SPECIFICATION

No: WM-S08-002

MENTION ITEM

DIVISION	DATE ISSUED	SPEC.NO.
QA. DERT	July,17,2012	WM-S08-002B04

HGR *TYPE* -FOR Fixed calss 2 high voltage ceramic dielectric capacitors (Low-dissipation Factor)

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 +125℃

5. PART NUMBERS

Examples

HGR	3D	B	471	K	A	2	B	D
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 Coating Material

5.1 Type

Type Designation

Type	Designation
HGR	class 2 high voltage ceramicdielectric capacitors (Low-dissipation Factor)

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℃
R	Y5R	±15%	

5.4 Nominal Capacitance Code

Nominal capacitance 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 following the significant figures.

Example:

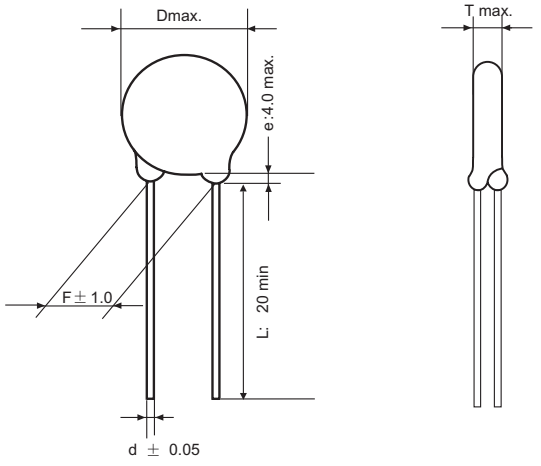
Code	Capacitance(pF)
101	100
102	1000
222	2200
103	10000

5.5 Capacitance Tolerance

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

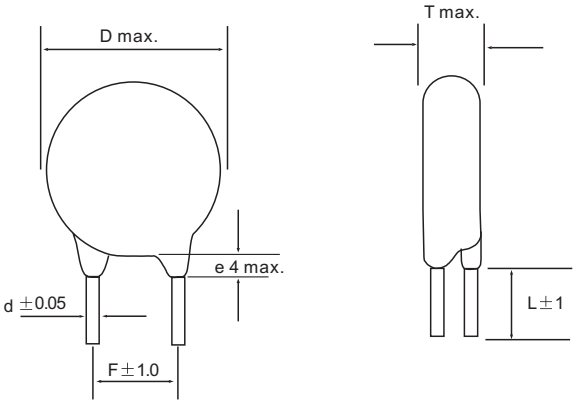
5.6 Lead style

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



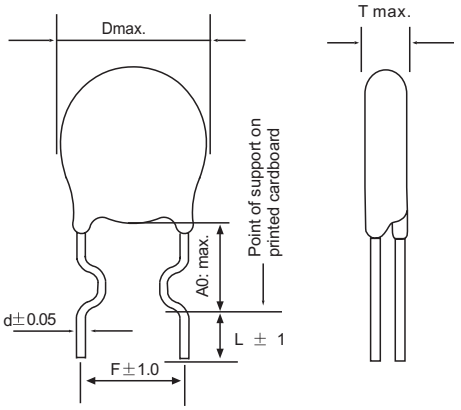
Lead code	A1	A2	A3	A4
F	2.5	5	7.5	10
L	20 mm min			
d	0.5mm or 0.55			
e	Max. 4.0mm			

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



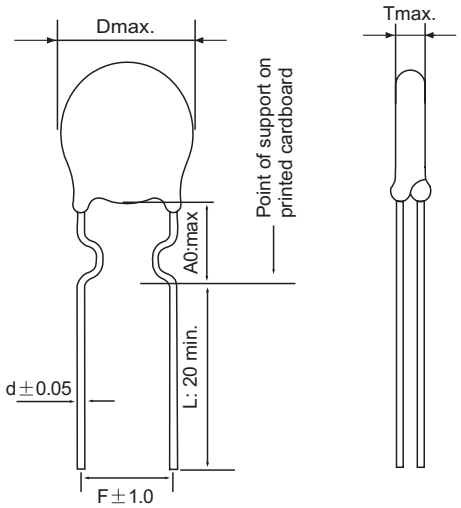
Lead code	B1	B2	B3	B4
F	2.5	5	7.5	10
L	5 or depend on client			
d	0.5mm or 0.55mm			
e	Max. 4.0mm			

