SPECIFICATION

MENTION INDEX

1. Applicable safety standard ..... 1.
2. Acquired Safety Standards approval ..... 1.
3. Part Number ..... 1.
4. Marking ..... 6.
5. Rating and Characteristics ..... 7.
6. Specifications and Test Methods ..... 8.
7. Characteristics Data ..... 12.
8. Taping specification ..... 14.
9. Packaging Styles ..... 16.
10. Packaging Quantity ..... 17.
11. Label and Transport ..... 17.
12. Notification before the modification ..... 17.

DIVISTION	DATE ISSUED	SPEC.NO.
TECH.DERT	May.3.2012	WM-S08-008B06

HM *TYPE* -FOR(Reinforced Insulation)-IEC60384-14-ClassX1,Y2

1. Applicable Safety Standard

This specification applies to the VDE, CQC, UL ,CSA ,EC and JET approved ceramic capacitors dist type for antenna-coupling, line-by-pass and across-the-line.
And approved by VDE ,CQC for IEC-384-14- second edition1993/EN 132400

2. Acquired Safety Standard Approval and Recognized number

Safety Standard	Standard No.	Recognition No.	Rated Voltage
VDE-ENEC	DIN EN60384-14(VDE 0565 Teil1-1):2006-04; EN60384-14:2005-08; IEC60384-14(ed.3)	40034436	X1:400V~ Y2:250V~
UL	UL60384-14	E221839	
CQC	GB/T14472-1998	CQC09001040206	
CSA	CSA-E60384-14:09	1226874	
KC	K60384-14	SU03040-8001/2A	
JET	J60384-14(JISC5101-14)	1417-C9901-022	

3. Part Numbers

Examples

HM	F	103	M	G	4	B	W
①	②	③	④	⑤	⑥	⑦	⑧

① Type
② Temperature Characteristics
③ Nominal Capacitance
④ Capacitance Tolerance Symbol
⑤ Lead Style
⑥ Lead Spacing
⑦ Packaging
⑧ Internal code

3.1 Type

Type Designation

Code	Sefety Sandard Recogized Type
HM	X1: AC400V, Y2:AC250V

3.2 Temperature Characiteristics Code

Code	Temperature Characeristics	Cap.Change Of Temp.coeff.	Temperature Range
S	SL	+350～-1000ppm/℃	-25 to 85℃
B	Y5P	±10%	
E	Y5U	+20%～-55%	
F	Y5V	+30%～-80%	

3.3 Nominal Capacitance Code

Nominal capactiance shall consist of three numerals in the unit of picofarad(Pf). The first and second numerals mean the significant figures, and the third numeral shall represent the number of zeros fllowing the significant figures.

Example:

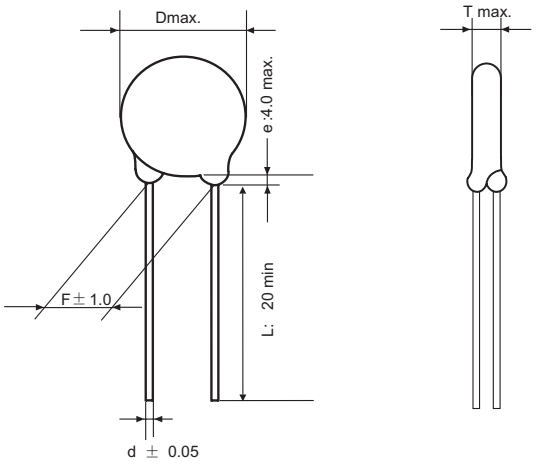
Code	Capacitance(pF)
101	100
102	1000
222	2200
103	10000

3.4 Capacitance Tolerance

Code	Tolerance
K	±10%
M	±20%

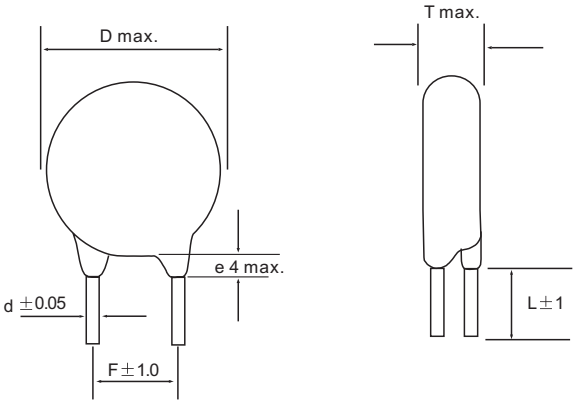
3.5 Lead style

3.5.1: Straight long lead (Lead Style Code :A)



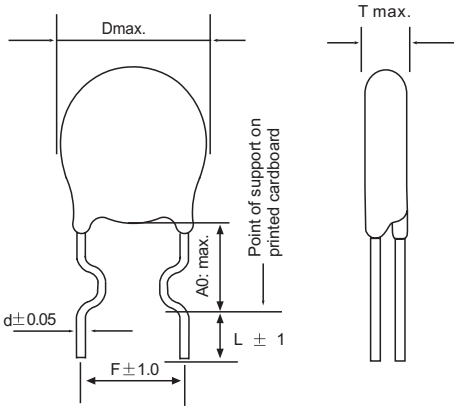
Lead code	A2	A3	A4
F	5	7.5	10
L	20 min		
d	0.55		
e	4.0 Max.		

3.5.2 : Straight short lead (Lead Style Code : B)



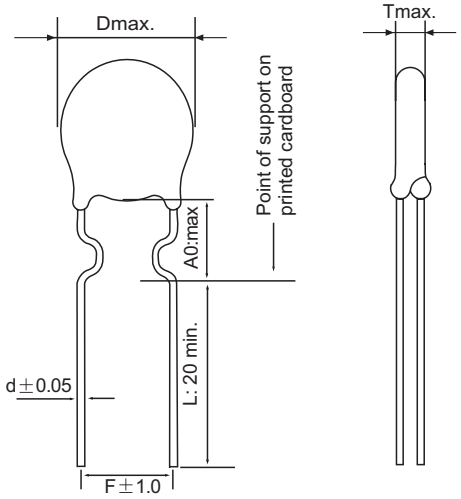
Lead code	B2	B3	B4
F	5	7.5	10
L	5 or depend on client		
d	0.55		
e	4.0 Max.		

