

## MENTION ITEM

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DIVISION	DATE ISSUED	SPEC.NO.
TECH. DERT	July,17,2012	WM-S08-004B04

# HLT *TYPE* -FOR Fixed class 1 ceramic dielectric capacitors

**1. SCOPE**

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

**2. RELATIVE STANDARDS**

IEC 384-8 : 1988 [ Fixed capacitors of ceramic dielectric, class 1]  
 GB/T 5966-1996 [ Fixed capacitors of ceramic dielectric, class 1]

**3. QUALITY**

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

**4. OPERATING TEMPERATURE RANGE**

-25°C to +85°C

**5. PART NUMBERS**

Examples HLT 1H C 220 J B 2 B 5 W  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

- ① Type
- ② Rated Voltage
- ③ Temperature Characteristics
- ④ Nominal Capacitance
- ⑤ Capacitance Tolerance Symbol
- ⑥ Lead Style
- ⑦ Lead Spacing
- ⑧ Packaging
- ⑨ Lead length
- ⑩ Internal code

**5.1 Type**

Type Designation

Type	Designation
HLT	class 1 ceramic dielectric capacitors

**5.2 Rated Voltage**

Code	Rated Voltage
1H	DC.50V/63V
2A	DC.100v
2E	DC.250v
2H	DC.500v

5.3 Temperature Characteristics Code

Code	Temperature Characteristics	Cap.Change Of Temp.coeff.	Temperature Range
C	NPO	$0 \pm 60 \text{ppm}/^\circ\text{C}$	-25 to 85°C
N	N750	$-750 \pm 120 \text{ppm}/^\circ\text{C}$	
S	SL	$+350 \sim -1000 \text{ppm}/^\circ\text{C}$	

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:

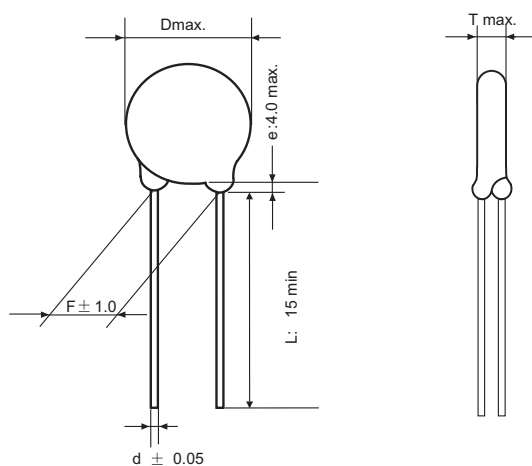
Code	Capacitance(pF)
1R5	1.5
050	5
220	22
101	100

5.5 Capacitance Tolerance

Code	Tolerance
C	$\pm 0.25 \text{pF}$
D	$\pm 0.5 \text{pF}$
J	$\pm 5\%$
K	$\pm 10\%$

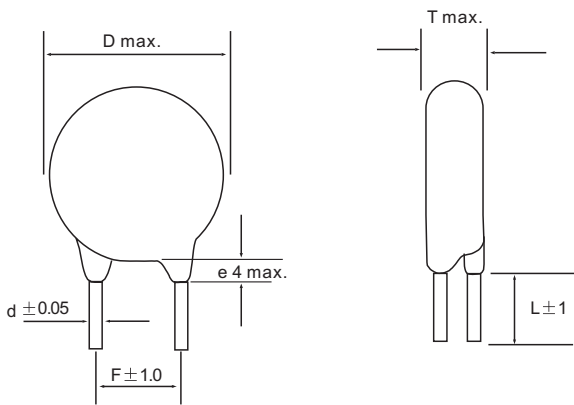
5.6 Lead style

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



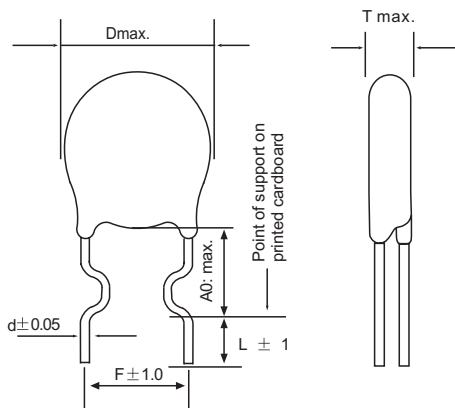
Lead code	A1	A2	A3	A4
F	2.5	5	7.5	10
L	15 mm min			
d	0.45 or 0.5			
e	Max. 4.0mm			