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



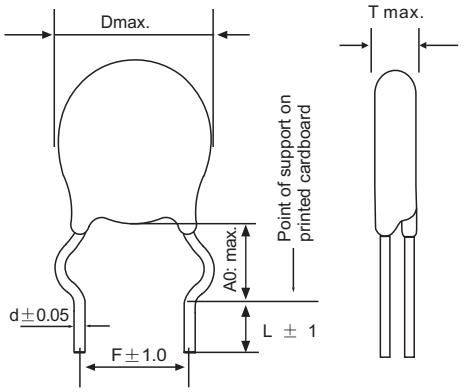
Lead code	C2	C3	C4
F	5	7.5	10
A0	5	5	6.5
L	5 or depend on client		
d	0.5mm or 0.55mm		

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



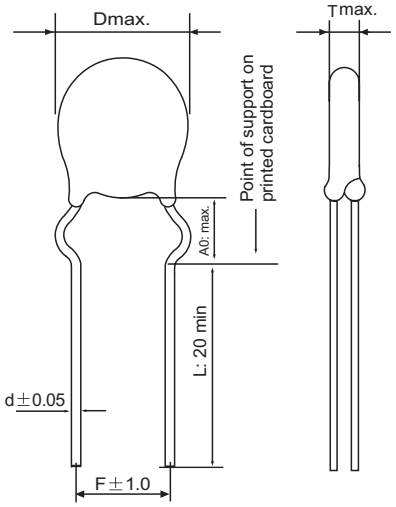
Lead code	D2	D3	D4
F	5	7.5	10
A0	5	5	6.5
L	20 mm min		
d	0.5mm or 0.55mm		

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



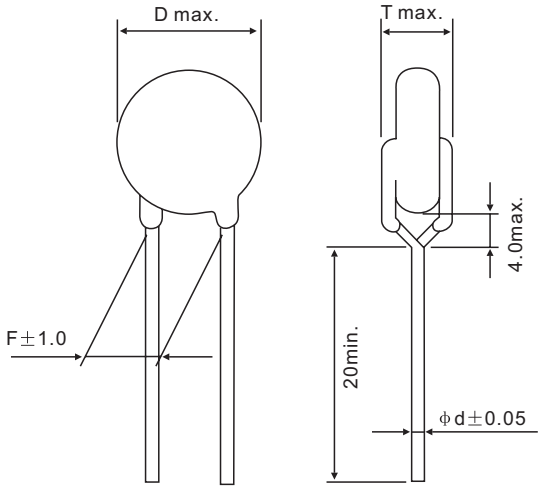
Lead code	E2	E3	E4
F	5	7.5	10
A0	5	5	6.5
L	5 or depend on client		
d	0.5mm or 0.55mm		

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



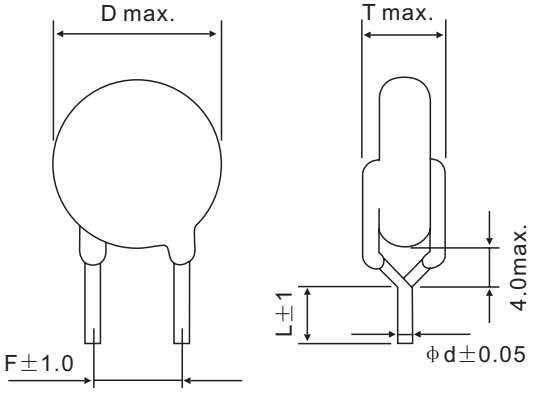
Lead code	F2	F3	F4
F	5	7.5	10
A	5	5	6.5
L	20 mm min		
d	0.5mm or 0.55mm		

