75±0.10	1.75±0.10	1.75±0.10
F	5.50±0.05	5.50±0.05	5.50±0.05	3.50±0.05

TAPE AND REEL SPECIFICATIONS



SIZE	0201, 0402, 0603, 0805, 1206, 1210	
Reel Size	7"	13"
C	13.0±0.5	13.0±0.5
W1	10.0±1.5	10.0±1.5
A	178.0±2.0	330.0±2.0
N	60.0+1.0/-0	50 min

SIZE	1812, 1825, 2220, 2225
Reel Size	7"
C	13.0±0.5
W1	13.0±0.3
A	178.0±2.0
N	60.0+1.0/-0

SIZE	THICKNESS	PAPER TAPE		PLASTIC TAPE	
		7" REEL	13" REEL	7" REEL	13" REEL
0201	0.30±0.03	15K	70K	-	-
0402	0.50±0.05	10K	50K	-	-
0603	0.80±0.07	4K	15K	-	-
	0.80+0.15/-0.1	4K	15K	-	-
0805	0.60±0.10	4K	15K	-	-
	0.80±0.10	4K	15K	-	-
	1.25±0.10	-	-	3K	10K
	1.25±0.20	-	-	3K	10K
1206	0.80±0.10	4K	15K	-	-
	0.95±0.10	-	-	3K	10K
	1.15±0.15	-	-	3K	10K
	1.25±0.10	-	-	3K	10K
	1.60±0.20	-	-	2K	10K
1210	1.60+0.30/-0.1	-	-	2K	9K
	0.95±0.10	-	-	3K	10K
	1.25±0.10	-	-	3K	10K
	1.60±0.20	-	-	2K	8K
	2.00±0.20	-	-	1K	6K
1812	2.50±0.30	-	-	1K	6K
	1.25±0.20	-	-	1K	N/A
	1.60±0.20	-	-	1K	N/A
	2.00±0.20	-	-	1K	N/A
1825	2.40±0.20	-	-	700	N/A
	1.25±0.20	-	-	700	N/A
	1.60±0.20	-	-	700	N/A
	2.00±0.20	-	-	700	N/A
2220	2.40±0.20	-	-	400	N/A
	3.20±0.20	-	-	700	N/A
	1.25±0.20	-	-	1K	N/A
	1.60±0.20	-	-	1K	N/A
	2.00±0.20	-	-	1K	N/A
2225	2.40±0.20	-	-	700	N/A
	2.80±0.20	-	-	400	N/A
	1.25±0.20	-	-	700	N/A
	1.60±0.20	-	-	700	N/A
	2.00±0.20	-	-	700	N/A