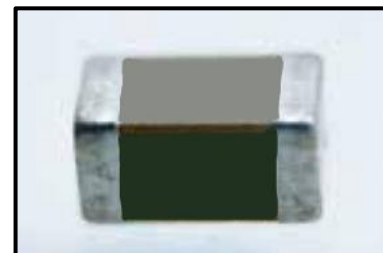




GMC SERIES GENERAL PURPOSE CAPACITORS

⚡ Features

- Large capacitance values in small sizes
- Excellent high frequency characteristics
- All PPI Caps conform to EIA Specifications



⚡ Applications

- Can be used on surface mount assembly equipment
- Our fully integrated manufacturing and total quality control systems ensure unprecedented high standards of quality and reliability.

⚡ Notes

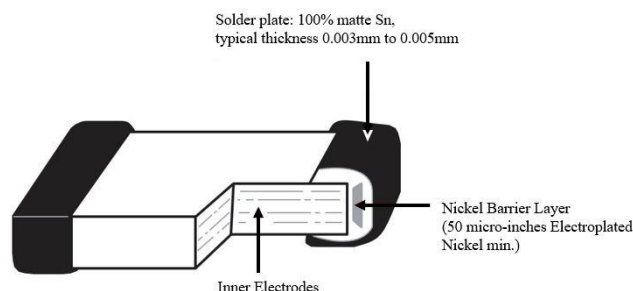
- Capacitance Value & Tolerance are determined by circuit requirements
- Voltage is determined by circuit requirements
- Capacitor Size select the smallest unit permitted by the circuit constraints that provides the required capacitance and voltage rating
- Nickel Barrier is standard and recommended for units exposed to repeated solder cycles, to minimize leaching of the termination.
- All capacitors conform to EIA specifications.

⚡ Construction

Constructed by screen printing alternative layers of internal metallic electrodes onto ceramic dielectric materials and firing into a concrete monolithic body, then completed by application of metal end terminations which are fired to assure permanent bonding with the individual internal electrodes.



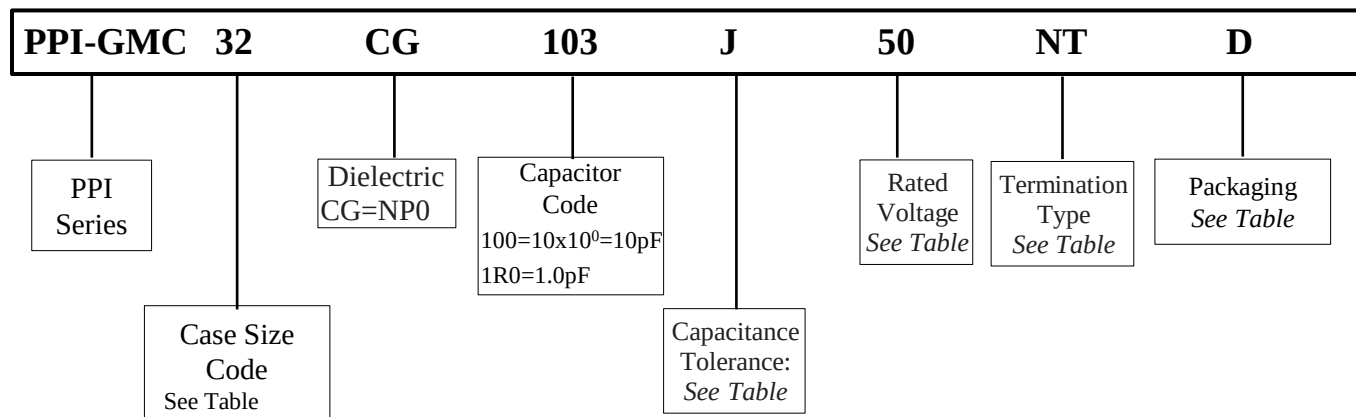
Please note that the contents of this document are subject to change at any time at PPI's sole discretion. The most up-to-date version of this document is available at www.passiveplus.com



NP0/ COG

Capacitance change with temperature is 0-30ppm/°C which is less than -0.3%/°C from -55°C to +125°C. Typical capacitance change with life is less than -0.1% for NP0s, one-fifth that shown by most other dielectrics. NP0 formulations show no aging characteristics.

Part Numbering

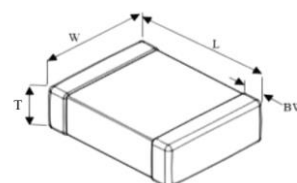


Dielectric

Ultra Stable Class I Dielectric: Linear temperature coefficient, low loss, negligible change of electrical properties with time, voltage and frequency.

Dimensions (mm)

Dimensions (mm)					
Code	Size	L	W	T	BW
01	01005	0.40 ± 0.02	0.20 ± 0.02	0.20 ± 0.02	0.07 ~ 0.14
02	0201	0.60 ± 0.03	0.30 ± 0.03	0.30 ± 0.03	0.15 ± 0.05
04	0402	1.00 ± 0.05	0.50 ± 0.05	0.50 ± 0.10	0.10 ~ 0.35
10	0603	1.60 ± 0.20	0.80 ± 0.20	1.0 max	0.10 ~ 0.40
21	0805	2.00 ± 0.30	1.25 ± 0.20	1.40	0.25 ~ 0.75
31	1206	3.20 ± 0.30	2.50 ± 0.20	2.20	0.25 ~ 0.75
32	1210	3.20 ± 0.30	1.60 ± 0.20	1.80	0.25 ~ 0.75
40	1808	4.50 ± 0.35	3.20 ± 0.30	2.20	0.25 ~ 0.75
43	1812	3.20 ± 0.30	1.6 ± 0.20	1.80	0.25 ~ 0.75
45	1825	5.70 ± 0.40	5.01 ± 0.40	1.80	0.25 ~ 0.75
55	2220	5.70 ± 0.40	6.30 ± 0.40	2.20	0.25 ~ 0.75
57	2225	4.50 ± 0.35	6.30 ± 0.40	2.20	0.25 ~ 0.75



≠ Capacitance Code

Cap Code	Value	Cap Code	Value	Cap Code	Value	Cap Code	Value
0R5	0.5pF	100	10pF	104	0.1uF	106	10uF
5R0	5.0pF	103	0.01uF	105	1.0uF	107	100uF

≠ Capacitance Tolerances

Code	B	C	D	F	G	J	K	M	Z
Tol.	±0.1pF	±0.25pF	±0.5pF	±1%	±2%	±5%	±10%	±20%	-20% + 80%

≠ Rated Voltages

Code	Voltage	Code	Voltage
4R0	4.0V	350	35V
6R3	6.3V	500	50V
100	10V	630	63V
160	16V	101	100V
250	25V	201	200V

≠ Terminations

Nickel barrier is standard and recommended for units exposed to repeated solder cycles to minimize leaching of the termination.

Code	Description
NT	Sn/Ni
PT	Pd/Ag



**⚡ Electrical Specifications**

Operating Temperature Range	-55°C to +125°C
Temperature Coefficient (TC)	0±30ppm/°C
Temperature Voltage Coefficient (ΔCMax @ V _{DCW})	0±30ppm/°C
Dissipation Factor	0.1% Max, 0.02% Typical
Insulation Resistance (IR)	25°C, V _{DCW} ; > 100 GWF or 1000WF, whichever is less 125°C V _{DCW} ; > 10 GWF or 100 WF, whichever is less
Dielectric Withstanding Voltage	3 X V _{DCW}
Aging Rate	0% per decade hour
Test Parameters	C ≤ 1000pF, f = 1MHz, V = 1.0 V _{rms} ± 0.2V _{rms} , T = 25°C C > 1000pF, f = 1KHz, V = 1.0V _{rms} ± 0.2V _{rms} , T = 25°C

01005: PPI-GMC01

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
0.5 pF	0R5	B,C	6.3V or 16V	6.8	6R8	B,C	6.3V or 16V	33	330	F,G,J,K	6.3V or 16V
1.0	1R0			8.2	8R2	39		390			
1.2	1R2			10	100	43		430			
1.5	1R5			11	110	47		470			
1.8	1R8			12	120	51		510			
2.2	2R2			15	150	56		560			
2.7	2R7			18	180	62		620			
3.3	3R3			20	200	68		680	6.3V		
3.9	3R9			22	220	82		820			
4.7	4R7			27	270	100		101			
5.6	5R6			30	300						

0201: PPI-GMC02

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
0.5 pF	0R5	B,C	25V or 50V	6.8	6R8	B,C	25V or 50V	33	330	F,G,J,K	25V or 50V
1.0	1R0			8.2	8R2	39		390			
1.2	1R2			10	100	43		430			
1.5	1R5			11	110	47		470			
1.8	1R8			12	120	51		510			
2.2	2R2			15	150	56		560			
2.7	2R7			18	180	62		620			
3.3	3R3			20	200	68		680			
3.9	3R9			22	220	82		820			
4.7	4R7			27	270	100		101			
5.6	5R6			30	300	120		121			



GMC Series

Dielectric NP0/COG**0402: PPI-GMC04**

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
0.5 pF	0R5	B,C	10V or 16V or 25V or 50V or 100V or 200V	8.0	8R0	B,C	10V or 16V or 25V or 50V or 100V or 200V	82	820	F,G,J,K	10V or 16V or 25V or 50V or 100V or 200V
1.0	1R0			8.2	8R2			91	910		10V or 16V or 25V or 50V or 100V
1.2	1R2			9.0	9R0			100	101		
1.5	1R5			9.1	9R1	110		111			
1.8	1R8			10	100	120		121			
2.0	2R0			11	110	130		131			
2.2	2R2			12	120	150		151			
2.4	2R4			13	130	180		181			
2.7	2R7			15	150	200		201			
3.0	3R0			18	180	220		221			
3.3	3R3			20	200	240		241			
3.5	3R5			22	220	270		271			
3.6	3R6			24	240	300		301			
3.9	3R9			27	270	330		331			
4.0	4R0			30	300	390		391			
4.3	4R3			33	330	430		431			
4.7	4R7			36	360	470		471			
5.0	5R0			39	390	560		561			
5.1	5R1			43	430	680		681			
5.6	5R6			47	470	820		821			
6.0	6R0			51	510	1.0 nF		102			
6.3	6R3	56	560	1.2	122	10V or 16V or 25V or 50V					
6.8	6R8	62	620	1.5	152	10V or 16V or 25V					
7.0	7R0	68	680	1.8	182						
7.5	7R5	75	750	2.2	222						



