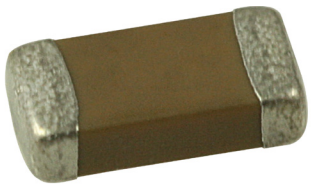
General Purpose Ceramic Capacitors (C Series)



Features:

- RoHS Compliant and Halogen Free
- Capacitance range: 0.1pF to 220uF
- Voltage range: 4V to 100V
- Terminations: 100% matte Tin (Sn), Palladium (Pd-Ag), Gold (Au) and Lead (Pb)
- Very low ESR in X7R/X5R (<10mΩ typical)
- Ceramic monolithic structure provides excellent reliability
- High-speed automated placement capabilities

Part Number Structure

C	0805	C0G	500 —	101	J	N	P	□□
Series	**Size**	**Temperature Characteristic (Dielectric)**	**Rated Voltage**	**Capacitance (picofarads)**	**Tolerance**	**Termination**	**Packaging**	***Optional Thickness Identifier***
	01005 0201 0402 0504 0603 0805 1206 1210 1812 2220 2221	C0G X7R X5R Y5V Z5U	1st two digits are significant followed by number of zeroes. 4R0 = 4.0 VDCW 6R3 = 6.3 VDCW 100 = 10 VDCW 160 = 16 VDCW 250 = 25 VDCW 500 = 50 VDCW 630 = 63 VDCW 101 = 100 VDCW	1st two digits are significant, followed by number of zeroes. **e.g:** 101 = 100pF R denotes decimal 6R8 = 6.8pF	* B = ± 0.1pF * C = ± 0.25pF * D = ± 0.5pF F = ± 1% G = ± 2% J = ± 5% K = ± 10% M = ± 20% N = ± 30% Z = +80 - 20% * For values below 10pF only.	N = 100% matte Tin (Sn) over Nickel * P = Palladium Silver * G = Gold over Nickel Pb = 90% Tin (Sn)/10% Lead (Pb) * Pd/Ag & Gold terminations have limited values & sizes available.	D = Paper Tape (10" Reel) E = Embossed Tape (7" Reel) P = Paper Tape (7" Reel) R = Paper Tape (13" Reel) U = Embossed Tape (13" Reel)	Leave blank for standard thickness. Designate "-" for Min. "*" for Max. followed by Thickness Code **e.g:**-E (min. thickness of .026") *E (max. thickness of .026")

Example P/N: C0805C0G500-101JNP

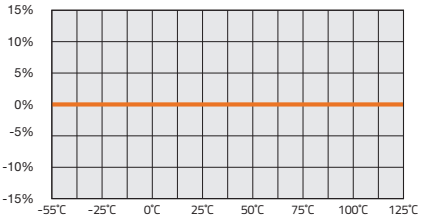
Optional Thickness Identifier Codes:

CODE:	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	6
DIMENSION:	.015	.020	.026	.030	.035	.040	.045	.050	.055	.060	.065	.070	.075	.080	.085	.090	.095	.100	.105	.110	.023

Electrical Specifications

NP0/C0G

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:
>1000 Ω-F or 100 GΩ, for values ≤ 0.047uF (whichever is less at 25°C, WDCV).
For Capacitance values > 0.047uF, 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:
B,C,D,F,G,J,K

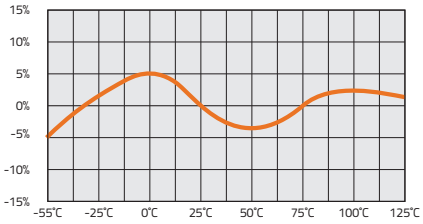
Dissipation Factor:
0.1% max

General Purpose Ceramic Capacitors (C Series)

Electrical Specifications

X7R

Typical Capacitance Change vs. Temperature

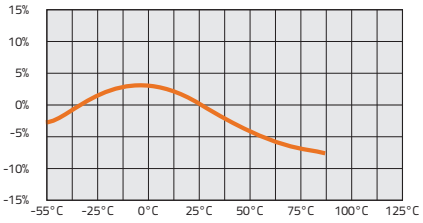


Operating Temperature Range:
-55°C to +125°C
Temperature Coefficient:
0 ±15%Δ°C MAX.
Temperature Voltage Coefficient:
X7R not applicable
Insulation Resistance:
>100 Ω-F or 10 GΩ, whichever is less at 25°C, VDCW. (The IR at 125°C is 10% of the value at 25°C)
Ageing:
2.5% per decade hour, typical
Withstanding Voltage:
>2.5 times VDCW
Capacitance Tolerance:
J,K,M

Rated Voltage	D.F.	Exception of D.F.	
≥50V	≤2.5%	≤3%	0201 (50V); 0603≥0.047uF 0805≥0.22uF; 1206≥0.47uF
		≤5%	0603≥1uF; 0805≥1uF; 1206≥4.7uF; 1210≥4.7uF
25V	≤2.5%	≤5%	0201≥0.01uF; 0805≥1uF; 1210≥4.7uF
		≤10%	0402≥0.10uF; 0603≥0.33uF; 0805≥2.2uF 1206≥4.7uF; 1210≥22uF
16V	≤3.5%	≤5%	0201≥0.01uF; 0402≥0.033uF; 0805≥0.68uF; 1206≥2.2uF; 1210≥4.7uF
		≤10%	0402≥0.47uF; 0603≥0.68uF; 0805≥2.2uF; 1206≥4.7uF; 1210≥22uF
10V	≤5%	≤10%	0402≥0.33uF; 0603≥0.33uF; 0805≥2.2uF; 1206≥2.2uF; 1210≥22uF
6.3V	≤10%	0201≥0.1uF; 0402≥1uF; 0603≥10uF; 0805≥4.7uF; 1206≥47uF; 1210≥100uF	

