SPECIFICATION

No: WM-S050104-C01

MENTION ITEM

PLACE OF MANUFCTURE

XANMEN WANMING ELECTRONICS CO.,LTD

EXPLANATORY NOTE FOR MODIFICATION

	Rev.	Date	Person Charge	Modification(desired)
UPDATE STORY	**C**	2003/06/20		New Release

DIVISION	DATE ISSUED	SPEC.NO.
QA. DERT	JUN, 20,2003	WM-S050104-C01

HGK *TYPE* -FOR Fixed calss 2 high voltage ceramic dielectric capacitors

1. SCOPE

This specification applies to ceramic insulated capacitors disk type used in electronic equipment.

2. RELATIVE STANDARDS

IEC 384-9 : 1988 [Fixed capacitors of ceramic dielectric,class 2]
GB/T 5698-1996 [Fixed capacitors of ceramic dielectric,class 2]
GB 9322-88 [Fixed class 2 high voltage ceramic dielectric capacitors]

3. QUALITY

Capacitors are manufactured in a highly quality-controlled processes to ensure the reliability of the products

4. OPERATING TEMPERATURE RANGE

-25℃ to +85℃

5. PART NUMBERS

Examples

HGK	3A	B	102	K	A	2	B	
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Type
② Rated Voltage
③ Temperature Characteristics
④ Nominal Capacitance
⑤ Capacitance Tolerance Symbol
⑥ Lead Style
⑦ Lead Spacing
⑧ Packaging
⑨ Internal code

5.1 Type

Type Designation

Type	Designation
HGK	class 2 high voltage ceramic dielectric capacitors

5.2 Raated Voltage

Code	Rated Voltage
3A	DC.1KV
3D	DC.2kV
3F	DC.3kV
3G	DC.4kv
3H	DC.5kV
3J	DC.6kV

5.3 Temperature Characiteristics Code

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

5.4 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:

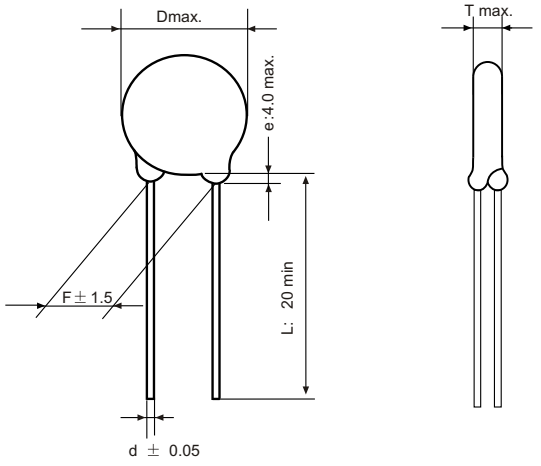
Code	Capacitance(pF)
101	100
102	1000
222	2200
103	10000

5.5 Capacitance Tolerance

Code	Tolerance
K	±10%
M	±20%
Z	-20%~+80%

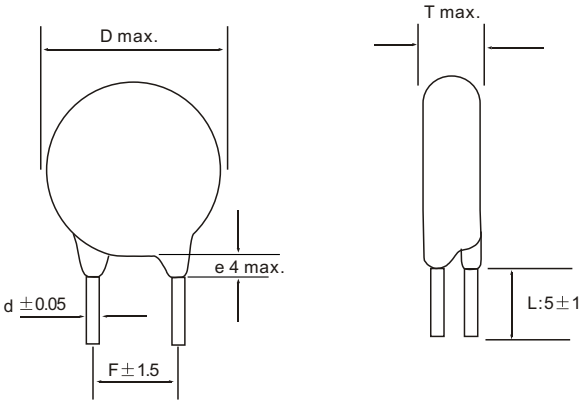
5.6 Lead style

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



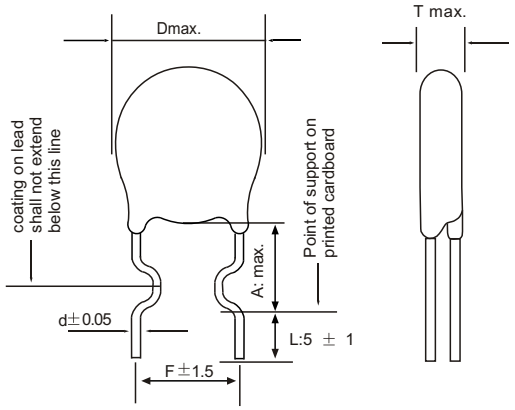
Lead code	A1	A2	A3	A4	A5
F	2.5	5	7.5	10	12.5
L	20 mm min				
d	0.5 or 0.6 or 0.8				
e	Max. 4.0mm				

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



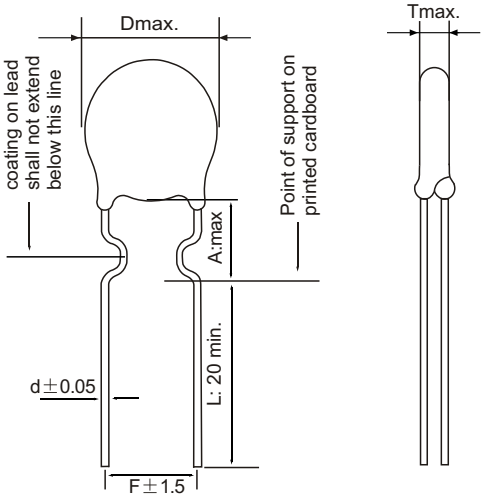
Lead code	B1	B2	B3	B4	B5
F	2.5	5	7.5	10	12.5
L	5±1 mm or bases on buyer request				
d	0.5 or 0.6 or 0.8				
e	Max. 4.0mm				

