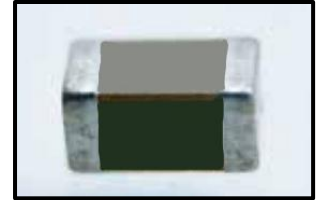


## ≠ Features

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



## ≠ Applications

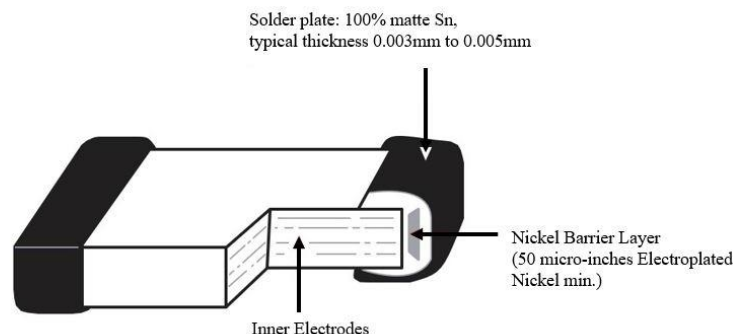
- Can be used on surface mount assembly equipment
- Our fully integrated manufacturing and total quality control systems ensure unprecedented high standards of quality and reliability.

## ≠ Notes

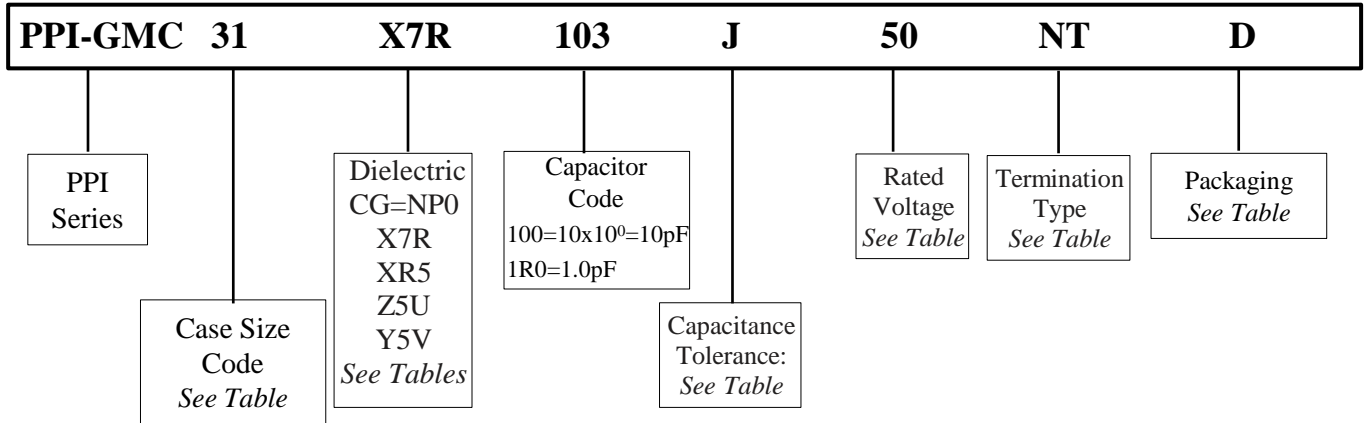
- Capacitance Value & Tolerance are determined by circuit requirements
- Voltage is determined by circuit requirements
- Capacitor Size select the smallest unit permitted by the circuit constraints that provides the required capacitance and voltage rating
- Nickel Barrier is standard and recommended 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.