GMC Series

Dielectric NP0/COG

0603: PPI-GMC10											
Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
0.5 pF	0R5	B,C	25V or 50V or 100V or 200V	9.1	9R1	F,G,J,K	25V or 50V or 100V or 200V	160	161	F,G,J,K	25V or 50V or 100V or 200V
1.0	1R0			10	100			180	181		
1.2	1R2			11	110			200	201		
1.3	1R3			12	120			220	221		
1.5	1R5			13	130			240	241		
1.8	1R8			15	150			270	271		
2.0	2R0			18	180			300	301		
2.2	2R2			20	200			330	331		
2.4	2R4			22	220			390	391		
2.7	2R7			24	240			430	431		
3.0	3R0			27	270			470	471		
3.3	3R3			30	300			510	511		
3.6	3R6			33	330			560	561		
3.9	3R9			36	360			680	681		
4.0	4R0			39	390			750	751		
4.3	4R3			43	430			820	821		
4.7	4R7			47	470			910	911		
5.0	5R0			51	510			1.0 nF	102		25V or 50V
5.1	5R1			56	560			1.2	122		
5.6	5R6			62	620			1.5	152		
6.0	6R0			68	680			1.8	182		
6.2	6R2			75	750			2.2	222		
6.8	6R8			82	820			2.7	272		
7.0	7R0			91	910			3.3	332		
7.5	7R5			100	101			3.9	392		
8.0	8R0			120	121			4.7	472		
8.2	8R2			130	131			5.6	562		
9.0	9R0			150	151			10	103		



GMC Series

Dielectric NP0/COG

0805: PPI-GMC21											
Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
0.5 pF	0R5	B,C	16V or 25V or 50V or 100V or 200V	11	110	F,G,J,K	16V or 25V or 50V or 100V or 200V	270	271	F,G,J,K	16V or 25V or 50V or 100V or 200V
1.0	1R0			12	120			300	301		
1.1	1R1			13	130			330	331		
1.2	1R2			15	150			360	361		
1.3	1R3			16	160			390	391		
1.5	1R5			18	180			430	431		
1.6	1R6			20	200			470	471		
1.8	1R8			22	220			510	511		
2.0	2R0			24	240			560	561		
2.2	2R2			27	270			680	681		
2.4	2R4			30	300			750	751		
2.7	2R7			33	330			820	821		
3.0	3R0			36	360			910	911		
3.3	3R3			39	390			1.0 nF	102		
3.6	3R6			43	430			1.2	122		
3.9	3R9			47	470			1.5	152		
4.0	4R0			51	510			1.8	182		
4.3	4R3			56	560			2.2	222		
4.7	4R7			62	620			2.4	242		
5.0	5R0			68	680			2.7	272		
5.1	5R1			75	750			3.3	332		
5.6	5R6			82	820			3.9	392		
6.0	6R0			91	910			4.7	472		
6.2	6R2			100	101			5.6	562		
6.8	6R8			120	121			6.8	682		
7.0	7R0			130	131			8.2	822		
7.5	7R5	150	151	10	103						
8.0	8R0	160	161	15	153						
8.2	8R2	180	181	22	223						
9.0	9R0	200	201	33	333						
9.1	9R1	220	221								
10	100	F,G,J,K	240	241							



GMC Series

Dielectric NP0/COG

1206: PPI-GMC31

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
0.5 pF	0R5	B,C	25V or 50V or 100V or 200V	13	130	F,G,J,K	25V or 50V or 100V or 200V	390	391	F,G,J,K	25V or 50V or 100V or 200V
1.0	1R0			15	150			430	431		
1.1	1R1			16	160			470	471		
1.2	1R2			18	180			510	511		
1.3	1R3			20	200			560	561		
1.5	1R5			22	220			680	681		
1.6	1R6			24	240			750	751		
1.8	1R8			27	270			820	821		
2.0	2R0			30	300			910	911		
2.2	2R2			33	330			1.0 nF	102		
2.4	2R4			36	360			1.2	122		
2.7	2R7			39	390			1.5	152		
3.0	3R0			43	430			1.8	182		
3.3	3R3			47	470			2.2	222		
3.6	3R6			51	510			2.4	242		
3.9	3R9			56	560			2.7	272		
4.0	4R0			62	620			3.3	332		
4.3	4R3			68	680			3.9	392		
4.7	4R7			75	750			4.7	472		
5.0	5R0			82	820			5.6	562		
5.1	5R1			91	910			6.8	682		
5.6	5R6			100	101			8.2	822		
6.0	6R0			120	121			10	103		
6.2	6R2			130	131			15	153		
6.8	6R8			150	151			18	183		
7.0	7R0			160	161			22	223		
7.5	7R5			180	181			27	273		
8.0	8R0			200	201			33	333		25V or 50V or 100V
8.2	8R2			220	221			39	393		
9.0	9R0			240	241			49	473		
9.1	9R1			270	271			56	563		
10	100			300	301			68	683		
11	110			330	331			82	823		
12	120	F,G,J,K		360	361			100	104		



GMC Series

Dielectric NP0/COG**1210: PPI-GMC32**

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC		
1.0 pF	1R0	B,C	16V or 25V or 50V or 100V or 200V	18	180	F,G,J,K	16V or 25V or 50V or 100V or 200V	680	681	F,G,J,K	16V or 25V or 50V or 100V or 200V		
1.1	1R1			20	200			750	751				
1.2	1R2			22	220			820	821				
1.3	1R3			24	240			910	911				
1.5	1R5			27	270			1.0 nF	102				
1.6	1R6			30	300			1.2	122				
1.8	1R8			33	330			1.5	152				
2.0	2R0			36	360			1.8	182				
2.2	2R2			39	390			2.2	222				
2.4	2R4			43	430			2.4	242				
2.7	2R7			47	470			2.7	272				
3.0	3R0			51	510			3.3	332				
3.3	3R3			56	560			3.9	392				
3.6	3R6			62	620			4.7	472				
3.9	3R9			68	680			5.6	562				
4.0	4R0			75	750			6.8	682				
4.3	4R3			82	820			8.2	822				
4.7	4R7			91	910			10	103				
5.0	5R0			100	101			12	123				
5.1	5R1			120	121			15	153				
5.6	5R6			130	131			18	183				
6.0	6R0			150	151			22	223				
6.2	6R2			160	161			27	273				
6.8	6R8			180	181			33	333				
7.0	7R0			200	201			39	393				
7.5	7R5			220	221			47	473				
8.0	8R0	240		241	56			563	F,G,J,K	16V or 25V or 50V or 100V			
8.2	8R2	270		271	68			683					
9.0	9R0	300		301	82			823					
9.1	9R1	330		331	100			104	F,G,J,K	16V or 25V or 50V			
10	100	360		361	120			124					
11	110	390		391	150			154					
12	120	F,G,J,K			430			431					
13	130				470			471					
15	150				510			511					
16	160				560			561					



GMC Series

Dielectric NP0/COG

1808: PPI-GMC40											
Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
10 pF	100	F,G,J,K	50V or 100V or 200V	68	680	F,G,J,K	50V or 100V or 200V	510	511	F,G,J,K	50V or 100V or 200V
11	110			75	750			560	561		
12	120			82	820			680	681		
13	130			91	910			750	751		
15	150			100	101			820	821		
16	160			120	121			910	911		
18	180			130	131			1.0 nF	102		
20	200			150	151			1.2	122		
22	220			160	161			1.5	152		
24	240			180	181			1.8	182		
27	270			200	201			2.2	222		
30	300			220	221			2.4	242		
33	330			240	241			2.7	272		
36	360			270	271			3.3	332		
39	390			300	301			3.9	392		
43	430			330	331			4.7	472		
47	470			360	361			5.6	562		
51	510			390	391			6.8	682		50V or 100V
56	560			430	431			8.2	822		50V
62	620			470	471						



GMC Series

Dielectric NP0/COG**1812: PPI-GMC43**

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	
10 pF	100	F,G,J,K	50V or 100V or 200V	130	131	F,G,J,K	50V or 100V or 200V	2.7	272	F,G,J,K	50V or 100V or 200V	
11	110			150	151			3.3	332			
12	120			160	161			3.9	392			
13	130			180	181			4.7	472			
15	150			200	201			5.6	562			
16	160			220	221			6.8	682			
18	180			240	241			8.2	822			
20	200			270	271			10	103			
22	220			300	301			12	123			
24	240			330	331			15	153			
27	270			360	361			18	183			
30	300			390	391			22	223			
33	330			430	431			27	273			
36	360			470	471			33	333			
39	390			510	511			39	393			
43	430			560	561			47	473			
47	470			680	681			56	563			
51	510			750	751			68	683			
56	560			820	821			82	823			
62	620			910	911			100	104			
68	680			1.0 nF	102			120	124		50V or 100V	
75	750			1.2	122			150	154			
82	820			1.5	152			180	184			
91	910			1.8	182			220	224			
100	101			2.2	222							
120	121			2.4	242							



GMC Series

Dielectric NP0/COG**1825: PPI-GMC45**

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
10 pF	100	F,G,J,K	50V or 100V or 200V	100	101	F,G,J,K	50V or 100V or 200V	1.5	152	F,G,J,K	50V or 100V or 200V
11	110			120	121			1.8	182		
12	120			130	131			2.2	222		
13	130			150	151			2.4	242		
15	150			160	161			2.7	272		
16	160			180	181			3.3	332		
18	180			200	201			3.9	392		
20	200			220	221			4.7	472		
22	220			240	241			5.6	562		
24	240			270	271			6.8	682		
27	270			300	301			8.2	822		
30	300			330	331			10	103		
33	330			360	361			12	123		
36	360			390	391			15	153		
39	390			430	431			18	183		
43	430			470	471			22	223		50V or 100V
47	470			510	511			27	273		
51	510			560	561			33	333		
56	560			680	681			39	393		
62	620			750	751			47	473		
68	680			820	821			56	563		
75	750			910	911			68	683		
82	820			1.0 nF	102			82	823		
91	910			1.2	122			100	104		

2220: PPI-GMC55

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	
270 pF	271	F,G,J,K	50V or 100V or 200V	1.8	182	F,G,J,K	50V or 100V or 200V	33	333	F,G,J,K	50V or 100V	
300	301			2.2	222			39	393			
330	331			2.4	242			47	473			
360	361			2.7	272			56	563			
390	391			3.3	332			68	683			
430	431			3.9	392			82	823			
470	471			4.7	472			100	104			
510	511			5.6	562			120	124			
560	561			6.8	682			150	154			
680	681			8.2	822			180	184			
750	751			10	103			220	224			
820	821			12	123			270	274			
910	911			15	153			330	334			
1.0 nF	102			18	183		50V or 100V	470	474			50V
1.2	122			22	223							
1.5	152			27	273							



GMC Series

Dielectric NP0/COG**2225: PPI-GMC57**

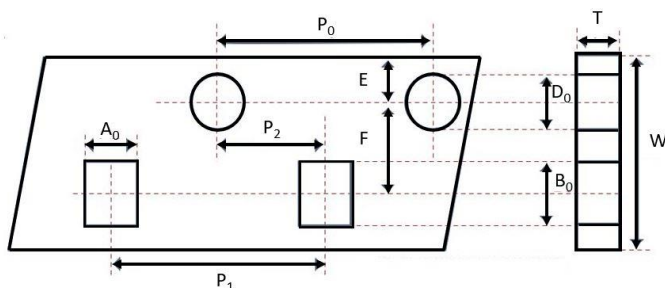
Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
270 pF	271	F,G,J,K	50V or 100V or 200V	1.0 nF	102	F,G,J,K	50V or 100V or 200V	10	103	F,G,J,K	50V or 100V or 200V
300	301			1.2	122			12	123		
330	331			1.5	152			15	153		
360	361			1.8	182			18	183		
390	391			2.2	222			22	223		
430	431			2.4	242			27	273		
470	471			2.7	272			33	333		
510	511			3.3	332			39	393		50V or 100V
560	561			3.9	392			47	473		50V
680	681			4.7	472			56	563		
750	751			5.6	562			68	683		
820	821			6.8	682			82	823		
910	911			8.2	822						