3.5.3 : Inside Crimped Short lead (Lead Style Code : C)



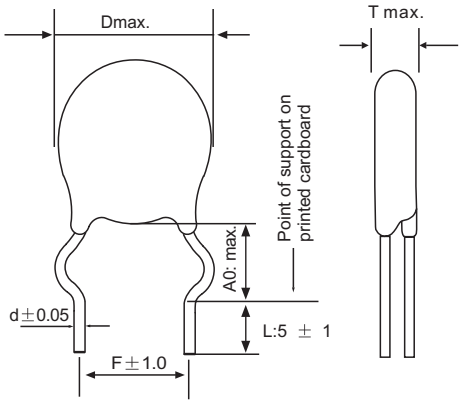
Lead code	C2	C3	C4
F	5	7.5	10
A0	5	5	6.5
L	5 or depend on client		
d	0.55		

3.5.4 : Inside crimped long lead (Lead Style Code : D)



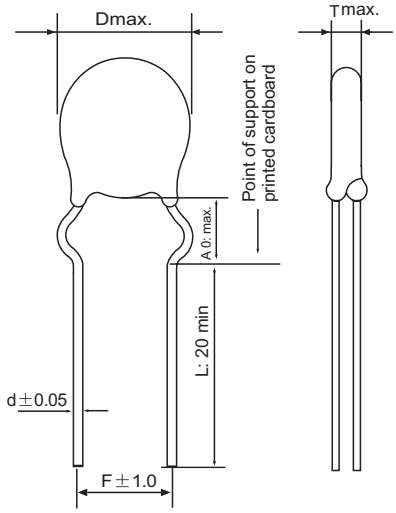
Lead code	D2	D3	D4
F	5	7.5	10
A0	5	5	6.5
L	20 min		
d	0.55		

3.5.5 : Outside crimped Shart lead (Lead Style Code: E)



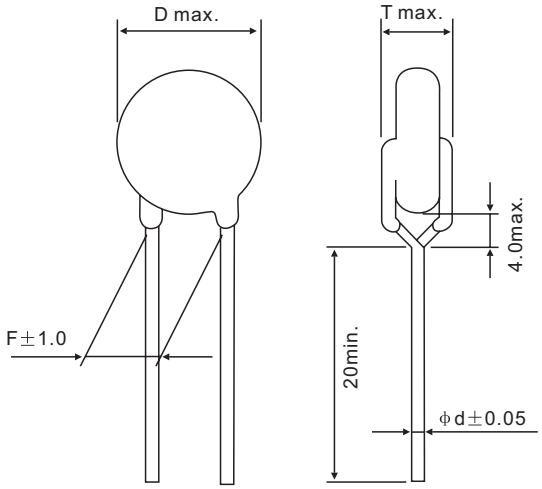
Lead code	E2	E3	E4
F	5	7.5	10
A0	5	5	6.5
L	5 or depend on client		
d	0.55		

3.5.6 : Outside crimped long lead (Lead Style Code: F)



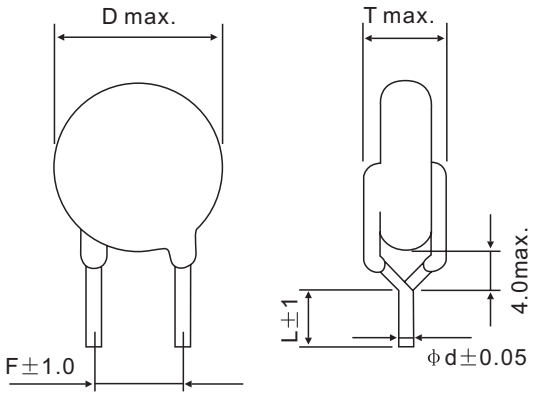
Lead code	F2	F3	F4
F	5	7.5	10
A0	5	5	6.5
L	20 min		
d	0.55		

3.5.7 : Vertical crimped long lead (Lead Style Code: G)



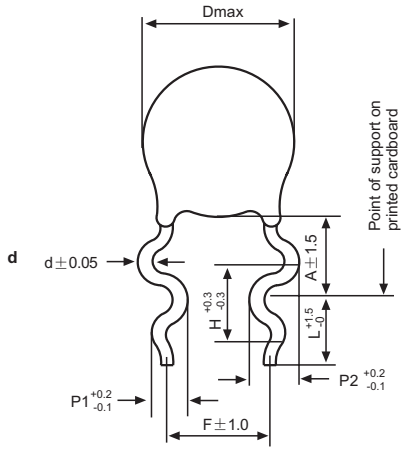
Lead code	G2	G3	G4
F	5	7.5	10
L	20 min		
d	0.55		

3.5.8 : Vertical crimped short lead (Lead Style Code: H)



Lead code	H2	H3	H4
F	5	7.5	10
L	5 or depend on client		
d	0.55		

3.5.9 : Duoble crimped snap lead, (Lead Style Code: M)



Lead code	M2	M3	M4
F	5	7.5	10
H	2.6	2.6	3.3
P1	1.25	1.25	1.65
P2	1.65	1.65	1.95
A	D＜8: 6.0±1.5 , D＞8:7.0±1.5		
L	3 to 30 mm		
d	0.55		

General Information: PCB max. thickness 1.6mm

3.6 Lead Spacing Code

Code	Lead Spacing(mm)
2	5.0± 1.0
3	7.5± 1.0
4	10.0±1.0

3.7 Packaging Code

Code	Pitch of components(mm)	Packaging
B	/	Bulk
A	12.7	Taping Ammo Pack
C	25.4	
D	15.0	
E	30.0	
R	12.7	Taping Reel Pack

3.8 Internal Code

Code	Meaning
W	Meeting RoSH
L	Halogen-Free & Meeting RoSH

4. MARKING

(1) Type Designation : HM

(2) Nominal Capacitance : (Marked With 3 figures) ex: 222 = 2200pF

(3) Capacitanve tolerance: K:±10%, M :±20%

(4) Subclass and rated voltage: X1:400V~ , Y2:250V~

(5) Manufacture,s trade mark: WMEC

(6)Manufacturing date and serial number: 21124

(7)Appoved Monogram :

VDE-ENEC approval mark:

CQC approval mark :

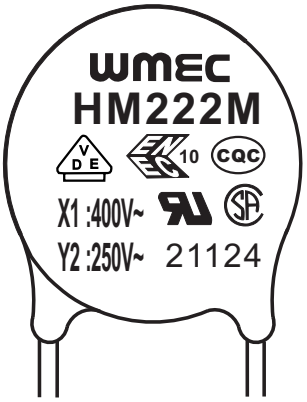
CSA approval mark :

UL approval mark :

ENEC approval mark :

KC approval mark :

Marking ex.