X5R

Typical Capacitance Change vs. Temperature

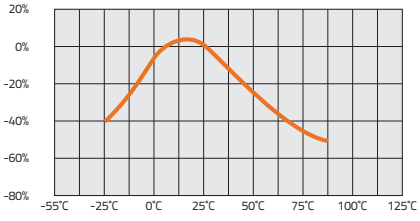


Operating Temperature Range:
-55°C to +85°C
Temperature Coefficient:
0 ±15%Δ°C MAX.
Temperature Voltage Coefficient:
X5R not applicable
Insulation Resistance:
>100 Ω-F or 10 GΩ, whichever is less at 25°C, VDCW. (The IR at 125°C is 10% of the value at 25°C)
Ageing:
2.5% per decade hour, typical
Withstanding Voltage:
>2.5 times VDCW
Capacitance Tolerance:
K,M

Rated Voltage	D.F.	Exception of D.F.	
≥50V	≤2.5%	≤3%	0201 (50V); 0603≥0.047uF 0805≥0.22uF; 1206≥0.47uF
		≤5%	0603≥1uF; 0805≥1uF; 1206≥4.7uF; 1210≥4.7uF
25V	≤2.5%	≤5%	0201≥0.01uF; 0805≥1uF; 1210≥4.7uF
		≤10%	0402≥0.10uF; 0603≥0.33uF; 0805≥2.2uF 1206≥4.7uF; 1210≥22uF
16V	≤3.5%	≤5%	0201≥0.01uF; 0402≥0.033uF; 0805≥0.68uF; 1206≥2.2uF; 1210≥4.7uF
		≤10%	0402≥0.47uF; 0603≥0.68uF; 0805≥2.2uF; 1206≥4.7uF; 1210≥22uF
10V	≤5%	≤10%	0402≥0.33uF; 0603≥0.33uF; 0805≥2.2uF; 1206≥2.2uF; 1210≥22uF
6.3V	≤10%	0201≥0.1uF; 0402≥1uF; 0603≥10uF; 0805≥4.7uF; 1206≥47uF; 1210≥100uF	

Z5U

Typical Capacitance Change vs. Temperature



Operating Temperature Range:
+10°C to +85°C
Temperature Coefficient:
+22% - 56%Δ°C MAX.
Insulation Resistance:
>100 Ω-F or 10 GΩ, whichever is less at 25°C, WDCV. (The IR at 125°C is 10% of the value at 25°C)
Ageing:
5% per decade hour, typical
Withstanding Voltage:
>2.5 times VDCW
Capacitance Tolerance:
M,Z

Rated Voltage	D.F.	Exception of D.F.	
≥50V	≤5%	≤9%	0603≥0.1uF; 0805≥0.47uF; 1206≥4.7uF;
25V	≤5%	≤9%	0402≥0.047uF; 0603≥0.1uF; 0805≥0.33uF; 1206≥1uF; 1210≥4.7uF
16V	≤9%	≤12.5%	0603≥2.2uF; 0805≥3.3uF; 1206≥10uF; 1210≥22uF; 1812≥47uF
10V	≤12.5%	≤16%	0603≥2.2uF; 0805≥3.3uF; 1206≥4.7uF; 1210≥10uF; 1812≥47uF
6.3V	≤16%		

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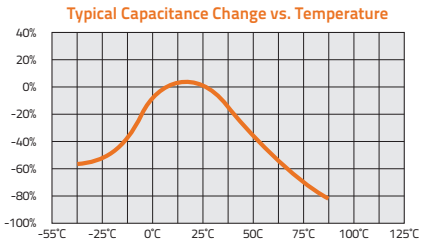
Electrical Specifications

Y5V



Operating Temperature Range:
-30°C to +85°C
Temperature Coefficient:
+22% - 82%Δ°C MAX.
Insulation Resistance:
>100 Ω-F or 10 GΩ, whichever is less at 25°C, WDCV. (The IR at 125°C is 10% of the value at 25°C)
Ageing:
7% per decade hour, typical
Withstanding Voltage:
>2.5 times VDCW
Capacitance Tolerance:
M,Z

Rated Voltage	D.F.	Exception of D.F.	
≥50V	≤5%	≤9%	0603≥0.1uF; 0805≥0.47uF; 1206≥4.7uF;
25V	≤5%	≤9%	0402≥0.047uF; 0603≥0.1uF; 0805≥0.33uF; 1206≥1uF; 1210≥4.7uF
16V	≤9%	≤12.5%	0603≥2.2uF; 0805≥3.3uF; 1206≥10uF; 1210≥22uF; 1812≥47uF
10V	≤12.5%	≤16%	0603≥2.2uF; 0805≥3.3uF; 1206≥4.7uF; 1210≥10uF; 1812≥47uF
6.3V	≤16%		

Test Parameters

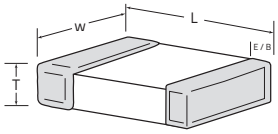
Test parameters for Multilayer Ceramic Capacitors - X7R, X5R and Y5V:
1KHz ± 100Hz at 1.0 ± 0.2 Vrms < 10uF (10 V min.)
1KHz ± 100Hz at 0.5 ± 0.1 Vrms < 10uF (6.3V max.)
120Hz ± 24Hz at 1.0 ± 0.1 Vrms ≥ 10uF

Test parameters for Multilayer Ceramic Capacitors - NPO/C0G:
1MHz ± 100KHz at 1.0 ± 0.2 Vrms ≤ 1000pF, 25°C
1KHz ± 100Hz at 1.0 ± 0.2 Vrms > 1000pF, 25°C

Note: To ensure proper capacitance readings, the voltage level must be held constant. The HP4284 and Agilent E4980 has a "ALC" (Automatic Level Control) function and should be switched to the "ON" position for accurate capacitance readings.

Voltage and Capacitance Range

C0G (NP0) Dielectric



Values that are typically available.