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



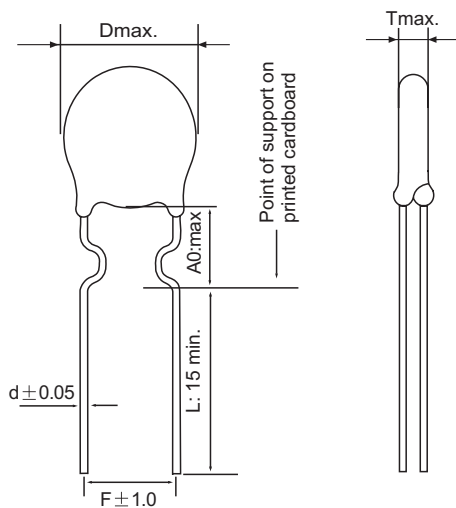
Lead code	B1	B2	B3	B4
F	2.5	5	7.5	10
L	5 or depend on client			
d	0.45 or 0.5			
e	Max. 4.0mm			

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



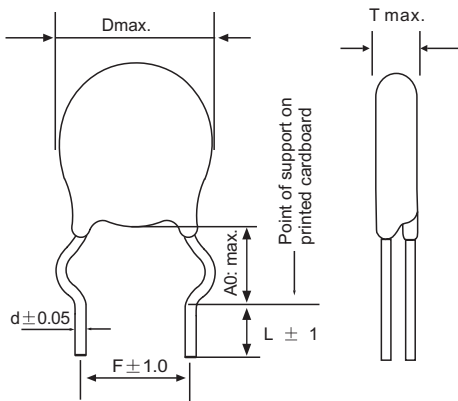
Lead code	C2	C3	C4
F	5	7.5	10
A0	5	5	6.5
L	5 or depend on client		
d	0.45 or 0.5		

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



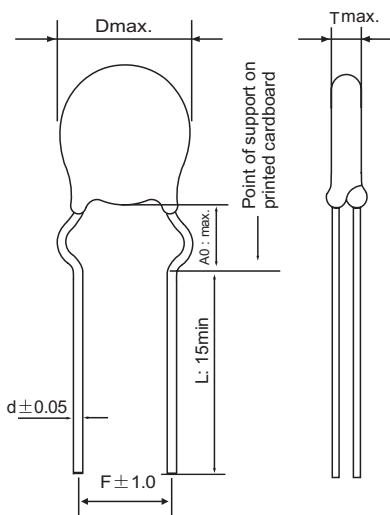
Lead code	D2	D3	D4
F	5	7.5	10
A0	5	5	6.5
L	15 mm min		
d	0.45 or 0.5		

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



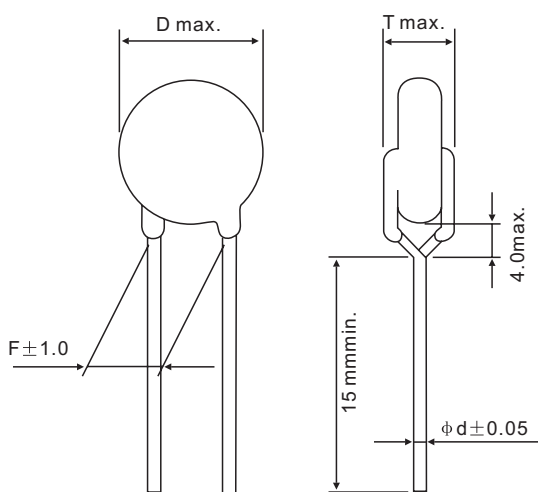
Lead code	E2	E3	E4
F	5	7.5	10
A0	5	5	6.5
L	5 or depend on client		
d	0.45 or 0.5		