⚡ Packaging

Size	Code		Description	
	D	G	Q	
	Qty per 7" Reel		Qty per 10/13" Reel	
01005	20K	50K		
0201	10K/ 15K	50K		
0402	10K	40K	50K	
0603	4K	10K	15K	
0805	2K, 3K, 4K	10K	15K	20K
1206	2K, 3K, 4K	10K	15K	20K
1210	500,1K, 2K, 3K	4K	8K	
1808	1K, 2K, 3K			
1812	500, 1K	3K		
1825	500, 1K			
2220	500, 1K			
2225	500, 750			

⚡ Tape & Reel Specifications

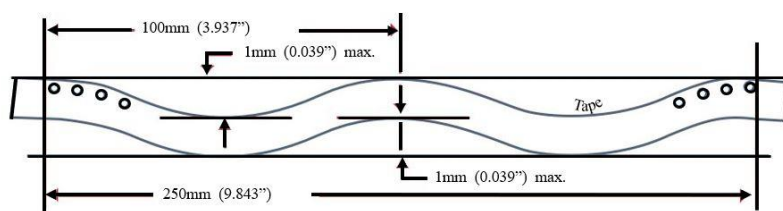
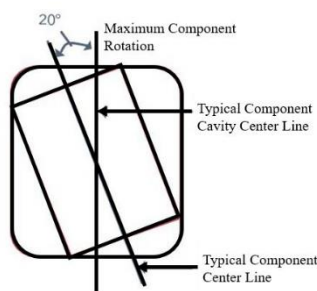
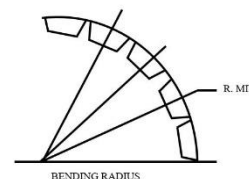
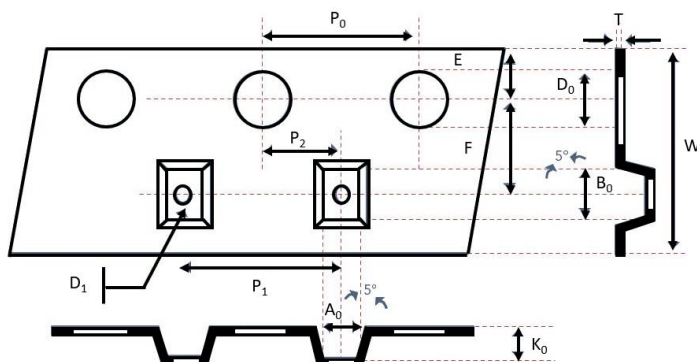


Cardboard carrier tape for EIA case sizes: 01005, 0201, 0402, 0603, 0805, 1206

Unit: mm

Size	A ₀	B ₀	T	K ₀	W	P ₀	10XP ₀	P ₁	P ₂	D ₀	D ₁	E	F
01005	0.25 ± 0.04	0.45 ± 0.04	0.36 ± 0.05	*	8.00 ± 0.30	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	*	1.75 ± 0.10	3.50 ± 0.05
0201	0.39 ± 0.07	0.69 ± 0.07	<0.50	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05
0402	0.70 ± 0.20	1.20 ± 0.20	<0.80	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05
0603	1.10 ± 0.20	1.90 ± 0.20	<1.20	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05
0805	1.65 ± 0.20	2.40 ± 0.20	<1.30	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05
1206	2.00 ± 0.20	3.60 ± 0.20	<1.30	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05

Tape & Reel Specifications



Embossed plastic carrier tape for case sizes: 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225

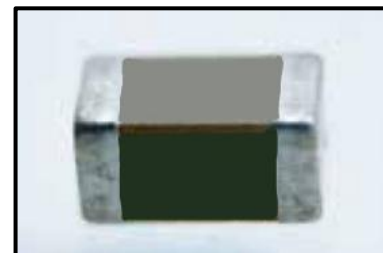
Unit: mm

Size	A ₀	B ₀	T	K ₀	W	P ₀	10XP ₀	P ₁	P ₂	D ₀	D ₁	E	F
0805	<1.80	<2.70	0.23 ± 0.10	<2.50	8.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.00 ± 0.10	1.75 ± 0.10	3.50 ± 0.05
1206	<2.30	<4.00	0.23 ± 0.10	<2.50	8.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.00 ± 0.10	1.75 ± 0.10	3.50 ± 0.05
1210	<3.20	<3.95	0.23 ± 0.10	<3.00	8.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.00 ± 0.10	1.75 ± 0.10	3.50 ± 0.05
1808	<2.50	<5.30	0.25 ± 0.10	<2.50	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.00 ± 0.10	1.75 ± 0.10	5.50 ± 0.10
1812	<3.90	<5.30	0.25 ± 0.10	<3.50	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	5.50 ± 0.10
1825	<6.80	<5.30	0.30 ± 0.10	<3.10	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	5.50 ± 0.10
2220	<5.80	<6.50	0.30 ± 0.10	<3.10	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	5.50 ± 0.10
2225	<6.80	<6.50	0.30 ± 0.10	<3.10	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	5.50 ± 0.10



Features

- Large capacitance values in small sizes
- Excellent high frequency characteristics
- All PPI Caps conform to EIA Specifications



Applications

- Can be used on surface mount assembly equipment
- Our fully integrated manufacturing and total quality control systems ensure unprecedented high standards of quality and reliability.



Notes

- Capacitance Value & Tolerance are determined by circuit requirements
- Voltage is determined by circuit requirements
- Capacitor Size select the smallest unit permitted by the circuit constraints that provides the required capacitance and voltage rating
- Nickel Barrier is standard and recommended for units exposed to repeated solder cycles, to minimize leaching of the termination.
- All capacitors conform to EIA specifications.

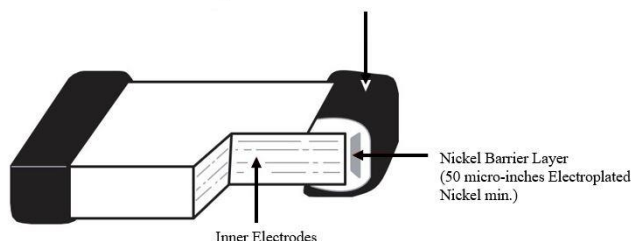


Construction

Constructed by screen printing alternative layers of internal metallic electrodes onto ceramic dielectric materials and firing into a concrete monolithic body, then completed by application of metal end terminations which are fired to assure permanent bonding with the individual internal electrodes.



Solder plate: 100% matte Sn,
typical thickness 0.003mm to 0.005mm

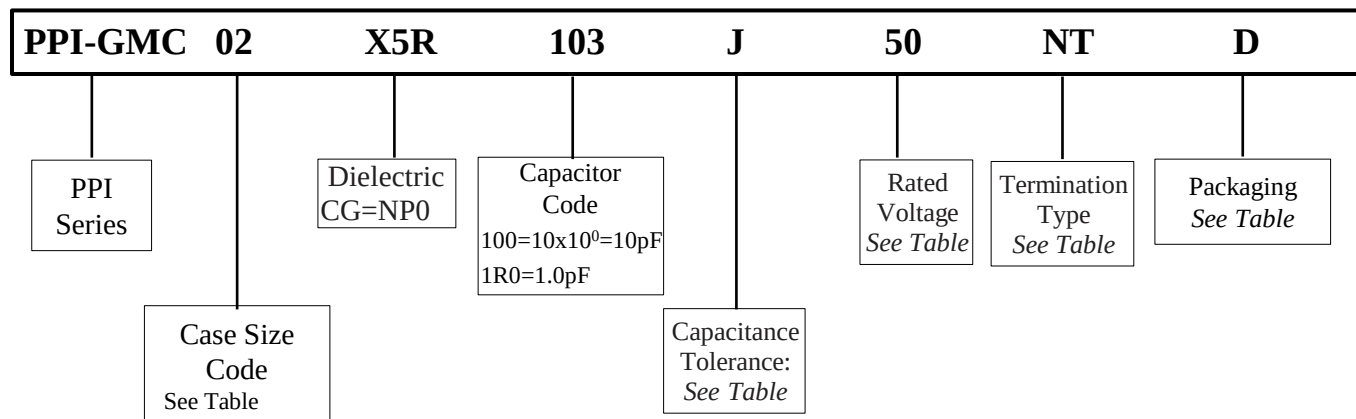


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NP0/ COG

Capacitance change with temperature is 0-30ppm/°C which is less than -0.3%/°C from -55°C to +125°C. Typical capacitance change with life is less than -0.1% for NP0s, one-fifth that shown by most other dielectrics. NP0 formulations show no aging characteristics.

Part Numbering

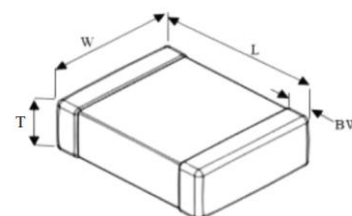


Dielectric

Ultra Stable Class I Dielectric: Linear temperature coefficient, low loss, negligible change of electrical properties with time, voltage and frequency.

Dimensions (mm)

Dimensions (mm)					
Code	Size	L	W	T	BW
01	01005	0.40 ± 0.02	0.20 ± 0.02	0.20 ± 0.02	0.07 ~ 0.14
02	0201	0.60 ± 0.03	0.30 ± 0.03	0.30 ± 0.03	0.15 ± 0.05
04	0402	1.00 ± 0.05	0.50 ± 0.05	0.50 ± 0.10	0.10 ~ 0.35
10	0603	1.60 ± 0.20	0.80 ± 0.20	1.0 max	0.10 ~ 0.40
21	0805	2.00 ± 0.30	1.25 ± 0.20	1.40	0.25 ~ 0.75
31	1206	3.20 ± 0.30	2.50 ± 0.20	2.20	0.25 ~ 0.75
32	1210	3.20 ± 0.30	1.60 ± 0.20	1.80	0.25 ~ 0.75
40	1808	4.50 ± 0.35	3.20 ± 0.30	2.20	0.25 ~ 0.75
43	1812	3.20 ± 0.30	1.6 ± 0.20	1.80	0.25 ~ 0.75
45	1825	5.70 ± 0.40	5.01 ± 0.40	1.80	0.25 ~ 0.75
55	2220	5.70 ± 0.40	6.30 ± 0.40	2.20	0.25 ~ 0.75
57	2225	4.50 ± 0.35	6.30 ± 0.40	2.20	0.25 ~ 0.75



Capacitance Code

Cap Code	Value	Cap Code	Value	Cap Code	Value	Cap Code	Value
0R5	0.5pF	100	10pF	104	0.1uF	106	10uF
5R0	5.0pF	103	0.01uF	105	1.0uF	107	100uF

Capacitance Tolerances

Code	B	C	D	F	G	J	K	M	Z
Tol.	±0.1pF	±0.25pF	±0.5pF	±1%	±2%	±5%	±10%	±20%	-20% + 80%

Rated Voltages

Code	Voltage	Code	Voltage
4R0	4.0V	350	35V
6R3	6.3V	500	50V
100	10V	630	63V
160	16V	101	100V
250	25V	201	200V

Terminations

Nickel barrier is standard and recommended for units exposed to repeated solder cycles to minimize leaching of the termination.

