1、Purpose versus Application characteristics：

The specifications are applicable to Ultra Micro Multi-layer Ceramic Chip Capacitor (MLCC)：

■ Universal； □ Automotive Grade；

2、The term / Definition：:

2.1 Structural design classification：□General； ■ Ultra Micro； □ High Capacitance； □ High-Q；

□ High-voltage

2.2 Chip Size：■01005、■0201、□0402、□0603、□0805、□1206、___(Others)；

2.3 Capacitance range：0.1pF~2.2μF；

2.4 Voltage range：4V~ 50V；

2.5 Type of Dielectrics：■C0G、■X7R、■X5R、■Y5V、■X6S、■X7S、■X6T、■X7T、 ____(Others)；

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Mark：The product specification is only for reference of design selection, not used as the basis for delivery

3、Part Number System：

V 103 K 0201 X5R 250 N A *

- **V** — General-purpose MLCC
- **103** — Rated Capacitance. For example: 103=10nF, 474=470nF
- **K** — Capacitance Tolerance: A: ±0.05pF B: ±0.1pF C: ±0.25 pF D: ±0.5pF F: ±1% G: ±2% J: ±5% K: ±10% L: ±15% M: ±20% Z: +80/-20% N: ±30% X: ±40% Y: +150/-20%
- **0201** — Size Code (EIA size) 0105(01005) 0201(0201)
- **X5R** — Type of Dielectrics C0G、X7R、X5R Y5V、X6S、X7S **X6T.、X7T**
- **250** — Rated Voltage 6R3=6.3V; 100=10V 160=16V ; 250=25V 500=50V
- **N** — Termination Type N: Cu /Ni/Sn structure;
- **A** — Thickness Code Details are shown in Table1.
- ***** — Control code

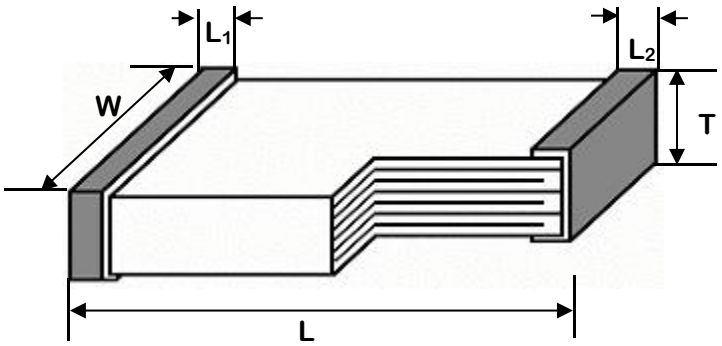


Figure 1 Configuration and Dimension of MLCC

Table 1 Dimension of MLCC (Unite： mm)

Size Code	Length（L）	Width（W）	Width of Termination（L1、L2）	Thickness（T）	Thickness code
01005	0.40±0.02	0.20±0.02	0.07～0.13	0.20±0.02	Z
0201	0.60±0.03	0.30±0.03	0.1～0.2	0.30±0.03	A
	$0.60^{+0.05}_{-0.03}$	$0.30^{+0.05}_{-0.03}$	0.1～0.2	$0.3^{+0.05}_{-0.03}$	J
	$0.60^{+0.09}_{-0.03}$	$0.30^{+0.09}_{-0.03}$	0.1～0.2	$0.30^{+0.09}_{-0.03}$	7
	$0.60^{+0.1}_{-0.03}$	$0.30^{+0.1}_{-0.03}$	0.1～0.2	$0.3^{+0.1}_{-0.03}$	X

Table 2 Type of dielectrics

Type of Dielectrics	Operating Temperature Range	Temperature Coefficient or Characteristic
NP0	-55℃～+125℃	C0G：0±30ppm/℃
		C0H：0±60ppm/℃
X7R	-55℃～+125℃	±15%
X5R	-55℃～+85℃	±15%
Y5V	-30℃～+85℃	-82%≤ΔC/C≤+22%
X6S	-55℃～+105℃	±22%
X7S	-55℃～+125℃	±22%
X6T	-55℃～+105℃	+22%～-33%
X7T	-55℃～+125℃	+22%～-33%