5. Rating and Characteristics

Type HM (IEC60384-14 Sub-class X1,Y2) Rating and Characteristics

Part Number	Temp. Char.	Capacitance (pF)	Doby Dia. D (mm)	Body Thicknes T (mm)	Lead Spacing F (mm)	Lead Dia. d (mm)	Lead Package Long Bulk)	Lead Package Short Bulk)	Lead Package Taping
HMS100○□□□	SL	10 ±5% or ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HMS150○□□□	SL	15 ±5% or ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HMS220○□□□	SL	22 ±5% or ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HMS330○□□□	SL	33 ±5% or ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HMS470○□□□	SL	47 ±5% or ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HMS680○□□□	SL	68 ±5% or ±10%	9.0	6.0	7.5	0.55	G3B	H3B	G3A
HMB101K□□□	B/Y5P	100 +10,-10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HMB151K□□□	B/Y5P	150 +10,-10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HMB181K□□□	B/Y5P	180 +10,-10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HMB221K□□□	B/Y5P	220 +10,-10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HMB271K□□□	B/Y5P	270 +10,-10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HMB331K□□□	B/Y5P	330 +10,-10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HMB391K□□□	B/Y5P	390 +10,-10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HMB471K□□□	B/Y5P	470 +10,-10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HMB561K□□□	B/Y5P	560 +10,-10%	9.0	6.0	7.5	0.55	G3B	H3B	G3A
HMB681K□□□	B/Y5P	680 +10,-10%	10.0	6.0	7.5	0.55	G3B	H3B	G3A
HMB821K□□□	B/Y5P	820 +10,-10%	11.0	6.0	7.5	0.55	G3B	H3B	G3A
HMB102K□□□	B/Y5P	1000 +10,-10%	12.0	6.0	7.5	0.55	G3B	H3B	G3A
HME102M□□□	E/Y5U	1000 +20,-20%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HME122M□□□	E/Y5U	1200 +20,-20%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HME152M□□□	E/Y5U	1500 +20,-20%	9.0	6.0	7.5	0.55	G3B	H3B	G3A
HME182M□□□	E/Y5U	1800 +20,-20%	9.0	6.0	7.5	0.55	G3B	H3B	G3A
HME222M□□□	E/Y5U	2200 +20,-20%	10.0	6.0	7.5	0.55	G3B	H3B	G3A
HME272M□□□	E/Y5U	2700 +20,-20%	11.0	6.0	7.5	0.55	G3B	H3B	G3A
HME332M□□□	E/Y5U	3300 +20,-20%	12.0	6.0	7.5	0.55	G3B	H3B	G3A
HME392M□□□	E/Y5U	3900 +20,-20%	13.0	6.0	7.5	0.55	G3B	H3B	G3C
HME472M□□□	E/Y5U	4700 +20,-20%	13.0	6.0	7.5	0.55	G3B	H3B	G3C
HMF102M□□□	F/Y5V	1000 +20,-20%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HMF122M□□□	F/Y5V	1200 +20,-20%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HMF152M□□□	F/Y5V	1500 +20,-20%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HMF182M□□□	F/Y5V	1800 +20,-20%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HMF222M□□□	F/Y5V	2200 +20,-20%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HMF272M□□□	F/Y5V	2700 +20,-20%	9.0	6.0	7.5	0.55	G3B	H3B	G3A
HMF332M□□□	F/Y5V	3300 +20,-20%	10.0	6.0	7.5	0.55	G3B	H3B	G3A
HMF392M□□□	F/Y5V	3900 +20,-20%	11.0	6.0	7.5	0.55	G3B	H3B	G3A
HMF472M□□□	F/Y5V	4700 +20,-20%	11.0	6.0	7.5	0.55	G3B	H3B	G3A
HMF562M□□□	F/Y5V	5600 +20,-20%	12.0	6.0	7.5	0.55	G3B	H3B	G3C
HMF682M□□□	F/Y5V	6800 +20,-20%	14.0	6.0	7.5	0.55	G3B	H3B	G3C
HMF103M□□□	F/Y5V	10000 +20,-20%	15.0	6.0	10.0	0.55	G4B	H4B	G4C

①Circle is filled with one to tolerance code of Capactance..J=±5%. K=±10%.

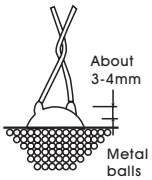
②Three blank columns are filled with the lead and packaging codes. Please refer to the three columns on the right for appropriate code.

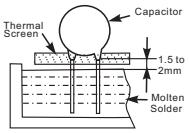
6. Specification and test method

6.1 Operating temperature range:-25℃ to 125℃

6.2 Test and measurement shall be made at the standard condition,(Temperature 15 to 35℃,relative humidity 45 to 75% and atmospheric pressure 86-106 kPa), unless otherwise specified herein
If doubt occurred on the value of measurement, and measurement was requested by customer capacitors shall be measured at the reference condition(Temperature 20±2℃,relative humidity 60 to 70% and atmospheric pressure 86-106 kPa), unless otherwise specified herein