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



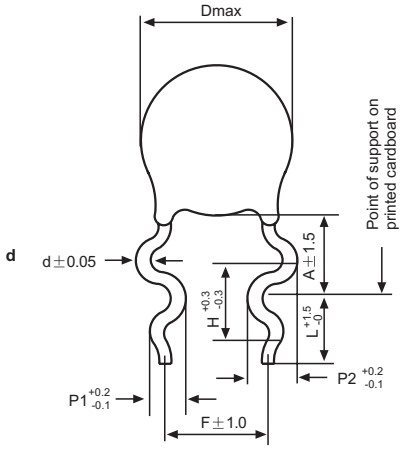
Lead code	G2	G3	G4
F	5	7.5	10
L	20 mm min		
d	0.5mm or 0.55mm		

5.6.8 : 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	0.5mm or 0.55mm		

5.6.9 : 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	0.5mm or 0.55mm		

General Information: PCB max. thickness 1.6mm

5.7 Lead Spacing Code

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

5.8 Packaging Code

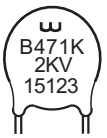
Code	Pitch of components(mm)	Packaging
B	/	Bulk
A	12.7	Taping Ammo Pack
C	25.4	
D	15.0	
E	30.0	
R	12.7	Taping Reel Pack

5.9 Coating Material

Code	illuminate
D	Yellow Phenolic Coating
—	Blue Epoxy Coating

6. MARKING

6.1 Characteristics : B(Y5P)

Body diameter(mm)	Marking item	Marking ex.
All	A: Nominal capacitance b: Capaictance Tolerance c: Rated Voltage d: Temperature Characteristic e: Manufactuer,s Trade Mark f： Internal Code	

6.2 Characteristics : R(Y5R)

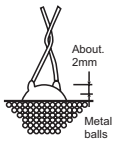
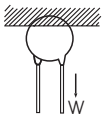
Body diameter(mm)	Marking item	Marking ex.
All	A: Nominal capacitance b: Capacitance Tolerance c: Rated Voltage d: Temperature Characteristic e: Manufactuer,s Trade Mark f： Internal Code	

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		-25to+125℃	——
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	10000MΩmin.	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. R : 0.2% max. Char. B: 0.5% 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.R:Within±15% Char.B:Within±10% Pre-treatment : Capacitor shall be stored at 85±2℃ for 1 h, then placed at*room condition for 24±2 h before measurements.	The capacitance measurement shall be made at each step specified in Table.
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. R : 0.2% max. Char. B : 0.5% max.	

Step	1	2	3	4	5
Temp.(℃)	20±2	-25±3	20±2	85±2	20±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 105±2℃for 1 h, then placed at *room condition for 24±2 h before initial measurements.
Post-treatment:Capacitor shall be stored for 4 to 24 h at *room condition.</td></tr>
<tr><td>Capacitance Change</td><td>Within± 10%</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 105±2℃ for 1h, then placed at *room condition for 24±2 h before initial measurements.
Post-treatment : Capacitor shall be stored for 1 to 2 h at *room condition.</td></tr>
<tr><td>Capacitance Change</td><td>Within± 10%</td></tr>
<tr><td>D.F.</td><td>Char.R : 0.4% max.
Char.B : 1.0% 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 105±2℃ for 1 h, then placed at *room condition for 24±2 h before initial measurements.
Post-treatment : Capacitor shall be stored at 105±2℃ for 1 h, then placed at *room condition for 24±2 h.</td></tr>
<tr><td>Capacitance Change</td><td>Within± 10%</td></tr>
<tr><td>D.F.</td><td>Char.R : 0.6% max.
Char.B : 1.0% 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 105±2℃, and relative humidity of 50% max.. (Charge/Discharge current ≤50mA.)
Pre-treatment : Capacitor shall be stored at 105±2℃ for 1 h, then placed at *room condition for 24±2 h before initial measurements.
Post-treatment : Capacitor shall be stored at 105±2℃ for 1 h, then placed at *room condition for 24±2 h.</td></tr>
<tr><td>Capacitance Change</td><td>Within± 10%</td></tr>
<tr><td>D.F.</td><td>Char.R : 0.6% max.
Char.B : 1.0% 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.
<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>+105±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

