Document No.: M06-00-E-04 (Ver.: 4)

# PRODUCT SPECIFICATION

RODUCT: MULTILAYER C CAPACITOR

TYPE : CHIP C

APPROVED BY C

| Document Control |
| --- |
| |

OVERSEAS

TAIWAN ☐GUANG ZHOU ☐KUN SHAN

### ③ Temperature Characteristics Code:

| Code | Temp. Coefficient | Operation Temp. | Capacitance Change |
|---|---|---|---|
| **C** | NPO (Class I) | -55℃ +125℃ | 0 ± 30 ppm/℃ |
| **R** | X7R (Class II) | -55℃ +125℃ | ± 15% |
| **X** | X5R (Class II) | -55℃ +85℃ | ± 15% |
| **F** | Y5V (Class II) | -25℃ +85℃ | +30% -80% |

### ④ Capacitance Code：

| Code | Capacitance(pF) | Code | Capacitance(pF) |
|---|---|---|---|
| 010 | 1 * | 102 | 1000 * |
| 1R5 | 1.5 | 222 | 2200 * |
| 100 | 10 * | 472 | 4700 * |
| 101 | 100 * | 103 | 10000 * |

### ⑤ Tolerance Code：

| Code | Tolerance | Code | Tolerance |
|---|---|---|---|
| B | ± 0.1pF | J | ±5% |
| C | ±0.25pF | K | ±10% |
| D | ±0.50pF | M | ±20% |
| F | ± 1% | Z | +80%/-20% |
| G | ± 2% | | |

PS: 1. * -- Two significant digits followed by no. of zeros

2. Temperature coefficient (T.C.) vs. Proper tolerance applied:

NPO: B、C、D、F、G、J、K Tolerance

X7R: J、K、M Tolerance

X5R: K、M Tolerance

Y5V : M、Z Tolerance

### ⑥ Termination Code：

| Code | N | C |
|---|---|---|
| Termination Type | Nickel Barrier (Leaded) | Nickel Barrier (Lead-Free) |

### ⑦ Packaging Code：

| Code | B | T | Q | G |
|---|---|---|---|---|
| Packaging Type | Bulk | 7” Reel | 10” Reel | 13” Reel |

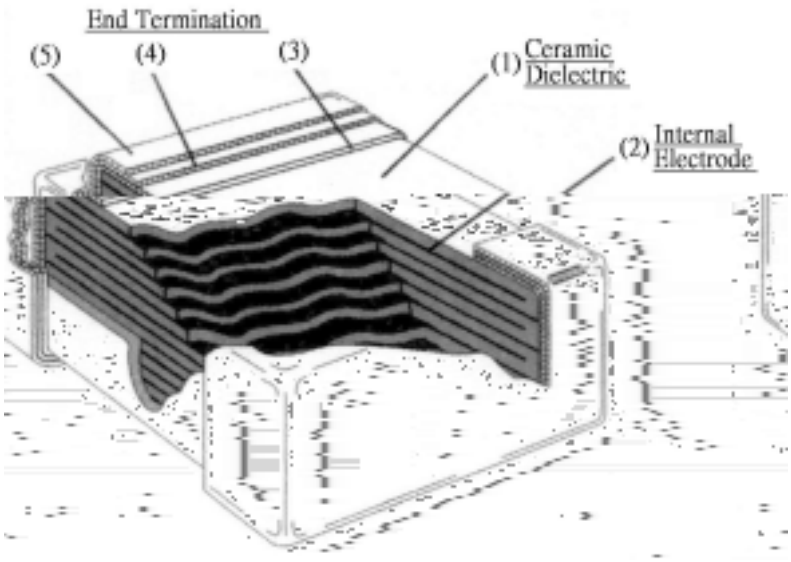
## 3. STANDARD TEST CONDITIONS：

Tests shall, unless otherwise specified, be carried out at 15 to 35℃ and RH 45 to 75%.

## 4. DISPOSITION

If question to the measuring result in judgement, take the capacitor under a specified temperature for 30 minutes at least before measurement.

## 5. STRUCTURE:




Class I：

| NO | Specifications | | Material |
|---|---|---|---|
| 1 | Ceramic dielectric | | Barium titanate base |
| 2 | Internal Electrode | | Pd, PdAg |
| 3 | End Terminal | Inner layer | Ag |
| 4 | | Middle layer | Ni |
| 5 | | Outer layer | Sn |

Class II：

| NO | Specifications | | Material | |
|---|---|---|---|---|
| 1 | Ceramic dielectric | | Barium titanate base | |
| 2 | Internal Electrode | | Pd, PdAg | Ni |
| 3 | End Termination | Inner layer | Ag | Cu |
| 4 | | Middle layer | Ni | |
| 5 | | Outer layer | Sn | |

## 6. STORING CONDITION AND TERM

Recommends the storing of products within 12 months at temperature 5 40℃ and humidity 20%~70%RH max. If the product stored over 12 months, please reconfirm its solderability before use.

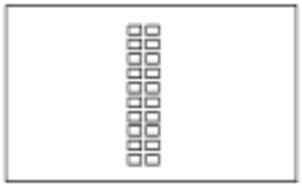
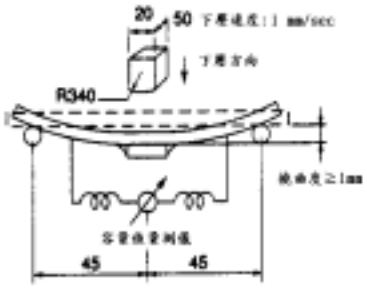
## 7. PERFORMANCE:

<table>
<tr><th>NO.</th><th>Item</th><th>Performance</th><th>Test or Inspection method</th></tr>
<tr><td>(1)</td><td>External Appearance</td><td>No defects which may affect performance.</td><td>Visual inspection & Dimension measurement</td></tr>
<tr><td>(2)</td><td>Voltage Proof</td><td>Withstand test voltage without Insulation breakdown or other damage.</td><td>DC Tested voltage shall be applied for 1 5sec. Charge/discharge current shall not exceed 50 mA .<br>(PS: Ra – Rated Voltage )
<table>
<tr><th>Rated voltage</th><th>DC Tested voltage</th></tr>
<tr><td><100V</td><td>2.5Ra</td></tr>
<tr><td>100V</td><td>3.0Ra</td></tr>
<tr><td>200~300V</td><td>2.0Ra</td></tr>
<tr><td>500~999V</td><td>1.5Ra</td></tr>
<tr><td>1000~3000V</td><td>1.2Ra</td></tr>
</table></td></tr>
<tr><td>(3)</td><td>Insulation Resistance</td><td>NPO:<br>10,000MΩ Min. or 500Ω-F Min<br>X7R、X5R、Y5V:<br>10GΩ Min or<br>R · C ≧ 500Ω． F<br>(Whichever is smaller)</td><td>Apply DC tested voltage for 120±5 minute.<br>(PS: Ra – Rated Voltage)
<table>
<tr><th>Rated voltage</th><th>DC Tested voltage</th></tr>
<tr><td>＜500V</td><td>1.0 Ra</td></tr>
<tr><td>≧500V</td><td>500V</td></tr>
</table></td></tr>
<tr><td>(4)</td><td>Capacitance (Cap.)</td><td>Within the specified tolerance that refers on page 2</td><td rowspan="2">Measuring frequency & voltage:<br>NPO：＞1000pF：<br>1KHz±10%<br>1.0±0.2 Vrms<br>≦1000pF：<br>1MHz±10%<br>1.0±0.2 Vrms<br>X7R、X5R、Y5V：<br>C ≦10uF<br>1.0±0.2 Vrms<br>1KHz±10%<br>C＞10 uF<br>0.5±0.2 Vrms<br>120Hz±20%</td></tr>
<tr><td>(5)</td><td>Dissipation Factor (D. F.) or Quality factor (Q=1/D.F.)</td><td>NPO: More than 30pF: Q≧1000 ;<br>Less than 30pF: Q≧400+20C<br>X7R, X5R :
<table>
<tr><th>Rated vol.</th><th>D.F.≦</th><th colspan="2">Exception of D.F.≦</th></tr>
<tr><td>≧50V</td><td>2.5%</td><td>3.0%</td><td>0603≧0.047uF, 0805≧0.18uF , 1206≧0.47uF</td></tr>
<tr><td rowspan="2">25V</td><td rowspan="2">3.5%</td><td>5.0%</td><td>0805≧1uF, 1210≧10uF</td></tr>
<tr><td>7.0%</td><td>0603≧0.33uF</td></tr>
<tr><td>16V</td><td>3.5%</td><td>5.0%</td><td>0402≧0.033uF, 0603≧0.15uF, 0805≧0.68uF, 1206≧2.2uF</td></tr>
<tr><td>10V</td><td>5.0%</td><td>---</td><td>---</td></tr>
<tr><td>6.3V</td><td>7.5%</td><td>15.0%</td><td>0805≧22uF, 1210≧100uF,</td></tr>
</table>
Y5V :
<table>
<tr><th>Rated vol.</th><th>D.F.≦</th><th colspan="2">Exception of D.F.≦</th></tr>
<tr><td>≧50V</td><td>5.0%</td><td>---</td><td>---</td></tr>
<tr><td rowspan="2">25V</td><td rowspan="2">5.0%</td><td>7.0%</td><td>0603≧0.1uF; 0805≧0.33uF; 1206≧1uF</td></tr>
<tr><td>9.0%</td><td>0402≧0.068uF</td></tr>
<tr><td>16V(C<1.0uF)</td><td>7.0%</td><td>9.0%</td><td>0402≧0.068uF</td></tr>
<tr><td>16V(C≧1.0uF)</td><td>9.0%</td><td>---</td><td>---</td></tr>
<tr><td>10V</td><td>12.5%</td><td>---</td><td>---</td></tr>
<tr><td>6.3V</td><td>20.0%</td><td>---</td><td>---</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>NO.</th><th>Item</th><th colspan="3">Performance</th><th>Test or Inspection method</th></tr>
<tr><td rowspan="6">(6)</td><td rowspan="6">Temperature Characteristic of Capacitance</td><td colspan="3">Temperatures Coefficient</td><td rowspan="6">The temperature coefficient is determined using the capacitance measured at base temperature as a reference. Test the specimen in a range of maximum and minimum operation temperature that shown as left table.<br>* Base Temp for NPO、X7R、X5R : 25± 2 ℃<br>* Base Temp for Y5V: 20± 2 ℃</td></tr>
<tr><td>T.C.</td><td>Operating Temperature</td><td>Capacitance Change( ΔC)</td></tr>
<tr><td>NPO</td><td>-55~+125℃</td><td>0±30(ppm/℃)</td></tr>
<tr><td>X7R</td><td>-55~+125℃</td><td>± 15%</td></tr>
<tr><td>X5R</td><td>-55~+85℃</td><td>± 15%</td></tr>
<tr><td>Y5V</td><td>-25~+85℃</td><td>＋30%~－80%</td></tr>
<tr><td rowspan="3">(7)</td><td rowspan="3">Solder-ing to Heat</td><td>External appearance</td><td colspan="2">No mechanical damage.</td><td rowspan="3">Completely immerse both terminations in solder at 270±5℃ for 10±3 sec.<br><br>Leave the capacitors in ambient condition for 24±2 hours before measurement.<br><br>*Preconditioning：(only for Class 2):<br>Perform a heat treatment at 150 ±5℃ for one hour and then let sit for 48 ± 4 hours at room temperature. Perform the initial measurement.</td></tr>
<tr><td>Cap. change (ΔC/C)</td><td>NPO<br>X7R/ X5R<br>Y5V</td><td>±2.5% or ± 0.25 pF max. ( Whichever is larger)<br>±7.5%<br>±20%</td></tr>
<tr><td>D.F.、Quality factor (Q=1/D.F.)& IR</td><td colspan="2">To meet initial standard value</td></tr>
<tr><td>(8)</td><td>Leaching</td><td colspan="3">New solder to over 95% of termination</td><td>Completely soak both terminal electrodes in solder at 270±5℃ for 40±5 sec.</td></tr>
<tr><td>(9)</td><td>Solderability</td><td colspan="3">New solder to over 95% of termination</td><td>Completely soak both terminal electrodes in solder at specified temperature for 3±0.5 sec.:<br>a. For Tin-Lead (Sn/Pb) Termination product: 235±5℃<br>Soldering bath: Sn63/Pb37<br>b. For Lead-free Termination product: 245±5 ℃<br>Soldering bath: Sn96.5/Ag3.0/Cu0.5</td></tr>
</table>