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



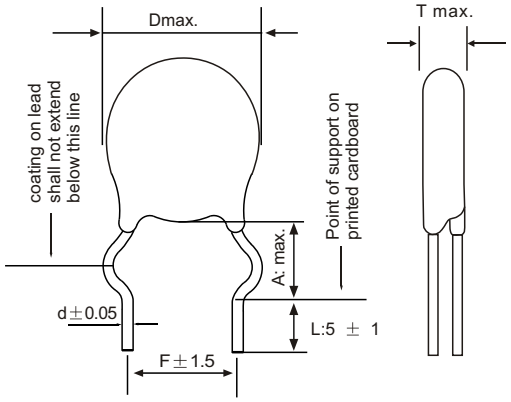
Lead code	C2	C3	C4	C5
F	5	7.5	10	12.5
A	5	5	6.5	6.5
L	5±1 mm or bases on buyer request			
d	0.5 or 0.6 or 0.8			

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



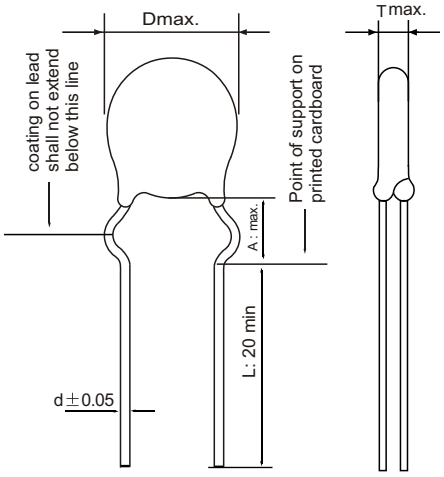
Lead code	D2	D3	D4	D5
F	5	7.5	10	12.5
A	5	5	6.5	6.5
L	20 mm min			
d	0.5 or 0.6 or 0.8			

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



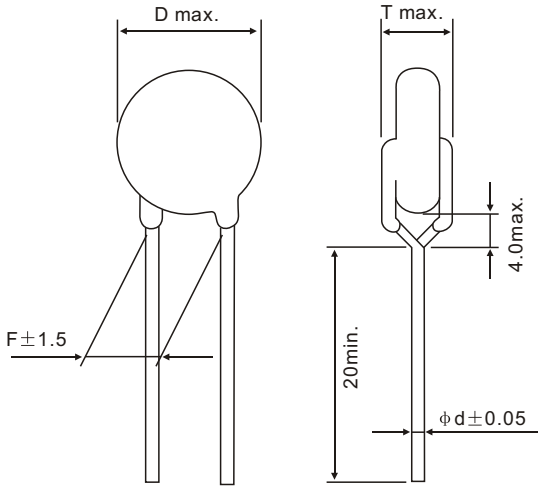
Lead code	E2	E3	E4	E5
F	5	7.5	10	12.5
A	5	5	6.5	6.5
L	5±1 mm or bases on buyer request			
d	0.5 or 0.6 or 0.8			

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



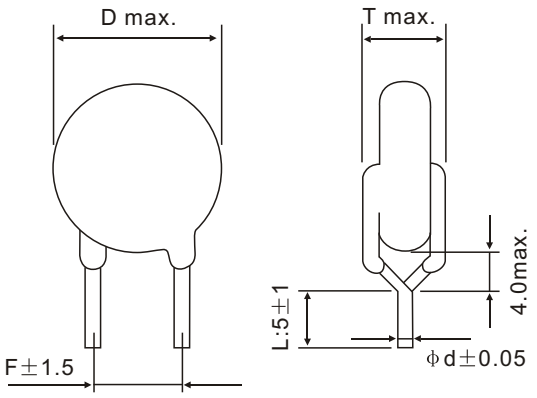
Lead code	F2	F3	F4	F5
F	5	7.5	10	12.5
A	5	5	6.5	6.5
L	20 mm min			
d	0.5 or 0.6 or 0.8			

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



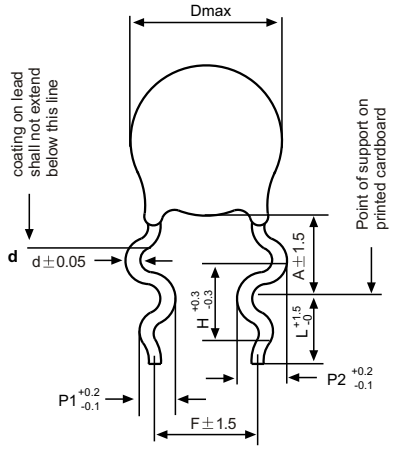
Lead code	G2	G3	G4	G5
F	5	7.5	10	12.5
L	20 mm min			
d	0.5 or 0.6 or 0.8			

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



Lead code	H2	H3	H4	H5
F	5	7.5	10	12.5
L	5±1 mm or bases on buyer request			
d	0.5 or 0.6 or 0.8			

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



Lead code	M2	M3	M4	M5
F	5	7.5	10	12.5
H	2.6	2.6	3.3	3.3
P1	1.25	1.25	1.65	1.65
P2	1.65	1.65	1.95	1.95
A	D＜8: 6.0±1.5 , D＞8:7.0±1.5			
L	3 to 30 mm			
d	0.5 or 0.6 or 0.8			

General Information: PCB max. thickness 1.6mm

5.7 Lead Spacing Code

Code	Lead Spacing(mm)
2	5.0± 1.5
3	7.5± 1.5
4	10.0±1.5

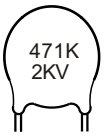
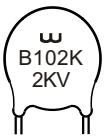
5.8 Packaging Code

Code	Packaging
B	Bulk
A	Taping Ammo Pack
R	Taping Reel Pack

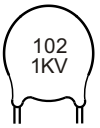
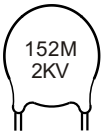
5.9 Internal Code

6. MARKING

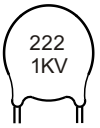
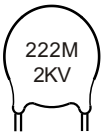
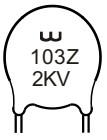
6.1 Characteristics : B(Y5P)

Body diameter(mm)	Marking item	Marking ex.
4.0 to 6.0	A: Nominal capacitance c: Rated Voltage	
6.0 to 8.0	A: Nominal capacitance b: Capaictance Tolerance c: Rated Voltage	
9.0 over	A: Nominal capacitance b: Capaictance Tolerance c: Rated Voltage d: Temperature Characteristic e: Manufactuer,s Trade Mark	