Table 3 Rated Voltage and Rated Capacitance

Size	Rate Voltage /U_R	Capacitance								Thickness code
		C0G	X7R	X5R	Y5V	X6S	X7S	X6T	X7T	
01005	50V	0.2pF~100pF	—	—	—	—	—	—	—	Z
	25V	0.2pF~100pF	100pF~1.0nF	—	—	—	—	—	—	Z
	16V	1pF~100pF	1.0nF~4.7nF	10nF ~15nF	—	—	—	—	—	Z
	10V	—	—	10nF ~22nF	—	—	—	—	—	Z
	6.3V	—	—	33nF~100nF	—	—	—	—	—	Z
	4V	—	—	100nF	—	—	—	—	—	Z
0201	50V	0.1pF~220pF	100pF~3.3nF	100pF~10nF	100pF~1.5nF	—	—	—	—	A
	25V	0.1pF~1nF	3.3nF ~10nF	100pF~47nF	1.0nF~22nF	—	—	—	—	A
		—	—	27nF~100nF	33nF~100nF	—	—	—	—	J
		—	—	220nF~470nF	220nF	—	—	—	—	X
	35V	—	—	100nF	100nF	—	—	—	—	X
	16V	—	10nF~22nF	47nF~100nF	3.3nF~100nF	12nF～47nF	22nF~47nF	—	—	A
		—	—	100nF~220nF	100nF~220nF	100nF	22nF~47nF	—	—	J
		—	—	330nF~1.0μF	330nF~1.0μF	100nF	—	—	—	X
	10V	—	—	100nF	3.3nF~100nF	12nF~100nF	10nF~47nF	—	—	A
		—	—	100nF~220nF	100nF~220nF	100nF~220nF	100nF	—	—	J
		—	—	1.0uF	—	—	—	—	—	7
		—	—	330nF~2.2μF	330nF~2.2μF	220nF	—	—	220nF	X
	6.3V	—	—	100nF~220nF	15nF~220nF	100nF	47nF~100nF	—	—	A
		—	—	100nF~2.2μF	100nF~2.2μF	100nF~220nF	100nF	—	220nF~470nF	J
		—	—	470nF~2.2μF	470nF~2.2μF	220nF~470nF	—	—	—	X
	4V	—	—	—	—	12nF～100nF	—	—	—	A
		—	—	470nF~1.0uF	470nF~680nF	—	—	—	220nF	J
		—	—	680nF~2.2μF	680nF~2.2μF	220nF~470nF	—	1.0uF	470nF	X

Note: 1) E12 series for X6T,X7T,X6S,X7S,X7R and X5R groups, E6 series for Y5V group, E24 series for C0G group, integer nominal values such as 1.0, 2.0, 3.0pF, etc. are allowed for the specifications below 10pF.
2) For products of the same size, material and capacity, the rated voltage can be covered from high to low.

Type of Packing：

Reel Packaging (standard carrier tape disc packaging), every disc smallest package shown in Table 4.

Table 4 Type of Packing

Chip Size	01005		0201		
Thickness code	Z	Z	A/J	A/X/J	A/X/J
Disc size	7〃	7〃	7〃	7〃	13〃
Carrier Tape type	Paper	Plastic	Paper	Paper	Paper
QTY (Kpcs)	20	40	10	15	50

First packaging: Each multi-disc material is packed into a box.

The second packaging: the first packaged packaging box is loaded into the paper packaging box, and the remaining space in the box is filled with light auxiliary materials. The above packaging forms can also be packaged according to user needs.

4. Specifications and Test Methods：

4.1 Visual Inspection：

4.1.1 Requirement: no obvious defects on ceramic body and termination.

4.1.2 Test Method: Microscope 10×.

4.2 Size:

4.2.1 Requirement: Configuration and dimension of MLCC are shown in Figure 1 and Table 1.

4.2.2 Test Method: Measuring by gages which precision is not less than 0.01 mm .

4.3 Operating Environment:

C0G/C0H(NP0)、X7R	Temperature: -55℃～+125℃; RH: ≤95%（25℃）	Barometric pressure: 86 KPa ～106KPa
X5R	Temperature: -55℃～+85℃; RH: ≤95%（25℃）	Barometric pressure: 86 KPa ～106KPa
Y5V	Temperature: -30℃～+85℃; RH: ≤95%（25℃）	Barometric pressure: 86 KPa ～106KPa
X6S	Temperature: -30℃～+105℃; RH: ≤95%（25℃）	Barometric pressure: 86 KPa ～106KPa
X7S	Temperature: -30℃～+125℃; RH: ≤95%（25℃）	Barometric pressure: 86 KPa ～106KPa
X6T	Temperature: -30℃～+105℃; RH: ≤95%（25℃）	Barometric pressure: 86 KPa ～106KPa
X7T	Temperature: -30℃～+125℃; RH: ≤95%（25℃）	Barometric pressure: 86 KPa ～106KPa