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



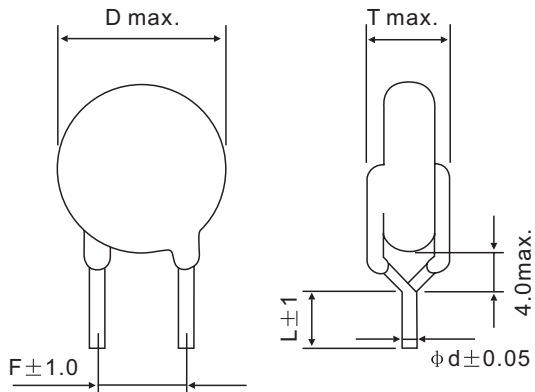
Lead code	F2	F3	F4
F	5	7.5	10
A	5	5	6.5
L	15 mm min		
d	0.45 or 0.5		

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



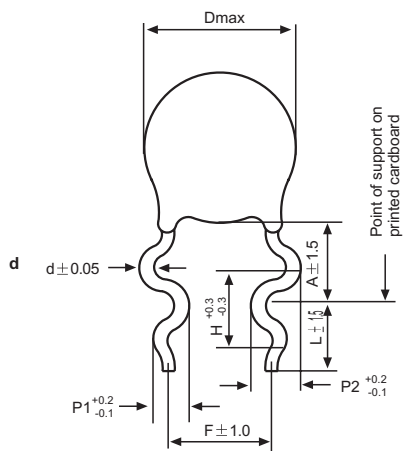
Lead code	G2	G3	G4
F	5	7.5	10
L	15 mm min		
d	0.45 or 0.5		

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	0.45 or 0.5		

5.6.9 : Double 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	0.45 or 0.5		

General Information: PCB max. thickness 1.6mm

5.7 Lead Spacing Code

Code	Lead Spacing(mm)
1	2.5 ± 1.0
2	5.0 ± 1.0
3	7.5 ± 1.0
4	10.0 ± 1.0

5.10 Internal Code

Code	Illuminate
W	Meeting RoHS






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 Lead length

Code	Length (mm)
5	L = 5.0
—	L = 15.0 min

6. MARKING

Rated Voltage	Marking item	Marking ex.		
		NPO	N750	SL
50V/63V	1. Nominal capacitance 2. Rated Voltage 3. Manufacturers identification			
500VDC	1. Manufacturers identification 2. Temperature Characteristic 3. Nominal capacitance 4. Capacitance Tolerance 5. Rated Voltage		—	

6.1 Marking item

- (1) Mark Color: Black or nearly color
- (2) Temperature Characteristics : Identified by color, NPO (Black) , N750&SL (Omitted).
- (3) Nominal Capacitance : Under 100pF : Actual value. 100pF and over : by 3-figures code.
- (4) Capacitance Tolerance : K= ± 10%,M= ± 20%
- (5) Rated Voltage : 50V/63V/100V : Identified by horizontal line under capacitance ,  
500V: Actual value
- (6) Manufacturers identification : Marked with 

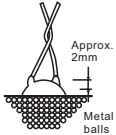
7. SPECIFICATION AND TEST METHOD

7.1 Test condition

Test and measurement shall be made at the standard condition, (Temperature 15 to 35°C, relative humidity 45 to 75% and atmospheric pressure 86-106 kPa), 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°C, relative humidity 60 to 70% and atmospheric pressure 86-106 kPa), unless otherwise specified herein