(All measurements in inches)

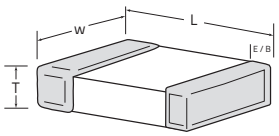
Size		01005 (± 0.0008)	0201 (± 0.002)		0402 (± 0.004)			0504 (± 0.008)		0603 (± 0.006)		0805 (± 0.008)			1206 (± 0.008)		1210 (±0.008)		1812 (±0.012)	
L		.016	.024		.040			.053		.063		.080			.126		.126		.177	
W		.008	.012		.020			.040		.032		.050			.063		.098		.126	
T (max)		.008	.012		.025			.040		.033		.055			.070		.075		.085	
Min E/B		.002	.002		.004			.005		.008		.020 ± .010			.020 ± .010		.020 ± .010		.024 ± .015	
VDCW (MAX)		6.3V	16V	25V	50V	25V	50V	100V	50V	100V	50V	100V	25V	50V	100V	50V	100V	50V	100V	50V	100V
CAPACITANCE CODE	CAPACITANCE VALUE																				
0R1	0.1pF		■	■	■	■	■	■			■	■	■	■	■						
0R2	0.2pF		■	■	■	■	■	■			■	■	■	■	■						
0R3	0.3pF		■	■	■	■	■	■			■	■	■	■	■						
0R4	0.4pF		■	■	■	■	■	■			■	■	■	■	■						
0R5	0.5pF		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
1R0	1.0pF		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
1R2	1.2		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
1R5	1.5		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
1R8	1.8		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
2R2	2.2		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
2R7	2.7		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
3R3	3.3		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
3R9	3.9		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
4R7	4.7		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
5R0	5.0		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
5R6	5.6		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
6R8	6.8		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
8R2	8.2		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
100	10pF		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
120	12		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
150	15		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
180	18		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
220	22		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		

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.

General Purpose Ceramic Capacitors (C Series)

Voltage and Capacitance Range

C0G (NP0) Dielectric



Values that are typically available.

(All measurements in inches)

Size	01005 (± 0.0008)		0201 (± 0.002)		0402 (± 0.004)			0504 (± 0.008)		0603 (± 0.006)		0805 (± 0.008)			1206 (± 0.008)		1210 (±0.008)		1812 (±0.012)		2220 / 2221 (±0.016)	
L	.016		.024		.040			.053		.063		.080			.126		.126		.177		.225 / .225	
W	.008		.012		.020			.040		.032		.050			.063		.098		.126		.200 / .210	
T (max)	.008		.012		.025			.040		.033		.055			.070		.075		.085		.108 /.108	
Min E/B	.002		.002		.004			.005		.008		.020 ± .010			.020 ± .010		.020 ± .010		.024 ± .015		.025 ± .015	
VDCW (MAX)	6.3V	16V	25V	50V	25V	50V	100V	50V	100V	50V	100V	25V	50V	100V	50V	100V	50V	100V	50V	100V	50V	100V
CAPACITANCE CODE	CAPACITANCE VALUE																					
270	27		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
330	33		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
390	39		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
470	47		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
560	56	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
680	68			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
820	82	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
101	100pF	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
121	120					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
151	150					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
181	180					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
221	220					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
271	270					■	■		■	■	■	■	■	■	■	■	■	■	■	■	■			
331	330					■	■		■		■	■	■	■	■	■	■	■	■	■	■			
391	390					■	■		■		■	■	■	■	■	■	■	■	■	■	■			
471	470					■	■		■		■	■	■	■	■	■	■	■	■	■	■			
561	560					■	■		■		■	■	■	■	■	■	■	■	■	■	■			
681	680					■	■		■		■	■	■	■	■	■	■	■	■	■	■			
821	820					■	■		■		■		■	■	■	■	■	■	■	■	■			
102	1000pF					■	■		■		■	■	■	■	■	■	■	■	■	■	■	■		
122	1200										■		■	■	■	■	■	■	■	■	■	■		
152	1500										■	■	■	■	■	■	■	■	■	■	■	■		
182	1800										■		■	■	■	■	■	■	■	■	■	■		
222	2200										■		■	■		■	■	■	■	■	■	■		
272	2700										■		■	■		■	■	■	■	■	■	■		
332	3300										■		■	■		■	■	■	■	■	■	■		
392	3900										■	■	■	■		■	■	■	■	■	■	■		
472	4700										■		■	■		■	■	■	■	■	■	■	■	■
562	5600										■		■	■		■		■		■	■	■	■	■
682	6800										■		■	■		■	■	■		■	■	■	■	■
822	8200										■		■	■		■		■		■	■	■	■	■
103	.01uF										■		■	■		■	■	■		■	■	■	■	■
123	.012												■	■		■					■		■	■
153	.015													■		■					■		■	■
183	.018															■					■		■	■
223	.022												■	■		■					■		■	■
273	.027															■					■		■	■
333	.033															■							■	■
393	.039																						■	■
473	.047															■					■		■	■
563	.056															■							■	
683	.068															■					■		■	
823	.082															■								
104	.100uF														25V	50V					■	■		
124	.120																							
154	.150																							
184	.180																							
224	.220																				■			
274	.270																							
334	.330																							
394	.390																							
474	.470																							
564	.560																							
684	.680																							
824	.820																							

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.

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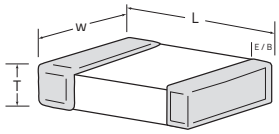
Voltage and Capacitance Range

X7R Dielectric



Values that are typically available.