4.4 Electrical Parameters and Test Methods:

Table 5 Specifications and Test Methods of MLCC Electrical Parameter

No.	Item	Specification	Test Method
1	Capacitance（C）	Within the specified tolerance	Temperature:18～28℃; Humidity: ≤RH 80%; Test Frequency: NP0（C0G/C0H）: C≤1000pF，f=1MHz±10% X7R,X5R,Y5V,X6S,X7S,X6T,X7T: f=1KHz±10% Test voltage: 1.0±0.2Vrms
2	Tangent of Loss Angle/ (tgδ)	C0G/C0H(NP0) ： C≥30pF，$tg\delta \le 10\times10^{-4}$; C<30pF， $tg\delta \le 1.0\times(90/C+7)\times10^{-4}$	
		X7R: U_R=50V $tg\delta \le 500\times10^{-4}$； U_R =25V $tg\delta \le 500\times10^{-4}$ U_R =16V $tg\delta \le 500\times10^{-4}$； U_R =10V $tg\delta \le 500\times10^{-4}$	
		X5R,Y5V: U_R =50V $tg\delta \le 1000\times10^{-4}$ U_R =35V/25V/16V $tg\delta \le 1250\times10^{-4}$ U_R ≤10V $tg\delta \le 1500\times10^{-4}$	
		X6S,X7S,X6T,X7T: $U_R \ge 25V$ $tg\delta \le 1000\times10^{-4}$;$U_R$ =16V $tg\delta \le 1250\times10^{-4}$; U_R =10V $tg\delta \le 1250\times10^{-4}$;$U_R \le 6.3V$ $tg\delta \le 1500\times10^{-4}$;	
3	Insulation Resistances/ (Ri)	C0G/C0H(NP0): Ri≥10000MΩ	Temperature:18～28℃; Humidity: ≤RH 80%; Apply rated voltage for 60±5secs.
		X7R,X5R,Y5V： Ri≥4000MΩ (C≤25nF) Ri×C≥100s (C>25nF)	
		X6S,X7S,X6T,X7T: Ri×C≥100s	
4	Withstanding Voltage（WV）	No breakdown or flashover during test	NP0（C0G/C0H): 3 ×U_R X7R,X5R,Y5V,X6S,X7S,X6T,X7T:2.5×U_R Duration: 1 min. Charge/discharge current not exceeds 50mA.

Note: Capacitance test instructions of Class 2 ceramic capacitors

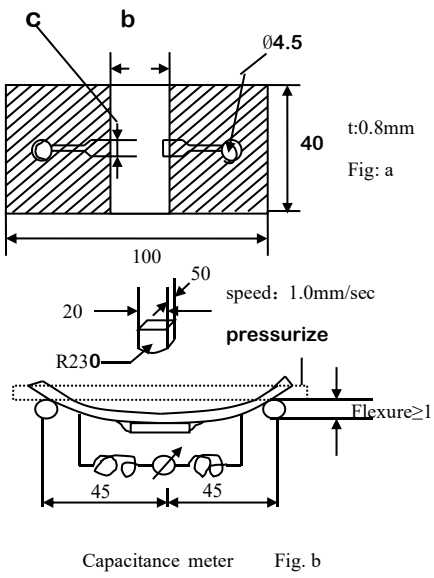
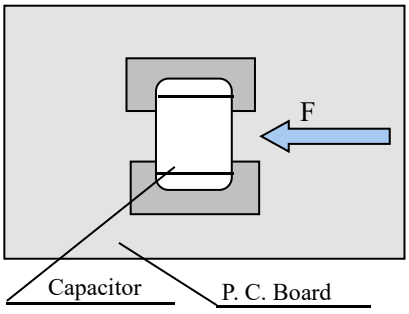
When the capacitor initial capacitance is lower than its tolerance value, the test sample need to be heated for 60 ± 5 minutes at 150 ℃ ± 10 ℃. Recover it, let sit at room temperature for 24±2 hrs, and then test the capacitance.