7.2 Performance

No.	Item	Specification	Testing Method
1	Operating Temperature Range	-25 to +85°C	—
2	Capacitance	Within Specified tolerance.	The capacitor shall be measured at 20°C with 1±0.2MHz and AC1±0.1V(r.m.s.).
3	Q	C≥30pF: Q≥1000 C<30pF: Q≥400+20C	Same condition as capacitance.
4	Insulation Resistance(I.R.)	10000M Ω min.	The insulation resistance shall be measured with rated voltage within 60±5 s of charging.
5	Dielectric Strength	Between Lead Wires	No Failure.
		Body Insulation	No Failure.
6	Temperature Characteristic	Temperature Coefficient	Within specified tolerance. (See Table A)
		Characteristic Drift	Within ±0.2% or ±0.05pF whichever is greater.
			The capacitor shall not be damage when DC voltage of 250% of the rated voltage are applied between the lead wires for 1 to 5 s. (Charge/Discharge current≤50mA.) The capacitor is placed in the container with metal balls of diameter 1mm so that each lead wire, shortcircuited, is kept about 1mm off the balls as shown in the figure, and DC voltage of 250% of the rated voltage is applied for 1 to 5 s between capacitor lead wires and small metals. (Charge/Discharge current≤50mA.) 
7	Vibration Resistance	Appearance	No marked defect.
		Capacitance	Within specified tolerance.
		Q	C≥30pF: Q≥1000 C<30pF: Q≥400+20C <sup>*1</sup>
8	Soldering Effent	Appearance	No marked defect
		Capacitance Change	Within ±2.5% or ±0.25pF Whichever is greater.
		Dielectric Strength (Between Lead Wires)	Pass the item No.5
9	Humidity (Under Steady State)	Appearance	No marked defect.
		Capacitance Change	Within ±5% or ±0.5pF Whichever is greater.
		Q	C≥30pF :Q≥350 10≤C<30pF :Q≥275+ <sup>5</sup> / <sub>2</sub> C <sup>*1</sup> C<10pF :Q≥200+10C <sup>*1</sup>
		I.R.	1000M Ω min.
		Dielectric Strength (Between Lead Wires)	Pass the item No.5
			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 1 min. 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. The lead wire shall be immersed into the melted solder of 350±10°C (Nominal body diameter φ5mm and under 270±5°C) up to about 1.5 to 2.0mm from the main body for 3.5±0.5 s. (Nominal body diameter φ5mm and under 5±0.5 s.) Post-treatment: Capacitor shall be stored for 1 to 2 h at <sup>**2</sup> room condition. Set the capacitor for 500+24/-0 h at 40±2°C in 90 to 95% relative Humidity. Post-treatment: Capacitor shall be stored for 1 to 2 h at <sup>*1</sup> room condition.

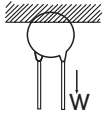
\*1 "C" expresses nominal capacitance value(pF).

\*\*2 "room condition" ..... Temperature; 15 to 35°C, Relative humidity; 45 to 75%, Atmospheric pressure; 86 to 106kPa

Table A

Char.	Temp. Coeff. (ppm/°C) between +20°C and +85°C	Cap. Change (%) between +20°C and -25°C		Char.	Temp. Coeff. (ppm/°C) between +20°C and +85°C	Cap. Change (%) between +20°C and -25°C	
		Max.	Min.			Max.	Min.
NPO	0±60	0.49	-0.27	N750	-750±120	4.94	2.84
CJ	0±120	0.82	-0.54	SL	+350 to -1000	—	—