6.2 Characteristics : E(Y5U)

Body diameter(mm)	Marking item	Marking ex.
4.0 to 6.0	A: Nominal capacitance c: Rated Voltage	
6.0 to 8.0	A: Nominal capacitance b: Capaictance Tolerance c: Rated Voltage	
9.0 over	A: Nominal capacitance b: Capaictance Tolerance c: Rated Voltage d: Temperature Characteristic e: Manufactuer,s Trade Mark	

6.3 Characteristics : F(Y5V)

Body diameter(mm)	Marking item	Marking ex.
4.0 to 6.0	A: Nominal capacitance c: Rated Voltage	
6.0 to 8.0	A: Nominal capacitance b: Capaictance Tolerance c: Rated Voltage	
9.0 over	A: Nominal capacitance b: Capaictance Tolerance c: Rated Voltage e: Manufactuer,s Trade Mark	

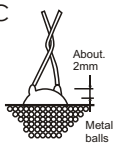
※Note : Mark Color: Black or nearly color

7. SPECIFICATION AND TEST METHOD

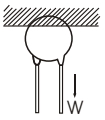
7.1 Test condition

Test and measurement shall be made at the standard condition,(Temperature 15 to 35℃,relative humidity 45 to 75% and atmospheric pressure 860-1060 hpa),unless otherwise specified herein
If doubt occurred on the value of measurement, and remeasurement was requested by customer capacitors shall be measured at the reference condition(Temperature 20±2℃,relative humidity 60 to 70% and atmospheric pressure 860-1060 hpa), unless otherwise specified herein

7.2 Performance

No.	Item		Specification	Testing Method
1	Operating Temperature Range		-25 to +85℃	——
2	Appearance and Dimensions		No marked defect on appearance from and dimensions are within specified range.	The capacitor shall be inspected by naked eyes for Visible evidence of defect. Dimensions shall be measured with slide calipers.
3	Marking		To be easily legible.	The capacitor shall be inspected by naked eyes.
4	Dielectric Strength	Between Lead Wires	No failure.	The capacitor shall not be damage when DC voltage of 150% the rated voltage are applied between the lead wires for 1 to 5 s. (Charge/Discharge current ≤ 50mA.)
		Body Insulation	No failure.	The capacitor is placed in the container with metal balls of diameter 1mm so that each lead wire,short circuited, is kept about 2mm off the balls as shown in the figure, and DC Voltage of 1.3kV is applied for 1 to 5 s between capacitor lead wires and small metals. (Charge/Discharge current ≤ 50mA.) 
5	Insulation Resistance (I.R.)	Between Lead Wires	C*1 ≤0.02μF:10000MΩ min. C*1 >0.02μF: 7500MΩ min.	The insulation resistance shall be measured with DC500±50V within 60±5 s of charging.
6	Capacitance		Within specified tolerance.	The capacitance shall be measured at 20±2℃ with 1±0.2kHz and AC1±0.1V(r.m.s.).
7	Dissipation Factor(D.F.)		Char. B,E : 2.5% max. Char. F: 5.0% max.	The dissipation factor shall be measured at 20±2℃ with 1±0.2kHz and AC1±0.1V(r.m.s.).
8	Temperature Characteristic		Char.B:Within±10% Char.E:Within+20/-55% Char.F:Within+30/-80%	The capacitance measurement shall be made at each step specified in Table.
			Pre-treatment : Capacitor shall be stored at 85±2℃ for 1 h, then placed at*2room condition for 24±2 h before measurements.	

Step	1	2	3	4	5
Temp.(℃)	20±2	-25±3	20±2	85±2	20±2

9	Strength of Lead	Pull	Lead wire shall not cut off. Capacitor shall not be broken.	As a figure,fix the body of capacitor, apply a tensile weight gradually to each lead wire inthe radial direction of capacitor up to 10N(5N for lead diameter φ0.5mm),and keep it for 10±1 s. 
		Bending		Each lead wire shall br subjected to 5N(2.5N for lead diameter φ0.5mm)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.
10	Vibration Resistance	Appearance	No marked defect.	The capacitor shall firmly be soldered to the supporting lead wire and vibration which is 10 to 55Hz in the vibration frequency range, 1.5mm in total amplitude, and about 1min. In the rate of vibration change from 10Hz to 55Hz and back to 10Hz is applied for a total of 6 h; 2 h each in 3 mutually perpendicular directions.
		Capacitance	Within specified tolerance.	
		D.F.	Char.B,E: 2.5% max. Char.F: 5.0% max.	

*1 "C" expresses nominal capacitance value.
*2 "room condition" ····· Temperature; 15 to 35℃, Relative humidity; 45 to 75%, Atmospheric pressure; 86 to 106kPa