4.5 Environment Test Specifications and Methods：

Without specific note, the “test method” in Table 6 is based on GB/T 21041/21042 IDT IEC60384-21/22

Table 6 Environment Test Specifications and Methods

<table>
<tr><th>No.</th><th>Item</th><th>Specification</th><th>Test Method</th></tr>
<tr><td rowspan="4">1</td><td rowspan="4">Temperature Coefficient of Capacitance (α_c) or Temperature Characteristics</td><td>NP0(C0G)：
$\alpha_c \leq \pm 30$ppm/℃ (125℃)；
$-72 \leq \alpha_c \leq +30$ppm/℃ (-55℃)；
NP0(C0H)
$\alpha_c \leq \pm 60$ppm/℃ (125℃)；
$-72 \leq \alpha_c \leq +30$ppm/℃ (-55℃)；
(It need not be tested for capacitance below 10pF, as is able to be assured by dielectric materials)</td><td rowspan="4">Preliminary Drying for 16~24hrs (NP0(C0G/C0H)).
Special preconditioning for 1hr at 150℃ followed by 24hrs (X7R, X5R,Y5V,X6S, X7S,X6T,X7T).
The ranges of capacitance change compared with the temperature ranges (θ_1, 25℃, θ_2) shall be within the specified ranges.
NP0, X7R,X7S,X7T:θ_1= -55℃, θ_2=125℃;
X6S,X6T:θ_1=-55℃，θ_2=105℃
X5R: θ_1= -55℃, θ_2=85℃;
Y5V: θ_1= -30℃，θ2=85℃
Test voltage: 0.5±0.2Vrms
test voltage of special specifications referto table 6-1
<table>
<tr><th>SIZE</th><th>TCC</th><th>CAP.</th><th>Test Voltage</th></tr>
<tr><td rowspan="4">01005</td><td>C0G/X7R</td><td>capacitance list</td><td>1.0±0.2Vrms</td></tr>
<tr><td rowspan="3">X5R</td><td>C＞22nF</td><td>0.2±0.03Vrms</td></tr>
<tr><td>22nF≥C≥4.7nF</td><td>0.5±0.1Vrms</td></tr>
<tr><td>C＜4.7nF</td><td>1.0±0.2Vrms</td></tr>
<tr><td rowspan="10">0201</td><td>C0G</td><td>capacitance list</td><td>1.0±0.2Vrms</td></tr>
<tr><td rowspan="2">X7R</td><td>C＜10nF</td><td>1.0±0.2Vrms</td></tr>
<tr><td>10nF</td><td>0.5±0.1Vrms</td></tr>
<tr><td rowspan="5">X5R</td><td>82nF≤C＜220nF</td><td>0.5±0.1Vrms</td></tr>
<tr><td>220nF≤C≤470nF</td><td>0.3±0.1Vrms</td></tr>
<tr><td>1uF</td><td>0.2±0.1Vrms</td></tr>
<tr><td>100pF＜C＜82nF 且 Ur≤6.3V</td><td>0.5±0.1Vrms</td></tr>
<tr><td>100pF＜C＜82nF 且 Ur＞6.3V</td><td>1.0±0.2Vrms</td></tr>
<tr><td>Y5V</td><td>capacitance list</td><td>1.0±0.2Vrms</td></tr>
</table>
</td></tr>
<tr><td>X7R, X5R：ΔC/C ≤ ±15%</td></tr>
<tr><td>X6S、X7S：ΔC/C ≤ ±22%
X6T、X7T：-33%≤ΔC/C≤22%</td></tr>
<tr><td>Y5V: -82%≤ΔC/C≤+22%</td></tr>
<tr><td rowspan="3">2</td><td rowspan="3">Resistance to Soldering Heat</td><td>Visual: No visible damage and terminations uncovered shall be less than 25%.</td><td rowspan="3">Special preconditioning for 1hr at 150℃ followed by 24hrs (X7R,X5R,Y5V,X6S, X7S,X6T,X7T). Preheat the capacitor at 110 to 140℃ for 30~60s. Immerse the capacitor in an eutectic solder solution at 260±5℃ for 10±1 seconds. The depth of immersion is 10mm.
Recover it, let sit at room temperature for 6~24hrs (NP0(C0G/C0H)) or 24±2hrs (X7R,X5R,Y5V,X6S,X7S,X6T,X7T), then observe appearance and measure electrical characteristics.</td></tr>
<tr><td>Capacitance Change:
NP0(C0G/C0H): ΔC/C ≤ ±2.5% or 0.25pF, whichever is larger;
X7R, X5R,Y5V,X6S,X7S,X6T,X7T: ΔC/C≤±15%;</td></tr>
<tr><td>tgδ and Ri: meet the initial specification in Table 5.</td></tr>
</table>