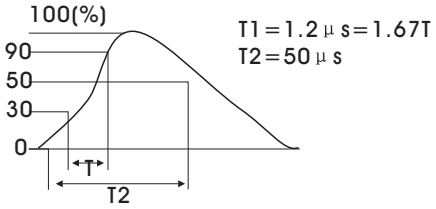
6.3 Performance

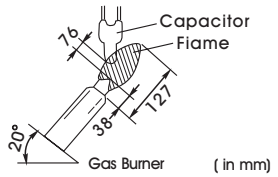
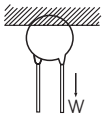
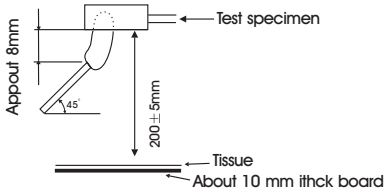
<table>
<tr><th>No.</th><th colspan="2">Item</th><th>Specification</th><th>Testing Method</th></tr>
<tr><td>1</td><td colspan="2">Appearance and Dimensions</td><td>No marked defect on appearance from and dimensions are within specified range.</td><td>The capacitor shall be inspected by naked eyes for Visible evidence of defect.
Dimensions shall be measured with slide calipers.</td></tr>
<tr><td>2</td><td colspan="2">Marking</td><td>To be easily legible.</td><td>The capacitor shall be inspected by naked eyes</td></tr>
<tr><td>3</td><td colspan="2">Capacitance</td><td>Within specified tolerance.</td><td rowspan="2">The capacitance, dissipation factor shall be measured at 20±2℃ with 1±0.1kHz.and AC1±0.1V(r.m.s).</td></tr>
<tr><td>4</td><td colspan="2">Dissipation Factor(D.F.)</td><td><table><tr><th>Char.</th><th>Specification</th></tr><tr><td>B,E</td><td>D.F≤2.5%</td></tr><tr><td>F</td><td>D.F≤5.0%</td></tr><tr><td>SL</td><td>Q≥400+20C (C＜30PF)
Q≥1000 (C≥30PF)</td></tr></table></td></tr>
<tr><td>5</td><td colspan="2">Insulation Resistance(I.R.)</td><td>10000MΩmin.</td><td>The insulation resistance shall be measured with DC500±50V within 60±5 s of charging.</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">Dielectric Strength</td><td>Between Lead Wires</td><td>No failure.</td><td>The capacitor shall not be damage when AC2600V(r.m.s.) are applied between the lead wires for 60 s.</td></tr>
<tr><td>Body Insulation</td><td>No failure.</td><td>First, the terminals of the capacitor shall be connected together. Then, as shown in Figure right, a metal foil shall be closely wrapped around the body of the capacitor to the distance of about 3 to 4 mm from each terminal.Then,the capacitor shall be insertedinto a container filled with metal ballsof about 1mm diameter. Finally, AC AC2600(r.m.s.) is applied for 60 s between the capacitor lead wires and metal balls.
 
</td></tr>
<tr><td>7</td><td colspan="2">Temperature Characteristics</td><td><table><tr><th>Char.</th><th>Capacitance Change</th></tr><tr><td>B</td><td>Within±10%</td></tr><tr><td>E</td><td>Within $^{+20}_{-55}$%</td></tr><tr><td>F</td><td>Within $^{+30}_{-80}$%</td></tr><tr><td>SL</td><td>+350~-1000ppm/℃</td></tr></table>Temperature characteristic guarantee is -25 to +85℃</td><td>The capacitance measurement shall be made at each step specified in Table 3.
<Table.3><table><tr><th>Step</th><th>Temperature(℃)</th></tr><tr><td>1</td><td>+20±2</td></tr><tr><td>2</td><td>-25 ±2</td></tr><tr><td>3</td><td>+20±2</td></tr><tr><td>4</td><td>+85±2</td></tr><tr><td>5</td><td>+20±2</td></tr></table></td></tr>
<tr><td>8</td><td colspan="2">Solderability of Leads</td><td>Lead wire shall be soldered with uniformly coated on the axial direction over 3/ 4pf the circumferential direction.</td><td>The lead wire of a capacitor shall be dipped into molten solder of 235±5℃ for 2±0.5 s. The depth of immersion is up to about 1.5 to 2.0mm from the root of lead wires.</td></tr>
</table>

<table>
<tr><th>No.</th><th colspan="2">Item</th><th>Specification</th><th>Testing Method</th></tr>
<tr><td rowspan="4">9</td><td rowspan="4">Soldering Effect</td><td>Appearance</td><td>No marked defect.</td><td rowspan="4">As in figure,the lead wires should be immersed solder of 350±10℃ or 260±5℃ up to 1.5 to 2.0mm from the root of terminal for 3.5±0.5 s (10±1 s for 260±5℃).
 

Pre-treatment:
Capacitor should be stored at 85±2℃ for 1 h, then placed at *room condition for 24±2 h before initial measurements.
Post-treatment:
Capacitor should be stored for 1 to 2 h at *room condition.</td></tr>
<tr><td>Capacitance Change</td><td>Within±10%</td></tr>
<tr><td>I.R.</td><td>1000MΩ min.</td></tr>
<tr><td>Dielectric Strength</td><td>Pre Item 6.</td></tr>
<tr><td rowspan="3">10</td><td rowspan="3">Vibration Resistance</td><td>Appearance</td><td>No marked defect.</td><td rowspan="3">The capacitor should firmly be soldered to the supporting lead wire and vibrated at a frequency range of 10 to 55Hz ,1.5mm in total amplitude, with about a 1 1minute rate of vibration change from10Hz to 55Hz and back to 10Hz .
Apply for total of 6 hrs., 2 hrs each in 3 mutually perpendicular directions.</td></tr>
<tr><td>Capacitance</td><td>Within the specified tolerance.</td></tr>
<tr><td>D.F.
Q</td><td><table><tr><th>Char.</th><th>Specification</th></tr><tr><td>B,E</td><td>D.F.≤2.5%</td></tr><tr><td>F</td><td>D.F.≤5.0%</td></tr><tr><td>SL</td><td>Q≥400+20C*1 (C＜30pF)
Q≥1000 (C≥30pF)</td></tr></table></td></tr>
<tr><td rowspan="4">11</td><td rowspan="4">Humidity (Under Steady State)</td><td>Appearance</td><td>No marked defect.</td><td rowspan="4">Set the capacitor for 500±12 h at 40±2℃ in 90 to 95%relative humidity.
Post-treatment:
Capacitor should be stored for 1 to 2 h at *2room condition.</td></tr>
<tr><td>Capacitance Change</td><td><table><tr><th>Char.</th><th>Capacitance Change</th></tr><tr><td>B</td><td>Within± 10%</td></tr><tr><td>E,F</td><td>Within± 15%</td></tr><tr><td>SL</td><td>Within± 5%</td></tr></table></td></tr>
<tr><td>D.F.
Q</td><td><table><tr><th>Char.</th><th>Specification</th></tr><tr><td>B,E</td><td>D.F.≤5.0%</td></tr><tr><td>F</td><td>D.F.≤7.5%</td></tr><tr><td>SL</td><td>Q≥275+5/2C*1 (C＜30pF)
Q≥350 (C≥30pF)</td></tr></table></td></tr>
<tr><td>I.R.</td><td>3000MΩ min.</td></tr>
<tr><td rowspan="4">12</td><td rowspan="4">Humidity Loading</td><td>Appearance</td><td>No marked defect.</td><td rowspan="4">Apply the rated voltage for 500±12 h at 40±2℃, in 90 to 95% relative humidity.
Post-treatment:
Capacitor should be stored for 1 to 2 h at *2room condition.</td></tr>
<tr><td>Capacitance Change</td><td><table><tr><th>Char.</th><th>Capacitance Change</th></tr><tr><td>B</td><td>Within± 10%</td></tr><tr><td>E,F</td><td>Within± 15%</td></tr><tr><td>SL</td><td>Within± 5%</td></tr></table></td></tr>
<tr><td>D.F.
Q</td><td><table><tr><th>Char.</th><th>Specification</th></tr><tr><td>B,E</td><td>D.F.≤5.0%</td></tr><tr><td>F</td><td>D.F.≤7.5%</td></tr><tr><td>SL</td><td>Q≥275+5/2C*1 (C＜30pF)
Q≥350 (C≥30pF)</td></tr></table></td></tr>
<tr><td>I.R.</td><td>3000MΩ min.</td></tr>
<tr><td></td><td></td><td>Dielectric Strength</td><td>Per Item 6.</td><td></td></tr>
</table>