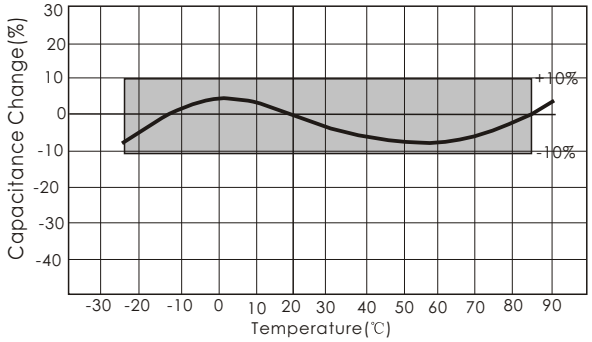
<table>
<tr><th>No.</th><th colspan="2">Itme</th><th>Specification</th><th>Testing Method</th></tr>
<tr><td>11</td><td colspan="2">Solderability of Leads</td><td>Lead wire shall be soldered withuniformly coated on the axial direction over 3/4 of the circumferential direction.</td><td>The lead wire of a capacitor shall be dipped into a ethanol solution of 25 wt% rosin and then into molten solder of 235±5℃ for 2±0.5 s. In both cases the depth of dipping is up to about 1.5 to 2mm from the root of lead wires.</td></tr>
<tr><td rowspan="3">12</td><td rowspan="3">Soldering Effect</td><td>Appearance</td><td>No marked defect</td><td rowspan="3">The lead wire shall be immersed into the melted solder of 350±10℃ or 260±5℃ up to about 1.5 to 2.0mm from the main body for 3.5 ±0.5 s (10±1 s for 260±5℃)
Pre-treatment:Capacitor shall be stored at 85±2℃for 1 h, then placed at *2room condition for 24±2 h before initial measurements.
Post-treatment:Capacitor shall be stored for 4 to 24 h at *2room condition.</td></tr>
<tr><td>Capacitance Change</td><td>Char.B:Within± 5%
Char.E:Within±15%
Char.F:Within±20%</td></tr>
<tr><td>Dielectric Strength (Between Lead Wires)</td><td>Per item 4.</td></tr>
<tr><td rowspan="4">13</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+24/-0 h at 40±2℃ in 90 to 95% relative Humidity.
Pre-treatment : Capacitor shall be stored at 85±2℃ for 1h, then placed at *2room condition for 24±2 h before initial measurements.
Post-treatment : Capacitor shall be stored for 1 to 2 h at *2room condition.</td></tr>
<tr><td>Capacitance Change</td><td>Char.B : Within±10%
Char.E : Within±20%
Char.F : Within±30%</td></tr>
<tr><td>D.F.</td><td>Char.B,E : 5.0% max.
Char.F : 7.5% max.</td></tr>
<tr><td>I.R.</td><td>1000MΩ min.</td></tr>
<tr><td rowspan="4">14</td><td rowspan="4">Humidity Loading</td><td>Appearance</td><td>No marked defect.</td><td rowspan="4">Apply the rated voltage for 500 +24/-0 h at 40±2℃ in 90 to 95% relative humidity.(Charge/Discharge current ≤50mA.)
Pre-treatment : Capacitor shall be stored at 85±2℃ for 1 h, then placed at *2room condition for 24±2 h before initial measurements.
Post-treatment : Capacitor shall be stored at 85±2℃ for 1 h, then placed at *2room condition for 24±2 h.</td></tr>
<tr><td>Capacitance Change</td><td>Char.B : Within±10%
Char.E : Within±20%
Char.F : Within±30%</td></tr>
<tr><td>D.F.</td><td>Char.B,E : 5.0% max.
Char.F : 7.5% max.</td></tr>
<tr><td>I.R.</td><td>500MΩmin.</td></tr>
<tr><td rowspan="4">15</td><td rowspan="4">Life</td><td>Appearance</td><td>No marked defect.</td><td rowspan="4">Apply a DC voltage 150% of the rated voltage for1000 +48/-0 h at 85±2℃, and relative humidity of 50% max.. (Charge/Discharge current ≤50mA.)
Pre-treatment : Capacitor shall be stored at 85±2℃ for 1 h, then placed at *2room condition for 24±2 h before initial measurements.
Post-treatment : Capacitor shall be stored at 85±2℃ for 1 h, then placed at *2room condition for 24±2 h.</td></tr>
<tr><td>Capacitance Change</td><td>Char.B : Within±10%
Char.E : Within±20%
Char.F : Within±30%</td></tr>
<tr><td>D.F.</td><td>Char.B,E : 4.5% max.
Char.F : 7.5% max.</td></tr>
<tr><td>I.R.</td><td>2000MΩmin.</td></tr>
<tr><td rowspan="5">16</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.the 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±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>+85±3</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>0±3</td><td>15 min</td><td>Salt water</td></tr></table>Cycle time:5 cycle
Pre-treatment : Capacitor shall be stored at 85±2℃ for 1 h, then placed at *2room condition for 24±2 h before initial measurements.
Post-treatment : Capacitor shall be stored for 4 to 24 h at *2room condition.</td></tr>
<tr><td>Capacitance Change</td><td>Char.B : Within±10%
Char.E : Within±20%
Char.F : Within±30%</td></tr>
<tr><td>D.F.</td><td>Char.B,E : 4.0% max.
Char.F : 7.5% max.</td></tr>
<tr><td>I.R.</td><td>2000MΩmin.</td></tr>
<tr><td>Dielectric Strength (Between Lead Wires)</td><td>Per item 4.</td></tr>
</table>

*2 "Room condition" ····· Temperature; 15 to 35℃, Relative humidity; 45 to 75%, Atmospheric pressure: 86 to 106kPa

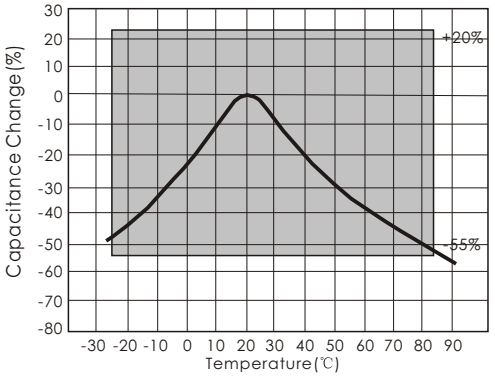
8. CHARACTERISTICS DATA (TYPICCAL EXAMPLE)

8.1 Capacitance-Temperature Characteristics

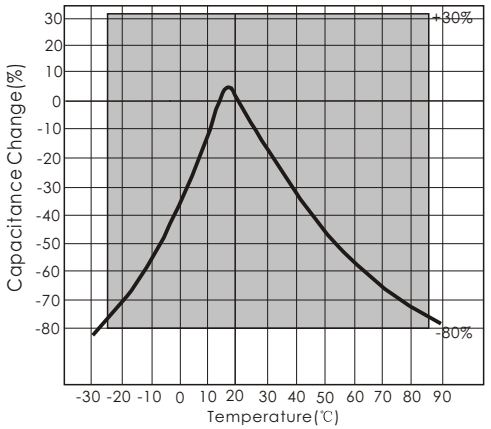
Char：B(Y5P)