3	Solderability	75% min. coverage of both terminal electrodes is soldered evenly and continuously.	Immerse the test capacitor into a methanol solution containing rosin for 3 to 5 seconds, preheat it at 80 to 140℃ for 30~60s and immerse it into molten solder of 235±5℃ for 2±0.2 seconds. The depth of immersion is 10mm.
4	Bond Strength of Termination	Visual: No visible damage. Capacitance Change: NP0(C0G/C0H): ΔC/C ≤ ±5% or ±0.5pF,witchever is larger; X7R,X5R,Y5V,X6S,X7S,X6T,X7T: ΔC/C≤ ±12.5%;	Solder the capacitor to the test jig (glass epoxy boards) shown in Fig. a. Apply a force in the direction shown in Fig. b. Bending 1mm at a speed of 1mm/sec and hold for 5±1secs, then measure the capacitance.  Capacitance meter Fig. b (Unit：mm)
5	Adhesion	Visual: No visible damage.	Solder the capacitor on a P. C. board, apply a pushing force F for 10±1secs.  01005 F=1N 0201 F=2N

6	Vibration	Visual: No visible damage. Capacitance Change: NP0(C0G/C0H): ΔC/C≤±2.5% or ±0.25pF, whichever is larger; X7R , X5R,Y5V: ΔC/C≤±12.5%; X6S,X7S,X6T,X7T: ΔC/C≤±15%. tgδ and Ri: meet the initial specification in Table 5.	Sample shall be mounted on a suitable substrate. Amplitude: 1.5mm Frequencies: from 10 to 55Hz, and back to 10 Hz in about 1 min. Repeat this for 2hrs each in 3 perpendicular directions X, Y, Z, total 6hrs.
7	Rapid change of temperature	Visual: No visible damage. Capacitance Change: NP0(C0G/C0H): ΔC/C≤±2.5% or ±0.25pF, whichever is larger; X7R,X5R,Y5V: ΔC/C≤±15%; X6S,X7S,X6T,X7T: ΔC/C≤±20%. tgδ and Ri: meet the initial specification in Table 5.	Special preconditioning for 1hr at 150℃ followed by 24hrs (X7R, X5R,Y5V,X6S,X7S,X6T,X7T). Fix the capacitor to the supporting jig. Expose the capacitors in the condition step 1 through 4 and perform 5 cycles. Step temperature (℃) time 1 θ_A 30 min 2 25 2~5 min. 3 θ_B 30 min 4 25 2~5 min. NP0（C0G/C0H), X7R,X7S,X7T: θ_A =-55℃, θ_B =125℃; X6S,X6T:θ_A=-55℃，θ_B=105℃ X5R: θ_A=-55℃, θ_B=85℃ Y5V: θ_A= -30℃, θ_B=85℃ Recover it, let sit at room temperature for 6~24hrs(NP0 （ C0G/C0H ）) or 24±2hrs (X7R,X5R,Y5V,X6S,X7S,X6T,X7T), then observe appearance and measure electrical characteristics.

8	Damp Heat (Steady State)	Visual: No visible damage.	Special preconditioning for 1hr at 150℃ followed by 24hrs (X7R,X5R,Y5V,X6S,X7S,X6T,X7T). Test Temperature: 40℃±2℃ Humidity: RH 90~95% Duration:500hrs Recover it, let sit at room temperature for 6~24hrs(NP0 （ C0G/C0H ）) or 24±2hrs (X7R,X5R,Y5V,X6S,X7S,X6T,X7T), then observe appearance and measure electrical characteristics.
		Capacitance change: NP0(C0G/C0H):ΔC/C≤±5% or ±0. 5pF , whichever is larger; X7R,X5R,Y5V: ΔC/C≤±12.5%; X6S,X7S,X6T,X7T: ΔC/C≤±30%.	
		Tangent of loss angle (tgδ): NP0(C0G/C0H): $tg\delta \leq 20\times10^{-4}$ (C≥30pF) or $tg\delta \leq 2\times(90/C+7)\times10^{-4}$(C<30pF); X7R: $tg\delta \leq 700\times10^{-4}$; X6S,X7S,X6T,X7T:tgδ≤2×the initial specification in Table 5; X5R,Y5V: $tg\delta \leq 1200\times10^{-4}$.	
		Insulation Resistances (Ri): NP0(C0G/C0H): Ri≥2500MΩ or Ri×C≥50s , whichever is smaller; X7R,X5R,Y5V,X6S,X7S,X6T,X7T: Ri≥1000MΩ or Ri×C≥50s (U_R≥25V) , whichever is smaller; Ri≥1000MΩ or Ri×C≥10s (U_R≤16V) , whichever is smaller.	