(All measurements in inches)

Size			01005 (± 0.0008)		0201 (± 0.002)				**0402** (± 0.004)				0504 (± 0.008)			0603 (± 0.006)					0805 (± 0.008)		
L			.016		.024				.040				.053			.063					.080		
W			.008		.012				.020				.040			.032					.050		
T (max)			.008		.012				.025				.040			.038					.058		
Min E/B			.002		.002				.004				.005			.008					.020 ± .010		
VDCW (MAX)			6.3V	10V	6.3V	10V	16V	25V	16V	25V	50V	100V	25V	50V	100V	10V	16V	25V	50V	100V	25V	50V	100V
CAPACITANCE CODE	101	100pF	■	■		■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■
	121	120		■		■	■	■				■	■	■	■		■	■	■	■	■	■	■
	151	150		■		■	■	■				■	■	■	■		■	■	■	■	■	■	■
	181	180		■		■	■	■				■	■	■	■		■	■	■	■	■	■	■
	221	220	■	■		■	■	■			■	■	■	■	■		■	■	■	■	■	■	■
	271	270				■	■	■			■	■	■	■	■		■	■	■	■	■	■	■
	331	330	■	■		■	■	■			■	■	■	■	■		■	■	■	■	■	■	■
	391	390				■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■
	471	470	■	■		■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■
	561	560				■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■
	681	680	■	■		■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■
	821	820				■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■
	102	1000pF		■	■	■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■
	122	1200					■			■	■	■	■	■	■		■	■	■	■	■	■	■
	152	1500			■	■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■
	182	1800								■	■	■	■	■	■		■	■	■	■	■	■	■
	222	2200			■	■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■
	272	2700								■	■	■	■	■	■		■	■	■	■	■	■	■
	332	3300			■	■	■			■	■	■	■	■	■		■	■	■	■	■	■	■
	392	3900								■	■	■	■	■	■		■	■	■	■	■	■	■
	472	4700			■	■	■			■	■	■	■	■	■		■	■	■	■	■	■	■
	562	5600							■	■	■		■	■	■		■	■	■	■	■	■	■
	682	6800			■	■			■	■	■		■	■	■		■	■	■	■	■	■	■
	822	8200							■	■	■		■	■	■		■	■	■	■	■	■	■
	103	.01uF			■	■			■	■	■		■	■	■	■	■	■	■	■	■	■	■
	123	.012							■	■	■		■	■		■	■	■	■		■	■	■
	153	.015							■	■	■		■	■		■	■	■	■		■	■	■
	183	.018							■	■	■		■			■	■	■	■		■	■	■
	223	.022							■	■	■		■			■	■	■	■	■	■	■	■
	273	.027							■	■	■					■	■	■	■		■	■	■
	333	.033							■	■	■					■	■	■	■		■	■	■

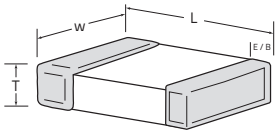
CAPACITANCE VALUE

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.
All components manufactured with the X7R dielectric are also available as an X5R dielectric.

General Purpose Ceramic Capacitors (C Series)

Voltage and Capacitance Range

X7R Dielectric



Values that are typically available.

(All measurements in inches)

Size			0201 (± 0.002)			0402 (± 0.004)					0603 (± 0.006)						0805 (± 0.008)					
L			.024			.040					.063						.080					
W			.012			.020					.032						.050					
T (max)*			.012			.025					.038						.058					
Min E/B			.002			.004					.008						.020 ± .010					
VDCW (MAX)			4V	6.3V	10V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	100V	6.3V	10V	16V	25V	50V	100V
CAPACITANCE CODE	393	.039				■	■	■	■	■		■	■	■	■					■	■	■
	473	.047				■	■	■	■	■		■	■	■	■					■	■	■
	563	.056							■	■		■	■	■						■	■	■
	683	.068					■	■	■	■		■	■	■	■					■	■	
	823	.082				■	■	■	■	■		■	■	■					■	■	■	
	104	.100uF				■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■
	124	.120										■	■					■	■	■		
	154	.150									■	■	■	■				■	■	■	■	
	184	.180										■	■					■	■	■	■	
	224	.220						■			■	■	■	■	■			■	■	■	■	
	274	.270										■	■					■	■	■		
	334	.330									■	■	■					■	■	■	■	
	394	.390																■	■	■		
	474	.470									■	■	■					■	■	■	■	
	564	.560																				
	684	.680																■	■			
	824	.820																■	■			
	105	1.00uF				■					■	■	■	■			■	■	■	■	■	
	125	1.20																				
	155	1.50																				
	185	1.80																				
	225	2.20									■	■						■	■	■		
	335	3.30																				
	475	4.70																■	■			
	685	6.80																				
	106	10.0uF															■	■	■			
	156	15.0uF																				
	226	22.0uF																				
	476	47.0uF																				
	107	100.0uF																				

CAPACITANCE VALUE

* For values above 1uF, thickness may be greater than specified above.
T(max): 0603 – 0.040"
0805 – 0.060"

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.
All components manufactured with the X7R dielectric are also available as an X5R dielectric.

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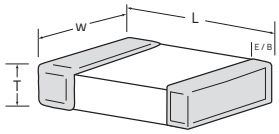
Voltage and Capacitance Range

X7R Dielectric



Values that are typically available.

(All measurements in inches)

Size			1206 (± 0.008)					1210 (±0.008)					1812 (±0.012)						2220 / 2221 °(±0.016)			
L			.126					.126					.177						.225 / .225			
W			.063					.098					.126						.200 / .210			
T (max)*			.070					.125					.085						.108 /.108			
Min E/B			.020 ± .010					.020 ± .010					.024 ± .015						.025 ± .015			
VDCW (MAX)			10V	16V	25V	50V	100V	10V	16V	25V	50V	100V	6.3V	10V	16V	25V	50V	100V	16V	25V	50V	100V
CAPACITANCE CODE		CAPACITANCE VALUE																				
	102		1000pF																			
	122		1200																			
	152		1500																			
	182		1800																			
	222		2200																			
	272		2700																			
	332		3300																			
	392		3900																			
	472		4700																			
	562		5600																			
	682		6800																			
	822		8200																			
	103		.01uF																			
	123		.012																			
	153		.015																			
	183		.018																			
	223		.022																			
	273		.027																			
	333		.033																			
	393		.039																			
	473		.047																			
	563		.056																			
	683		.068																			
	823		.082																			
	104		.100uF																			
	124		.120																			
	154		.150																			
	184		.180																			
	224		.220																			
	274		.270																			
	334		.330																			

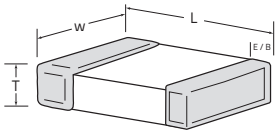
* For values above 1uF, thickness may be greater than specified above.
T(max): 1206 – 0.075" 1812 – 0.130"
1210 – 0.125" 2220 – 0.135"

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.
All components manufactured with the X7R dielectric are also available as an X5R dielectric.