Code	Description
NT	Sn/Ni
PT	Pd/Ag





Stable Class II Dielectric

Temperature variation of capacitance is within $\pm 15\%$ from -55°C to $+125^{\circ}\text{C}$ for X7R (-55°C to $+85^{\circ}\text{C}$ for X5R). The capacitance change is non-linear.

Electrical Specifications

Operating Temperature Range	-55°C to $+85^{\circ}\text{C}$
Temperature Coefficient (TC)	$\pm 15\%$
Temperature Voltage Coefficient (ΔC_{Max} @ V_{DCW})	Not Applicable
Dissipation Factor	2.5% Max, 1.80% Typical
Insulation Resistance (IR)	25°C , V_{DCW} ; $> 100\text{GQF}$ or 1000QF , whichever is less 125°C V_{DCW} ; $> 10\text{GQF}$ or 100QF , whichever is less
Dielectric Withstanding Voltage	$2.5 \times V_{\text{DCW}}$
Aging Rate	$< 2\%$ per decade hour
Test Parameters	1KHz 1.0Vrms $\pm 0.2\text{Vrms}$ 25°C values $>$ or $=$ to $10\mu\text{F}$ 1.0 Vrms 120Hz



GMC Series

Dielectric X5R**01005: PPI-GMC01**

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
150 pF	151	K,M	10V	1.5	152	K,M	10V	15	153	K,M	10V
180	181			1.8	182			18	183		
220	221			2.2	222			22	223		
270	271			2.7	272			27	273		
330	331			3.3	332			33	333		
390	391			3.9	392			39	393		
470	471			4.7	472			47	473		
560	561			5.6	562			56	563		
680	681			6.8	682			68	683		
820	821			8.2	822			82	823		
1.0 nF	102			10	103			100	104		
1.2	122			12	123						

0201: PPI-GMC02

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
100 pF	101	K,M	6.3V or 10V or 16V or 25V	1.5	152	K,M	6.3V or 10V or 16V or 25V	27	273	K,M	6.3V or 10V or 16V or 25V
120	121			1.8	182			33	333		
150	151			2.2	222			39	393		
180	181			3.3	332			47	473		
220	221			3.9	392			56	563		
270	271			4.7	472			68	683		
330	331			5.6	562			82	823		
390	391			6.8	682			100	104		
470	471			8.2	822			220	224		
560	561			10	103			470	474		6.3V or 10V
680	681			12	123			1.0 uF	105		6.3V or 10V or 16V or 25V
820	821			15	153			2.2	225		6.3V
1.0 nF	102			18	183			4.7	475		
1.2	122			22	223						



GMC Series

Dielectric X5R**0402: PPI-GMC04**

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
1.0 nF	102	K,M	6.3V or 10V or 16V or 25V or 35V or 50V	15	153	K,M	6.3V or 10V or 16V or 25V or 35V or 50V	270	274	K,M	6.3V or 10V or 16V or 25V or 35V
1.2	122			18	183			390	394		6.3V or 10V or 16V or 25V or 35V or 50V
1.5	152			22	223			470	474		6.3V or 10V or 16V or 25V or 35V or 50V
1.8	182			27	273			560	564		6.3V or 10V or 16V or 25V
2.2	222			33	333			680	684		6.3V or 10V or 16V or 25V or 35V
2.7	272			39	393			820	824		6.3V or 10V or 16V or 25V
3.3	332			47	473			1.0 uF	105		6.3V or 10V or 16V or 25V or 35V
3.9	392			56	563			2.2	225		6.3V or 10V or 16V or 25V or 35V
4.7	472			68	683			3.3	335		6.3V or 10V or 16V
5.6	562			82	823			3.9	395		6.3V or 10V
6.8	682			100	103			4.7	475		6.3V or 10V or 16V
8.2	822			150	154		6.3V or 10V or 16V or 25V or 35V	10	106		6.3V or 10V
10	103			220	224		6.3V or 10V or 16V or 25V or 35V or 50V	22	226		6.3V
12	123										

0603: PPI-GMC10

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
100 nF	104	K,M	6.3V or 10V or 25V or 35V	560	564	K,M	6.3V or 10V or 25V or 35V	3.9	395	K,M	6.3V or 10V or 25V or 35V
120	124			680	684			4.7	475		6.3V or 10V or 25V or 35V
150	154			820	824			10	106		6.3V or 10V
220	224			1.0 uF	105			22	226		6.3V or 10V
270	274			2.2	225			47	476		6.3V
330	334			2.7	275						
470	474			3.3	335						



GMC Series

Dielectric X5R**0805: PPI-GMC21**

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	
180 nF	184	K,M	4V or 6.3V or 10V or 16V or 25V or 35V or 50V	820	824	K,M	4V or 6.3V or 10V or 16V or 25V or 35V or 50V	15	156	K,M	4V or 6.3V or 10V or 16V or 25V or 35V	
220*	224			1.0 uF*	105			22	226			4V or 6.3V or 10V
270	274			2.2*	225			33	336			
390	394			3.3	335			47	476			
470*	474			4.7*	475			100	107		4V or 6.3V	
560	564			6.8	685		4V or 6.3V or 10V or 16V or					
680	684			10	106							

*Also available in 63V

1206: PPI-GMC31

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
180 nF	184	K,M	4V or 6.3V or 10V or 16V or 25V or 50V	820	824	K,M	4V or 6.3V or 10V or 16V or 25V or 50V	15	156	K,M	4V or 6.3V or 10V or 16V or 25V
220	224			1.0 uF	105			22	226		
270	274			2.2	225			33	336		
390	394			3.3	335			47	476		
470	474			4.7	475			100	107		4V or 6.3V or 10V
560	564			6.8	685			150	157		4V
680	684			10	106						

1210: PPI-GMC32

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
180 nF	184	K,M	4V or 6.3V or 10V or 16V or 25V or 50V	1.0 uF	105	K,M	4V or 6.3V or 10V or 16V or 25V or 50V	33	336	K,M	4V or 6.3V or 10V or 16V or 25V
220	224			2.2	225			47	476		4V or 6.3V or 10V or 16V
270	274			3.3	335			100	107		4V or 6.3V
390	394			4.7	475			150	157		4V
470	474			6.8	685			220	227		
560	564			10	106			330	337		
680	684			15	156						
820	824			22	226		4V or 6.3V or 10V or 16V or				

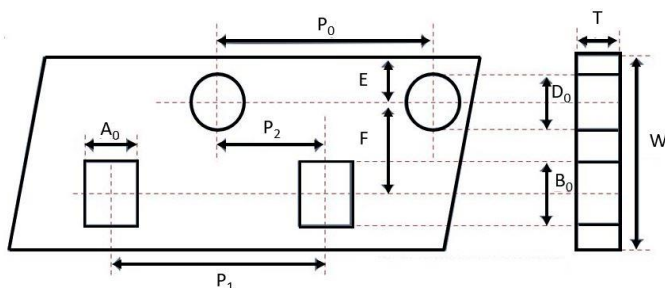
1812: PPI-GMC43

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
10 nF	106	K,M	10V or 16V or 25V	22	226	K,M	10V or 16V or 25V	47	476	K,M	6.3V or 10V
15	156			33	336		6.3V or 10V or 16V	100	107		

⚡ Packaging

Size		Code			Description
		D	G	Q	
	Qty per 7" Reel	Qty per 10/13" Reel			
01005	20K	50K			
0201	10K/ 15K	50K			
0402	10K	40K	50K		
0603	4K	10K	15K		
0805	2K, 3K, 4K	10K	15K	20K	
1206	2K, 3K, 4K	10K	15K	20K	
1210	500,1K, 2K, 3K	4K	8K		
1808	1K, 2K, 3K				
1812	500, 1K	3K			
1825	500, 1K				
2220	500, 1K				
2225	500, 750				

⚡ Tape & Reel Specifications

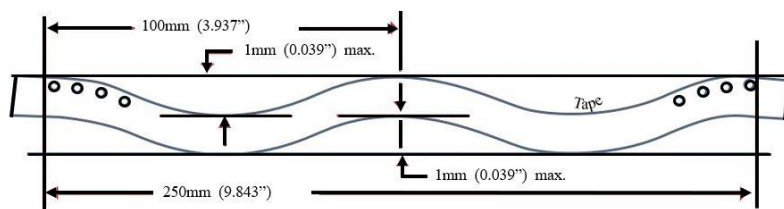
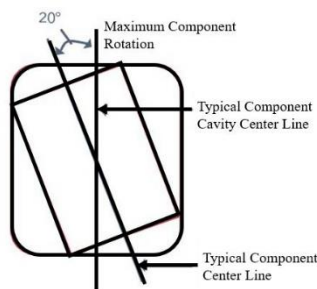
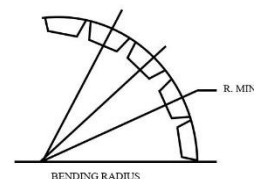
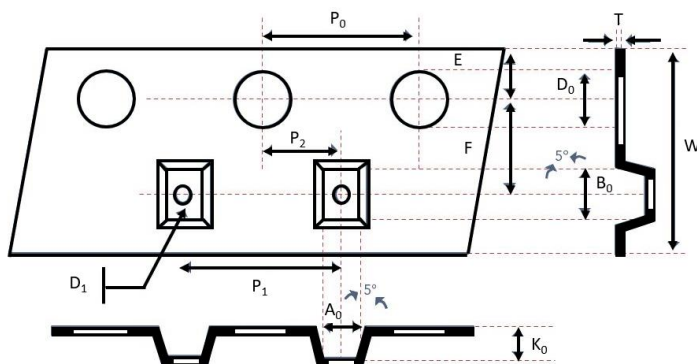


Cardboard carrier tape for EIA case sizes: 01005, 0201, 0402, 0603, 0805, 1206

Unit: mm

Size	A ₀	B ₀	T	K ₀	W	P ₀	10XP ₀	P ₁	P ₂	D ₀	D ₁	E	F
01005	0.25 ± 0.04	0.45 ± 0.04	0.36 ± 0.05	*	8.00 ± 0.30	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	*	1.75 ± 0.10	3.50 ± 0.05
0201	0.39 ± 0.07	0.69 ± 0.07	<0.50	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05
0402	0.70 ± 0.20	1.20 ± 0.20	<0.80	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05
0603	1.10 ± 0.20	1.90 ± 0.20	<1.20	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05
0805	1.65 ± 0.20	2.40 ± 0.20	<1.30	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05
1206	2.00 ± 0.20	3.60 ± 0.20	<1.30	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05