<table>
<tr><th>NO.</th><th colspan="2">Item</th><th>Performance</th><th>Test or Inspection method</th></tr>
<tr><td rowspan="4">(10)</td><td rowspan="4">Humidity (Steady state)</td><td>External appearance</td><td>No mechanical damage.</td><td rowspan="4">Humidity (Steady state):<br>At temperature 40±2℃ and humidity 90 to 95%RH for 500＋24/－0 hours.<br>Leave the capacitors in ambient condition for the following time before measurement.<br>Class 1：24±2 hours.<br>Class 2：48±4 hours.<br>* Charge / discharge current shall. not exceed 50 mA.<br>* Preconditioning：(only for Class 2):<br>Apply the rated DC voltage for 1hour at 150 ±5℃. Remove and let sit for 48±4 hours at room temperature. Perform initial measurement.</td></tr>
<tr><td>Cap. change<br>(ΔC/C)</td><td>NPO: ± 5% or ±0.5 pFmax.<br>(Whichever is larger)<br>X7R/ X5R: ±12.5％<br>Y5V: ±30%</td></tr>
<tr><td>D.F.<br>or<br>Quality factor<br>(Q=1/D.F.)</td><td>
NPO：<br>C≧30pF DF≧1/350<br>10pF≦C<30pF DF≧1/(275+2.5C)<br>C＜10pF DF≧1/(200+10C)<br><br>X7R、X5R：
<table>
<tr><th>Rated vol.</th><th>D.F.≦</th><th colspan="2">Exception of D.F.≦</th></tr>
<tr><td>≧50V</td><td>3.0%</td><td>6.0%</td><td>0603≧0.047uF,<br>0805≧0.18uF ,<br>1206≧0.47uF</td></tr>
<tr><td rowspan="2">25V</td><td rowspan="2">5.0%</td><td>10.0%</td><td>0805≧1uF,<br>1210≧10uF</td></tr>
<tr><td>14.0%</td><td>0603≧0.33uF</td></tr>
<tr><td>16V</td><td>5.0%</td><td>10.0%</td><td>0402≧0.033uF,<br>0603≧0.15uF,<br>0805≧0.68uF,<br>1206≧2.2uF</td></tr>
<tr><td>10V</td><td>7.5%</td><td>15.0%</td><td>0402≧0.056uF,<br>0603≧0.33uF,<br>0805≧2.2uF,<br>1206≧2.2uF</td></tr>
<tr><td>6.3V</td><td>15.0%</td><td>30.0%</td><td>0805≧22uF,<br>1210≧100uF</td></tr>
</table>
Y5V：
<table>
<tr><th>Rated vol.</th><th>D.F.≦</th><th colspan="2">Exception of D.F.≦</th></tr>
<tr><td>≧50V</td><td>7.5%</td><td>---</td><td>---</td></tr>
<tr><td rowspan="2">25V</td><td rowspan="2">7.5%</td><td>10.0%</td><td>0603≧0.1uF;<br>0805≧0.33uF;<br>1206≧1uF</td></tr>
<tr><td>12.5%</td><td>0402≧0.068uF</td></tr>
<tr><td>16V(C<1.0uF)</td><td>10.0%</td><td>12.5%</td><td>0402≧0.068uF</td></tr>
<tr><td>16V(C≧1.0uF)</td><td>12.5%</td><td>---</td><td>---</td></tr>
<tr><td>10V</td><td>15.0%</td><td>---</td><td>---</td></tr>
<tr><td>6.3V</td><td>30.0%</td><td>---</td><td>---</td></tr>
</table>
</td></tr>
<tr><td>I.R.</td><td>1GΩ min. or 50Ω*F<br>(Whichever is smaller)</td></tr>
</table>

<table>
<tr><th>NO.</th><th colspan="2">Item</th><th>Performance</th><th>Test or Inspection method</th></tr>
<tr><td rowspan="4">(11)</td><td rowspan="4">Humidity load</td><td>External appearance</td><td>No mechanical damage.</td><td rowspan="4">Humidity load:<br>(apply for the product with rated voltage 500V-Max):<br>Apply the rated voltage at temperature 40±2℃ and humidity 90 to 95%RH for 500＋24/－0 hours.<br>Leave the capacitors in ambient condition for the following time before measurement.<br>Class 1：24±2 hours.<br>Class 2：48±4 hours.<br>* Charge / discharge current shall. not exceed 50 mA.<br>* Preconditioning：(only for Class 2):<br>Apply the rated DC voltage for 1hour at 150 ±5℃. Remove and let sit for 48±4 hours at room temperature. Perform initial measurement.</td></tr>
<tr><td>Cap. change<br>(ΔC/C)</td><td>NPO: ± 7.5% or ±0.75 pF max.<br>(Whichever is larger)<br>X7R/ X5R: ±12.5%<br>Y5V: ±30%</td></tr>
<tr><td>D.F. or<br>Quality factor<br>(Q=1/D.F.)</td><td>NPO:<br>C≧30pF: D.F. $\leqq \frac{1}{200}$<br>C＜30pF:<br>D.F. $\leqq \frac{1}{100+10/3*C}$<br>PS: C: Nominal Capacitance<br>X7R、X5R：
<table>
<tr><th>Rated vol.</th><th>D.F.≦</th><th colspan="2">Exception of D.F.≦</th></tr>
<tr><td>≧50V</td><td>3.0%</td><td>6.0%</td><td>0603≧0.047uF,<br>0805≧0.18uF ,<br>1206≧0.47uF</td></tr>
<tr><td rowspan="2">25V</td><td rowspan="2">5.0%</td><td>10.0%</td><td>0805≧1uF,<br>1210≧10uF</td></tr>
<tr><td>14.0%</td><td>0603≧0.33uF</td></tr>
<tr><td>16V</td><td>5.0%</td><td>10.0%</td><td>0402≧0.033uF,<br>0603≧0.15uF,<br>0805≧0.68uF,<br>1206≧2.2uF</td></tr>
<tr><td>10V</td><td>7.5%</td><td>15.0%</td><td>0402≧0.056uF,<br>0603≧0.33uF,<br>0805≧2.2uF,<br>1206≧2.2uF</td></tr>
<tr><td>6.3V</td><td>15.0%</td><td>30.0%</td><td>0805≧22uF,<br>1210≧100uF</td></tr>
</table>
Y5V：
<table>
<tr><th>Rated vol.</th><th>D.F.≦</th><th colspan="2">Exception of D.F.≦</th></tr>
<tr><td>≧50V</td><td>7.5%</td><td>---</td><td>---</td></tr>
<tr><td rowspan="2">25V</td><td rowspan="2">7.5%</td><td>10.0%</td><td>0603≧0.1uF;<br>0805≧0.33uF;<br>1206≧1uF</td></tr>
<tr><td>12.5%</td><td>0402≧0.068uF</td></tr>
<tr><td>16V(C<1.0uF)</td><td>10.0%</td><td>12.5%</td><td>0402≧0.068uF</td></tr>
<tr><td>16V(C≧1.0uF)</td><td>12.5%</td><td>---</td><td>---</td></tr>
<tr><td>10V</td><td>15.0%</td><td>---</td><td>---</td></tr>
<tr><td>6.3V</td><td>30.0%</td><td>---</td><td>---</td></tr>
</table></td></tr>
<tr><td>I.R.</td><td>500MΩ min. or 25Ω*F<br>(Whichever is smaller)</td></tr>
</table>