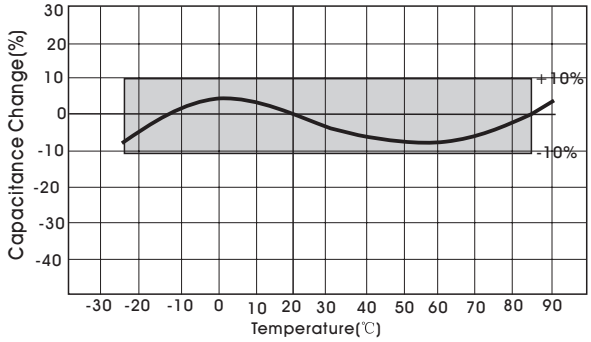
Pre-treatment : Capacitor shall be stored at 105±2℃ for 1 h, then placed at *room condition for 24±2 h before initial measurements.
Post-treatment : Capacitor shall be stored for 4 to 24 h at *room condition.</td></tr>
<tr><td>Capacitance Change</td><td>Within± 10%</td></tr>
<tr><td>D.F.</td><td>Char.R : 0.6% max.
Char.B : 1.0% 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>

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

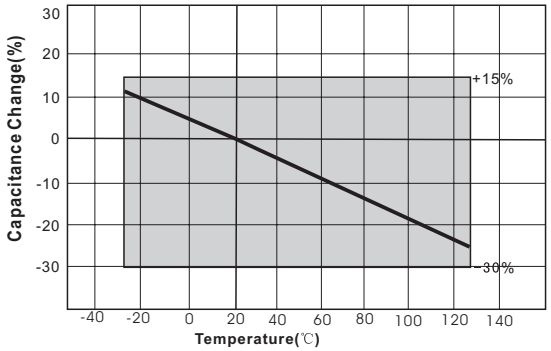
8. CHARACTERISTICS DATA (TYPICCAL EXAMPLE)

8.1 Capacitance-Temperature Characteristics

Char：B(Y5P)

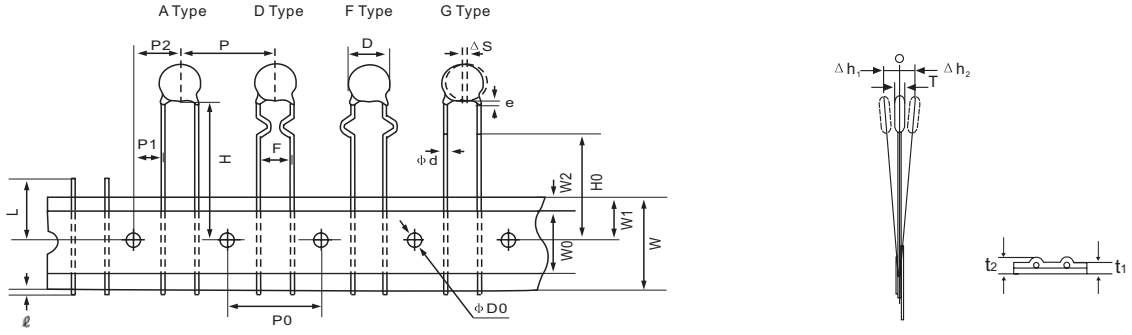


Char :R(Y5R)