Tape & Reel Specifications



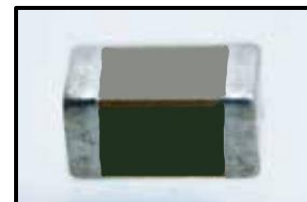
Embossed plastic carrier tape for case sizes: 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225

Unit: mm

Size	A ₀	B ₀	T	K ₀	W	P ₀	10XP ₀	P ₁	P ₂	D ₀	D ₁	E	F
0805	<1.80	<2.70	0.23 ± 0.10	<2.50	8.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.00 ± 0.10	1.75 ± 0.10	3.50 ± 0.05
1206	<2.30	<4.00	0.23 ± 0.10	<2.50	8.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.00 ± 0.10	1.75 ± 0.10	3.50 ± 0.05
1210	<3.20	<3.95	0.23 ± 0.10	<3.00	8.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.00 ± 0.10	1.75 ± 0.10	3.50 ± 0.05
1808	<2.50	<5.30	0.25 ± 0.10	<2.50	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.00 ± 0.10	1.75 ± 0.10	5.50 ± 0.10
1812	<3.90	<5.30	0.25 ± 0.10	<3.50	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	5.50 ± 0.10
1825	<6.80	<5.30	0.30 ± 0.10	<3.10	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	5.50 ± 0.10
2220	<5.80	<6.50	0.30 ± 0.10	<3.10	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	5.50 ± 0.10
2225	<6.80	<6.50	0.30 ± 0.10	<3.10	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	5.50 ± 0.10

⚡ Features

- Large capacitance values in small sizes
- Excellent high frequency characteristics
- All PPI Caps conform to EIA Specifications



⚡ Applications

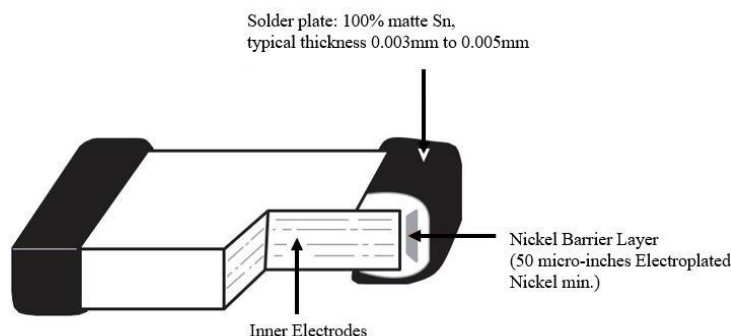
- Can be used on surface mount assembly equipment
- Our fully integrated manufacturing and total quality control systems ensure unprecedented high standards of quality and reliability.

⚡ Notes

- Capacitance Value & Tolerance are determined by circuit requirements
- Voltage is determined by circuit requirements
- Capacitor Size select the smallest unit permitted by the circuit constraints that provides the required capacitance and voltage rating
- Nickel Barrier is standard and recommended for units exposed to repeated solder cycles, to minimize leaching of the termination.
- All capacitors conform to EIA specifications.

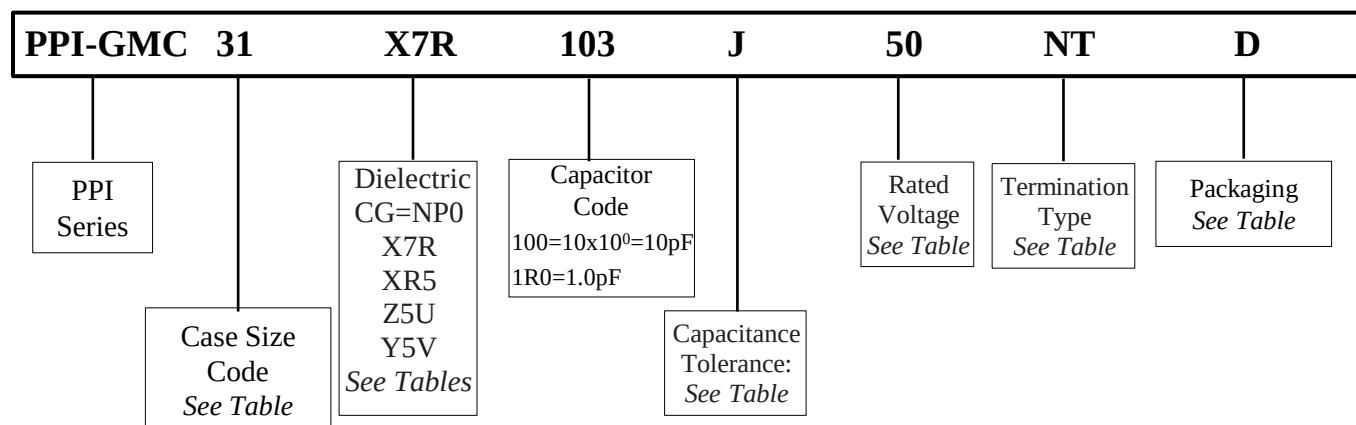
⚡ Construction

Constructed by screen printing alternative layers of internal metallic electrodes onto ceramic dielectric materials and firing into a concrete monolithic body, then completed by application of metal end terminations which are fired to assure permanent bonding with the individual internal electrodes.



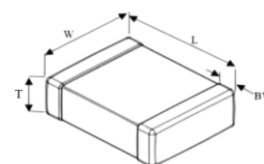
Please note that the contents of this document are subject to change at any time at PPI's sole discretion. The most up-to-date version of this document is available at www.passiveplus.com

Part Numbering



Dimensions (mm)

Dimensions (mm)					
Code	Size	L	W	T	BW
01	01005	0.40 ± 0.02	0.20 ± 0.02	0.20 ± 0.02	0.07 ~ 0.14
02	0201	0.60 ± 0.03	0.30 ± 0.03	0.30 ± 0.03	0.15 ± 0.05
04	0402	1.00 ± 0.05	0.50 ± 0.05	0.50 ± 0.10	0.10 ~ 0.35
10	0603	1.60 ± 0.20	0.80 ± 0.20	1.0 max	0.10 ~ 0.40
21	0805	2.00 ± 0.30	1.25 ± 0.20	1.40	0.25 ~ 0.75
31	1206	3.20 ± 0.30	2.50 ± 0.20	2.20	0.25 ~ 0.75
32	1210	3.20 ± 0.30	1.60 ± 0.20	1.80	0.25 ~ 0.75
40	1808	4.50 ± 0.35	3.20 ± 0.30	2.20	0.25 ~ 0.75
43	1812	3.20 ± 0.30	1.6 ± 0.20	1.80	0.25 ~ 0.75
45	1825	5.70 ± 0.40	5.01 ± 0.40	1.80	0.25 ~ 0.75
55	2220	5.70 ± 0.40	6.30 ± 0.40	2.20	0.25 ~ 0.75
57	2225	4.50 ± 0.35	6.30 ± 0.40	2.20	0.25 ~ 0.75



⚡ Capacitance Code

Cap Code	Value	Cap Code	Value	Cap Code	Value	Cap Code	Value
0R5	0.5pF	100	10pF	104	0.1uF	106	10uF
5R0	5.0pF	103	0.01uF	105	1.0uF	107	100uF

⚡ Capacitance Tolerances

Code	B	C	D	F	G	J	K	M	Z
Tol.	±0.1pF	±0.25pF	±0.5pF	±1%	±2%	±5%	±10%	±20%	-20% + 80%

⚡ Rated Voltages

Code	Voltage	Code	Voltage
4R0	4.0V	350	35V
6R3	6.3V	500	50V
100	10V	630	63V
160	16V	101	100V
250	25V	201	200V

⚡ Terminations

Nickel barrier is standard and recommended for units exposed to repeated solder cycles to minimize leaching of the termination.

Code	Description
NT	Sn/Ni
PT	Pd/Ag



**± Stable Class II Dielectric**

Temperature variation of capacitance is within $\pm 15\%$ from -55°C to $+125^{\circ}\text{C}$ for X7R (-55°C to $+85^{\circ}\text{C}$ for X5R).
The capacitance change is non-linear.

± Electrical Specifications

Operating Temperature Range

X7R -55°C to $+125^{\circ}\text{C}$

X5R -55°C to $+85^{\circ}\text{C}$

Temperature Coefficient (TC) $\pm 15\%$

Temperature Voltage Coefficient
(ΔC_{Max} @ V_{DCW}) Not Applicable

Dissipation Factor 2.5% Max, 1.80% Typical

Insulation Resistance (IR) 25°C , V_{DCW} ; $> 100\text{G}\Omega$ or $1000\text{Q}\Omega$, whichever is less
 125°C V_{DCW} ; $> 10\text{G}\Omega$ or $100\text{Q}\Omega$, whichever is less

Dielectric Withstanding Voltage $2.5 \times V_{\text{DCW}}$

Aging Rate $< 2\%$ per decade hour

Test Parameters 1KHz 1.0Vrms $\pm 0.2\text{Vrms}$ 25°C values $>$ or $=$ to $10\mu\text{F}$ 1.0 Vrms
120Hz

01005: PPI-GMC01

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
100 pF	101	J,K	6.3V or 10V	270	271	J,K	6.3V or 10V	680	681	J,K	6.3V or 10V
120	121			330	331			820	821		
150	151			390	391			1000	102		
180	181			470	470						
220	221			560	561						

0201: PPI-GMC02

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
100 pF	101	J,K	6.3V or 10V or 16V or 25V or 50V	560	561	J,K	6.3V or 10V or 16V or 25V or 50V	3.3	332	J,K	6.3V or 10V or 16V
120	121			680	681			3.9	392		
150	151			820	821			4.7	472		
180	181			1.0 nF	102			5.6	562		
220	221			1.2	122			6.8	682		
270	271			1.5	152		6.3V or 10V or 16V	8.2	822		
330	331			1.8	182			10	103		
390	391			2.2	222						
470	471			2.7	272						



GMC Series

Dielectric: X7R**0402: PPI-GMC04**

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC		
100 pF	101	J,K	10V or 25V or 50V or 100V or 200V	1.0 nF	102	J,K	10V or 25V or 50V or 100V	33	333	J,K	10V or 25V or 50V		
110	111			1.2	122			39	393				
120	121			1.5	152			47	473				
130	131			1.8	182			56	563				
150	151			2.2	222			68	683				
180	181			2.7	272			82	823				
200	221			3.3	332			100	104				
220	221			3.9	392			150	154		10V or 25V		
240	241			4.7	472			220	224				
270	271			5.6	562			270	274				
300	301			6.8	682			390	394				
330	331			8.2	822		470	474	10V				
390	391			10	103		560	564					
430	431			12	123		680	684					
470	471			15	153		820	824					
560	561			18	183		1uF	105					
680	681			22	223		10V or 25V or 50V						
820	821			27	273								