| NO. | Item | | Performance | Test or Inspection method |
|---|---|---|---|---|
| (12) | Vibration | External appearance | Without distinct damage | Solder the capacitors to the test jig as shown in figure below with IR-Reflow method. The capacitor shall be subjected to a simple harmonic motion with the entire frequency range, from 10 to 55 Hz and return to 10 Hz , shall be transverse in 1 min.<br>Amplitude (total excursion): 1.5mm<br>Amplitude tolerance:±15%<br>This motion shall be applied for a period of 2 hours in each of 3 mutually perpendicular directions (a total of 6 hours)<br>  |
| | | Capacitance | To meet initial standard value | |
| | | D.F. or Quality factor (Q=1/D.F.) | To meet initial standard value | |
| (13) | Deflection | External appearance | No cracking or marking defects shall occur |  |
| | | Bending strength | Flexure ≧ 1mm | |
| | | Cap. change (ΔC/C) | NPO: ±5% or±0.5pFmax.<br>( Whichever is larger)<br>X7R/ X5R: ±12.5 %<br>Y5V: ±30 % | |

<table>
<tr><th>NO.</th><th colspan="2">Item</th><th>Performance</th><th colspan="4">Test or Inspection method</th></tr>
<tr><td rowspan="8">(14)</td><td rowspan="8">Temperature cycle</td><td>External appearance</td><td>No mechanical damage.</td><td colspan="4" rowspan="2">The capacitor shall be subject 5 cycles according to four heat treatments listed in the following table.<br>Then Leave the capacitors in ambient condition for the following time before measurement.<br><br>Class 1：24±2 hours.<br>Class 2：48±4 hours.</td></tr>
<tr><td>Cap. change (ΔC/C)</td><td>NPO: ±2.5% or ±0.25pFmax.<br>( Whichever is larger)<br>X7R/ X5R: ±7.5%<br>Y5V: ±20%</td></tr>
<tr><td rowspan="7">D.F. or<br>Quality factor<br>(Q=1/D.F.)</td><td rowspan="7">To meet initial standard value</td><td>Step</td><td colspan="2">Temperature (°C)</td><td>Duration (min.)</td></tr>
<tr><td rowspan="4">1</td><td>NPO</td><td>-55°C-3/+0°C</td><td rowspan="4">30±3</td></tr>
<tr><td>X7R</td><td>-55°C-3/+0°C</td></tr>
<tr><td>X5R</td><td>-55°C-3/+0°C</td></tr>
<tr><td>Y5V</td><td>-25°C-3/+0°C</td></tr>
<tr><td>2</td><td colspan="2">Room Temp.</td><td>2 ~ 3</td></tr>
<tr><td rowspan="4">3</td><td>NPO</td><td>125°C-0+3°C</td><td rowspan="4">30±2</td></tr>
<tr><td>X7R</td><td>125°C-0+3°C</td></tr>
<tr><td>X5R</td><td>85°C-0+3°C</td></tr>
<tr><td>Y5V</td><td>85°C-0+3°C</td></tr>
<tr><td>4</td><td colspan="2">Room Temp.</td><td>2 ~ 3</td></tr>
<tr><td>I.R.</td><td>10000MΩ min. or 500Ω*F<br>(Whichever is smaller)</td><td colspan="4">*Preconditioning：(only for Class 2):<br>Perform a heat treatment at 150 ±5°C for one hour and then let sit for 48±4 hours at room temperature. Perform the initial measurement.</td></tr>
</table>

<table>
<tr><th>NO.</th><th colspan="2">Item</th><th>Performance</th><th>Test or Inspection method</th></tr>
<tr><td>(15)</td><td>Load Life</td><td>External appearance</td><td>No mechanical damage.</td><td rowspan="3">
<table>
<tr><th>Rated Voltage</th><th>Tested Voltage</th></tr>
<tr><td>< 500V</td><td>2.0Ra</td></tr>
<tr><td>≥ 500V<br>< 1000V</td><td>1.5Ra</td></tr>
<tr><td>≥ 1000V</td><td>1.2Ra</td></tr>
</table>
at maximum operating temperature ±2℃ for 1000＋48/－0 hours.<br>Leave the capacitors in ambient condition for the following time before measurement.<br>Class I: 24±2 hours<br>Class II: 48±4 hours<br><br>* Charge / discharge current shall. not exceed 50 mA.<br>* Preconditioning：(only for Class 2): Apply 200% of the rated DC voltage for 1 hour at the maximum operating temperature ± 3℃. Remove and let sit for 48±4 hours at room temperature. Perform initial measurement.</td></tr>
<tr><td></td><td></td><td>Cap. change<br>(ΔC/C)</td><td>NPO: ±3% or ±0.3pFmax.<br>(Whichever is larger)<br>X7R/ X5R: ±12.5%<br>Y5V: ±30%</td></tr>
<tr><td></td><td></td><td>D.F. or<br>Quality factor<br>(Q=1/D.F.)</td><td>NPO:<br>C≧30pF: D.F. $\leqq \frac{1}{350}$<br>30pF>C≧10pF:<br>D.F. $\leqq \frac{1}{275+2.5*C}$<br>C＜10pF：D.F. $\leqq \frac{1}{200+10*C}$<br>PS: C: Nominal Capacitance (pF)<br><br>X7R、X5R：
<table>
<tr><th>Rated vol.</th><th>D.F.≦</th><th colspan="2">Exception of D.F.≦</th></tr>
<tr><td>≧50V</td><td>3.0%</td><td>6.0%</td><td>0603≧0.047uF,<br>0805≧0.18uF ,<br>1206≧0.47uF</td></tr>
<tr><td rowspan="2">25V</td><td rowspan="2">5.0%</td><td>10.0%</td><td>0805≧1uF,<br>1210≧10uF</td></tr>
<tr><td>14.0%</td><td>0603≧0.33uF</td></tr>
<tr><td>16V</td><td>5.0%</td><td>10.0%</td><td>0402≧0.033uF,<br>0603≧0.15uF,<br>0805≧0.68uF,<br>1206≧2.2uF</td></tr>
<tr><td>10V</td><td>7.5%</td><td>15.0%</td><td>0402≧0.056uF,<br>0603≧0.33uF,<br>0805≧2.2uF,<br>1206≧2.2uF</td></tr>
<tr><td>6.3V</td><td>15.0%</td><td>30.0%</td><td>0805≧22uF,<br>1210≧100uF</td></tr>
</table>
Y5V：
<table>
<tr><th>Rated vol.</th><th>D.F.≦</th><th colspan="2">Exception of D.F.≦</th></tr>
<tr><td>≧50V</td><td>7.5%</td><td>---</td><td>---</td></tr>
<tr><td rowspan="2">25V</td><td rowspan="2">7.5%</td><td>10.0%</td><td>0603≧0.1uF;<br>0805≧0.33uF;<br>1206≧1uF</td></tr>
<tr><td>12.5%</td><td>0402≧0.068uF</td></tr>
<tr><td>16V(C<1.0uF)</td><td>10.0%</td><td>12.5%</td><td>0402≧0.068uF</td></tr>
<tr><td>16V(C≧1.0uF)</td><td>12.5%</td><td>---</td><td>---</td></tr>
<tr><td>10V</td><td>15.0%</td><td>---</td><td>---</td></tr>
<tr><td>6.3V</td><td>30.0%</td><td>---</td><td>---</td></tr>
</table></td></tr>
<tr><td></td><td></td><td>I.R.</td><td>1000MΩ min. or 50Ω*F<br>(Whichever is smaller)</td></tr>
</table>