Char:E（Y5U）



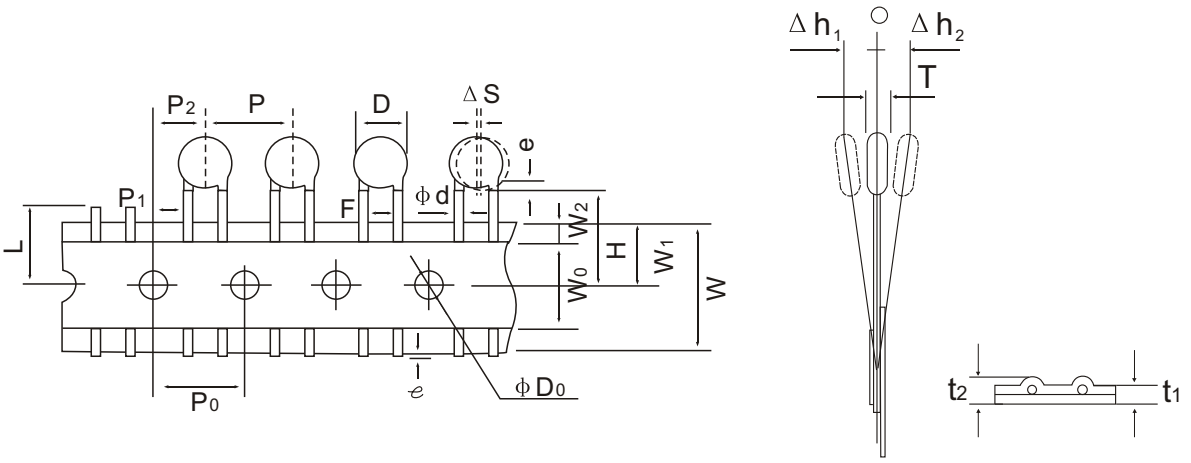
Char:F（Y5V）



9 TAPING SPECIFICATION

9.1 Straight leads (Leads style **A2**)

(12.7mm pitch/ lead spacing 5 mm taping)

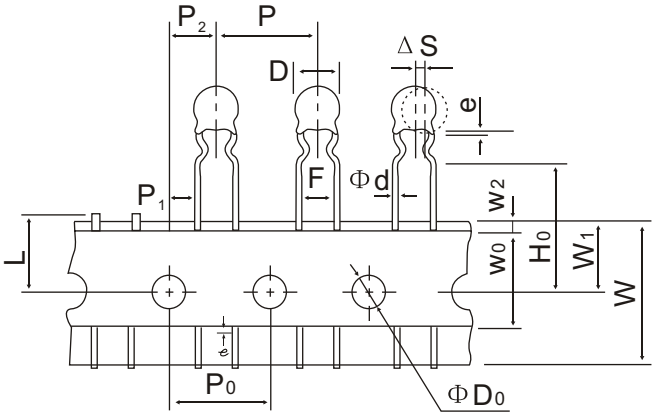


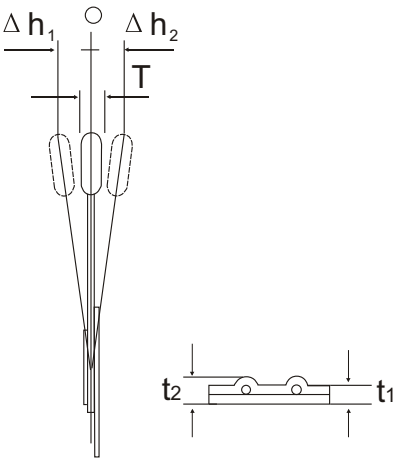
Item	Code	Demension
Pitch of component	P	12.7
Pitch of sprocket hole	P_0	12.7±0.3
Lead spacing	F	$5.0^{+0.8}_{-0.2}$
Length from hole center to component center	P_2	6.35±1.3
Length from hole center to lead	P_1	3.85±0.7
Body diameter	D	See the individual product specification
Deviation along tape,left 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
Protrusion length	$\mathscr{e}$	+0.5 to -1.0
Diameter of sprocket hole	ϕD_0	4.0±0.2
Total thickness, tape and lead wire	φd	0.6±0.05
Lead diameter	t1	0.6±0.3
Total tape thickness	t2	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	11.5 min.
Hold down tape position	W_2	1.5±1.5
Coating extension on lead	e	Up to the end of crimp
Deviation across tape	$\triangle h_1$	2.0 max.
	$\triangle h_2$	

(in mm)

9.2 Inside crimped leads (Leads style **D2**)

(12.7mm pitch/ lead spacing 5 mm taping)



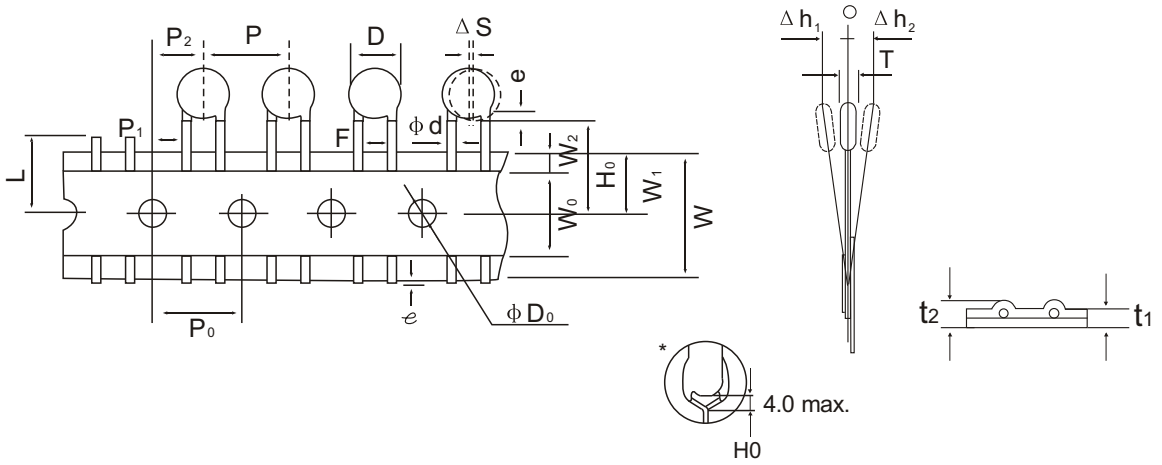


Item	Code	Demension
Pitch of component	P	12.7
Pitch of sprocket hole	P_0	12.7±0.3
Lead spacing	F	$5.0^{+0.8}_{-0.2}$
Length from hole center to component center	P_2	6.35±1.3
Length from hole center to lead	P_1	3.85±0.7
Body diameter	D	See the individual product specification
Deviation along tape,left 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_0	16.0±0.5
Protrusion length	$\mathscr{e}$	+0.5 to -1.0
Diameter of sprocket hole	ΦD_0	4.0±0.2
Total thickness, tape and lead wire	Φd	0.6±0.05
Lead diameter	t1	0.6±0.3
Total tape thickness	t2	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	11.5 min.
Hold down tape position	W_2	1.5±1.5
Coating extension on lead	e	Up to the end of crimp
Deviation across tape	$\triangle h_1$	2.0 max.
	$\triangle h_2$	