General Purpose Ceramic Capacitors (C Series)

Voltage and Capacitance Range

X7R Dielectric



Values that are typically available.

(All measurements in inches)

Size			1206 (± 0.008)						1210 (±0.008)						1812 (±0.012)						2220 / 2221 (±0.016)			
L			.126						.126						.177						.225 / .225			
W			.063						.098						.126						.200 / .210			
T (max)*			.070						.125						.095						.108 /.108			
Min E/B			.020 ± .010						.020 ± .010						.024 ± .015						.025 ± .015			
VDCW (MAX)			6.3V	10V	16V	25V	50V	100V	6.3V	10V	16V	25V	50V	100V	6.3V	10V	16V	25V	50V	100V	16V	25V	50V	100V
CAPACITANCE CODE	394	.390			■	■	■		■	■	■	■	■				■	■	■	■		■	■	■
	474	.470			■	■	■		■	■	■	■	■	■			■	■	■	■		■	■	■
	564	.560			■	■	■		■	■	■	■	■				■	■	■	■		■	■	■
	684	.680			■	■			■	■	■	■	■	■			■	■	■	■		■	■	■
	824	.820			■	■			■	■	■	■					■	■	■			■	■	■
	105	1.00uF	■	■	■	■	■	■	■	■	■	■	■	■			■	■	■	■		■	■	■
	125	1.20															■	■	■			■	■	■
	155	1.50	■	■	■	■	■		■	■	■	■										■		
	185	1.80																						
	225	2.20	■	■	■	■	■	■	■	■	■	■	■	■			■	■	■	■				
	335	3.30	■	■	■	■			■	■	■	■	■										■	
	475	4.70	■	■	■	■	■		■	■	■	■	■				■	■	■				■	■
	685	6.80																						
	106	10.0uF	■	■	■	■			■	■	■	■	■			■	■							
	156	15.0uF																						
	226	22.0uF	■	■					■	■	■	■				■					■			
	476	47.0uF							■	■														
	107	100.0uF																						

CAPACITANCE VALUE

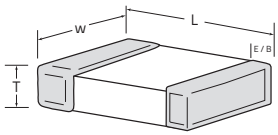
* For values above 1uF, thickness may be greater than specified above.
T(max): 1206 – 0.075" 1812 – 0.130"
1210 – 0.125" 2220 – 0.135"

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.
All components manufactured with the X7R dielectric are also available as an X5R dielectric.

DYETHIN **Email:** sales@dyethin.com | **Web:** www.dyethin.com

Voltage and Capacitance Range

X5R Dielectric



Values that are typically available.

(All measurements in inches)

Size	01005 (± 0.0008)	0201 (± 0.002)		0402 (± 0.004)				0603 (± 0.006)				0805 (± 0.008)				1206 (± 0.008)				1210 (±0.016)		1812 (±0.016)	
L	.016	.024		.040				.063				.080				.126				.126		.177	
W	.008	.012		.020				.032				.050				.063				.098		.126	
T (max)	.008	.012		.025				.040				.060				.072				.125		.130	
Min E/B	.002	.002		.004				.008				.020 ± .010				.020 ± .010				.020 ± .010		.024 ± .015	
VDCW (MAX)	6.3V	10V	4V	6.3V	10V	16V	25V	4V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	6.3V	10V	16V	25V	6.3V	10V	16V	25V	16V	25V	16V	25V
CAPACITANCE CODE	CAPACITANCE VALUE																												
102	1000pF	■						■																					
122	1200																												
152	1500	■						■																					
182	1800																												
222	2200	■	■					■																					
272	2700																												
332	3300	■						■																					
392	3900																												
472	4700	■						■																					
562	5600																												
682	6800	■						■																					
822	8200																												
103	.01uF	■						■																					
153	.015				■																								
223	,022				■																								
333	.033				■																								
393	.039				■																								
473	.047				■																								
104	0.10uF	■			■	■	■			■	■	■	■	■															
154	.150									■	■																		
224	.220			■	■	■				■	■		■																
334	.330									■																			
474	.470				■	■				■	■	■	■				■												
684	.680													■	■														
105	1.00uF			■	■					■	■	■	■		■	■	■	■	■	■	■	■	■	■	■				
125	1.20																												
155	1.50																												
185	1.80																												
225	2.20			■	■	■			■	■				■	■	■		■	■	■	■	■	■	■	■				
335	3.30																		■	■						■	■	■	■

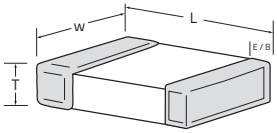
For values above 1uF, thickness may be greater than specified above.
T(max): 1206 – 0.075" 1812 – 0.130"
1210 – 0.125" 2220 – 0.135"

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.
All components manufactured with the X7R dielectric are also available as an X5R dielectric.

General Purpose Ceramic Capacitors (C Series)

Voltage and Capacitance Range

X5R Dielectric (0402 - 1206)



Values that are typically available.