## 8. Capacitance Specification:

### Capacitance Specification Table (Class I)

| T.C | NPO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | 0402 | | | | | 0603 | | | | | | | 0805 | | | | | | | | 1206 | | | | | | | | | | |
| Rated Voltage | Code | 10 | 16 | 25 | 50 | 100 | 10 | 16 | 25 | 50 | 100 | 200 | 250 | 10 | 16 | 25 | 50 | 100 | 200 | 250 | 500 | 10 | 16 | 25 | 50 | 100 | 200 | 250 | 500 | 1000 | 2000 |
| 0.5pF | 0R5 | N | N | N | N | | S | S | S | S | S | | | A | A | A | A | A | A | A | A | | | | | | | | | | |
| 1 | 010 | N | N | N | N | | S | S | S | S | S | | | A | A | A | A | A | A | A | A | | | | | | | | | | |
| 1.2 | 1R2 | N | N | N | N | | S | S | S | S | S | | | A | A | A | A | A | A | A | A | | | | | | | | | | |
| 1.5 | 1R5 | N | N | N | N | | S | S | S | S | S | | | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 1.8 | 1R8 | N | N | N | N | | S | S | S | S | S | | | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 2.2 | 2R2 | N | N | N | N | | S | S | S | S | S | | | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 2.7 | 2R7 | N | N | N | N | | S | S | S | S | S | | | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 3.3 | 3R3 | N | N | N | N | | S | S | S | S | S | | | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 3.9 | 3R9 | N | N | N | N | | S | S | S | S | S | | | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 4.7 | 4R7 | N | N | N | N | | S | S | S | S | S | | | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 5.6 | 5R6 | N | N | N | N | | S | S | S | S | S | | | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 6.8 | 6R8 | N | N | N | N | | S | S | S | S | S | | | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 8.2 | 8R2 | N | N | N | N | | S | S | S | S | S | | | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 10pF | 100 | N | N | N | N | N | S | S | S | S | S | | | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 12 | 120 | N | N | N | N | N | S | S | S | S | S | | | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 15 | 150 | N | N | N | N | N | S | S | S | S | S | | | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 18 | 180 | N | N | N | N | N | S | S | S | S | S | | | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 22 | 220 | N | N | N | N | N | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 27 | 270 | N | N | N | N | N | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 33 | 330 | N | N | N | N | N | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 39 | 390 | N | N | N | N | N | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 47 | 470 | N | N | N | N | N | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 56 | 560 | N | N | N | N | | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B |
| 68 | 680 | N | N | N | N | | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | C |
| 82 | 820 | N | N | N | N | | S | S | S | S | S | S | S | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B | C |
| 100pF | 101 | N | N | N | N | | S | S | S | S | S | S | S | A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B | C |
| 120 | 121 | N | N | N | N | | S | S | S | S | S | | | A | A | A | A | A | A | A | D | B | B | B | B | B | B | B | B | B | D |
| 150 | 151 | N | N | N | N | | S | S | S | S | S | | | A | A | A | A | A | B | B | D | B | B | B | B | B | B | B | B | C | D |
| 180 | 181 | N | N | N | N | | S | S | S | S | S | | | A | A | A | A | A | B | B | D | B | B | B | B | B | B | B | B | C | G |
| 220 | 221 | N | N | N | N | | S | S | S | S | S | | | A | A | A | A | A | D | D | D | B | B | B | B | B | B | B | B | D | G |
| 270 | 271 | N | N | N | N | | S | S | S | S | S | | | A | A | A | A | A | D | D | D | B | B | B | B | B | B | B | C | D | |
| 330 | 331 | N | N | N | N | | S | S | S | S | S | | | A | A | A | A | A | D | D | D | B | B | B | B | B | B | B | C | G | |
| 390 | 391 | N | N | N | N | | S | S | S | S | S | | | B | B | B | B | B | D | D | D | B | B | B | B | B | B | B | C | G | |
| 470 | 471 | N | N | N | N | | S | S | S | S | S | | | B | B | B | B | B | D | | | B | B | B | B | B | C | C | C | G | |
| 560 | 561 | | | | | | S | S | S | S | S | | | B | B | B | B | B | D | | | B | B | B | B | B | C | C | C | | |
| 680 | 681 | | | | | | S | S | S | S | | | | B | B | B | B | B | D | | | B | B | B | B | B | C | C | C | | |
| 820 | 821 | | | | | | S | S | S | S | | | | B | B | B | B | B | D | | | B | B | B | B | B | C | D | D | | |
| 1000pF | 102 | | | | | | S | S | S | S | | | | B | B | B | B | B | | | | B | B | B | B | B | C | G | G | | |
| 1200 | 122 | | | | | | S | S | S | S | | | | B | B | B | B | B | | | | B | B | B | B | B | C | | | | |
| 1500 | 152 | | | | | | S | S | S | S | | | | B | B | B | B | B | | | | B | B | B | B | B | C | | | | |
| 1800 | 182 | | | | | | S | S | S | S | | | | B | B | B | B | B | | | | B | B | B | B | B | D | | | | |
| 2200 | 222 | | | | | | S | S | S | S | | | | B | B | B | B | B | | | | B | B | B | B | B | D | | | | |
| 2700 | 272 | | | | | | S | S | | | | | | D | D | D | D | D | | | | B | B | B | B | B | | | | | |
| 3300 | 332 | | | | | | S | S | | | | | | D | D | D | D | D | | | | B | B | B | B | B | | | | | |
| 3900 | 392 | | | | | | | | | | | | | D | D | D | D | D | | | | B | B | B | B | B | | | | | |
| 4700 | 472 | | | | | | | | | | | | | D | D | D | I | | | | | B | B | B | B | B | | | | | |
| 5600 | 562 | | | | | | | | | | | | | D | D | | | | | | | B | B | B | B | B | | | | | |
| 6800 | 682 | | | | | | | | | | | | | D | D | | | | | | | C | C | C | C | C | | | | | |
| 8200 | 822 | | | | | | | | | | | | | D | D | | | | | | | C | C | C | C | C | | | | | |
| 0.01uF | 103 | | | | | | | | | | | | | D | D | | I | | | | | D | D | D | D | | | | | | |
| 0.012 | 123 | | | | | | | | | | | | | D | D | | | | | | | D | D | P | P | | | | | | |
| 0.015 | 153 | | | | | | | | | | | | | | | | | | | | | D | D | P | P | | | | | | |
| 0.018 | 183 | | | | | | | | | | | | | | | | | | | | | D | D | | | | | | | | |
| 0.022 | 223 | | | | | | | | | | | | | | | | | | | | | D | D | | | | | | | | |
| 0.027 | 273 | | | | | | | | | | | | | | | | | | | | | D | D | | | | | | | | |
| 0.033 | 333 | | | | | | | | | | | | | | | | | | | | | D | D | | | | | | | | |
| 0.039 | 393 | | | | | | | | | | | | | | | | | | | | | G | G | | | | | | | | |
| 0.047 | 473 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.056 | 563 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# Capacitance Specification Table (Class I)