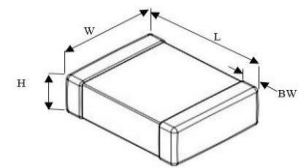


**≠ Part Numbering**



**≠ Dimensions (mm)**

Dimensions (mm)						
Code	Size	L	W	T	BW	
<b>01</b>	<b>01005</b>	0.40 ± 0.02	0.20 ± 0.02	0.20 ± 0.02	0.07 ~ 0.14	
<b>02</b>	<b>0201</b>	0.60 ± 0.03	0.30 ± 0.03	0.30 ± 0.03	0.15 ± 0.05	
<b>04</b>	<b>0402</b>	1.00 ± 0.05	0.50 ± 0.05	0.50 ± 0.10	0.10 ~ 0.35	
<b>10</b>	<b>0603</b>	1.60 ± 0.20	0.80 ± 0.20	1.0 max	0.10 ~ 0.40	
<b>21</b>	<b>0805</b>	2.00 ± 0.30	1.25 ± 0.20	1.40	0.25 ~ 0.75	
<b>31</b>	<b>1206</b>	3.20 ± 0.30	2.50 ± 0.20	2.20	0.25 ~ 0.75	
<b>32</b>	<b>1210</b>	3.20 ± 0.30	1.60 ± 0.20	1.80	0.25 ~ 0.75	
<b>40</b>	<b>1808</b>	4.50 ± 0.35	3.20 ± 0.30	2.20	0.25 ~ 0.75	
<b>43</b>	<b>1812</b>	3.20 ± 0.30	1.6 ± 0.20	1.80	0.25 ~ 0.75	
<b>45</b>	<b>1825</b>	5.70 ± 0.40	5.01 ± 0.40	1.80	0.25 ~ 0.75	
<b>55</b>	<b>2220</b>	5.70 ± 0.40	6.30 ± 0.40	2.20	0.25 ~ 0.75	
<b>57</b>	<b>2225</b>	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
<b>0R5</b>	0.5pF	<b>100</b>	10pF	<b>104</b>	0.1uF	<b>106</b>	10uF
<b>5R0</b>	5.0pF	<b>103</b>	0.01uF	<b>105</b>	1.0uF	<b>107</b>	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
<b>4R0</b>	4.0V	<b>350</b>	35V
<b>6R3</b>	6.3V	<b>500</b>	50V
<b>100</b>	10V	<b>630</b>	63V
<b>160</b>	16V	<b>101</b>	100V
<b>250</b>	25V	<b>201</b>	200V

### ⚡ Terminations

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

Code	Description
<b>NT</b>	Sn/Ni
<b>PT</b>	Pd/Ag





**± Stable Class II Dielectric**

Temperature variation of capacitance is within ±15% from -55°C to +125°C for X7R (-55°C to +85°C for X5R). The capacitance change is non-linear.

**± Electrical Specifications**

Operating Temperature Range

X7R	-55°C to +125°C
X5R	-55°C to +85°C

Temperature Coefficient (TC)	±15%
Temperature Voltage Coefficient (ΔcMax @ VDCW)	Not Applicable
Dissipation Factor	2.5% Max, 1.80% Typical
Insulation Resistance (IR)	25°C, VDCW; > 100GQF or 1000QF, whichever is less 125°C VDCW; > 10GQF or 100QF, whichever is less
Dielectric Withstanding Voltage	2.5 X VDCW
Aging Rate	< 2% per decade hour
Test Parameters	1KHz 1.0Vrms ±0.2Vrms 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
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			8.2	822							
330	331			1.8	182		10	103								
390	391			2.2	222											
470	471			2.7	272											
												6.3V or 10V or 16V				



**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						
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						
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										
820	821			27	273										
							10V or 25V or 50V				10V				
											10V or 25V				

**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						
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						
330	331			7.5	752			680	684						
390	391			8.2	822			820	824						
430	431			10	103			1.0 uF	105						
470	471			12	123			2.2	225						
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							
750	751			33	333		10	106							
820	821			39	393										
910	911			47	473										
							6.3V or 10V or 16V or 25V or 50V or 100V				6.3V or 10V or 16V				
											6.3V or 10V				
											6.3V				



**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		
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		3.3	335			
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						
									6.3V or 10V or 16V or 25V		

**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			
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 or 25V or 50V		
						6.3V or 10V or 16V					



**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		
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		
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		
1.8	182			82	823			10	106		
2.2	222			100	104			22	226		
2.7	272			120	124			47	476		
3.3	332			150	154						
3.9	392			180	184						
						6.3V or 10V or 16V or 25V or 50V					
						6.3V or 10V or 16V or 25V or 50V or 100V					
						6.3V or 10V					

**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		
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		
1.2	122			22	223			470	474		
1.5	152			27	273						
											25V or 50V
											25V



**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		
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		
1.8	182			82	823			10	106		
2.2	222			100	104			22	226		
2.7	272			120	124			33	336		
3.3	332			150	154						
3.9	392			180	184						
						10V or 16V or 25V or 50V					
						10V or 16V or 25V					
						10V or 16V					