(All measurements in inches)

Size			0402 (± 0.009)			0603 (± 0.006)					0805 (± 0.008)						1206 (± 0.008)				
L			.040			.063					.080						.126				
W			.020			.032					.050						.063				
T (max)			.027			.040					.060						.072				
Min E/B			.004			.008					.020 ± .010						.020 ± .010				
VDCW (MAX)			4V	6.3V	10V	4V	6.3V	10V	16V	25V	4V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V
CAPACITANCE CODE	395	CAPACITANCE VALUE	3.90uF																		
	475		4.70uF	■	■	■		■	■	■			■	■	■	■	■	■	■	■	■	
	685		6.80uF																		
	106		10.0uF	■	■		■	■	■	■	■		■	■	■	■		■	■	■	■	■
	156		15.0uF																		
	226		22.0uF	■	■		■	■	■				■	■	■	■		■	■	■	■	
	476		47.0uF				■	■				■	■					■	■	■	■	
	107		100.0uF									■						■	■			
	157		150.0uF																			
	227		220.0uF															■				

X5R Dielectric (1210 - 2221)

(All measurements in inches)

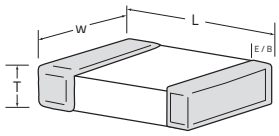
Size			1210 (±0.016)					1812 (±0.016)				2220 / 2221 (±0.016)			
L			.126					.177				.225 / .225			
W			.098					.126				.200 / .210			
T (max)			.125					.130				.135			
Min E/B			.020 ± .010					.024 ± .015				.025 ± .015			
VDCW (MAX)			6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	6.3V	10V	25V	50V
CAPACITANCE CODE	395	CAPACITANCE VALUE	3.90uF												
	475		4.70uF	■	■	■	■		■	■	■				
	685		6.80uF												
	106		10.0uF	■	■	■	■		■	■	■			■	■
	156		15.0uF											■	
	226		22.0uF	■	■	■		■	■	■	■				
	476		47.0uF	■	■	■		■	■			■	■		
	107		100.0uF	■				■				■			
	157		150.0uF	■											
	227		220.0uF	■											

For values above 1uF, thickness may be greater than specified above.
T(max): 1206 – 0.075" 1812 – 0.130"
1210 – 0.125" 2220 – 0.135"

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.
All components manufactured with the X7R dielectric are also available as an X5R dielectric.

Voltage and Capacitance Range

Z5U Dielectric



Values that are typically available.

(All measurements in inches)

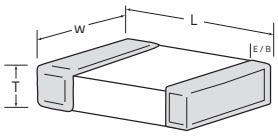
Size			0504 (± 0.008)		0603 (± 0.006)		0805 (± 0.008)		1206 (± 0.008)		1210 (±0.016)		1812 (±0.016)		2220 / 2221 (±0.016)	
L			.050		.063		.080		.126		.126		.177		.225 / .225	
W			.040		.032		.050		.063		.098		.126		.200 / .210	
T (max)			.040		.038		.058		.070		.075		.085		.108 / .108	
Min E/B			.005		.008		.020 ± .010		.020 ± .010		.020 ± .010		.024 ± .015		.025 ± .015	
VDCW (MAX)			25V	50V	25V	50V	25V	50V	25V	50V	25V	50V	25V	50V	25V	50V
CAPACITANCE CODE	CAPACITANCE VALUE															
102	1000pF		■	■												
122	1200		■	■												
152	1500		■	■												
182	1800		■	■												
222	2200		■	■												
272	2700		■	■												
332	3300		■	■												
392	3900		■	■												
472	4700		■	■			■									
562	5600		■	■			■	■								
682	6800		■	■			■	■								
822	8200		■	■			■	■								
103	.01uF		■	■	■	■	■	■	■	■	■	■				
123	.012		■	■	■	■	■	■	■	■	■	■				
153	.015		■	■	■	■	■	■	■	■	■	■				
183	.018		■	■	■	■	■	■	■	■	■	■				
223	.022		■	■	■	■	■	■	■	■	■	■				
273	.027		■	■	■	■	■	■	■	■	■	■				
333	.033		■	■	■	■	■	■	■	■	■	■				
393	.039		■	■	■	■	■	■	■	■	■	■				
473	.047		■	■	■	■	■	■	■	■	■	■				
563	.056		■		■	■	■	■	■	■	■	■				
683	.068		■		■	■	■	■	■	■	■	■				
823	.082		■		■	■	■	■	■	■	■	■				
104	.100uF		■		■	■	■	■	■	■	■	■	■	■		
124	.120				■		■	■	■	■	■	■	■	■		
154	.150				■		■	■	■	■	■	■	■	■	■	■
184	.180				■		■	■	■	■	■	■	■	■	■	■
224	.220				■		■	■	■	■	■	■	■	■	■	■
274	.270						■	■	■	■	■	■	■	■	■	■
334	.330				■		■	■	■	■	■	■	■	■	■	■

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.

General Purpose Ceramic Capacitors (C Series)

Voltage and Capacitance Range

Z5U Dielectric



Values that are typically available.

(All measurements in inches)

Size			0504 (± 0.008)		0603 (± 0.006)		0805 (± 0.008)		1206 (± 0.008)		1210 (±0.016)		1812 (±0.016)		2220 / 2221 (±0.016)	
L			.050		.063		.080		.126		.126		.177		.225 / .225	
W			.040		.032		.050		.063		.098		.126		.200 / .210	
T (max)			.040		.038		.058		.070		.075		.085		.108 / .108	
Min E/B			.005		.008		.020 ± .010		.020 ± .010		.020 ± .010		.024 ± .015		.025 ± .015	
VDCW (MAX)			25V	50V	25V	50V	25V	50V	25V	50V	25V	50V	25V	50V	25V	50V
CAPACITANCE CODE	394	.390					■		■	■	■	■	■	■	■	■
	474	.470					■		■	■	■	■	■	■	■	■
	564	.560					■		■		■	■	■	■	■	■
	684	.680							■		■	■	■	■	■	■
	824	.820							■		■	■	■	■	■	■
	105	1.00uF							■		■	■	■	■	■	■
	125	1.20									■	■	■	■	■	■
	155	1.50									■	■	■	■	■	■
	185	1.80									■	■	■	■	■	■
	225	2.20									■		■	■	■	■
	335	3.30									■		■		■	■
	395	3.90									■				■	
	475	4.70									■				■	
	685	6.80														
	106	10.0uF														■
	156	15.0uF														
	226	22.0uF														
	476	47.0uF														
	107	100.0uF														

CAPACITANCE VALUE

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. For values above 1uF, thickness may be greater than specified above.