0603: PPI-GMC10

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC		
100 pF	101	J,K	6.3V or 10V or 16V or 25V or 50V or 100V or 200V	1.0 nF	102	J,K	6.3V or 10V or 16V or 25V or 50V or 100V or 200V	56	563	J,K	6.3V or 10V or 16V or 25V or 50V or 100V		
120	121			1.2	122			68	683				
130	131			1.5	152			82	823				
150	151			1.8	182			100	104				
160	161			2.2	222			120	124				
180	181			2.7	272			150	154				
200	221			3.3	332			220	224		6.3V or 10V or 16V or 25V or 50V		
220	221			3.9	392			270	274				
240	241			4.7	472			330	334				
270	271			5.6	562			470	474				
300	301			6.8	682		560	564	6.3V or 10V or 16V or 25V				
330	331			7.5	752		680	684					
390	391			8.2	822		820	824					
430	431				10		103		1.0 uF	105		6.3V or 10V or 16V or 25V or 50V	
470	471				12		123		2.2	225		6.3V or 10V or 16V	
510	511				15		153		2.7	275			
560	561				18		183		3.3	335			
620	621				22		223		3.9	395			
680	681				27		273		4.7	475		6.3V or 10V	
750	751				33		333		10	106		6.3V	
820	821				39		393						
910	911				47		473						



GMC Series

Dielectric: X7R

0805: PPI-GMC21

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
100 pF	101	J,K	6.3V or 10V or 16V or 25V or 35V or 50V or 100V or 200V	3.9	392	J,K	6.3V or 10V or 16V or 25V or 35V or 50V or 100V or 200V	150	154	J,K	6.3V or 10V or 16V or 25V or 35V or 50V or 100V
120	121			4.7	472			180	184		
150	151			5.6	562			220	224		
180	181			6.8	682			270	274		
220	221			8.2	822			330	334		
270	271			10	103			470	474		
330	331			12	123			560	564		
390	391			15	153			680	684		
470	471			18	183			820	824		
560	561			22	223			1.0 uF	105		6.3V or 10V or 16V or 25V or 35V or 50V
680	681			27	273			1.2	125		
820	821			33	333			1.5	155		
1.0 nF	102			39	393			1.8	185		
1.2	122			47	473			2.2	225		
1.5	152			56	563		6.3V or 10V or 16V or 25V or 35V or 50V or 100V	3.3	335	J,K	6.3V or 10V or 16V or 25V
1.8	182			68	683			4.7	475		
2.2	222			82	823			6.8	685		
2.7	272			100	104			10	106		
3.3	332			120	124						

1206: PPI-GMC31

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
100 pF	101	J,K	6.3V or 10V or 16V or 25V or 50V or 100V or 200V	3.9	392	J,K	6.3V or 10V or 16V or 25V or 50V or 100V or 200V	180	184	J,K	6.3V or 10V or 16V or 25V or 50V
120	121			4.7	472			220	224		
150	151			5.6	562			270	274		
180	181			6.8	682			330	334		
220	221			8.2	822			470	474		
270	271			10	103			560	564		
330	331			12	123			680	684		
390	391			15	153			820	824		
470	471			18	183			1.0 uF	105		
560	561			22	223			1.2	125		
680	681			27	273			1.5	155		
820	821			33	333			1.8	185		
1.0 nF	102			47	473			2.2	225		
1.2	122			56	563			3.3	335	J,K	6.3V or 10V or 16V or 25V or 50V
1.5	152			68	683			4.7	475		
1.8	182			82	823			6.8	685		
2.2	222			100	104			10	106		
2.7	272			120	124			22	226		
3.3	332			150	154						6.3V or 10V or 16V



GMC Series

Dielectric: X7R**1210: PPI-GMC32**

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
100 pF	101	J,K	6.3V or 10V or 16V or 25V or 50V or 100V or 200V	4.7	472	J,K	6.3V or 10V or 16V or 25V or 50V or 100V or 200V	220	224	J,K	6.3V or 10V or 16V or 25V or 50V or 100V or 200V
120	121			5.6	562			270	274		6.3V or 10V or 16V or 25V or 50V or 100V
150	151			6.8	682			330	334		
180	181			8.2	822			470	474		
220	221			10	103			560	564		
270	271			12	123			680	684		
330	331			15	153			820	824		
390	391			18	183			1.0 uF	105		6.3V or 10V or 16V or 25V or 50V or 100V
470	471			22	223			1.2	125		
560	561			27	273			1.5	155		
680	681			33	333			1.8	185	6.3V or 10V or 16V or 25V or 50V	
820	821			39	393			2.2	225		
1.0 nF	102			47	473			3.3	335		6.3V or 10V or 16V or 25V or 50V
1.2	122			56	563			4.7	475	6.3V or 10V or 16V or 25V or 50V or 100V	
1.5	152			68	683			6.8	685		
1.8	182			82	823			10	106		
2.2	222			100	104			22	226	6.3V or 10V	
2.7	272			120	124			47	476		
3.3	332			150	154						
3.9	392			180	184						

1808: PPI-GMC40

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
100 pF	101	J,K	25V or 50V or 100V or 200V	1.8	182	J,K	25V or 50V or 100V or 200V	33	333	J,K	25V or 50V or 100V or 200V
120	121			2.2	222			39	393		
150	151			2.7	272			47	473		
180	181			3.3	332			56	563		
220	221			3.9	392			68	683		
270	271			4.7	472			82	823		
330	331			5.6	562			100	104	J,K	25V or 50V
390	391			6.8	682			120	124		
470	471			8.2	822			150	154		
560	561			10	103			180	184		
680	681			12	123			220	224		
820	821			15	153			270	274		
1.0 nF	102			18	183			330	334	J,K	25V
1.2	122			22	223			470	474		
1.5	152			27	273						



GMC Series

Dielectric: X7R**1812: PPI-GMC43**

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
100 pF	101	J,K	10V or 16V or 25V or 50V or 100V or 200V	4.7	472	J,K	10V or 16V or 25V or 50V or 100V or 200V	220	224	J,K	10V or 16V or 25V or 50V or 100V or 200V
120	121			5.6	562			270	274		
150	151			6.8	682			330	334		
180	181			8.2	822			470	474		
220	221			10	103			560	564		
270	271			12	123			680	684		
330	331			15	153			820	824		
390	391			18	183			1.0 uF	105	J,K	10V or 16V or 25V or 50V or 100V
470	471			22	223			1.2	125		
560	561			27	273			1.5	155		
680	681			33	333			1.8	185		
820	821			39	393			2.2	225		
1.0 nF	102			47	473			3.3	335		
1.2	122			56	563			4.7	475		
1.5	152			68	683			6.8	685		10V or 16V or 25V or 50V
1.8	182			82	823			10	106		10V or 16V or 25V
2.2	222			100	104			22	226		10V or 16V
2.7	272			120	124			33	336		
3.3	332			150	154						
3.9	392			180	184						

1825: PPI-GMC45

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
100 pF	101	J,K	16V or 25V or 50V or 100V or 200V	3.3	332	J,K	16V or 25V or 50V or 100V or 200V	100	104	J,K	16V or 25V or 50V or 100V or 200V
120	121			3.9	392			120	124		
150	151			4.7	472			150	154		
180	181			5.6	562			180	184		
220	221			6.8	682			220	224		
270	271			8.2	822			270	274		
330	331			10	103			330	334		
390	391			12	123			470	474		
470	471			15	153			560	564		
560	561			18	183			680	684		
680	681			22	223			820	824		
820	821			27	273			1.0 uF	105		
1.0 nF	102			33	333			1.2	125		
1.2	122			39	393			1.5	155		
1.5	152			47	473			1.8	185		
1.8	182			56	563			2.2	225		
2.2	222			68	683						
2.7	272			82	823						



GMC Series

Dielectric: X7R**2220: PPI-GMC55**

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
1.0 nF	102	J,K	16V or 25V or 50V or 100V or 200V	22	223	J,K	16V or 25V or 50V or 100V or 200V	560	564	J,K	16V or 25V or 50V or 100V or 200V
1.2	122			27	273			680	684		
1.5	152			33	333			820	824		
1.8	182			39	393			1.0 uF	105		
2.2	222			47	473			1.2	125		
2.7	272			56	563			1.5	155		
3.3	332			68	683			1.8	185	J,K	16V Code 160 or 25V Code 250 or 50V Code 500 or 100V Code 101
3.9	392			82	823			2.2	225		
4.7	472			100	104			3.3	335		
5.6	562			120	124			4.7	475		
6.8	682			150	154			6.8	685		
8.2	822			180	184			10	106		
10	103			220	224			22	226	J,K	16V Code 160 or 25V Code 16V Code 160
12	123			270	274			33	336		
15	153			330	334			47	476		
18	183							470	474		

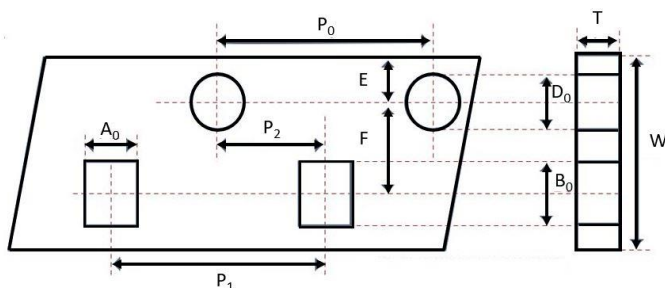
2225: PPI-GMC57

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
1.0 nF	102	J,K	16V or 25V or 50V or 100V or 200V	15	153	J,K	16V or 25V or 50V or 100V or 200V	220	224	J,K	16V or 25V or 50V or 100V or 200V
1.2	122			18	183			270	274		
1.5	152			22	223			330	334		
1.8	182			27	273			470	474		
2.2	222			33	333			560	564		
2.7	272			39	393			680	684		
3.3	332			47	473			820	824		16V or 25V or 50V or 100V
3.9	392			56	563			1.0 uF	105		
4.7	472			68	683			1.2	125		
5.6	562			82	823			1.5	155		
6.8	682			100	104			1.8	185		
8.2	822			120	124			2.2	225		16V or 25V
10	103			150	154			3.3	335		
12	123			180	184			4.7	475		16V

Packaging

Size	Code	Description
	D	G Q
	Qty per 7" Reel	Qty per 10/13" Reel
01005	20K	50K
0201	10K/ 15K	50K
0402	10K	40K 50K
0603	4K	10K 15K
0805	2K, 3K, 4K	10K 15K 20K
1206	2K, 3K, 4K	10K 15K 20K
1210	500,1K, 2K, 3K	4K 8K
1808	1K, 2K, 3K	
1812	500, 1K	3K
1825	500, 1K	
2220	500, 1K	
2225	500, 750	