**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						
											16V or 25V or 50V or 100V
											16V or 25V or 50V





**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		
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		
12	123			270	274			33	336		
15	153			330	334			47	476		
18	183			470	474						

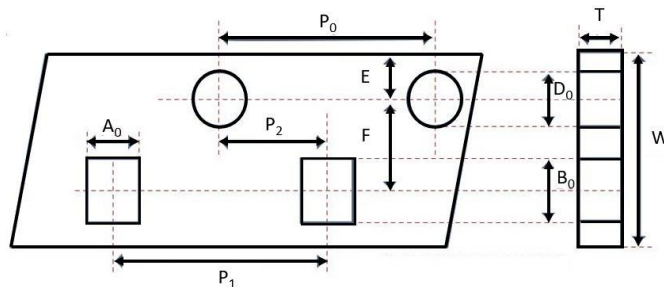
**2225: PPI-GMC57**

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		
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		
10	103	150	154	3.3	335						
12	123	180	184	4.7	475						

**≡ Packaging**

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

**≡ Tape & Reel Specifications**

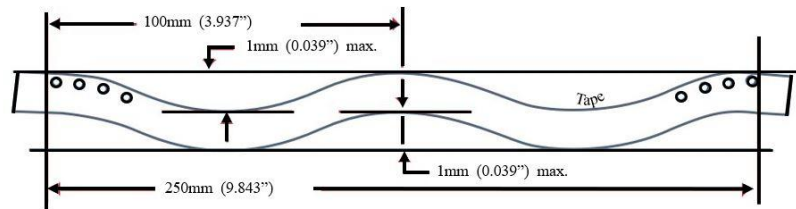
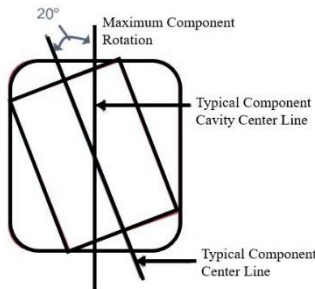
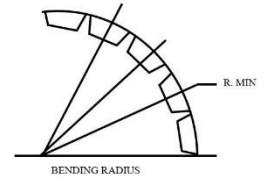
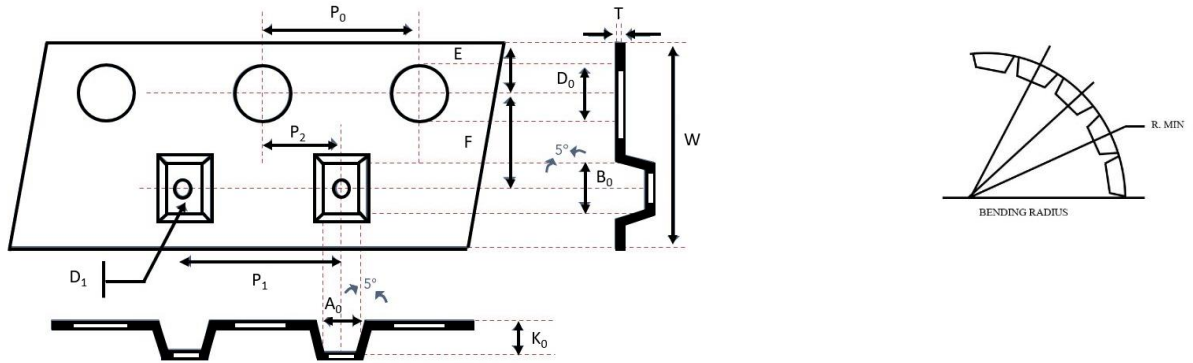


Cardboard carrier tape for EIA case sizes: 01005, 0201, 0402, 0603, 0805, 1206

Unit: mm

Size	A <sub>0</sub>	B <sub>0</sub>	T	K <sub>0</sub>	W	P <sub>0</sub>	10XP <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	D <sub>0</sub>	D <sub>1</sub>	E	F
<b>01005</b>	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
<b>0201</b>	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
<b>0402</b>	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
<b>0603</b>	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
<b>0805</b>	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
<b>1206</b>	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 <sub>0</sub>	B <sub>0</sub>	T	K <sub>0</sub>	W	P <sub>0</sub>	10XP <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	D <sub>0</sub>	D <sub>1</sub>	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