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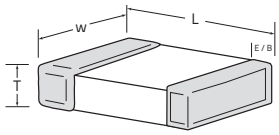
Voltage and Capacitance Range

Y5V Dielectric



Values that are typically available.

(All measurements in inches)

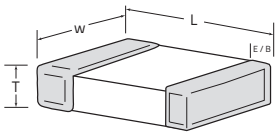
Size			0201 (± 0.002)	0402 (± 0.004)					0603 (± 0.006)						0805 (± 0.008)					1206 (± 0.008)				1210 (±0.016)				1812 (±0.016)		
L			.024	.040					.063						.080					.126				.126				.177		
W			.012	.020					.032						.050					.063				.098				.126		
T (max)			.012	.025					.038						.058					.070				.096				.085		
Min E/B			.002	.004					.008						.020 ± .010					.020 ± .010				.020 ± .010				.024 ± .015		
VDCW (MAX)			10V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	10V	16V	25V	50V	6.3V	10V	16V	25V	6.3V	10V	25V
CAPACITANCE CODE	CAPACITANCE VALUE																													
102	1000pF		■				■	■																						
122	1200						■	■																						
152	1500						■	■																						
182	1800						■	■																						
222	2200		■				■	■																						
272	2700						■	■																						
332	3300		■				■	■																						
392	3900						■	■																						
472	4700		■				■	■																						
562	5600						■	■																						
682	6800		■				■	■																						
822	8200						■	■																						
103	.01uF		■			■	■	■			■	■	■																	
123	.012					■	■				■	■	■																	
153	.015					■	■				■	■	■																	
183	.018					■	■				■	■	■																	
223	.022					■	■				■	■	■																	
273	.027					■	■				■	■	■																	
333	.033					■	■				■	■	■																	
393	.039					■	■				■	■	■					■												
473	.047					■	■				■	■	■					■												
563	.056					■	■				■	■	■					■												
683	.068					■	■				■	■	■					■												
823	.082					■	■				■	■	■				■	■												
104	.100uF			■	■	■	■		■	■	■	■	■			■	■	■			■	■								
124	.120								■	■	■	■				■	■	■			■	■								
154	.150								■	■	■	■				■	■	■			■	■								
184	.180								■	■	■	■				■	■	■			■	■								
224	.220			■	■	■			■	■	■	■	■			■	■	■			■	■								
274	.270										■	■				■	■	■			■	■								
334	.330			■	■						■	■				■	■	■			■	■			■	■				

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. For values above 1uF, thickness may be greater than specified above.

General Purpose Ceramic Capacitors (C Series)

Voltage and Capacitance Range

Y5V Dielectric



Values that are typically available.

(All measurements in inches)

Size	0201 (± 0.002)	0402 (± 0.004)			0603 (± 0.006)					0805 (± 0.008)					1206 (± 0.008)				1210 (±0.016)					1812 (±0.016)		
L	.024	.040			.063					.080					.126				.126					.177		
W	.012	.020			.032					.050					.063				.098					.126		
T (max)	.012	.025			.038					.058					.070				0.10					.085		
Min E/B	.002	.004			.008					.020 ± .010					.020 ± .010				.020 ± .010					.024 ± .015		
VDCW (MAX)	10V	6.3V	10V	16V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	25V
CAPACITANCE CODE	CAPACITANCE VALUE																									
394	.390													■	■	■			■	■				■	■				
474	.470		■	■		■	■	■	■				■	■	■			■	■				■	■				
564	.560												■					■					■	■				
684	.680												■				■	■					■	■				
824	.820												■				■	■					■	■				
105	1.00uF		■			■	■	■	■		■	■	■	■	■	■	■	■					■	■		■	■	■
125	1.20																									■	■
155	1.50																■	■					■	■		■	■	■
185	1.80																									■	■	■
225	2.20					■	■	■			■	■	■	■		■	■	■					■	■		■	■	■
335	3.30										■	■				■	■	■					■	■		■	■	■
395	3.90															■							■	■		■	■	■
475	4.70					■	■				■	■	■	■		■	■	■					■	■		■	■	■
685	6.80															■							■	■				
106	10.0uF										■	■	■			■	■	■					■	■	■		■	■
156	15.0uF																											
226	22.0uF														■					■	■				■	■	
476	47.0uF																		■	■					■	■	
107	100.0uF																		■						■		

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. For values above 1uF, thickness may be greater than specified above.

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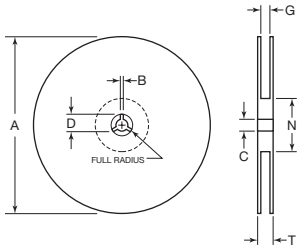
Tape and Reel Specifications

All tape and reel specifications must be adhered to per EIA-481-1-A.

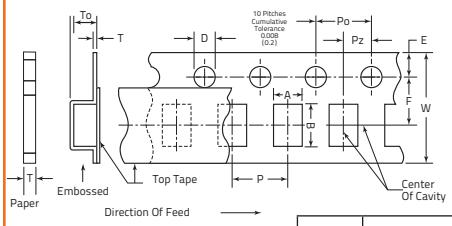


Reel Dimensions

Unit: mm (inch)

Tape	B min	C	A (7")	A (13")	D min	N min	G	T max
4mm	2.0 (0.079)	13 ± 0.05 (0.512 ± 0.02)	178 ±2.0 (7 ± 0.079)	-	21 ± 0.8 (0.82 ± 0.03)	50 (1.97)	5.0 ± 1.5 (0.196 ± 0.05)	8.0 max (0.315 max)
8mm	2.0 (0.07)	13 ± 0.05 (0.512 ± 0.02)	178 ±2.0 (7 ± 0.079)	330 ± 2.0 (13± 0.08)	20.2 (0.795)	50 (1.97)	10 ± 1.5 (0.394 ± 0.059)	14.9 (0.587)
12mm	2.0 (0.07)	13 ± 0.05 (0.512 ± 0.02)	178 ±2.0 (7 ± 0.079)	330 ± 2.0 (13± 0.08)	20.2 (0.795)	50 (1.97)	10 ± 1.5 (0.394 ± 0.059)	14.9 (0.587)