No.	Item	Specification	Testing Method															
10	Humidity Loading	Appearance	No marked defect.															
		Capacitance Change	Within $\pm 7.5\%$ or $\pm 0.75\text{pF}$ Whichever is greater.															
		Q	$C \geq 30\text{pF}$ : $Q \geq 200$ $C < 30\text{pF}$ : $Q \geq 100 + \frac{10}{3}C^*$															
		I.R.	500M $\Omega$ min.															
		Dielectric Strength (Between Lead Wires)	Pass the item No.5															
			Apply the rated voltage for 500 +24/-0 h at $40 \pm 2^\circ\text{C}$ in 90 to 95% relative humidity. Post-treatment: Capacitor shall be stored for 1 to 2 h at <sup>*</sup> 1 room condition. (Charge/Discharge current $\leq 50\text{mA}$ .)															
11	Life	Appearance	No marked defect.															
		Capacitance Change	Within $\pm 3\%$ or $\pm 0.3\text{pF}$ Whichever is greater.															
		Q	$C \geq 30\text{pF}$ : $Q \geq 350$ $10 \leq C < 30\text{pF}$ : $Q \geq 275 + \frac{5}{2}C^*$ $C < 10\text{pF}$ : $Q \geq 200 + 10C^*$															
		I.R.	500M $\Omega$ min.															
		Dielectric Strength (Between Lead Wires)	Pass the item No.5															
			Apply a DC voltage of 200% of the rated voltage for 1000 +48/-0 h at $85 \pm 2^\circ\text{C}$ Post-treatment: Capacitor shall be stored at $125 \pm 3^\circ\text{C}$ for 1 h, then placed at <sup>*</sup> 2 room condition for $24 \pm 2$ h (Charge/Discharge current $\leq 50\text{mA}$ .)															
12	Temperature and immersion cycling	Appearance	No marked defect.															
		Capacitance Change	Within $\pm 5\%$ or $\pm 0.5\text{pF}$ Whichever is greater.															
		Q	$C \geq 30\text{pF}$ : $Q \geq 350$ $10 \leq C < 30\text{pF}$ : $Q \geq 275 + \frac{5}{2}C^*$ $C < 10\text{pF}$ : $Q \geq 200 + 10C^*$															
		I.R.	500M $\Omega$ min.															
		Dielectric Strength (Between Lead Wires)	Pass the item No.5															
			The capacitor shall be subjected to 5 cycles of temperature variation according to Table 1, then the capacitor shall be immersed into two baths, the one a clean water bath at temperature $65 \pm 0.5^\circ\text{C}$ and the other a saturated salt water bath at temperature $0 \pm 3^\circ\text{C}$ for 15 min. This immersion cycle shall be repeated 2 times, then the capacitor shall be washed in running water, wiped or dried with air draught. Post-treatment: Capacitor shall be stored for 1 to 2 h at <sup>*</sup> 2 room condition. (Charge/Discharge current $\leq 50\text{mA}$ .)															
			(Table 1)															
			<table border="1"> <thead> <tr> <th>Step</th> <th>Temperature(<math>^\circ\text{C}</math>)</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>1</td> <td><math>-25 \pm 0.5</math></td> <td>30 min</td> </tr> <tr> <td>2</td> <td>Room Temp.</td> <td>3 min</td> </tr> <tr> <td>3</td> <td><math>85 \pm 0.5</math></td> <td>30 min</td> </tr> <tr> <td>4</td> <td>Room Temp.</td> <td>3 min</td> </tr> </tbody> </table>	Step	Temperature( $^\circ\text{C}$ )	Time	1	$-25 \pm 0.5$	30 min	2	Room Temp.	3 min	3	$85 \pm 0.5$	30 min	4	Room Temp.	3 min
Step	Temperature( $^\circ\text{C}$ )	Time																
1	$-25 \pm 0.5$	30 min																
2	Room Temp.	3 min																
3	$85 \pm 0.5$	30 min																
4	Room Temp.	3 min																
13	Strength of Lead	Pull	Lead wire shall not cut off. Capacitor shall not be broken.															
		Bending	Each lead wire shall be subjected to 5N weight and then a $90^\circ$ bend, at the point of egress, in one direction, return to original position, and then a $90^\circ$ bend in the opposite direction at the rate of one bend in 2 to 3 s.															
			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 $10 \pm 1$ s. 															
14	Solderability of Leads	Lead wire shall be soldered with uniformly coated on the axial direction over $\frac{3}{4}$ of the circumferential direction.	The lead wire of a capacitor shall be dipped into a methanol solution of 25wt% rosin and then into molten solder of $235 \pm 5^\circ\text{C}$ for $2 \pm 0.5$ s. In both cases the depth of dipping is up to about 1.5 to 2mm from the root of lead wires.															

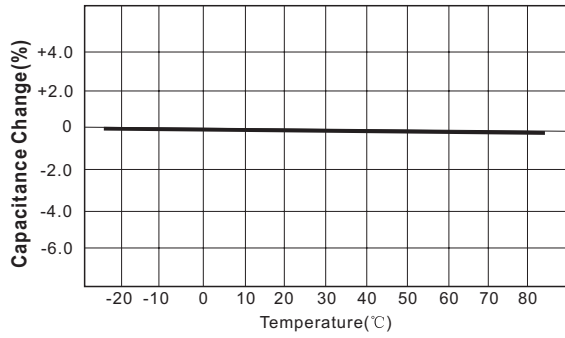
\*1 "C" expresses nominal capacitance value(pF).