9	Damp heat with load	Visual: No visible damage.	Special preconditioning for 1hr at 150℃ followed by 24hrs (X7R, X5R,Y5V,X6S, X7S,X6T,X7T). Test Temperature: 40±2℃; Humidity: RH 90～95%; Test Voltage: 1.0*U_R; Duration: 500hrs; Charge/discharge current not exceeds 50mA. Recover it, let sit at room temperature for 6~24hrs(NP0 （ C0G/C0H ）) or 24±2hrs (X7R,X5R,Y5V,X6S,X7S,X6T,X7T), then observe appearance and measure electrical characteristics. （ Special preconditioning for 1hr at 150℃ followed by 24hrs, then measure electrical characteristics.（Cp≥100nF））
		Capacitance change: NP0(C0G/C0H): ΔC/C≤±7.5% or ±0.75pF , whichever is larger; X7R: ΔC/C≤±12.5%; X5R,Y5V: ΔC/C≤±15%; X6S,X7S,X6T,X7T: ΔC/C≤±30%	
		Tangent of loss angle (tgδ): NP0(C0G/C0H): tgδ≤50×10^{-4} (C≥30pF) or tgδ≤ $5\times(90/C+7)\times10^{-4}$(C<30pF); X7R: tgδ≤$700\times10^{-4}$; X5R,Y5V: tgδ≤$1200\times10^{-4}$; X6S,X7S,X6T,X7T: tgδ≤2×the initial specification in Table 5.	
		Insulation Resistances (Ri): Ri≥500MΩ or Ri×C≥25s， whichever smaller	

10	Endurance	Visual: No visible damage. Capacitance Change: NP0(C0G/C0H): ΔC/C≤±3% or ±0.3pF , whichever large; X7R,X5R,Y5V: ΔC/C≤±15%; X6S,X7S,X6T,X7T: ΔC/C≤±30% Tangent of loss angle (tgδ): NP0(C0G/C0H): tgδ≤20×10^{-4} (C≥30pF) or tgδ≤$2\times(90/C+7)\times10^{-4}$(C<30pF); X7R: tgδ≤$700\times10^{-4}$; X5R,Y5V: tgδ≤$1200\times10^{-4}$; X6S,X7S,X6T,X7T: tgδ≤2×the initial specification in Table 5. Insulation Resistances (Ri): NP0(C0G/C0H): Ri≥1000MΩ or Ri×C≥50s , whichever smaller; X7R,X5R,Y5V,X6S,X7S,X6T,X7T: Ri≥1000MΩ or Ri×C≥50s (U_R≥25V) , whichever smaller; Ri≥1000MΩ or Ri×C≥10s (U_R≤16V) , whichever smaller.	Special preconditioning for 1hr at 150℃ followed by 24hrs (X7R,X5R,Y5V,X6S, X7S,X6T,X7T). Test Temperature: NP0(C0G/C0H), X7R,X7S,X7T: 125℃; X6S,X6T:105℃; X5R,Y5V: 85℃; Duration: 1000hrs; Test Voltage: 1.5×UR SIZE / CAP. / Rated Voltage / Test Voltage 01005 / Capacitance list / All voltages / 1.5×U_R 0201 / ＜1.0μF / All voltages / 1.5×U_R 0201 / ≥1.0μF / ≥4V / 1.0×U_R 0201 / 220nF≤Cp≤470nF / ≥25V / 1.0×U_R Recover it, let sit at room temperature for 6~24hrs(NP0 （ C0G/C0H ）) or 24±2hrs (X7R,X5R,Y5V,X6S,X7S,X6T,X7T), then observe appearance and measure electrical characteristics. （ Special preconditioning for 1hr at 150℃ followed by 24hrs, then measure electrical characteristics.（Cp≥100nF））

Table6-1 test voltage of special specifications

Size	Rate Voltage /U_R	Capacitance				test voltage Vrms
		X6S	X6T	X7T	X7S	
0201	16V	22nF~100nF	—	100nF	—	0.2±0.01
	10V	22nF~220nF	—	100nF/220nF	—	0.2±0.01
	6.3V	470nF	—	—	—	0.3±0.01
		22nF~220nF	—	100nF~330nF	—	0.2±0.01
		—	—	470 nF	—	0.1±0.01
	4.0V	470nF	—	470nF	—	0.2±0.01
		22nF~100nF	—	100nF	—	0.2±0.01
		—	1uF	—	—	0.1±0.01

5. Packaging, Shipment and storage:

5.1 Packing：

5.1.1 Packing type：

Reel Packaging (standard carrier tape disc packaging), single disc smallest package are shown in Table 4.