Taping Specifications



7 in. Reel Quantities**

Size	01005 (E)	01005 (P)	0201	0402	0603	0805	1206	1210	1812	2221
Tape Size	4mm	8mm	8mm	8mm	8mm	8mm	8mm	8mm	12mm	12mm
Min Qty Per Reel	40,000*	20000*	15,000	5,000	3,000	2,000	2,000	1,000	1,000	1,000
Max Qty Per Reel	40,000*	20000*	15,000	10,000	4,000	5,000	5,000	5,000	3,000	1,000

Note: ** Quantity dependent on thickness
*Smaller quantities may be available. Please contact us.

Paper Tape Carrier Dimensions (8mm)

Unit: mm (inch)

Size (inches)	A	B	W	F	E	Po	Pz	D	t	P
01005	0.25 ± 0.05 (0.010 ± .002)	0.45 ± 0.05 (0.018 ± .002)	8.0 ± 0.2 (.315 ± .008)	3.5 ± 0.1 (.138 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.039 ± .002)	1.5 + 0.1 (.064 +.004) - 0.0 - .000	1.15 MAX (.045 MAX)	2.0 ± 0.05 (.079 ± .002)
0201	0.37 ± 0.05 (0.014 ± .002)	0.67 ± 0.05 (0.026 ± .002)	8.0 ± 0.2 (.315 ± .008)	3.5 ± 0.1 (.138 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.039 ± .002)	1.5 + 0.1 (.064 +.004) - 0.0 - .000	1.15 MAX (.045 MAX)	2.0 ± 0.05 (.079 ± .002)
0402	0.65 ± 0.1 (.026 ± .004)	1.10 ± 0.2 (.043 ± .008)	8.0 ± 0.2 (.315 ± .008)	3.5 ± 0.1 (.138 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.039 ± .002)	1.5 + 0.1 (.064 +.004) - 0.0 - .000	1.15 MAX (.045 MAX)	2.0 ± 0.05 (.079 ± .002)
0603	1.10 ± 0.2 (.043 ± .008)	1.90 ± 0.2 (.075 ± .008)	8.0 ± 0.2 (.315 ± .008)	3.5 ± 0.1 (.138 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.039 ± .002)	1.5 + 0.1 (.064 +.004) - 0.0 - .000	1.15 MAX (.045 MAX)	4.0 ± 0.1 (.157 ± .004)
0805	1.16 ± 0.2 (.046 ± .008)	2.4 ± 0.2 (.095 ± .008)	8.0 ± 0.2 (.315 ± .008)	3.5 ± 0.1 (.138 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.039 ± .002)	1.5 + 0.1 (.064 +.004) - 0.0 - .000	1.15 MAX (.045 MAX)	4.0 ± 0.1 (.157 ± .004)
1206	2.0 ± 0.2 (.079 ± .008)	3.6 ± 0.2 (.142 ± .008)	8.0 ± 0.2 (.315 ± .008)	3.5 ± 0.1 (.138 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.039 ± .002)	1.5 + 0.1 (.064 +.004) - 0.0 - .000	1.15 MAX (.045 MAX)	4.0 ± 0.1 (.157 ± .004)

Embossed Carrier Dimensions (4mm, 8mm & 12mm)

Size (inches)	A	B	W	F	E	Po	Pz	D	To	T	P
01005	0.23 (0.009)	0.43 (0.016)	4.0 ± 0.05 (0.157 ± 0.002)	1.8 ± 0.02 (0.070 ± 0.001)	0.9 ± 0.05 (0.035 ± 0.002)	2.0 ± 0.04 (0.079 ± 0.001)	2.00 (0.079)	0.8 ± 0.04 (0.031 ± 0.001)	0.5 max (0.019 max)	0.15 ~0.4 (0.005 ~0.015)	1.00 (0.039)
0805	1.48 ± 0.2 (.058 ± .008)	2.3 ± 0.2 (.091 ± .008)	8.0 ± 0.2 (.315 ± .008)	3.5 ± .0.1 (.138 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.079 ± .002)	1.5 + 0.1 (.06 +.004) - 0.0 - .000	2.5 MAX (.098 MAX)	0.6 MAX (.024 MAX)	4.0 ± 0.1 (.157 ± .004)
1206	2.0 ± 0.2 (.079 ± .008)	3.6 ± 0.2 (.142 ± .008)	8.0 ± 0.2 (.315 ± .008)	3.5 ± .0.1 (.138 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.079 ± .002)	1.5 + 0.1 (.06 +.004) - 0.0 - .000	2.5 MAX (.098 MAX)	0.6 MAX (.024 MAX)	4.0 ± 0.1 (.157 ± .004)
1210	2.9 ± 0.2 (.114 ± .008)	3.6 ± 0.2 (.142 ± .008)	8.0 ± 0.2 (.315 ± .008)	3.5 ± .0.1 (.138 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.079 ± .002)	1.5 + 0.1 (.06 +.004) - 0.0 - .000	2.5 MAX (.098 MAX)	0.6 MAX (.024 MAX)	4.0 ± 0.1 (.157 ± .004)
1812	3.6 ± 0.2 (.142 ± .008)	4.9 ± 0.2 (.193 ± .008)	12.0 ± 0.3 (.472 ± .012)	5.6 ± .0.1 (.221 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.079 ± .002)	1.5 + 0.1 (.06 +.004) - 0.0 - .000	3.8 MAX (.150 MAX)	0.6 MAX (.024 MAX)	8.0 ± 0.1 (.315 ± .004)