(in mm)

9.3 Vertical crimped leads(Leads style **G2**)

(12.7mm pitch/ lead spacing 5 mm taping)

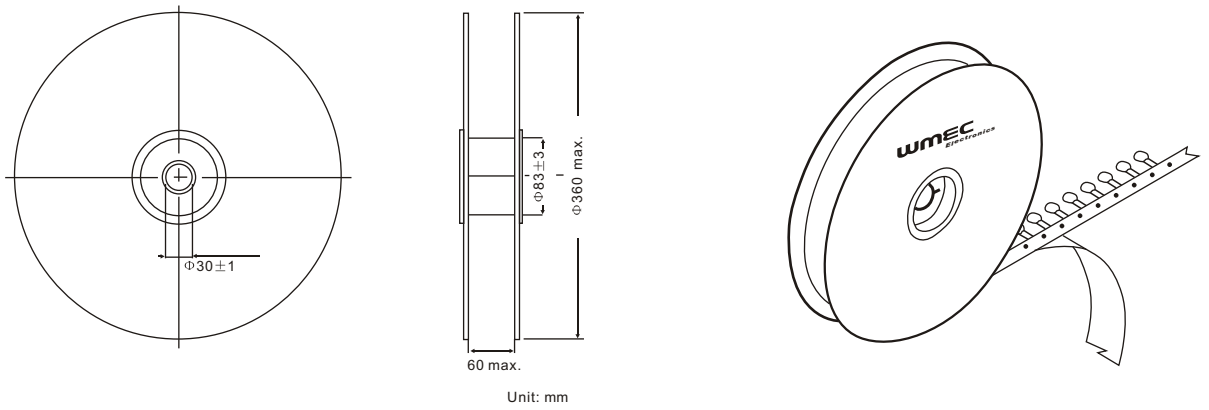


Item	Code	Demension
Pitch of component	P	12.7
Pitch of sprocket hole	P_0	12.7±0.3
Lead spacing	F	$5.0^{+0.8}_{-0.2}$
Length from hole center to component center	P_2	6.35±1.3
Length from hole center to lead	P_1	3.85±0.7
Body diameter	D	See the individual product specification
Deviation along tape,left 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_0	16.0±0.5
Protrusion length	$\mathscr{e}$	+0.5 to -1.0
Diameter of sprocket hole	φD_0	4.0±0.2
Total thickness, tape and lead wire	φd	0.6±0.05
Lead diameter	t1	0.6±0.3
Total tape thickness	t2	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	11.5 min.
Hold down tape position	W_2	1.5±1.5
Coating extension on lead	e	Up to the end of crimp
Deviation across tape	△h_1	2.0 max.
	△h_2	

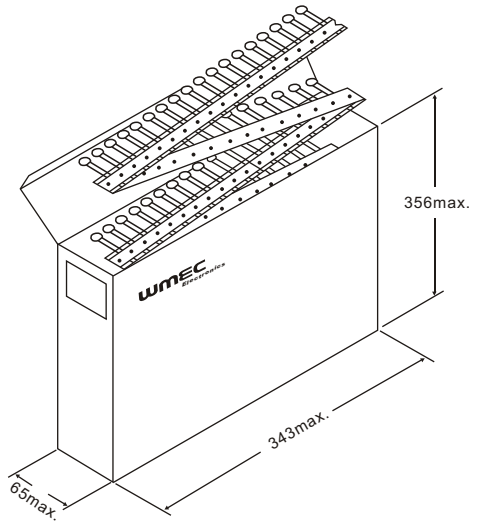
(in mm)

10 PACKAGING STYLES

10.1 Taping: Reel Packaging



10.2 Taping:Ammo Packaging



10.3 Bulk

Polyethylene Bag

11 : PACKAGING QUANTITY

11.1 (Bulk) at standards specification

Body Diameter 4.5 to 9.0 mm : 1000 pcs

Body Diameter 10 mm over : 500 pcs

11.2 Taping

Pitch : 12.7 mm

Body Diameter 4.5 to 8.0 mm : 1500 pcs./Box

Body Diameter 9.0 mm over : 1000 pcs./Box

12 : 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

a) Our Part No.
b) Quantity
c) Lot No.
D) Manufacturer's Nane.

Ex.

13: NOTIFICATION BEFORE THE MODIFICATION

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

14 : MANUFACTURER

XIAMEN WANMING ELECTRONICS CO., LTD.