Tape & Reel Specifications

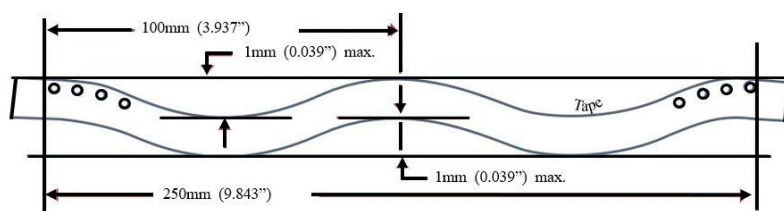
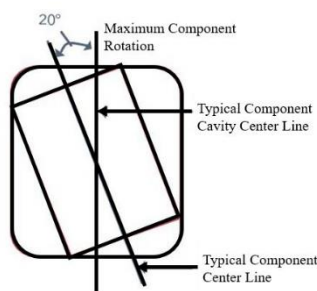
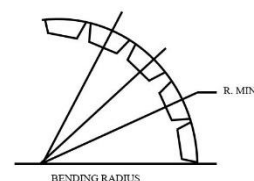
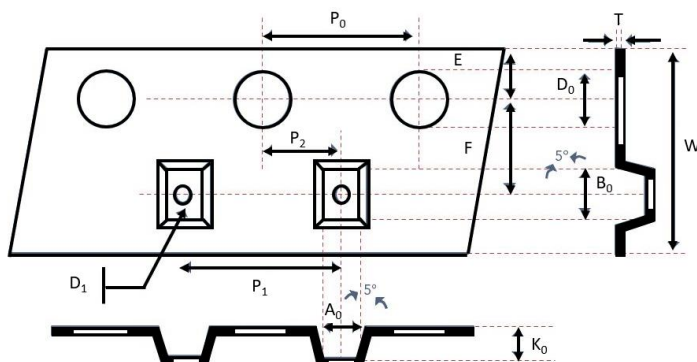


Cardboard carrier tape for EIA case sizes: 01005, 0201, 0402, 0603, 0805, 1206

Unit: mm

Size	A ₀	B ₀	T	K ₀	W	P ₀	10XP ₀	P ₁	P ₂	D ₀	D ₁	E	F
01005	0.25 ± 0.04	0.45 ± 0.04	0.36 ± 0.05	*	8.00 ± 0.30	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	*	1.75 ± 0.10	3.50 ± 0.05
0201	0.39 ± 0.07	0.69 ± 0.07	<0.50	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05
0402	0.70 ± 0.20	1.20 ± 0.20	<0.80	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05
0603	1.10 ± 0.20	1.90 ± 0.20	<1.20	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05
0805	1.65 ± 0.20	2.40 ± 0.20	<1.30	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05
1206	2.00 ± 0.20	3.60 ± 0.20	<1.30	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05

Tape & Reel Specifications



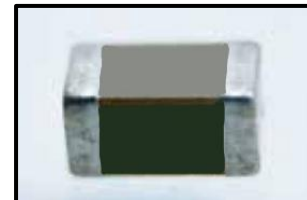
Embossed plastic carrier tape for case sizes: 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225

Unit: mm

Size	A ₀	B ₀	T	K ₀	W	P ₀	10XP ₀	P ₁	P ₂	D ₀	D ₁	E	F
0805	<1.80	<2.70	0.23 ± 0.10	<2.50	8.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.00 ± 0.10	1.75 ± 0.10	3.50 ± 0.05
1206	<2.30	<4.00	0.23 ± 0.10	<2.50	8.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.00 ± 0.10	1.75 ± 0.10	3.50 ± 0.05
1210	<3.20	<3.95	0.23 ± 0.10	<3.00	8.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.00 ± 0.10	1.75 ± 0.10	3.50 ± 0.05
1808	<2.50	<5.30	0.25 ± 0.10	<2.50	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.00 ± 0.10	1.75 ± 0.10	5.50 ± 0.10
1812	<3.90	<5.30	0.25 ± 0.10	<3.50	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	5.50 ± 0.10
1825	<6.80	<5.30	0.30 ± 0.10	<3.10	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	5.50 ± 0.10
2220	<5.80	<6.50	0.30 ± 0.10	<3.10	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	5.50 ± 0.10
2225	<6.80	<6.50	0.30 ± 0.10	<3.10	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	5.50 ± 0.10

⚡ Features

- Large capacitance values in small sizes
- Excellent high frequency characteristics
- All PPI Caps conform to EIA Specifications



⚡ Applications

- Can be used on surface mount assembly equipment
- Our fully integrated manufacturing and total quality control systems ensure unprecedented high standards of quality and reliability.

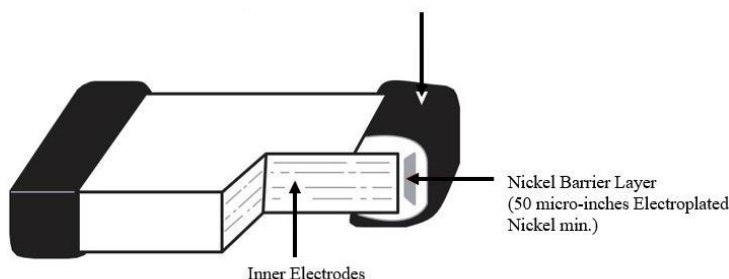
⚡ Notes

- Capacitance Value & Tolerance are determined by circuit requirements
- Voltage is determined by circuit requirements
- Capacitor Size select the smallest unit permitted by the circuit constraints that provides the required capacitance and voltage rating
- Nickel Barrier is standard and recommended for units exposed to repeated solder cycles, to minimize leaching of the termination.
- All capacitors conform to EIA specifications.

⚡ Construction

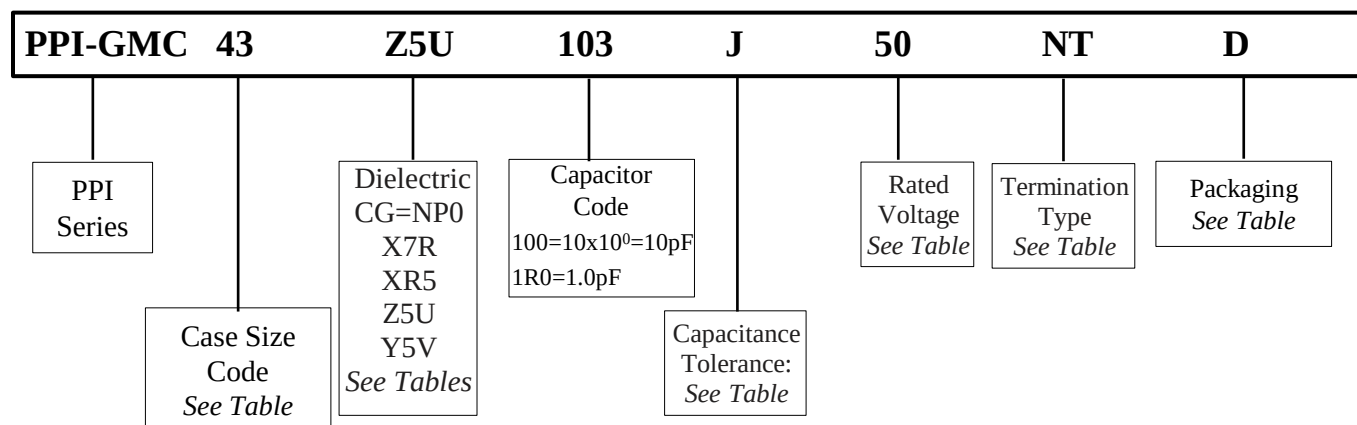
Constructed by screen printing alternative layers of internal metallic electrodes onto ceramic dielectric materials and firing into a concrete monolithic body, then completed by application of metal end terminations which are fired to assure permanent bonding with the individual internal electrodes.

Solder plate: 100% matte Sn,
typical thickness 0.003mm to 0.005mm



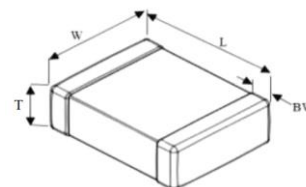
Please note that the contents of this document are subject to change at any time at PPI's sole discretion. The most up-to-date version of this document is available at www.passiveplus.com

Part Numbering



Dimensions (mm)

Dimensions (mm)					
Code	Size	L	W	T	BW
01	01005	0.40 ± 0.02	0.20 ± 0.02	0.20 ± 0.02	0.07 ~ 0.14
02	0201	0.60 ± 0.03	0.30 ± 0.03	0.30 ± 0.03	0.15 ± 0.05
04	0402	1.00 ± 0.05	0.50 ± 0.05	0.50 ± 0.10	0.10 ~ 0.35
10	0603	1.60 ± 0.20	0.80 ± 0.20	1.0 max	0.10 ~ 0.40
21	0805	2.00 ± 0.30	1.25 ± 0.20	1.40	0.25 ~ 0.75
31	1206	3.20 ± 0.30	2.50 ± 0.20	2.20	0.25 ~ 0.75
32	1210	3.20 ± 0.30	1.60 ± 0.20	1.80	0.25 ~ 0.75
40	1808	4.50 ± 0.35	3.20 ± 0.30	2.20	0.25 ~ 0.75
43	1812	3.20 ± 0.30	1.6 ± 0.20	1.80	0.25 ~ 0.75
45	1825	5.70 ± 0.40	5.01 ± 0.40	1.80	0.25 ~ 0.75
55	2220	5.70 ± 0.40	6.30 ± 0.40	2.20	0.25 ~ 0.75
57	2225	4.50 ± 0.35	6.30 ± 0.40	2.20	0.25 ~ 0.75



Capacitance Code

Cap Code	Value	Cap Code	Value	Cap Code	Value	Cap Code	Value
0R5	0.5pF	100	10pF	104	0.1uF	106	10uF
5R0	5.0pF	103	0.01uF	105	1.0uF	107	100uF

Capacitance Tolerances

Code	B	C	D	F	G	J	K	M	Z
Tol.	±0.1pF	±0.25pF	±0.5pF	±1%	±2%	±5%	±10%	±20%	-20% + 80%

Rated Voltages

Code	Voltage	Code	Voltage
4R0	4.0V	350	35V
6R3	6.3V	500	50V
100	10V	630	63V
160	16V	101	100V
250	25V	201	200V

Terminations

Nickel barrier is standard and recommended for units exposed to repeated solder cycles to minimize leaching of the termination.

Code	Description
NT	Sn/Ni
PT	Pd/Ag



**≠ Z5U**

Despite their capacitance instability, Z5U formulations are very popular because of their small size, temperature range, low ESL, low ESR and excellent frequency response. These features are particularly important for decoupling application where only a minimum capacitance value is required.

≠ Y5V

Y5V formulations are for general purpose use in a limited temperature range. They have a wide temperature characteristic of +22% - 82% capacitance change over the operating temperature range of -30°C to +85°C. Y5Vs high dielectric constant allows the manufacture of very high capacitance values (up to 22MF) in small physical sizes.