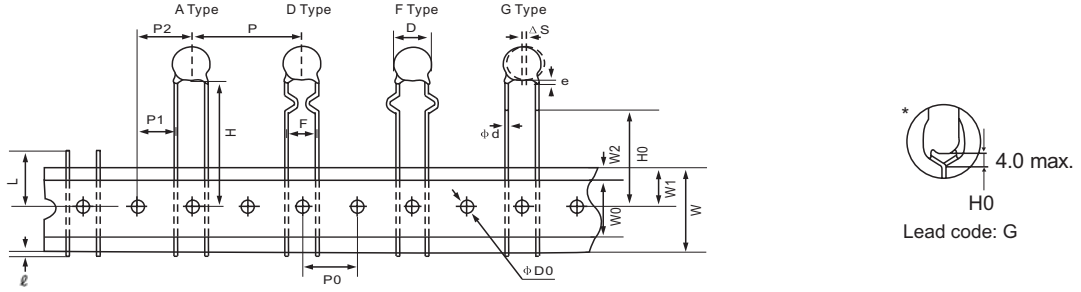


9.1 TAPING SPECIFICATION

● **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 ）

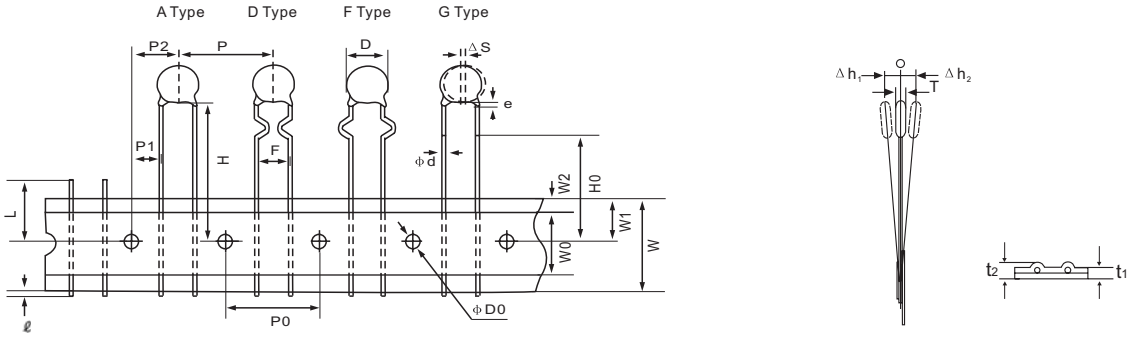


Item	Code	A2/D2/F2/G2	A3/D3/F3/G3	A3/D3/F3/G3	A4/D4/F4/G4
Pitch of component	P	12.7	12.7	25.4	25.4
Pitch of sprocket hole	P_0	12.7±0.3	12.7±0.3	12.7±0.3	12.7±0.3
Lead spacing	F	5.0±1.0	7.5±1.0	7.5±1.0	10.0±1.0
Length from hole center to component center	P_2	6.35±1.3	6.35±1.3	12.7±1.3	12.7±1.3
Length 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	Φ d	0.5±0.05/0.55±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			

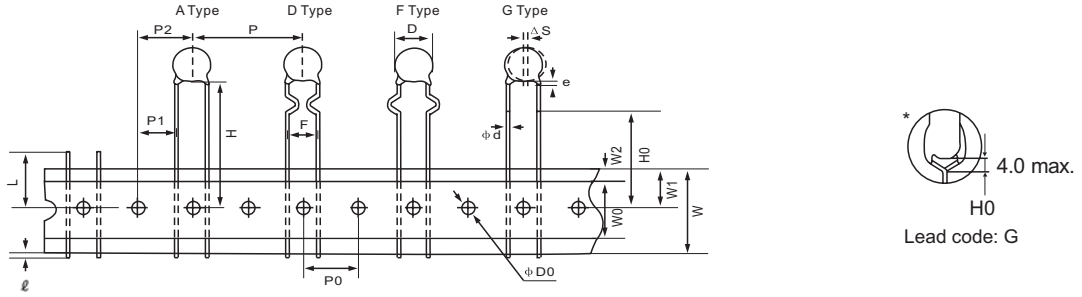
(in mm)