\*2 "room condition" ..... Temperature; 15 to  $35^\circ\text{C}$ , Relative humidity; 45 to 75%, Atmospheric pressure; 86 to 106kPa

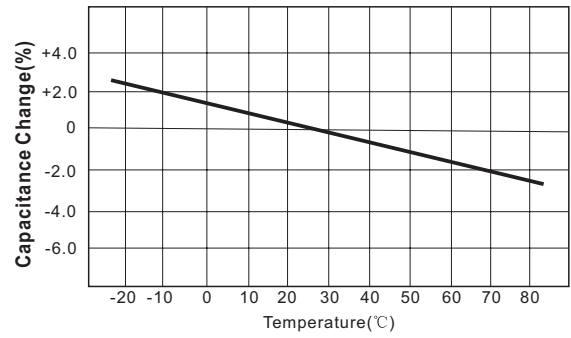
8. CHARACTERISTICS DATA ( TYPICCAL EXAMPLE)

8.1 Capacitance-Temperature Characteristics

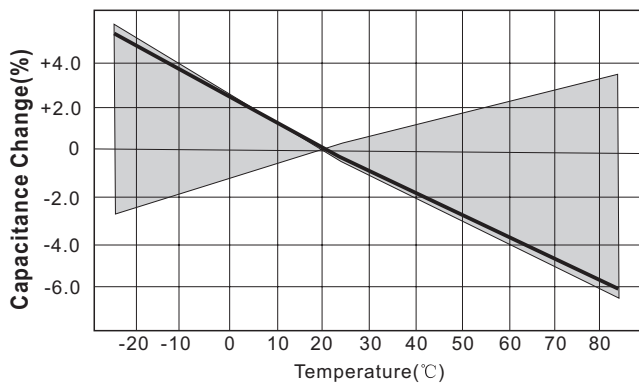
Char : NPO



Char: N750

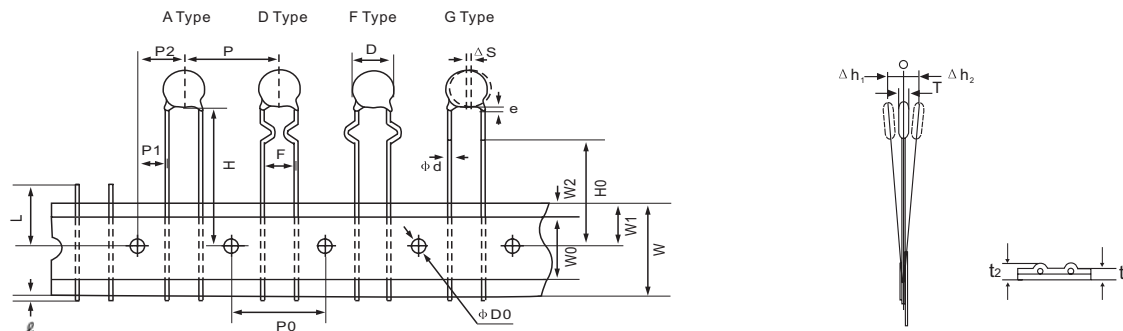


Char: SL

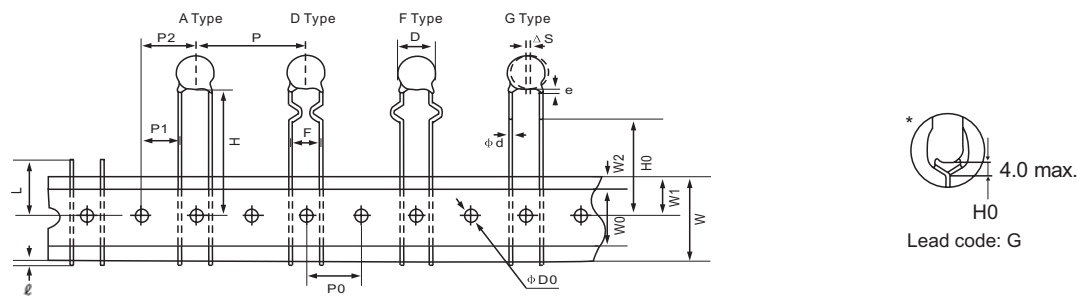


9 TAPING SPECIFICATION

- 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 )