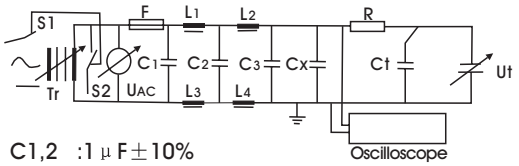
*1 “C ” expresses nominal capacitance value(pF).
*2 “Room condition ” …… Temperature; 15 to 35℃, Relative humidity; 45 to 75%, Atmospheric pressure: 86 to 106kPa

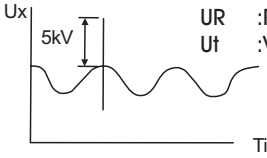
<table>
<tr><th>No.</th><th colspan="2">Item</th><th>Specification</th><th>Testing Method</th></tr>
<tr><td rowspan="5">13</td><td rowspan="5">Life</td><td>Appearance</td><td>No marked defect.</td><td rowspan="5">Impulse Voltage
Each individual capacitor shall be subjected to a 5kV impulses for three times. The time between impulses should be not less than 10S.
After the capacitors are applied to life test.
 

Apply a voltage of table 4 for 1000 h at 105+2/0℃, and relative humidity of 50% max…
<Table.4>
Applied voltage
AC425V(r.m.s.), Except that once each hour the voltage is increased to AC1000V(r.m.s.)for 0.1s.</td></tr>
<tr><td>Capacitance Change</td><td>Within± 20%</td></tr>
<tr><td>I.R.</td><td>3000MΩ min.</td></tr>
<tr><td>Dielectric Strength</td><td>Per Item 6.</td></tr>
<tr><td>Discharge Test(Ⅱ)</td><td>Per Item 9.</td></tr>
<tr><td>14</td><td colspan="2">Flame Test</td><td>The capacitor flame discontinue as follows.
<table><tr><th>Cycle</th><th>Time</th></tr><tr><td>1 to 4</td><td>30 s max.</td></tr><tr><td>5</td><td>60 s max.</td></tr></table></td><td>Post-treatment:
Capacitor shall be stored for 1 to 2 h at *room condition.
The capacitor shall be subjected to applied flame for 15 s and then removed for 15 s until 5 cycles.
 
</td></tr>
<tr><td rowspan="2">15</td><td rowspan="2">Robustness of terminations</td><td>Tensile</td><td rowspan="2">Lead wire shall not cut off.
Capacitor shall noit be broken.</td><td>As a figure,fix the body of capacitor, apply a tensile weight gradually to each lead wire in the radial direction of capacitor up to 10N and keep it for 10±1 s.
 
</td></tr>
<tr><td>Bending</td><td>Each lead wire shall be subjected to 5N weight and then a 90° bend, at the point of egress,in one direction, return to original position,and then a 90° bend in the opposite direction at the rate of one bend in 2 to 3 s.</td></tr>
<tr><td>16</td><td colspan="2">Passive Flammability</td><td>The burning time shall not be exceeded the time 30 s.
The tissue paper shall not ignite.</td><td>The capacitor under test shall be held in the flame in the position which best promotes burning. Each specimen shall only be exposed once to the flame. Time of exposure to flame: 30 s.
Length of flame: 12±1mm
Gas burner: Length 35mm min.
Inside Dia.: 0.5±0.1mm
Outside Dia.: 0.9mm max.
Gas:Butance gas Purity 95% min.
 
</td></tr>
</table>

*1 “C ” expresses nominal capacitance value(pF).

* “Room condition ” …… Temperature; 15 to 35℃, Relative humidity; 45 to 75%, Atmospheric pressure: 86 to 106kPa

<table>
<tr><th>No.</th><th colspan="2">Item</th><th>Specification</th><th>Testing Method</th></tr>
<tr><td>17</td><td colspan="2">Active Flammability</td><td>The cheese-cloth shall not be on fire.</td><td>The capacitor shall be individually wrapped in at least one but not more than two complete layers of cheese-cloth.The capacitor shall be subjected to 20 discharges. The interval between successive discharges shall be 5 s. The UAC shall be maintained for 2 min after the last discharge.
 