9.2 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 ）

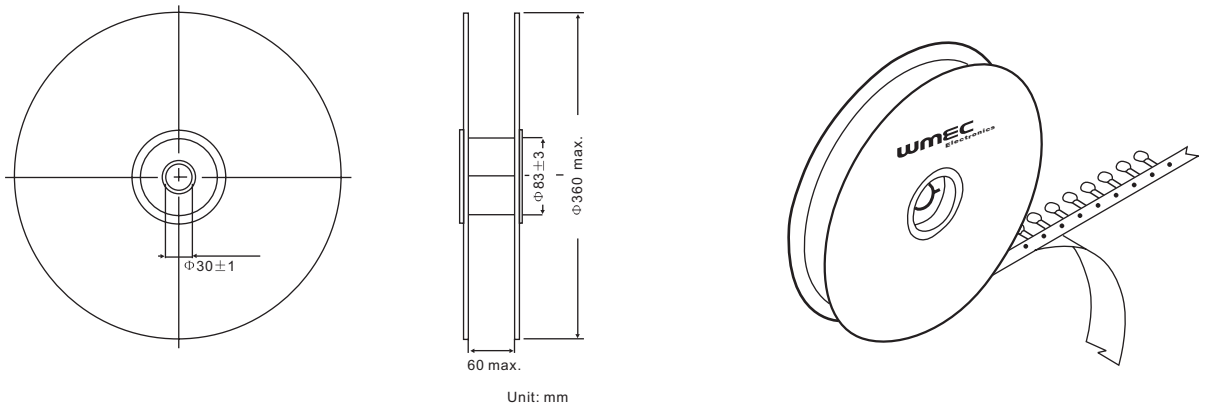


Item	Code	A2/D2/F2/G2	A3/D3/F3/G3	A3/D3/F3/G3	A4/D4/F4/G4
Pitch of component	P	15.0	15.0	30.0	30.0
Pitch of sprocket hole	P_0	15.0±0.3	15.0±0.3	15.0±0.3	15.0±0.3
Lead spacing	F	5.0±1.0	7.5±1.0	7.5±1.0	10.0±1.0
Length from hole center to component center	P_2	7.5±1.3	7.5±1.3	15.0±1.3	15.0±1.3
Length from 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	0.5±0.05/0.55±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			

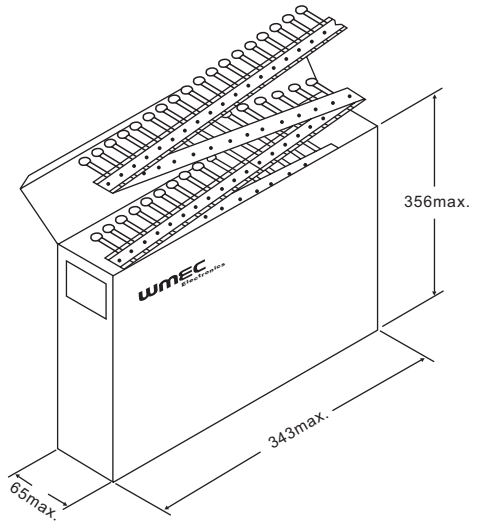
(in mm)

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

Series HGR (Temp.Char. B/Y5P, Rated Voltage: 1 to 3 kVDC)

Part Number	DC Rated Voltage (Vdc)	Capacitance (pF)	Body Dia. D (mm)	Body Thickness T (mm)	Lead Spacing F (mm)	Lead Dia. d (mm)*	Lead Package Long Bulk	Lead Package Short Bulk	Lead Package Taping
HGR3AB101K□□□	1000	100 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AB121K□□□	1000	120 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AB151K□□□	1000	150 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AB181K□□□	1000	180 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AB221K□□□	1000	220 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AB271K□□□	1000	270 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AB331K□□□	1000	330 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AB391K□□□	1000	390 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AB471K□□□	1000	470 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AB561K□□□	1000	560±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AB681K□□□	1000	680 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AB821K□□□	1000	820 ±10%	7.5	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AB102K□□□	1000	1000 ±10%	7.5	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AB122K□□□	1000	1200 ±10%	8.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AB152K□□□	1000	1500 ±10%	8.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AB182K□□□	1000	1800 ±10%	9.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AB222K□□□	1000	2200 ±10%	9.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AB272K□□□	1000	2700 ±10%	10.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AB332K□□□	1000	3300 ±10%	11.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AB392K□□□	1000	3900 ±10%	12.0	4.0	7.5	0.55	G3B	H3B	G3A
HGR3AB472K□□□	1000	4700 ±10%	13.0	4.0	7.5	0.55	G3B	H3B	G3C
HGR3AB562K□□□	1000	5600 ±10%	14.0	4.0	7.5	0.55	G3B	H3B	G3C
HGR3AB682K□□□	1000	6800 ±10%	15.0	4.0	7.5	0.55	G3B	H3B	G3C
HGR3AB822K□□□	1000	8200 ±10%	17.0	4.0	7.5	0.55	G3B	H3B	G3C
HGR3AB103K□□□	1000	10000 ±10%	18.0	4.0	7.5	0.55	G3B	H3B	G3C
HGR3DB101K□□□	2000	100 ±10%	7.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DB121K□□□	2000	120 ±10%	7.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DB151K□□□	2000	150 ±10%	7.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DB181K□□□	2000	180 ±10%	7.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DB221K□□□	2000	220 ±10%	7.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DB271K□□□	2000	270 ±10%	7.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DB331K□□□	2000	330 ±10%	7.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DB391K□□□	2000	390 ±10%	7.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DB471K□□□	2000	470 ±10%	7.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DB561K□□□	2000	560 ±10%	8.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DB681K□□□	2000	680 ±10%	8.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DB821K□□□	2000	820 ±10%	8.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DB102K□□□	2000	1000 ±10%	9.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DB122K□□□	2000	1200 ±10%	9.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DB152K□□□	2000	1500 ±10%	10.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DB182K□□□	2000	1800 ±10%	11.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DB222K□□□	2000	2200 ±10%	11.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DB272K□□□	2000	2700 ±10%	13.0	5.0	5.0	0.55	G2B	H2B	G2C
HGR3DB332K□□□	2000	3300 ±10%	14.0	5.0	7.5	0.55	G3B	H3B	G3C
HGR3DB392K□□□	2000	3900 ±10%	15.0	5.0	7.5	0.55	G3B	H3B	G3C
HGR3DB472K□□□	2000	4700 ±10%	16.0	5.0	7.5	0.55	G3B	H3B	G3C