| T.C | NPO | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | 1210 | | | | | | | | | | 1808 | | | 1812 | | | | | | | | | | | |
| Rated Voltage | Code | 10 | 16 | 25 | 50 | 100 | 200 | 250 | 500 | 1000 | 2000 | 1000 | 2000 | 3000 | 10 | 16 | 25 | 50 | 100 | 200 | 250 | 500 | 1000 | 2000 | 3000 |
| 0.5pF | 0R5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 010 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.2 | 1R2 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.5 | 1R5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.8 | 1R8 | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.2 | 2R2 | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.7 | 2R7 | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.3 | 3R3 | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.9 | 3R9 | | | | | | | | | | | D | D | D | | | | | | | | | | | |
| 4.7 | 4R7 | | | | | | | | | | | D | D | D | | | | | | | | | | | |
| 5.6 | 5R6 | | | | | | | | | | | D | D | D | | | | | | | | | | | |
| 6.8 | 6R8 | | | | | | | | | | | D | D | D | | | | | | | | | | | |
| 8.2 | 8R2 | | | | | | | | | | | D | D | D | | | | | | | | | | | |
| 10pF | 100 | | | | | C | C | C | C | C | C | D | D | D | | | | | D | D | D | D | D | D | D |
| 12 | 120 | | | | | C | C | C | C | C | C | D | D | D | | | | | D | D | D | D | D | D | D |
| 15 | 150 | | | | | C | C | C | C | C | C | D | D | D | | | | | D | D | D | D | D | D | D |
| 18 | 180 | | | | | C | C | C | C | C | C | D | D | D | | | | | D | D | D | D | D | D | D |
| 22 | 220 | C | C | C | C | C | C | C | C | C | C | D | D | D | | | | | D | D | D | D | D | D | D |
| 27 | 270 | C | C | C | C | C | C | C | C | C | C | D | D | D | | | | | D | D | D | D | D | D | D |
| 33 | 330 | C | C | C | C | C | C | C | C | C | C | D | D | D | | | | | D | D | D | D | D | D | D |
| 39 | 390 | C | C | C | C | C | C | C | C | C | C | D | D | D | | | | | D | D | D | D | D | D | D |
| 47 | 470 | C | C | C | C | C | C | C | C | C | C | D | D | D | | | | | D | D | D | D | D | D | D |
| 56 | 560 | C | C | C | C | C | C | C | C | C | D | D | D | D | | | | | D | D | D | D | D | D | D |
| 68 | 680 | C | C | C | C | C | C | C | C | C | D | D | D | D | | | | | D | D | D | D | D | D | D |
| 82 | 820 | C | C | C | C | C | C | C | C | C | D | D | D | D | | | | | D | D | D | D | D | D | D |
| 100pF | 101 | C | C | C | C | C | C | C | C | C | D | D | D | D | | | | | D | D | D | D | D | D | D |
| 120 | 121 | C | C | C | C | C | C | C | C | C | D | D | D | D | | | | | D | D | D | D | D | D | D |
| 150 | 151 | C | C | C | C | C | C | C | C | C | D | D | D | D | | | | | D | D | D | D | D | D | D |
| 180 | 181 | C | C | C | C | C | C | C | C | C | D | D | D | K | | | | | D | D | D | D | D | D | D |
| 220 | 221 | C | C | C | C | C | C | C | C | C | D | D | D | K | | | | | D | D | D | D | D | D | D |
| 270 | 271 | C | C | C | C | C | C | C | C | C | | D | D | K | | | | | D | D | D | D | D | D | K |
| 330 | 331 | C | C | C | C | C | C | C | C | D | | D | D | | | | | | D | D | D | D | D | D | K |
| 390 | 391 | C | C | C | C | C | C | C | C | D | | D | K | | | | | | D | D | D | D | D | D | K |
| 470 | 471 | C | C | C | C | C | C | C | C | D | | D | K | | | | | | D | D | D | D | D | D | K |
| 560 | 561 | C | C | C | C | C | C | C | C | | | K | K | | | | | | D | D | D | D | D | D | |
| 680 | 681 | C | C | C | C | C | C | C | C | | | K | K | | | | | | D | D | D | D | D | K | |
| 820 | 821 | C | C | C | C | C | C | C | C | | | K | | | | | | | D | D | D | D | D | K | |
| 1000pF | 102 | C | C | C | C | C | C | C | C | | | K | | | D | D | D | D | D | D | D | D | K | K | |
| 1200 | 122 | C | C | C | C | C | D | D | D | | | | | | D | D | D | D | D | D | D | D | K | | |
| 1500 | 152 | C | C | C | C | C | D | D | D | | | | | | D | D | D | D | D | D | D | D | K | | |
| 1800 | 182 | C | C | C | C | C | D | D | D | | | | | | D | D | D | D | D | D | D | D | | | |
| 2200 | 222 | C | C | C | C | C | D | D | | | | | | | D | D | D | D | D | D | D | D | | | |
| 2700 | 272 | C | C | C | C | C | D | D | | | | | | | D | D | D | D | D | D | D | D | | | |
| 3300 | 332 | C | C | C | C | C | D | | | | | | | | D | D | D | D | D | D | D | D | | | |
| 3900 | 392 | C | C | C | C | C | D | | | | | | | | D | D | D | D | D | D | | | | | |
| 4700 | 472 | C | C | C | C | C | | | | | | | | | D | D | D | D | D | D | | | | | |
| 5600 | 562 | C | C | C | C | C | | | | | | | | | D | D | D | D | D | D | | | | | |
| 6800 | 682 | C | C | C | C | C | | | | | | | | | D | D | D | D | D | D | | | | | |
| 8200 | 822 | C | C | C | C | C | | | | | | | | | D | D | D | D | D | | | | | | |
| 0.01uF | 103 | C | C | C | C | C | | | | | | | | | D | D | D | D | D | | | | | | |
| 0.012 | 123 | C | C | D | D | D | | | | | | | | | D | D | D | D | D | | | | | | |
| 0.015 | 153 | C | C | D | D | D | | | | | | | | | D | D | D | D | D | | | | | | |
| 0.018 | 183 | C | C | | | | | | | | | | | | D | D | D | D | D | | | | | | |
| 0.022 | 223 | C | C | | | | | | | | | | | | D | D | D | D | D | | | | | | |
| 0.027 | 273 | C | C | | | | | | | | | | | | D | D | D | D | D | | | | | | |
| 0.033 | 333 | C | C | | | | | | | | | | | | D | D | D | D | D | | | | | | |
| 0.039 | 393 | C | C | | | | | | | | | | | | D | D | | | | | | | | | |
| 0.047 | 473 | D | D | | | | | | | | | | | | D | D | | | | | | | | | |
| 0.056 | 563 | D | D | | | | | | | | | | | | D | D | | | | | | | | | |
| 0.068 | 683 | | | | | | | | | | | | | | D | D | | | | | | | | | |
| 0.082 | 823 | | | | | | | | | | | | | | D | D | | | | | | | | | |
| 0.1uF | 104 | | | | | | | | | | | | | | D | D | | | | | | | | | |

# Capacitance Specification Table (Class II)

| T.C | X7R | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | 0402 | | | | 0603 | | | | | 0805 | | | | | | | | 1206 | | | | | | | | | |
| Rated Voltage | Code | 10 | 16 | 25 | 50 | 10 | 16 | 25 | 50 | 100 | 10 | 16 | 25 | 50 | 100 | 200 | 250 | 500 | 10 | 16 | 25 | 50 | 100 | 200 | 250 | 500 | 1000 | 2000 |
| 100pF | 101 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | B^ | | | | | | | | | | |
| 120 | 121 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | B^ | | | | | | | | | | |
| 150 | 151 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | B^ | B | B | B | B | B | B | B | B^ | B^ | B^ |
| 180 | 181 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | B^ | B | B | B | B | B | B | B | B^ | B^ | B^ |
| 220 | 221 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | B^ | B | B | B | B | B | B | B | B^ | B^ | B^ |
| 270 | 271 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | B^ | B | B | B | B | B | B | B | B^ | B^ | B^ |
| 330 | 331 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | B^ | B | B | B | B | B | B | B | B^ | B^ | B^ |
| 390 | 391 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | B^ | B | B | B | B | B | B | B | B^ | B^ | C^ |
| 470 | 471 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | B^ | B | B | B | B | B | B | B | B^ | B^ | C^ |
| 560 | 561 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | B^ | B | B | B | B | B | B | B | B^ | B^ | C^ |
| 680 | 681 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | B^ | B | B | B | B | B | B | B | B^ | B^ | C^ |
| 820 | 821 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | B^ | B | B | B | B | B | B | B | B^ | B^ | G^ |
| 1000pF | 102 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | B^ | B | B | B | B | B | B | B | B^ | B^ | G^ |
| 1200 | 122 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | B^ | B | B | B | B | B | B | B | B^ | B^ | |
| 1500 | 152 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | B^ | B | B | B | B | B | B | B | B^ | C^ | |
| 1800 | 182 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | B^ | B | B | B | B | B | B | B | B^ | C^ | |
| 2200 | 222 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | B^ | B | B | B | B | B | B | B | B^ | D^ | |
| 2700 | 272 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | B^ | B | B | B | B | B | B | B | B^ | G^ | |
| 3300 | 332 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | | B | B | B | B | B | B | B | B^ | G^ | |
| 3900 | 392 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | | B | B | B | B | B | B | B | B^ | G^ | |
| 4700 | 472 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | B | B | | B | B | B | B | B | B | B | B^ | | |
| 5600 | 562 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | D | D | | B | B | B | B | B | B | B | B^ | | |
| 6800 | 682 | N | N | N | N | S | S | S | S | S | B | B | B | B | B | D | D | | B | B | B | B | B | B | B | B^ | | |
| 8200 | 822 | N | N | N | | S | S | S | S | S | B | B | B | B | B | D | D | | B | B | B | B | B | B | B | C^ | | |
| 0.01uF | 103 | N | N | N | | S | S | S | S | S | B | B | B | B | B | D | D | | B | B | B | B | B | B | B | C^ | | |
| 0.012 | 123 | N | N | N | | S | S | S | S | | B | B | B | B | B | D | D | | B | B | B | B | B | B | B | D^ | | |
| 0.015 | 153 | N | N | N | | S | S | S | S | | B | B | B | B | B | D | D | | B | B | B | B | B | C | C | D^ | | |
| 0.018 | 183 | N | N | N | | S | S | S | S | | B | B | B | B | B | D | D | | B | B | B | B | B | C | C | D^ | | |
| 0.022 | 223 | N | N | N | | S | S | S | S | | B | B | B | B | B | D | D | | B | B | B | B | B | C | C | G^ | | |
| 0.027 | 273 | N | N | | | S | S | S | S | | B | B | B | B | D | | | | B | B | B | B | B | C | C | G^ | | |
| 0.033 | 333 | N | N | | | S | S | S | X | | B | B | B | B | D | | | | B | B | B | B | B | G | G | G^ | | |
| 0.039 | 393 | N | | | | S | S | S | X | | B | B | B | B | | | | | B | B | B | B | B | G | G | | | |
| 0.047 | 473 | N | N | N | | S | S | S | X | | B | B | B | B | | | | | B | B | B | B | B | G | G | | | |
| 0.056 | 563 | N | | | | S | S | S | X | | B | B | B | B | | | | | B | B | B | B | B | G | G | | | |
| 0.068 | 683 | N | | | | S | S | S | X | | B | B | B | B | | | | | B | B | B | B | B | G | G | | | |
| 0.082 | 823 | N | | | | S | S | S | X | | B | B | B | B | | | | | B | B | B | B | D | G | G | | | |
| 0.1uF | 104 | N | N | | | S | S | S | X | | B | B | B | B | | | | | B | B | B | B | D | G | G | | | |
| 0.12 | 124 | | | | | S | S | | | | B | B | B | D | | | | | B | B | B | B | | | | | | |
| 0.15 | 154 | | | | | S | S | X | | | D | D | D | D | | | | | C | C | C | C | | | | | | |
| 0.18 | 184 | | | | | S | S | | | | D | D | D | | | | | | C | C | C | C | | | | | | |
| 0.22 | 224 | | | | | S | S | X | | | D | D | D | I | | | | | C | C | C | C | | | | | | |
| 0.27 | 274 | | | | | X | | | | | D | D | D | | | | | | C | C | C | D | | | | | | |
| 0.33 | 334 | | | | | X | X | | | | D | D | D | I | | | | | C | C | C | D | | | | | | |
| 0.39 | 394 | | | | | X | | | | | D | D | D | | | | | | C | C | J | P | | | | | | |
| 0.47 | 474 | | | | | X | X | | | | D | D | D | | | | | | J | J | J | P | | | | | | |
| 0.56 | 564 | | | | | | | | | | D | D | D | | | | | | J | J | J | P | | | | | | |
| 0.68 | 684 | | | | | X | X | | | | D | D | D | | | | | | J | J | J | P | | | | | | |
| 0.82 | 824 | | | | | | | | | | D | D | D | | | | | | J | J | J | P | | | | | | |
| 1uF | 105 | | | | | X | X | | | | D | D | D | | | | | | J | J | J | P | | | | | | |
| 2.2 | 225 | | | | | | | | | | I | I | | | | | | | J | J | P | | | | | | | |
| 3.3 | 335 | | | | | | | | | | | | | | | | | | | P | P | | | | | | | |
| 4.7 | 475 | | | | | | | | | | | | | | | | | | P | P | P | | | | | | | |
| 6.8 | 685 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 106 | | | | | | | | | | | | | | | | | | P | | | | | | | | | |
| 22 | 226 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 47 | 476 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# Capacitance Specification Table (Class II)