5.1.2 Carrier Tape size：

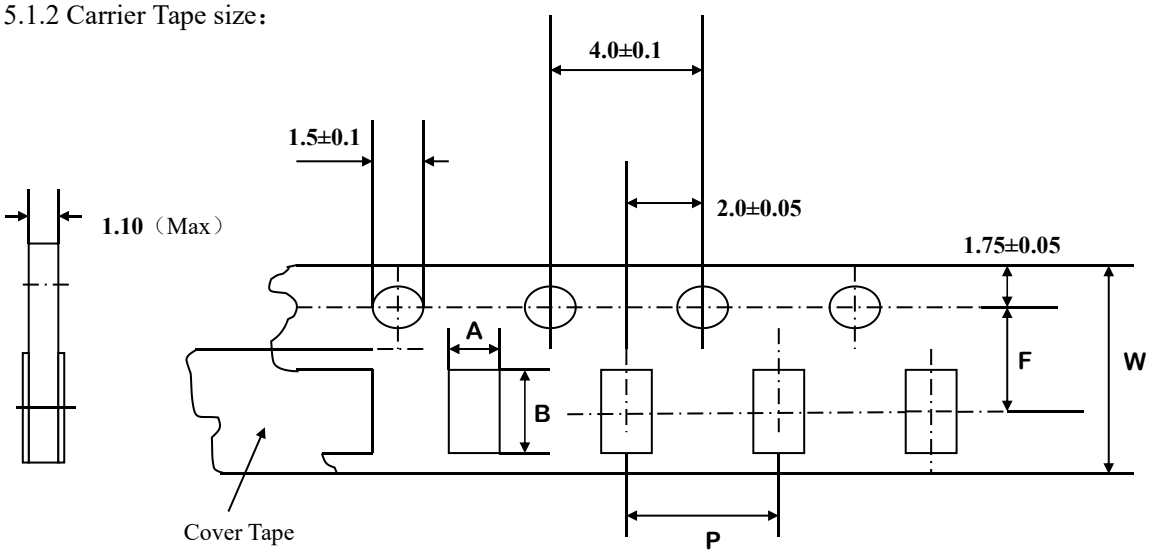


Figure 2 Carrier

Table 7 Carrier size

Mark	Size Code	
	01005	0201
	Size（Unit: mm）	
A （ Width of the square hole ）	0.24±0.03	0.37±0.03
B （ Length of the square hole ）	0.45±0.03	0.67±0.03
F （Center distance between positioning hole and square hole ）	3.50±0.05	3.50±0.05
P （ Square hole spacing ）	2.00±0.10	2.00±0.10
W （Width of carrier）	8.00±0.20	8.00±0.20