C1,2 :1μF±10%
C3 :0.033μF±5% 10kV
Ct :3μF±5% 10kV
Cx :Capacitor under test
F :Fuse, Rated 10A
L1 to 4 :1.5mH±20%
:16A Rod core choke
R :100Ω±2%
UAC :UR±5%
UR :Rated volatage
Ut :Voltage applied to Ct
 
</td></tr>
<tr><td rowspan="5">18</td><td rowspan="5">Temperature and Immersion Cycle</td><td>Appearance</td><td>No marked defect.</td><td rowspan="5">The capacitor shall be subjected to 5 temperature cycles,then consecutively to 2 immersion cycles.
<Temperature cycle>
<table><tr><th>Step</th><th>Temperature(℃)</th><th>Time</th></tr><tr><td>1</td><td>-25+0/-3</td><td>30 min</td></tr><tr><td>2</td><td>Room temp.</td><td>3 min</td></tr><tr><td>3</td><td>+125+3/-0</td><td>30 min</td></tr><tr><td>4</td><td>Room temp.</td><td>3 min</td></tr></table>
Cycle time:5 cycle
<Immersion cycle>
<table><tr><th>Step</th><th>Temperature(℃)</th><th>Time</th><th>Immersion water</th></tr><tr><td>1</td><td>+65+5/-0</td><td>15 min</td><td>Clean water</td></tr><tr><td>2</td><td>Room temp.</td><td>15 min</td><td>Salt water</td></tr></table>
Pre-treatment:
Capacitor shall be stored at 85±2℃ for 1 h, thenplaced at *room condition for 24±2 h.
Post-treatment:
Capacitor shall be stored for 24±2 h at *room condition.</td></tr>
<tr><td>Capacitance Change</td><td><table><tr><th>Char.</th><th>Capacitance Change</th></tr><tr><td>B</td><td>Within±10%</td></tr><tr><td>E</td><td>Within±15%</td></tr><tr><td>SL</td><td>Within±5%</td></tr></table></td></tr>
<tr><td>D.F.</td><td><table><tr><th>Char.</th><th>Specification</th></tr><tr><td>B,E</td><td>D.F≤5.0%</td></tr><tr><td>SL</td><td>Q≥275+2.5C(C<30PF)
Q≥350 (C≥30PF)</td></tr></table></td></tr>
<tr><td>I.R.</td><td>3000MΩ min.</td></tr>
<tr><td>Dielectric Strength</td><td>Per Item 6.</td></tr>
</table>

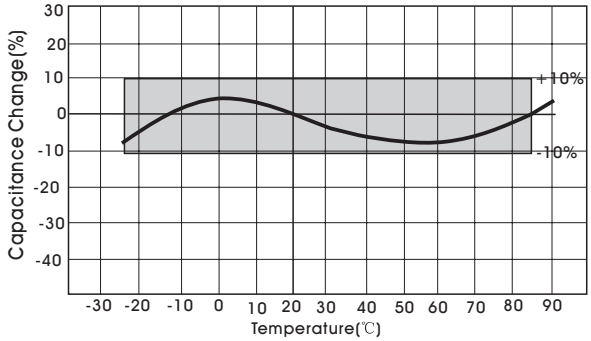
*1 “C ” expresses nominal capacitance value(pF).

* “Room condition ” …… Temperature; 15 to 35℃, Relative humidity; 45 to 75%, Atmospheric pressure: 86 to 106kPa

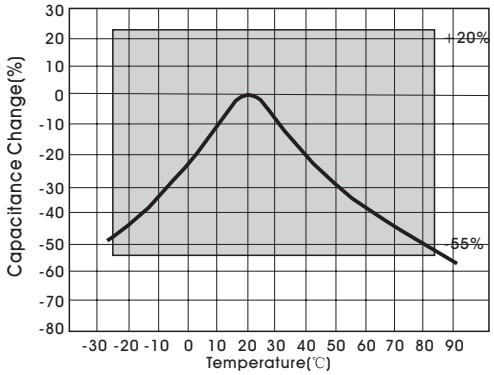
7. Characteristics Data (Typiccal Example)

7.1 Capacitance-Temperature Characteristics

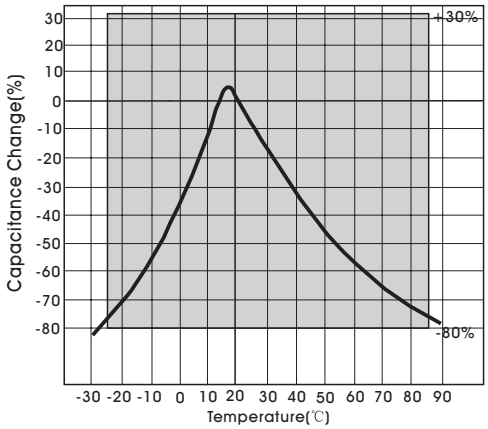
Char：B(Y5P)



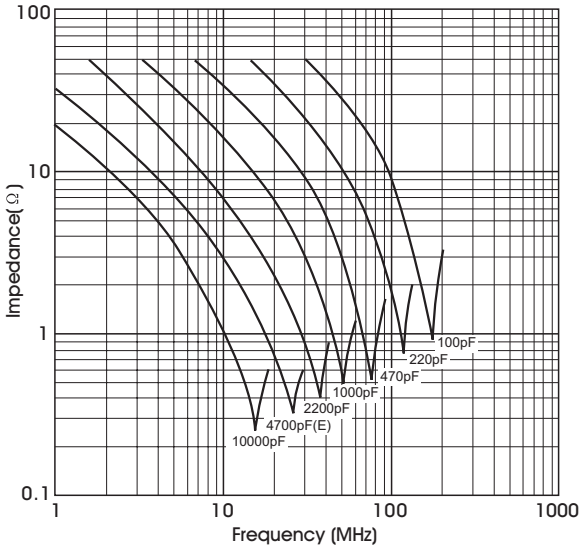
Char:E（Y5U）



Char:F（Y5V）



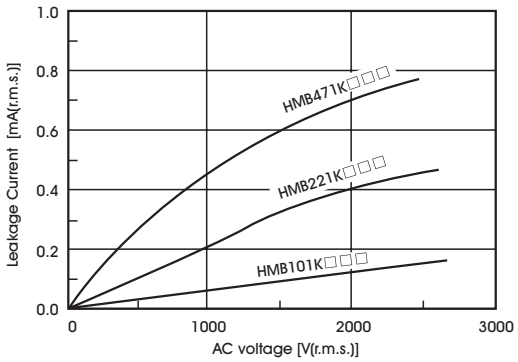
7.2 Impedance vs. Frequency Characteristics



7.3 Leakage Current Characteristics

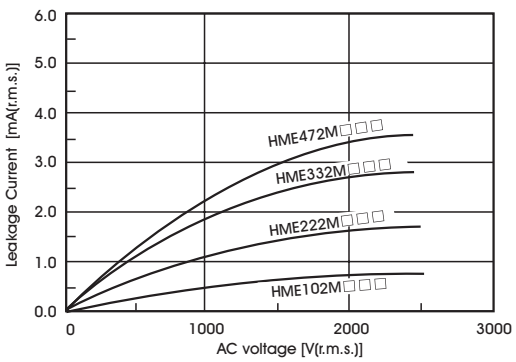
Type HM (B/Y5P char.)