| T.C | X7R | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | 1210 | | | | | | | | | 1808 | | | 1812 | | | | | | | | | | |
| Rated Voltage | Code | 10 | 16 | 25 | 50 | 100 | 200 | 250 | 500 | 1000 | 1000 | 2000 | 3000 | 10 | 16 | 25 | 50 | 100 | 200 | 250 | 500 | 1000 | 2000 | 3000 |
| 100pF | 101 | | | | | | | | | | | | | | | | | | | | | | | |
| 120 | 121 | | | | | | | | | | | | | | | | | | | | | | | |
| 150 | 151 | | | | | | | | | | D^ | D^ | | | | | | | | | | | | |
| 180 | 181 | | | | | | | | | | D^ | D^ | | | | | | | | | | | | |
| 220 | 221 | | | | | | | | | | D^ | D^ | | | | | | | | | | | | |
| 270 | 271 | | | | | | | | | | D^ | D^ | | | | | | | | | | D^ | D^ | |
| 330 | 331 | | | | | | | | | | D^ | D^ | K^ | | | | | | | | | D^ | D^ | |
| 390 | 391 | | | | | | | | | | D^ | D^ | K^ | | | | | | | | | D^ | D^ | |
| 470 | 471 | | | | | | | | | | D^ | D^ | K^ | | | | | | | | | D^ | D^ | |
| 560 | 561 | | | | | | | | | | D^ | D^ | K^ | | | | | | | | | D^ | D^ | |
| 680 | 681 | | | | | | | | | | D^ | D^ | K^ | | | | | | | | | D^ | D^ | K^ |
| 820 | 821 | | | | | | | | | | D^ | D^ | K^ | | | | | | | | | D^ | D^ | K^ |
| 1000pF | 102 | C^ | C^ | C^ | C^ | C^ | C^ | C^ | C^ | C^ | D^ | K^ | K^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | K^ |
| 1200 | 122 | C^ | C^ | C^ | C^ | C^ | C^ | C^ | C^ | C^ | D^ | K^ | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | |
| 1500 | 152 | C^ | C^ | C^ | C^ | C^ | C^ | C^ | C^ | C^ | D^ | K^ | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | |
| 1800 | 182 | C^ | C^ | C^ | C^ | C^ | C^ | C^ | C^ | C^ | D^ | K^ | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | |
| 2200 | 222 | C^ | C^ | C^ | C^ | C^ | C^ | C^ | C^ | C^ | D^ | K^ | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | |
| 2700 | 272 | C^ | C^ | C^ | C^ | C^ | C^ | C^ | C^ | C^ | D^ | | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | |
| 3300 | 332 | C^ | C^ | C^ | C^ | C^ | C^ | C^ | C^ | D^ | D^ | | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | K^ | |
| 3900 | 392 | C^ | C^ | C^ | C^ | C^ | C^ | C^ | C^ | | D^ | | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | K^ | |
| 4700 | 472 | C^ | C^ | C^ | C^ | C^ | C^ | C^ | C^ | | D^ | | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | K^ | |
| 5600 | 562 | C^ | C^ | C^ | C^ | C^ | C^ | C^ | C^ | | K^ | | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | | |
| 6800 | 682 | C^ | C^ | C^ | C^ | C^ | C^ | C^ | C^ | | K^ | | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | | |
| 8200 | 822 | C | C | C | C | C | C^ | C^ | C^ | | K^ | | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | | |
| 0.01uF | 103 | C | C | C | C | C | C^ | C^ | C^ | | K^ | | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | | |
| 0.012 | 123 | C | C | C | C | C | C^ | C^ | C^ | | | | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | K^ | | |
| 0.015 | 153 | C | C | C | C | C | C^ | C^ | C^ | | | | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | K^ | | |
| 0.018 | 183 | C | C | C | C | C | C^ | C^ | C^ | | | | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | | | |
| 0.022 | 223 | C | C | C | C | C | C^ | C^ | D^ | | | | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | | | |
| 0.027 | 273 | C | C | C | C | C | C^ | C^ | G^ | | | | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | | | |
| 0.033 | 333 | C | C | C | C | C | C^ | C^ | G^ | | | | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | | | |
| 0.039 | 393 | C | C | C | C | C | C^ | C^ | G^ | | | | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | | | |
| 0.047 | 473 | C | C | C | C | C | D^ | D^ | G^ | | | | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | D^ | | | |
| 0.056 | 563 | C | C | C | C | C | D^ | D^ | G^ | | | | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | K^ | | | |
| 0.068 | 683 | C | C | C | C | C | G^ | G^ | | | | | | D^ | D^ | D^ | D^ | D^ | D^ | D^ | K^ | | | |
| 0.082 | 823 | C | C | C | C | C | G^ | G^ | | | | | | D | D | D | D | D | D^ | D^ | K^ | | | |
| 0.1uF | 104 | C | C | C | C | C | G^ | G^ | | | | | | D | D | D | D | D | D^ | D^ | K^ | | | |
| 0.12 | 124 | C | C | C | C | C | | | | | | | | D | D | D | D | D | D^ | D^ | | | | |
| 0.15 | 154 | C | C | C | C | D | | | | | | | | D | D | D | D | D | K^ | K^ | | | | |
| 0.18 | 184 | C | C | C | C | D | | | | | | | | D | D | D | D | D | K^ | K^ | | | | |
| 0.22 | 224 | C | C | C | C | D | | | | | | | | D | D | D | D | D | K^ | K^ | | | | |
| 0.27 | 274 | C | C | C | C | | | | | | | | | D | D | D | D | D | | | | | | |
| 0.33 | 334 | C | C | C | D | K | | | | | | | | D | D | D | D | D | | | | | | |
| 0.39 | 394 | C | C | C | D | | | | | | | | | D | D | D | D | D | | | | | | |
| 0.47 | 474 | C | C | C | D | | | | | | | | | D | D | D | D | K | | | | | | |
| 0.56 | 564 | D | D | D | D | | | | | | | | | D | D | D | D | K | | | | | | |
| 0.68 | 684 | D | D | D | D | | | | | | | | | D | D | D | K | K | | | | | | |
| 0.82 | 824 | D | D | D | D | | | | | | | | | D | D | D | K | | | | | | | |
| 1uF | 105 | D | D | D | D | | | | | | | | | D | D | D | K | M | | | | | | |
| 2.2 | 225 | | | G | | | | | | | | | | | | | | | | | | | | |
| 3.3 | 335 | | | G | | | | | | | | | | | | | | | | | | | | |
| 4.7 | 475 | | | K | | | | | | | | | | | | | | | | | | | | |
| 6.8 | 685 | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 106 | K | K | M | | | | | | | | | | | M | M | | | | | | | | |
| 22 | 226 | | | | | | | | | | | | | | | | | | | | | | | |
| 47 | 476 | | | | | | | | | | | | | | | | | | | | | | | |