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

* The lead diameter of all the taping products is 0.55mm±0.1/-0.05.

Continued on the following page.

Attached Table 2

Continued from the preceding page.

Part Number	DC Rated Voltage (Vdc)	Capacitance (pF)	Body Dia. D (mm)	Body Thickness T (mm)	Lead Spacing F (mm)	Lead Dia. d (mm)*	Lead Package Long Bulk	Lead Package Short Bulk	Lead Package Taping
HGR3FB101K□□□	1000	100 ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FB121K□□□	3000	120 ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FB151K□□□	3000	150 ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FB181K□□□	3000	180 ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FB221K□□□	3000	220 ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FB271K□□□	3000	270 ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FB331K□□□	3000	330 ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FB391K□□□	3000	390 ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FB471K□□□	3000	470 ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FB561K□□□	3000	560±10%	9.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FB681K□□□	3000	680 ±10%	9.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FB821K□□□	3000	820 ±10%	10.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FB102K□□□	3000	1000 ±10%	11.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FB122K□□□	3000	1200 ±10%	11.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FB152K□□□	3000	1500 ±10%	12.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FB182K□□□	3000	1800 ±10%	13.0	6.0	7.5	0.55	G3B	H3B	G3C
HGR3FB222K□□□	3000	2200 ±10%	14.0	6.0	7.5	0.55	G3B	H3B	G3C
HGR3FB272K□□□	3000	2700 ±10%	15.0	6.0	7.5	0.55	G3B	H3B	G3C
HGR3FB332K□□□	3000	3300 ±10%	17.0	6.0	7.5	0.55	G3B	H3B	G3C
HGR3FB392K□□□	3000	3900 ±10%	19.0	10.0	7.5	0.55	G4B	H4B	G4C
HGR3FB472K□□□	3000	4700 ±10%	20.0	10.0	7.5	0.55	G4B	H4B	G4C

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

Series HGR (Temp.Char. R/Y5R, Rated Voltage: 1 to 3 kVDC)

Part Number	DC Rated Voltage (Vdc)	Capacitance (pF)	Body Dia. D (mm)	Body Thickness T (mm)	Lead Spacing F (mm)	Lead Dia. d (mm)*	Lead Package Long Bulk	Lead Package Short Bulk	Lead Package Taping
HGR3AR101K□□□	1000	100 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AR121K□□□	1000	120 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AR151K□□□	1000	150 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AR181K□□□	1000	180 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AR221K□□□	1000	220 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AR271K□□□	1000	270 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AR331K□□□	1000	330 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AR391K□□□	1000	390 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AR471K□□□	1000	470 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AR561K□□□	1000	560 ±10%	7.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AR681K□□□	1000	680 ±10%	8.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AR821K□□□	1000	820 ±10%	8.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AR102K□□□	1000	1000 ±10%	9.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AR122K□□□	1000	1200 ±10%	9.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AR152K□□□	1000	1500 ±10%	10.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AR182K□□□	1000	1800 ±10%	11.0	4.0	5.0	0.5	G2B	H2B	G2A
HGR3AR222K□□□	1000	2200 ±10%	12.0	4.0	5.0	0.55	G2B	H2B	G2A
HGR3AR272K□□□	1000	2700 ±10%	13.0	4.0	7.5	0.55	G3B	H3B	G3C
HGR3AR332K□□□	1000	3300 ±10%	14.0	4.0	7.5	0.55	G3B	H3B	G3C
HGR3AR392K□□□	1000	3900 ±10%	15.0	4.0	7.5	0.55	G3B	H3B	G3C
HGR3AR472K□□□	1000	4700 ±10%	16.0	4.0	10.0	0.55	G4B	H4B	G4C