AC voltage : 60Hz
Temperature : 25℃



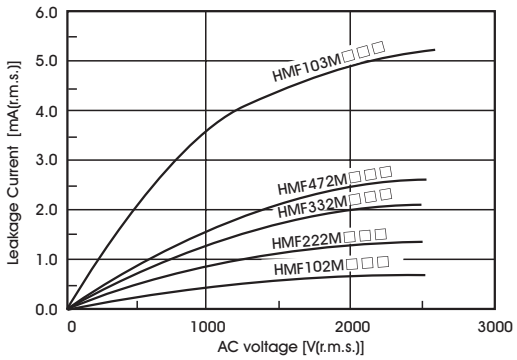
Type HM (E/Y5U char.)

AC voltage : 60Hz
Temperature : 25℃



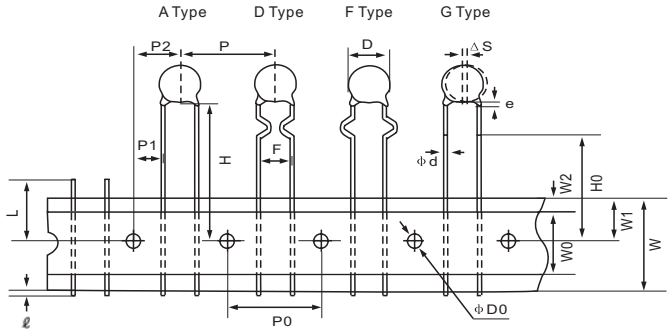
Type HM (F/Y5V char.)

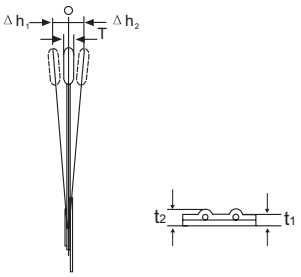
AC voltage : 60Hz
Temperature : 25℃



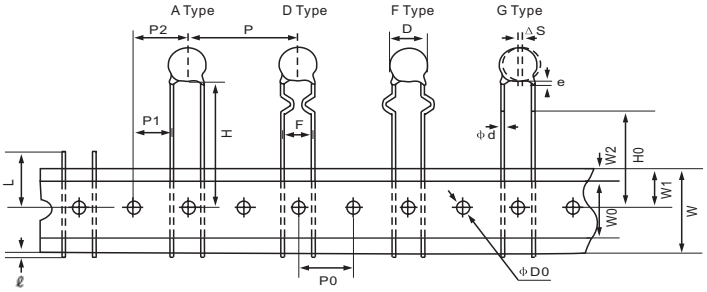
8.1 TAPING SPECIFICATION

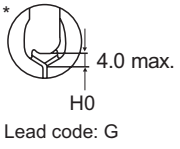
● **12.7mm pitch**/ lead spacing 5.0/7.5 mm taping （Lead Code:A2,A3,D2,D3,F2,F3,G2,G3 ）





● **25.4mm pitch**/ lead spacing 7.5/10.0mm taping （Lead Code:A3,A4,D3,D4,F3,F4,G3,G4 ）





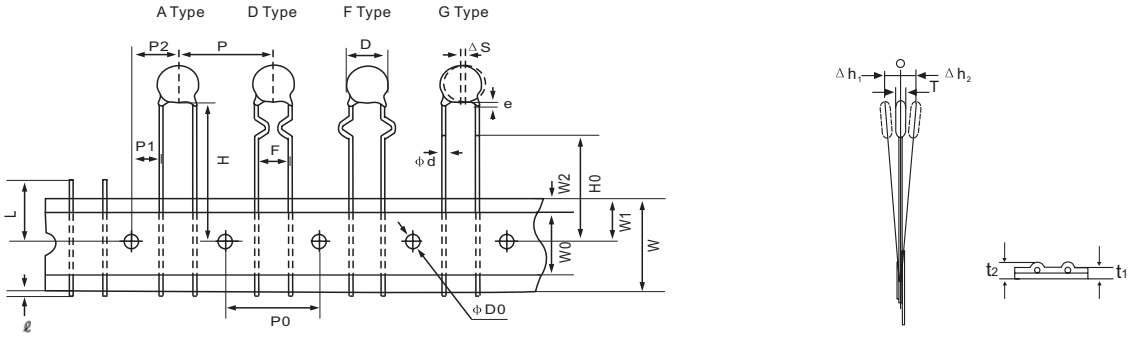
Lead code: G

Item	Code	A2/D2/F2/G2	A3/D3/F3/G3	A3/D3/F3/G3	A4/D4/F4/G4
Pitch of component	P	12.7	12.7	25.4	25.4
Pitch of sprocket hole	P_0	12.7±0.3	12.7±0.3	12.7±0.3	12.7±0.3
Lead spacing	F	5.0±1.0	7.5±1.0	7.5±1.0	10.0±1.0
Length from hole center to component center	P_2	6.35±1.3	6.35±1.3	12.7±1.3	12.7±1.3
Length from hole center to lead	P_1	3.85±0.7	2.6±0.7	8.95±1.0	7.7±1.0
Body diameter	D	See the individual product specification			
Deviation along tape,left or right	△S	0±2.0			
Carrier tape width	W	18.0±0.5			
Position of sprocket hole	W_1	9.0±0.5			
Lead distance between reference and bottom planes	H	20.0±1.5 (Lead Code:A2/A3/A4)			
	H_0	$18.0^{+1.5}_{-0.5}$ (Crimp type)			
Diameter of sprocket hole	φ D_0	4.0±0.2			
Lead diameter	φd	0.55±0.05			
Total tape thickness	t_1	0.6±0.3			
Total thickness, tape and lead wire	t_2	2.0 max.			
Body thickness	T	See the individual product specification			
Portion to cut in case of defect	L	11.0 max.			
Hold down tape width	W_0	10.0±2			
Hold down tape position	W_2	1.5±1.5			
Coating extension on lead	e	3.0 max. (Crimp type:Up to the end of crimp)			
Deviation across tape	$\frac{△h_1}{△h_2}$	2.0 max.			
Protrusion length	ℓ	+0.5 to -1.0			