# Capacitance Specification Table (Class II)

| T.C | | X5R | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | | 0402 | | | 0603 | | | | 0805 | | | 1206 | | | 1210 | | | | 1812 | | |
| Rated Voltage | Code | 6.3 | 10 | 16 | 6.3 | 10 | 16 | 25 | 6.3 | 10 | 16 | 6.3 | 10 | 16 | 6.3 | 10 | 16 | 25 | 6.3 | 10 | 16 |
| 0.012 | 123 | | | | | | | | | | | | | | | | | | | | |
| 0.015 | 153 | | | | | | | | | | | | | | | | | | | | |
| 0.018 | 183 | | | | | | | | | | | | | | | | | | | | |
| 0.022 | 223 | | | | | | | | | | | | | | | | | | | | |
| 0.027 | 273 | | | N | | | | | | | | | | | | | | | | | |
| 0.033 | 333 | | | N | | | | | | | | | | | | | | | | | |
| 0.039 | 393 | | | N | | | | | | | | | | | | | | | | | |
| 0.047 | 473 | | | N | | | | | | | | | | | | | | | | | |
| 0.056 | 563 | | N | | | | | | | | | | | | | | | | | | |
| 0.068 | 683 | | N | | | | | | | | | | | | | | | | | | |
| 0.082 | 823 | | N | | | | | | | | | | | | | | | | | | |
| 0.1uF | 104 | | N | N | | | | | | | | | | | | | | | | | |
| 0.15 | 154 | | | | | | | | | | | | | | | | | | | | |
| 0.22 | 224 | N | | | | | | X | | | | | | | | | | | | | |
| 0.33 | 334 | N | | | X | X | X | | | | | | | | | | | | | | |
| 0.47 | 474 | N | | | X | X | X | | | | | | | | | | | | | | |
| 0.68 | 684 | | | | X | X | X | | | | | | | | | | | | | | |
| 1uF | 105 | N | | | X | X | X | X | | | | | | | | | | | | | |
| 1.5 | 155 | | | | | | | | | | | | | | | | | | | | |
| 2.2 | 225 | | | | X | | | | I | I | I | | J | J | | | | | | | |
| 3.3 | 335 | | | | | | | | I | I | | | P | P | | | | | | | |
| 4.7 | 475 | | | | X | | | | I | I | | P | P | P | | | | | | | |
| 6.8 | 685 | | | | | | | | | | | P | | | | | | | | | |
| 10 | 106 | | | | | | | | I | | | P | P | P | K | K | K | M | | | |
| 22 | 226 | | | | | | | | I | | | P | | | M | M | M | | | M | M |
| 47 | 476 | | | | | | | | | | | | | | M | | | | M | | |
| 100 | 107 | | | | | | | | | | | | | | M | | | | U | | |

# Capacitance Specification Table (Class II)

| T.C | Y5V | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | 0402 | | | | | 0603 | | | | | 0805 | | | | | | | | 1206 | | | | | | | |
| Rated Voltage | Code | 6.3 | 10 | 16 | 25 | 50 | 6.3 | 10 | 16 | 25 | 50 | 6.3 | 10 | 16 | 25 | 50 | 100 | 200 | 250 | 6.3 | 10 | 16 | 25 | 50 | 100 | 200 | 250 |
| 1000pF | 102 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1500 | 152 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2200 | 222 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3300 | 332 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4700 | 472 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6800 | 682 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8200 | 822 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.01uF | 103 | | N | N | N | N | | S | S | S | S | | A | A | A | A | B | B | B | | B | B | B | B | B | B | B |
| 0.015 | 153 | | N | N | N | N | | S | S | S | S | | A | A | A | A | B | B | B | | B | B | B | B | B | B | B |
| 0.022 | 223 | | N | N | N | N | | S | S | S | S | | A | A | A | A | B | B | B | | B | B | B | B | B | B | B |
| 0.033 | 333 | | N | N | N | N | | S | S | S | S | | A | A | A | A | B | B | B | | B | B | B | B | B | B | B |
| 0.047 | 473 | | N | N | N | | | S | S | S | S | | A | A | A | A | B | B | B | | B | B | B | B | B | B | B |
| 0.068 | 683 | | N | N | N | | | S | S | S | S | | A | A | A | A | B | B | B | | B | B | B | B | B | B | B |
| 0.1uF | 104 | | N | N | N | | | S | S | S | S | | A | A | A | A | B | | | | B | B | B | B | B | B | B |
| 0.15 | 154 | | N | | | | | S | S | S | S | | A | A | A | A | | | | | B | B | B | B | C | C | C |
| 0.22 | 224 | | N | | | | S | S | S | S | S | | A | A | A | A | | | | | B | B | B | B | C | | |
| 0.33 | 334 | N | N | | | | | S | S | S | | | B | B | B | B | | | | | B | B | B | B | | | |
| 0.47 | 474 | N | N | | | | | S | S | S | | | B | B | B | | | | | | B | B | B | B | | | |
| 0.68 | 684 | N | | | | | | S | X | | | | B | B | D | | | | | | B | B | B | B | | | |
| 1uF | 105 | N | | | | | | S | X | | | | B | B | D | I | | | | | C | C | C | C | | | |
| 1.5 | 155 | | | | | | | S | | | | | D | D | | | | | | | C | C | C | | | | |
| 2.2 | 225 | | | | | | S | S | | | | | D | D | I | | | | | | C | C | C | J | | | |
| 3.3 | 335 | | | | | | | | | | | | D | D | | | | | | | J | J | J | | | | |
| 4.7 | 475 | | | | | | S | X | | | | | D | D | | | | | | | J | J | J | | | | |
| 6.8 | 685 | | | | | | | | | | | | I | | | | | | | | J | J | | | | | |
| 10 | 106 | | | | | | | | | | | I | I | | | | | | | J | J | J | P | | | | |
| 22 | 226 | | | | | | | | | | | I | | | | | | | | | P | | | | | | |
| 47 | 476 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 107 | | | | | | | | | | | | | | | | | | | | | | | | | | |

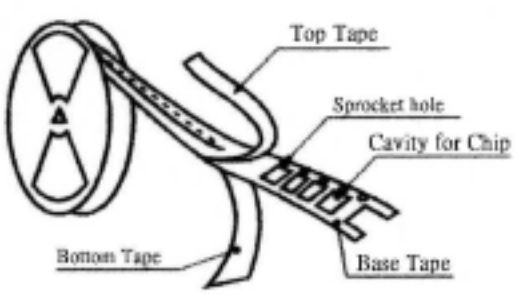
# Capacitance Specification Table (Class II)

| T.C | | Y5V | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | | 1210 | | | | | | | | 1812 | | | | | | | |
| Rated Voltage | Code | 6.3 | 10 | 16 | 25 | 50 | 100 | 200 | 250 | 6.3 | 10 | 16 | 25 | 50 | 100 | 200 | 250 |
| 1000pF | 102 | | | | | | | | | | | | | | | | |
| 1200 | 122 | | | | | | | | | | | | | | | | |
| 1500 | 152 | | | | | | | | | | | | | | | | |
| 1800 | 182 | | | | | | | | | | | | | | | | |
| 2200 | 222 | | | | | | | | | | | | | | | | |
| 2700 | 272 | | | | | | | | | | | | | | | | |
| 3300 | 332 | | | | | | | | | | | | | | | | |
| 3900 | 392 | | | | | | | | | | | | | | | | |
| 4700 | 472 | | | | | | | | | | | | | | | | |
| 5600 | 562 | | | | | | | | | | | | | | | | |
| 6800 | 682 | | | | | | | | | | | | | | | | |
| 8200 | 822 | | | | | | | | | | | | | | | | |
| 0.01uF | 103 | | | | | | C | C | C | | | | | | D | D | D |
| 0.015 | 153 | | | | | | C | C | C | | | | | | D | D | D |
| 0.022 | 223 | | | | | | C | C | C | | | | | | D | D | D |
| 0.033 | 333 | | | | | | C | C | C | | | | | | D | D | D |
| 0.047 | 473 | | | | | | C | C | C | | | | | | D | D | D |
| 0.068 | 683 | | | | | | C | C | C | | | | | | D | D | D |
| 0.1uF | 104 | | C | C | C | C | C | C | C | | D | D | D | D | D | D | D |
| 0.15 | 154 | | C | C | C | C | C | C | C | | D | D | D | D | D | D | D |
| 0.22 | 224 | | C | C | C | C | C | | | | D | D | D | D | D | D | D |
| 0.33 | 334 | | C | C | C | C | C | | | | D | D | D | D | D | D | D |
| 0.47 | 474 | | C | C | C | C | | | | | D | D | D | D | D | D | D |
| 0.68 | 684 | | C | C | C | C | | | | | D | D | D | D | D | D | D |
| 1uF | 105 | | C | C | C | C | | | | | D | D | D | D | D | | |
| 1.5 | 155 | | C | C | C | | | | | | D | D | D | D | | | |
| 2.2 | 225 | | C | C | C | | | | | | D | D | D | D | | | |
| 3.3 | 335 | | C | C | C | | | | | | D | D | D | D | | | |
| 4.7 | 475 | C | C | C | D | | | | | | D | D | D | D | | | |
| 6.8 | 685 | | C | C | G | | | | | | D | D | D | D | | | |
| 10 | 106 | | D | D | G | | | | | | D | D | D | K | | | |
| 22 | 226 | | K | K | | | | | | | | | K | | | | |
| 47 | 476 | | K | | | | | | | | | M | | | | | |
| 100 | 107 | M | | | | | | | | M | M | | | | | | |