5.1.3 Disc size：

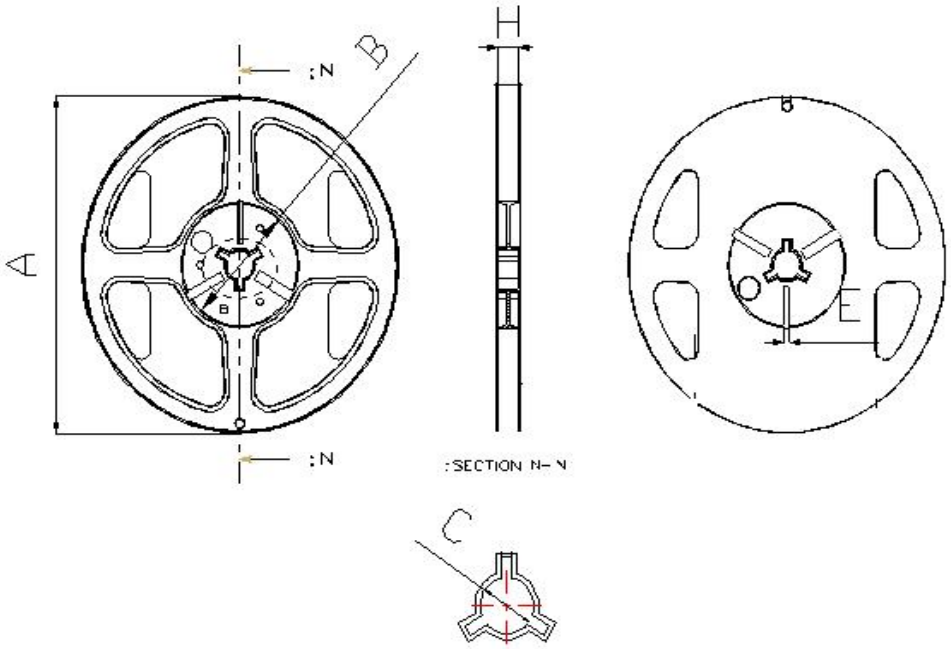
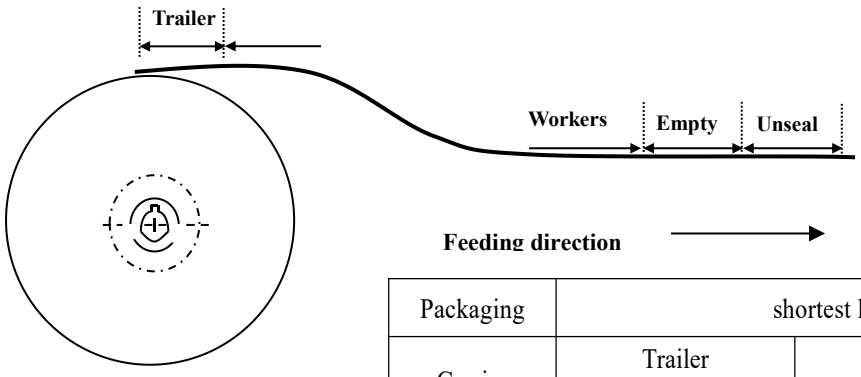


Figure 3 Disc

Table 8 Disc size

Disc Size	A/mm	B/mm	C/mm	E/mm	H/mm
7″	Φ178±2.0	Φ60±2.0	Φ13±1.0	4±1.0	9.5±1.0
13″	Φ330±2.0	Φ100±2.0	Φ13±1.0	3±1.0	10±1.0

5.1.4 Carrier specifications:



Packaging	shortest length of the reserved space		
Carrier	Trailer	Empty	Unseal
	60 mm	200mm	160 mm

5.1.5 Performance of Carrier Taping:

5.1.5.1 Strength of Carrier Tape and Top Cover Tape:

a. Carrier Tape

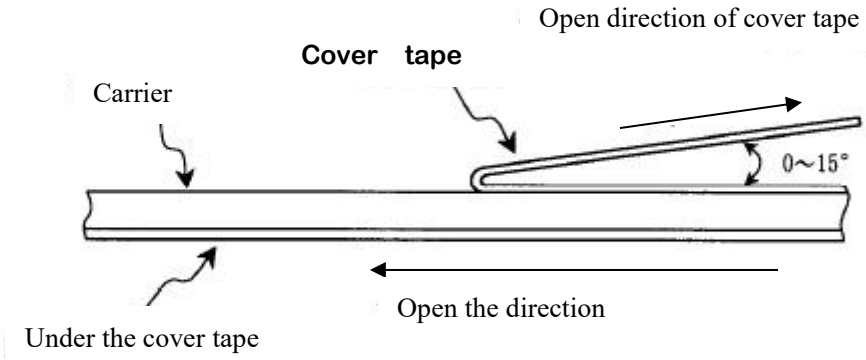
When a tensile force 1.02kgf is applied in the direction to unreel the tape, the tape shall with stand this force.

b. Top cover Tape

When a tensile force 1.02kgf is applied to the tape, the tape shall withstand this force.

5.1.5.2 Peeling Strength of Top Cover Tape:

Unless otherwise specified, the peeling strength of top cover tape shall be within 10.2 to 71.4 gf when the top cover tape is pulled at a speed of 300mm/min with the angle of 0 to 15°(see the following figure).



5.2 Shipment：

Transport packaging products to adapt to the modern means of transport, but the product in the process of transport to prevent rain and acid and alkali corrosion, shall not be whipped extrusion casting and gravity.

5.3 Storage：

Storage period：12 months, otherwise, its solderability must be inspected again.

Storage conditions：

Temperature: less than 35 ℃，

Relative humidity: less than RH70 %