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

* The lead diameter of all the taping products is 0.55mm+0.1/-0.05.

Attached Table 3

Continued from the preceding page.

Part Number	DC Rated Voltage (Vdc)	Capacitance (pF)	Body Dia. D (mm)	Body Thickness T (mm)	Lead Spacing F (mm)	Lead Dia. d (mm)*	Lead Package Long Bulk	Lead Package Short Bulk	Lead Package Taping
HGR3DR101K□□□	2000	100 ±10%	8.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DR121K□□□	2000	120 ±10%	8.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DR151K□□□	2000	150 ±10%	8.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DR181K□□□	2000	180 ±10%	8.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DR221K□□□	2000	220 ±10%	8.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DR271K□□□	2000	270 ±10%	8.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DR331K□□□	2000	330 ±10%	9.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DR391K□□□	2000	390 ±10%	9.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DR471K□□□	2000	470 ±10%	9.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DR561K□□□	2000	560 ±10%	9.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DR681K□□□	2000	680 ±10%	10.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DR821K□□□	2000	820 ±10%	11.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DR102K□□□	2000	1000 ±10%	11.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DR122K□□□	2000	1200 ±10%	12.0	5.0	5.0	0.55	G2B	H2B	G2A
HGR3DR152K□□□	2000	1500 ±10%	13.0	5.0	5.0	0.55	G2B	H2B	G2C
HGR3DR182K□□□	2000	1800 ±10%	15.0	5.0	7.5	0.55	G3B	H3B	G3C
HGR3DR222K□□□	2000	2200 ±10%	16.0	5.0	7.5	0.55	G3B	H3B	G3C
HGR3DR272K□□□	2000	2700 ±10%	17.0	5.0	7.5	0.55	G3B	H3B	G3C
HGR3DR332K□□□	2000	3300 ±10%	19.0	5.0	10.0	0.55	G4B	H4B	G4C
HGR3DR392K□□□	2000	3900 ±10%	20.0	5.0	10.0	0.55	G4B	H4B	G4C
HGR3DR472K□□□	2000	4700 ±10%	22.0	5.0	10.0	0.55	G4B	H4B	G4C
HGR3FR101K□□□	3000	100 ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FR121K□□□	3000	120 ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FR151K□□□	3000	150 ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FR181K□□□	3000	180 ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FR221K□□□	3000	220 ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FR271K□□□	3000	270 ±10%	8.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FR331K□□□	3000	330 ±10%	9.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FR391K□□□	3000	390 ±10%	9.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FR471K□□□	3000	470 ±10%	10.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FR561K□□□	3000	560 ±10%	10.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FR681K□□□	3000	680 ±10%	11.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FR821K□□□	3000	820 ±10%	12.0	6.0	7.5	0.55	G3B	H3B	G3A
HGR3FR102K□□□	3000	1000 ±10%	13.0	6.0	7.5	0.55	G3B	H3B	G3C
HGR3FR122K□□□	3000	1200 ±10%	14.0	6.0	7.5	0.55	G3B	H3B	G3C
HGR3FR152K□□□	3000	1500 ±10%	15.0	6.0	7.5	0.55	G3B	H3B	G3C
HGR3FR182K□□□	3000	1800 ±10%	16.0	6.0	7.5	0.55	G3B	H3B	G3C
HGR3FR222K□□□	3000	2200 ±10%	17.0	6.0	7.5	0.55	G3B	H3B	G3C

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

* The lead diameter of all the taping products is 0.55mm＋0.1/-0.05.