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

Attached Table 1

Rated Voltage： 1KVDC

CUSTOMER P/N	WAMING Part Number	Rated Voltage	Temp. Char.	Capacitance (pF)	Cap. Tol.	Dimensions(Unit:mm)			
						D(max)	F±1.5	T(max)	d±0.05
	HGK3AB101○□□□	1 kVDC	B/Y5P	100	K ,M	7.0	5.0	4.0	0.6
	HGK3AB121○□□□			120		7.0	5.0	4.0	0.6
	HGK3AB151○□□□			150		7.0	5.0	4.0	0.6
	HGK3AB181○□□□			180		7.0	5.0	4.0	0.6
	HGK3AB221○□□□			220		7.0	5.0	4.0	0.6
	HGK3AB271○□□□			270		7.0	5.0	4.0	0.6
	HGK3AB331○□□□			330		7.0	5.0	4.0	0.6
	HGK3AB391○□□□			390		7.0	5.0	4.0	0.6
	HGK3AB471○□□□			470		7.0	5.0	4.0	0.6
	HGK3AB561○□□□			560		7.0	5.0	4.0	0.6
	HGK3AB681○□□□			680		7.0	5.0	4.0	0.6
	HGK3AB821○□□□			820		7.0	5.0	4.0	0.6
	HGK3AB102○□□□			1000		7.0	5.0	4.0	0.6
	HGK3AB122○□□□			1200		7.5	5.0	4.0	0.6
	HGK3AB152○□□□			1500		8.0	5.0	4.0	0.6
	HGK3AB182○□□□			1800		9.0	5.0	4.0	0.6
	HGK3AB222○□□□			2200		10.0	5.0	4.0	0.6
	HGK3AB272○□□□			2700		10.5	5.0	4.0	0.6
	HGK3AB332○□□□			3300		11.5	5.0	4.0	0.6
	HGK3AB392○□□□			3900		12.5	7.5	4.0	0.6
	HGK3AB472○□□□			4700		13.5	7.5	4.0	0.6
	HGK3AB562○□□□			5600		14.5	7.5	4.0	0.6
	HGK3AB682○□□□			6800		15.5	7.5	4.0	0.6
	HGK3AB822○□□□			8200		17.0	7.5	4.0	0.6
	HGK3AB103○□□□			10000		18.0	10	4.0	0.6
	HGK3AE102○□□□	1 kVDC	E/Y5U	1000	M , Z	6.5	5.0	4.0	0.6
	HGK3AE122○□□□			1200		6.5	5.0	4.0	0.6
	HGK3AE152○□□□			1500		6.5	5.0	4.0	0.6
	HGK3AE182○□□□			1800		6.5	5.0	4.0	0.6
	HGK3AE222○□□□			2200		7.5	5.0	4.0	0.6
	HGK3AE272○□□□			2700		8.0	5.0	4.0	0.6
	HGK3AE332○□□□			3300		8.5	5.0	4.0	0.6
	HGK3AE392○□□□			3900		9.0	5.0	4.0	0.6
	HGK3AE472○□□□			4700		10.0	5.0	4.0	0.6
	HGK3AE562○□□□			5600		11.0	5.0	4.0	0.6
	HGK3AE682○□□□			6800		12.0	7.5	4.0	0.6
	HGK3AE103○□□□			10000		13.0	7.5	4.0	0.6
	HGK3AE223○□□□			22000		19.0	7.5	4.0	0.6
	HGK3AF102○□□□	1 kVDC	F/Y5V	1000	M , Z	6.5	5.0	4.0	0.6
	HGK3AF122○□□□			1200		6.5	5.0	4.0	0.6
	HGK3AF152○□□□			1500		6.5	5.0	4.0	0.6
	HGK3AF182○□□□			1800		6.5	5.0	4.0	0.6
	HGK3AF222○□□□			2200		6.5	5.0	4.0	0.6
	HGK3AF272○□□□			2700		6.5	5.0	4.0	0.6
	HGK3AF332○□□□			3300		7.5	5.0	4.0	0.6
	HGK3AF392○□□□			3900		7.5	5.0	4.0	0.6
	HGK3AF472○□□□			4700		8.0	5.0	4.0	0.6
	HGK3AF562○□□□			5600		8.5	5.0	4.0	0.6
	HGK3AF682○□□□			6800		9.5	5.0	4.0	0.6
	HGK3AF103○□□□			10000		10.0	7.5	4.0	0.6
	HGK3AF223○□□□			22000		15.0	7.5	4.0	0.6
	HGK3AF333○□□□			33000		17.0	10	4.0	0.6
	HGK3AF473○□□□			47000		20.0	10	4.0	0.6
	HGK3AF104○□□□			100000		26.0	10	4.0	0.6

Note:

□Packaging Code: B (Bulk) , A (Ammo Pack)

□Lead Spacing Code

□Lead Style Code

○Capacitance Tolerance Code： K (±10%) , M (±20%) , Z (+80%~ -20%)

Attached Table 2

Rated Voltage： 2KVDC

CUSTOMER P/N	WAMING Part Number	Rated Voltage	Temp. Char.	Capacitance (pF)	Cap. Tol.	Dimensions(Unit:mm)			
						D(max)	F±1.5	T(max)	d±0.05
	HGK3DB101○□□□	2 kVDC	B/Y5P	100	K，M	7.5	5.0	5.0	0.6
	HGK3DB121○□□□			120		7.5	5.0	5.0	0.6
	HGK3DB151○□□□			150		7.5	5.0	5.0	0.6
	HGK3DB181○□□□			180		7.5	5.0	5.0	0.6
	HGK3DB221○□□□			220		7.5	5.0	5.0	0.6
	HGK3DB271○□□□			270		7.5	5.0	5.0	0.6
	HGK3DB331○□□□			330		7.5	5.0	5.0	0.6
	HGK3DB391○□□□			390		7.5	5.0	5.0	0.6
	HGK3DB471○□□□			470		8.0	5.0	5.0	0.6
	HGK3DB561○□□□			560		8.0	5.0	5.0	0.6
	HGK3DB681○□□□			680		8.5	5.0	5.0	0.6
	HGK3DB821○□□□			820		9.0	5.0	5.0	0.6
	HGK3DB102○□□□			1000		9.0	5.0	5.0	0.6
	HGK3DB122○□□□			1200		9.5	5.0	5.0	0.6
	HGK3DB152○□□□			1500		10.5	7.5	5.0	0.6
	HGK3DB182○□□□			1800		11.5	7.5	5.0	0.6
	HGK3DB222○□□□			2200		12.5	7.5	5.0	0.6
	HGK3DB272○□□□			2700		13.5	10.0	5.0	0.6
	HGK3DB332○□□□			3300		14.5	10.0	5.0	0.6
	HGK3DB392○□□□			3900		15.0	10.0	5.0	0.6
	HGK3DB472○□□□			4700		17.0	10.0	5.0	0.6
	HGK3DE102○□□□	2 kVDC	E/Y5U	1000	M，Z	7.5	5.0	5.0	0.6
	HGK3DE122○□□□			1200		7.5	5.0	5.0	0.6
	HGK3DE152○□□□			1500		8.0	5.0	5.0	0.6
	HGK3DE182○□□□			1800		8.5	5.0	5.0	0.6
	HGK3DE222○□□□			2200		9.5	7.5	5.0	0.6
	HGK3DE272○□□□			2700		10.0	7.5	5.0	0.6
	HGK3DE332○□□□			3300		11.0	7.5	5.0	0.6
	HGK3DE392○□□□			3900		11.5	7.5	5.0	0.6
	HGK3DE472○□□□			4700		12.5	7.5	5.0	0.6
	HGK3DE562○□□□			5600		14.0	10.0	5.0	0.6
	HGK3DE682○□□□			6800		15.0	10.0	5.0	0.6
	HGK3DE103○□□□			10000		18.0	10.0	5.0	0.6
	HGK3DF102○□□□	2 kVDC	F/Y5V	1000	M，Z	7.5	5.0	5.0	0.6
	HGK3DF152○□□□			1500		7.5	5.0	5.0	0.6
	HGK3DF182○□□□			1800		7.5	5.0	5.0	0.6
	HGK3DF222○□□□			2200		8.0	5.0	5.0	0.6
	HGK3DF332○□□□			3300		9.0	7.5	5.0	0.6
	HGK3DF392○□□□			3900		9.0	7.5	5.0	0.6
	HGK3DF472○□□□			4700		10.0	7.5	5.0	0.6
	HGK3DF682○□□□			6800		11.0	7.5	5.0	0.6
	HGK3DF103○□□□			10000		13.0	10	5.0	0.6
	HGK3DF223○□□□			22000		18.0	10	5.0	0.6