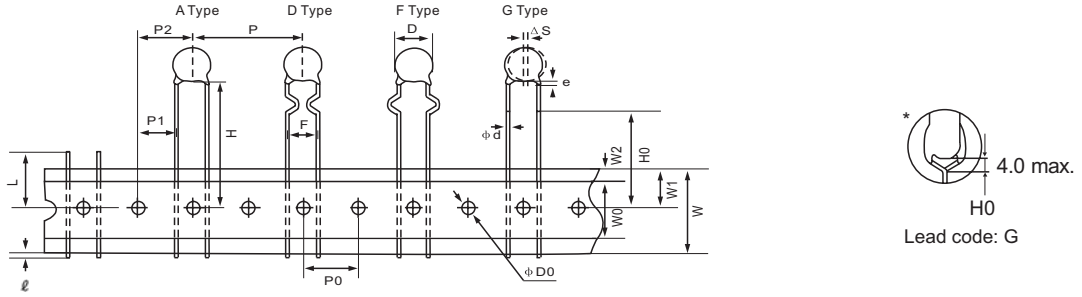
(in mm)

8.2 TAPING SPECIFICATION

● **15.0mm pitch**/ lead spacing 5.0/7.5 mm taping （Lead Code:A2,A3,D2,D3,F2,F3,G2,G3 ）



● **30.0mm pitch**/ lead spacing 7.5/10.0mm taping （Lead Code:A3,A4,D3,D4,F3,F4,G3,G4 ）

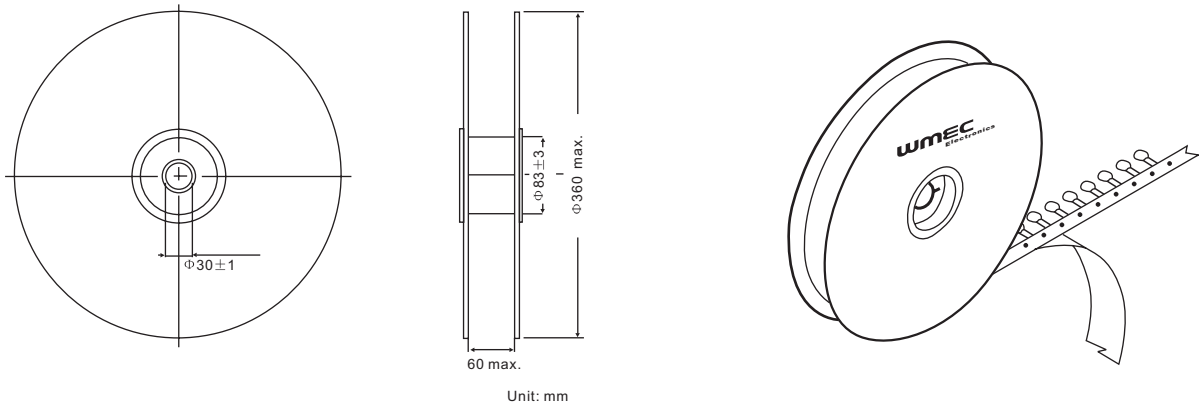


Item	Code	A2/D2/F2/G2	A3/D3/F3/G3	A3/D3/F3/G3	A4/D4/F4/G4
Pitch of component	P	15.0	15.0	30.0	30.0
Pitch of sprocket hole	P_0	15.0±0.3	15.0±0.3	15.0±0.3	15.0±0.3
Lead spacing	F	5.0±1.0	7.5±1.0	7.5±1.0	10.0±1.0
Length from hole center to component center	P_2	7.5±1.3	7.5±1.3	15.0±1.3	15.0±1.3
Length from hole center to lead	P_1	5.0±0.7	3.75±0.7	11.25±1.0	10.0±1.0
Body diameter	D	See the individual product specification			
Deviation along tape,left or right	△S	0±2.0			
Carrier tape width	W	18.0±0.5			
Position of sprocket hole	W_1	9.0±0.5			
Lead distance between reference and bottom planes	H	20.0±1.5 (Lead Code:A2/A3/A4)			
	H_0	$18.0^{+1.5}_{-0.5}$ (Crimp type)			
Diameter of sprocket hole	φD_0	4.0±0.2			
Lead diameter	φd	0.55±0.05			
Total tape thickness	t_1	0.6±0.3			
Total thickness, tape and lead wire	t_2	2.0 max.			
Body thickness	T	See the individual product specification			
Portion to cut in case of defect	L	11.0 max.			
Hold down tape width	W_0	10.0±2			
Hold down tape position	W_2	1.5±1.5			
Coating extension on lead	e	3.0 max. (Crimp type:Up to the end of crimp)			
Deviation across tape	$\frac{\triangle h_1}{\triangle h_2}$	2.0 max.			
Protrusion length	ℓ	+0.5 to -1.0			

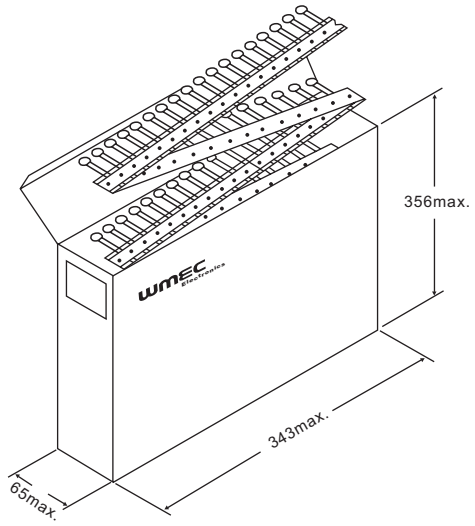
(in mm)

9 PACKAGING STYLES

9.1 Taping: Reel Packaging



9.2 Taping:Ammo Packaging



9.3 Bulk

Polyethylene Bag

10 : Packaging Quantity:

(Bulk) 500PCS

11 : Label and Transport

Capacitors shall be packaged prior to shipment so as to prevent damage during transportation and storage.

Shipping carton contains the following information on the label

Ex.

a) Our Part No.

b) Quantity

c) Lot No.

D) Manufacturer's Name.

12 : Notification before the modification

We,ll previously notify the modified place of manufacture, Manufactured articles and materials.

The operating conditions for the guarantee of this product are as shown in the specification.

Please note the Wanming Electronics co.,Ltd. Shall not be responsible for a failure and/or abnormality which are caused by use under the conditions other than the aforesaid operating conditions.