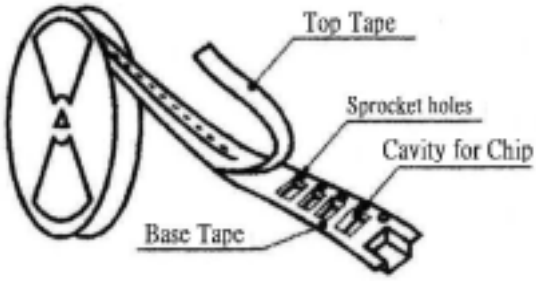
## 9. Packaging：

(1)Reel specification: Standard reel diameter is 7” and 13”

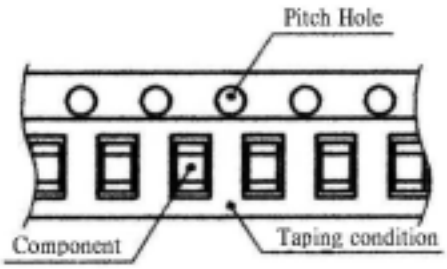
Paper Tape



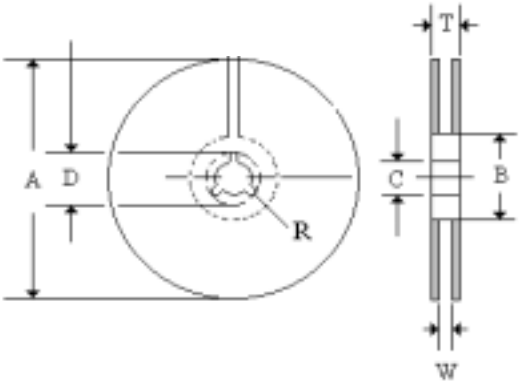

Plastic Tape




Packed Chips

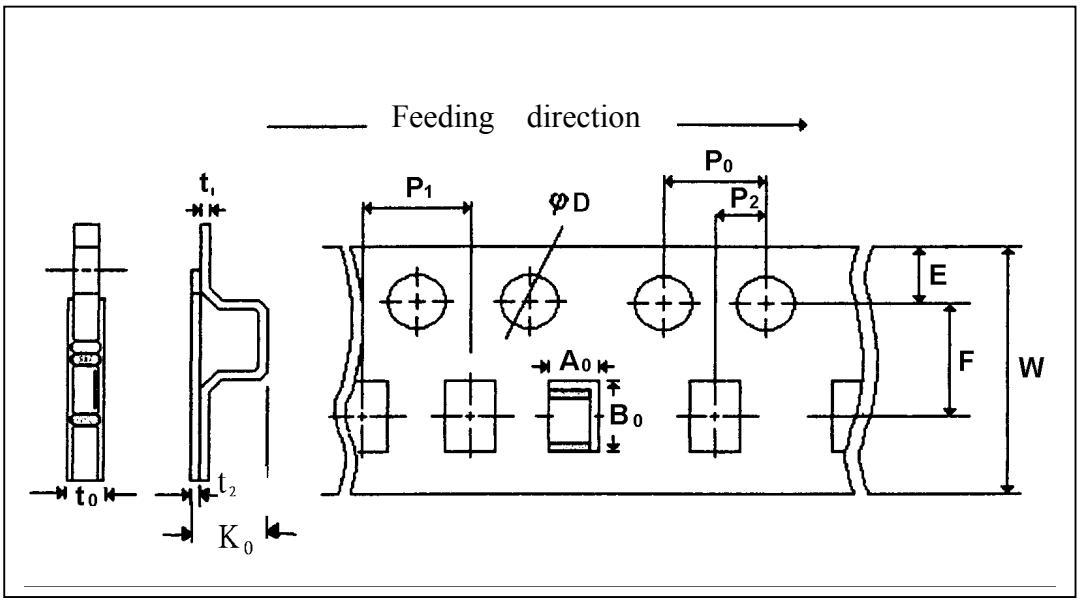



(2)Dimension of Reel:




| Dimension | | A | B | C | D | T | W |
|---|---|---|---|---|---|---|---|
| Reel Size | 7” | 178±1 | 50 min. | 13±1.0 | 21±1.0 | 12±2.0 | 10±1.0 |
| | 10” | 254±1 | | | | 13.5±1.0 | |
| | 13” | 330 ±1 | | | | 14±1.0 | |

(3) Tape Dimension：




Unit: inch (mm)

| Symbol | Description | 8 mm tape | 12 mm tape |
|---|---|---|---|
| W | Wide of Tape | 8(0.135)±0.2(0.008) | 12(0.472)±0.2(0.008) |
| F | Distance between drive hole center and cavity center | 3.5(0.138)±0.05(0.002) | 5.5(0.213)±0.05(0.002) |
| E | Distance between drive hole center and tape edge | 1.75(0.069)±0.1(0.004) | |
| $P_1$ | Distance between cavity center | 4(0.156)±0.1(0.004) | 8(0.135)±0.1(0.004) |
| $P_2$ | Axial distance between drive hole center and cavity center | 2(0.079)±0.05(0.002) | |
| $P_0$ | Axial distance between drive hole | 4(0.156)±0.1(0.004)<br>[2(0.079)±0.05(0.002) only for 0402 chip] | |
| $D_0$ | Drive hole diameter | 1.5(0.059)+0.1(0.004)-0 | |
| $t_1$ | Base tape thickness | 0.3(0.012)±0.1(0.004) | 0.4(0.016)±0.1(0.004) |
| $t_2$ | Total tape thickness | 0.1(0.004) max. | |
| $t_0$ | Total height of paper tape | 1.1 max. | |
| $K_0$ | Total height of plastic tape | 2.5 max. | |

| | 0402 | 0603 | 0805 | 1206 | 1210 and above |
|---|---|---|---|---|---|
| $A_0$(Wide of Cavity) | 0.65±0.1 | 1.05±0.1 | 1.55±0.15 | 2.0±0.2 | Dependent on chip size to minimize rotation |
| $B_0$(Length of Cavity) | 1.15±0.1 | 1.85±0.1 | 2.3±0.15 | 3.6±0.2 | |

PS: Axial – Refer direction that parallel to feeding direction. Unit: mm (inch)

(4)Quantity for each reel

Unit: mm/ inch

| Chip Size | Wideth(Reel) | Thickness | Unit/Reel | Wideth(Reel) | Thickness | Unit/Reel |
|---|---|---|---|---|---|---|
| 0402 | 8mm(7") | N | 10Kpcs/Reel | | | |
| | 8mm(13") | N | 50Kpcs/ Reel | | | |
| 0603 | 8mm(7") | S、X | 4 Kpcs/ Reel | | | |
| | 8mm(10") | S、X | 10 Kpcs/ Reel | | | |
| | 8mm(13") | S、X | 15 Kpcs/ Reel | | | |
| 0805 | 8mm(7") | A、B | 4 Kpcs/ Reel | 8mm(7") | D、I | 3 Kpcs/ Reel |
| | 8mm(10") | A、B | 10 Kpcs/ Reel | 8mm(10") | D、I | 5 Kpcs/ Reel |
| | 8mm(13") | A、B | 15 Kpcs/ Reel | 8mm(13") | D、I | 10 Kpcs/ Reel |
| 1206 | 8mm(7") | B | 4 Kpcs/ Reel | 8mm(7") | C、D、J | 3 Kpcs/ Reel |
| | 8mm(10") | B | 10 Kpcs/ Reel | 8mm(13") | C、D | 5Kpcs/Reel |
| | 8mm(13") | B | 15 Kpcs/ Reel | 8mm(13") | C、D | 10Kpcs/Reel |
| | | | | 8mm(7") | G、P | 2 Kpcs/ Reel |
| 1210 | | | | 8mm(7") | C、D | 3 Kpcs/ Reel |
| | | | | 8mm(7") | G | 2 Kpcs/ Reel |
| | | | | 8mm(7") | K、M | 1 Kpcs/ Reel |
| 1808 | | | | 12mm(7") | D | 2 Kpcs/ Reel |
| | | | | 12mm(7") | K | 1 Kpcs/ Reel |
| 1812 | | | | 12mm(7") | D、K | 1 Kpcs/ Reel |
| | | | | 12mm(7") | M、U | 0.5 Kpcs/ Reel |

*Chip thickness：
N=0.5±0.05
A=0.6±0.1
B=0.8±0.1
C=0.95±0.1
D=1.25±0.1
I=1.25±0.2
J=1.15±0.15
S=0.8±0.07
X=0.8+0.15/-0.1
P=1.6+0.3/-0.1
G=1.6±0.21
K=2.0±0.2
M=2.5±0.3
U=2.8±0.3

(5) Peeling off strength of Top tape

The angle between top tape and base tape is 165 ~ 180 ° , and the peeling speed is control in 300 ±10 mm/min, and the peeling force as follows:

a. 8mm tape or base tape : 0.1~0.55N
b. 12mm tape or base tape: 0.1~ 0.55N