Note:

□Packaging Code: B (Bulk) , A (Ammo Pack)

□Lead Spacing Code

□Lead Style Code

○Capacitance Tolerance Code： K (±10%) , M (±20%) , Z (+80%~ -20%)

Attached Table 3

Rated Voltage： 3KVDC

CUSTOMER P/N	WAMING Part Number	Rated Voltage	Temp. Char.	Capacitance (pF)	Cap. Tol.	Dimensions(Unit:mm)			
						D(max)	F±1.5	T(max)	d±0.05
	HGK3FB101○□□□	3 kVDC	B/Y5P	100	K，M	8.0	7.5	6.0	0.6
	HGK3FB121○□□□			120		8.0	7.5	6.0	0.6
	HGK3FB151○□□□			150		8.0	7.5	6.0	0.6
	HGK3FB181○□□□			180		8.0	7.5	6.0	0.6
	HGK3FB221○□□□			220		8.0	7.5	6.0	0.6
	HGK3FB271○□□□			270		8.0	7.5	6.0	0.6
	HGK3FB331○□□□			330		8.0	7.5	6.0	0.6
	HGK3FB391○□□□			390		8.0	7.5	6.0	0.6
	HGK3FB471○□□□			470		8.5	7.5	6.0	0.6
	HGK3FB561○□□□			560		9.0	7.5	6.0	0.6
	HGK3FB681○□□□			680		9.0	7.5	6.0	0.6
	HGK3FB821○□□□			820		9.5	7.5	6.0	0.6
	HGK3FB102○□□□			1000		10.5	7.5	6.0	0.6
	HGK3FB122○□□□			1200		11.0	7.5	6.0	0.6
	HGK3FB152○□□□			1500		12.0	10.0	6.0	0.6
	HGK3FB182○□□□			1800		13.0	10.0	6.0	0.6
	HGK3FB222○□□□			2200		14.0	10.0	6.0	0.6
	HGK3FB272○□□□			2700		15.5	10.0	6.0	0.6
	HGK3FB332○□□□			3300		17.0	10.0	6.0	0.6
	HGK3FB392○□□□			3900		18.0	10.0	6.0	0.6
	HGK3FB472○□□□			4700		19.5	10.0	6.0	0.6
	HGK3FE102○□□□	3 kVDC	E/Y5U	1000	M，Z	8.0	7.5	6.0	0.6
	HGK3FE122○□□□			1200		8.5	7.5	6.0	0.6
	HGK3FE152○□□□			1500		9.5	7.5	6.0	0.6
	HGK3FE182○□□□			1800		10.0	7.5	6.0	0.6
	HGK3FE222○□□□			2200		11.0	7.5	6.0	0.6
	HGK3FE272○□□□			2700		12.0	7.5	6.0	0.6
	HGK3FE332○□□□			3300		13.0	7.5	6.0	0.6
	HGK3FE392○□□□			3900		14.0	7.5	6.0	0.6
	HGK3FE472○□□□			4700		15.0	7.5	6.0	0.6
	HGK3FE562○□□□			5600		16.0	10.0	6.0	0.6
	HGK3FE682○□□□			6800		18.0	10.0	6.0	0.6
	HGK3FE103○□□□			10000		20.0	10.0	6.0	0.6
	HGK3FF102○□□□	3 kVDC	F/Y5V	1000	M，Z	8.0	7.5	6.0	0.6
	HGK3FF152○□□□			1500		8.0	7.5	6.0	0.6
	HGK3FF182○□□□			1800		8.0	7.5	6.0	0.6
	HGK3FF222○□□□			2200		9.0	7.5	6.0	0.6
	HGK3FF332○□□□			3300		10.0	7.5	6.0	0.6
	HGK3FF392○□□□			3900		10.0	7.5	6.0	0.6
	HGK3FF472○□□□			4700		11.0	7.5	6.0	0.6
	HGK3FF682○□□□			6800		13.0	10.0	6.0	0.6
	HGK3FF103○□□□			10000		15.0	10.0	6.0	0.6
	HGK3FF223○□□□			22000		21.0	10.0	6.0	0.8

Note:

□Packaging Code: B (Bulk) , A (Ammo Pack)

□Lead Spacing Code

□Lead Style Code

○Capacitance Tolerance Code： K (±10%) , M (±20%) , Z (+80%~ -20%)