High capacitance per unit volume: General Purpose product

≠ Electrical Specifications

Operating Temperature Range	-30°C to +85°C
Temperature Coefficient (TC)	±22% - 82%
Temperature Voltage Coefficient (ΔC_{Max} @ V_{DCW})	Not Applicable
Dissipation Factor	3.0% Max, 2.00% Typical
Insulation Resistance (IR)	10GQ or 100QF, whichever is less 25°C V_{DCW}
Dielectric Withstanding Voltage	2.5 X V_{DCW}
Aging Rate	3% per decade hour
Test Parameters	1KHz 1.0Vrms 25°C values > or = to 10uF 1.0 Vrms 120Hz



01005: PPI-GMC01

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
10 nF	103	M, Z	16V	27	273	M, Z	16V	68	683	M, Z	16V
12	123			33	333			82	823		
15	153			39	393			100	104		
18	183			47	473						
22	223			56	563						

0201: PPI-GMC02

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC		
10 nF	103	M, Z	6.3V	68	683	M, Z	6.3V	470	474	M, Z	6.3V		
12	123			82	823			560	564				
15	153			100	104			560	564				
18	183			120	124			680	684				
22	223			150	154			820	824				
27	273			180	184			1.0 uF	105				
33	333			220	224			2.2	225				
39	393			270	274			4.7	475				
47	473			330	334								
56	563			390	394								

0402: PPI-GMC04

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
10 nF	103	M, Z	6.3V or 10V or 16V or 25V or 50V	68	683	M, Z	6.3V or 10V or 16V or 25V or 50V	820	824	M, Z	6.3V or 10V or 16V
12	123			82	823			1.0 uF	105		6.3V or 10V or 16V or 25V
15	153			100	104			2.2	225		
18	183			150	154		6.3V or 10V or 16V or 25V	3.3	335		6.3V or 10V
22	223			220	224		6.3V or 10V or 16V or 25V	3.9	395		
27	273			270	274		6.3V or 10V or 16V	4.7	475		
33	333			390	394			10	106		
39	393			470	474			22	226		
47	473			560	564						
56	563						680	684			



Dielectrics: Z5U & Y5V

0603: PPI-GMC10

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	
10 nF	103	M, Z	6.3V or 10V or 16V or 25V or 50V	82	823	M, Z	6.3V or 10V or 16V or 25V or 50V	1.0 uF	105	M, Z	6.3V or 10V or 16V or 25V or 50V	
12	123			100	104			2.2	225		6.3V or 10V or 16V	
15	153			120	124			2.7	275		6.3V or 10V	
18	183			150	154			3.3	335			
22	223			220	224			3.9	395			
27	273			270	274			4.7	475		6.3V or 10V or 16V	
33	333			330	334			10	106		6.3V or 10V	
39	393			470	474			22	226		6.3V	
47	473			560	564			47	476		6.3V	
56	563			680	684							
68	683			820	824							

0805: PPI-GMC21

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	
10 nF	103	M, Z	6.3V or 10V or 16V or 25V or 50V	82	823	M, Z	6.3V or 10V or 16V or 25V or 50V	820	824	M, Z	6.3V or 10V or 16V or 25V or 50V	
12	123			100	104			1.0 uF	105			
15	153			120	124			2.2	225			
18	183			150	154			3.3	335			
22	223			180	184			4.7	475		6.3V or 10V or 16V	
27	273			220	224			6.8	685			
33	333			270	274			10	106			
39	393			330	334			22	226			
47	473			470	474			47	476		6.3V or 10V	
56	563			560	564							
68	683			680	684							

1206: PPI-GMC31

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
10 nF	103	M, Z	6.3V or 10V or 16V or 25V or 50V	100	104	M, Z	6.3V or 10V or 16V or 25V or 50V	2.2	225	M, Z	6.3V or 10V or 16V or 25V or 50V
12	123			120	124			3.3	335		
15	153			150	154			4.7	475		
18	183			180	184			6.8	685		
22	223			220	224			10	106		
27	273			270	274			22	226	M, Z	6.3V or 10V or 16V
33	333			330	334			33	336		
39	393			470	474			47	476		
47	473			560	684			68	686		
56	563			680	684			100	107		
68	683			820	824						
82	823			1.0 uF	105						

**Dielectrics: Z5U & Y5V****1210: PPI-GMC32**

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	
10 nF	103	M, Z	6.3V or 10V or 16V or 25V or 50V	100	104	M, Z	6.3V or 10V or 16V or 25V or 50V	2.2	225	M, Z	6.3V or 10V or 16V or 25V or 50V	
12	123			120	124			3.3	335			
15	153			150	154			4.7	475			
18	183			180	184			6.8	685			
22	223			220	224			10	106			
27	273			270	274			22	226			
33	333			330	334			33	336			
39	393			470	474			47	476		6.3V or 10V or 16V	
47	473			560	564			68	686			
56	563			680	684			100	107			
68	683			820	824			220	227			
82	823							1.0 uF	105			

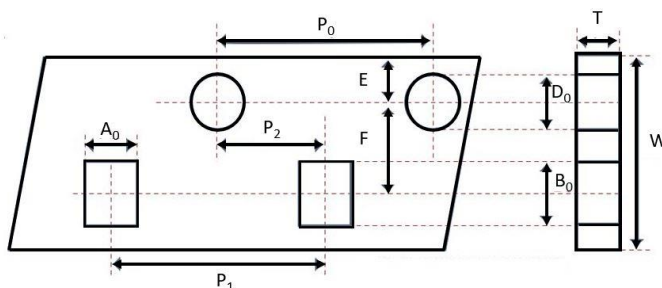
1812: PPI-GMC43

Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC	Value	Code	Tol.	Rated WVDC
47 nF	473	M, Z	6.3V or 10V or 16V or 25V or 50V	270	274	M, Z	6.3V or 10V or 16V or 25V or 50V	4.7	475	M, Z	6.3V or 10V or 16V or 25V or 50V
56	563			330	334			6.8	685		6.3V or 10V or 16V or 25V
68	683			470	474			10	106		
82	823			560	564			22	226		
100	104			680	684			33	336		6.3V or 10V or 16V
120	124			820	824			47	476		6.3V or 10V
150	154			1.0 uF	105			68	686		
180	184			2.2	225			100	107		
220	224			3.3	335						

⚡ Packaging

Size		Code D	Description G Q
	Qty per 7" Reel	Qty per 10/13" Reel	
01005	20K	50K	
0201	10K/ 15K	50K	
0402	10K	40K	50K
0603	4K	10K	15K
0805	2K, 3K, 4K	10K	15K 20K
1206	2K, 3K, 4K	10K	15K 20K
1210	500,1K, 2K, 3K	4K	8K
1808	1K, 2K, 3K		
1812	500, 1K	3K	
1825	500, 1K		
2220	500, 1K		
2225	500, 750		

⚡ Tape & Reel Specifications

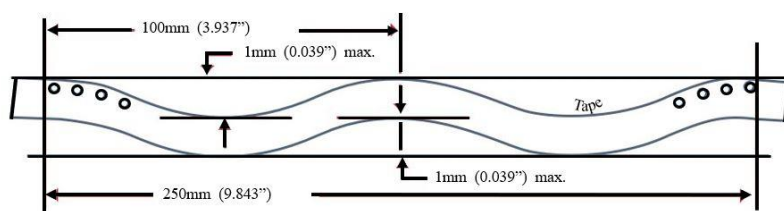
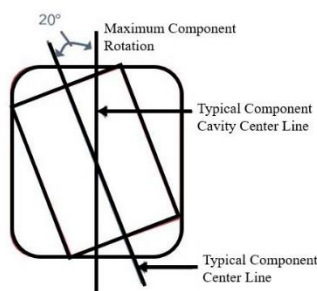
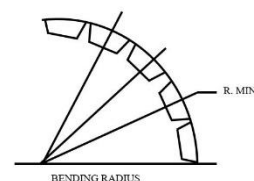
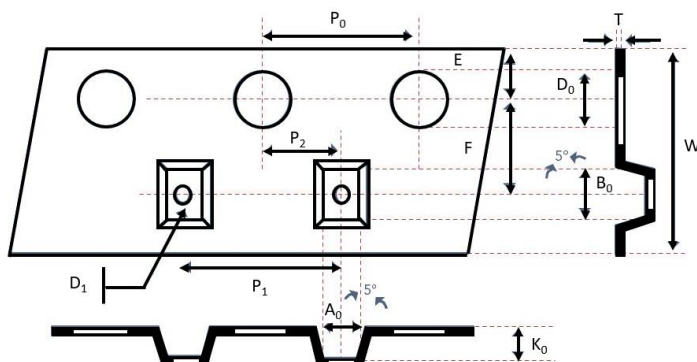


Cardboard carrier tape for EIA case sizes: 01005, 0201, 0402, 0603, 0805, 1206

Unit: mm

Size	A ₀	B ₀	T	K ₀	W	P ₀	10XP ₀	P ₁	P ₂	D ₀	D ₁	E	F
01005	0.25 ± 0.04	0.45 ± 0.04	0.36 ± 0.05	*	8.00 ± 0.30	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	*	1.75 ± 0.10	3.50 ± 0.05
0201	0.39 ± 0.07	0.69 ± 0.07	<0.50	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05
0402	0.70 ± 0.20	1.20 ± 0.20	<0.80	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05
0603	1.10 ± 0.20	1.90 ± 0.20	<1.20	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05
0805	1.65 ± 0.20	2.40 ± 0.20	<1.30	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05
1206	2.00 ± 0.20	3.60 ± 0.20	<1.30	*	8.00 ± 0.10	4.00 ± 0.10	40.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.55 ± 0.05	*	1.75 ± 0.05	3.50 ± 0.05

Tape & Reel Specifications



Embossed plastic carrier tape for case sizes: 0805, 1206, 1210, 1808, 1812

Unit: mm

Size	A ₀	B ₀	T	K ₀	W	P ₀	10XP ₀	P ₁	P ₂	D ₀	D ₁	E	F
0805	<1.80	<2.70	0.23 ± 0.10	<2.50	8.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.00 ± 0.10	1.75 ± 0.10	3.50 ± 0.05
1206	<2.30	<4.00	0.23 ± 0.10	<2.50	8.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.00 ± 0.10	1.75 ± 0.10	3.50 ± 0.05
1210	<3.20	<3.95	0.23 ± 0.10	<3.00	8.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.00 ± 0.10	1.75 ± 0.10	3.50 ± 0.05
1808	<2.50	<5.30	0.25 ± 0.10	<2.50	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.00 ± 0.10	1.75 ± 0.10	5.50 ± 0.10
1812	<3.90	<5.30	0.25 ± 0.10	<3.50	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	5.50 ± 0.10
1825	<6.80	<5.30	0.30 ± 0.10	<3.10	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	5.50 ± 0.10
2220	<5.80	<6.50	0.30 ± 0.10	<3.10	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	5.50 ± 0.10
2225	<6.80	<6.50	0.30 ± 0.10	<3.10	12.00 ± 0.20	4.00 ± 0.10	40.00 ± 0.20	2.00 ± 0.05	2.00 ± 0.05	1.50 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	5.50 ± 0.10