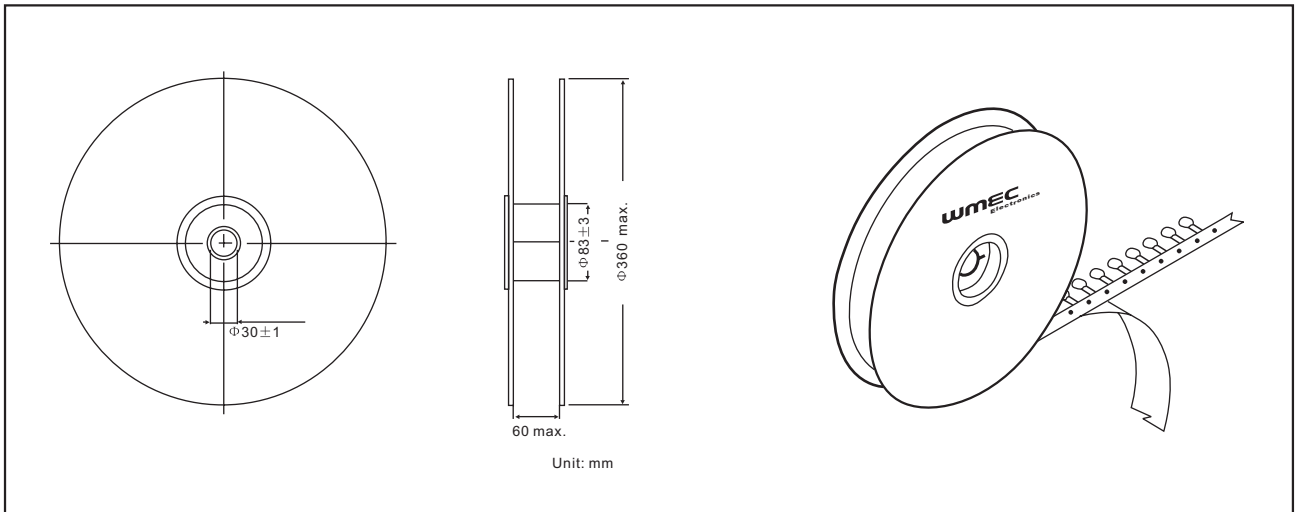


Item	Code	A2/D2/F2/G2	A3/D3/F3/G3	A3/D3/F3/G3	A4/D4/F4/G4
Pitch of component	P	12.7	12.7	25.4	25.4
Pitch of sprocket hole	P <sub>0</sub>	12.7±0.3	12.7±0.3	12.7±0.3	12.7±0.3
Lead spacing	F	5.0±1.0	7.5±1.0	7.5±1.0	10.0±1.0
Length from hole center to component center	P <sub>2</sub>	6.35±1.3	6.35±1.3	12.7±1.3	12.7±1.3
Length from hole center to lead	P <sub>1</sub>	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 <sub>1</sub>	9.0±0.5			
Lead distance between reference and bottom planes	H	20.0±2.0 (Lead Code:A2/A3/A4)			
	H <sub>0</sub>	18.0±2.0 (Crimp type)			
Diameter of sprocket hole	φD <sub>0</sub>	4.0±0.2			
Lead diameter	φd	0.5±0.05			
Total tape thickness	t <sub>1</sub>	0.6±0.3			
Total thickness, tape and lead wire	t <sub>2</sub>	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 <sub>0</sub>	10.0±2			
Hold down tape position	W <sub>2</sub>	1.5±1.5			
Coating extension on lead	e	3.0 max. (Crimp type:Up to the end of crimp)			
Deviation across tape	△h <sub>1</sub>	2.0 max.			
	△h <sub>2</sub>				
Protrusion length	ℓ	+0.5 to -1.0			

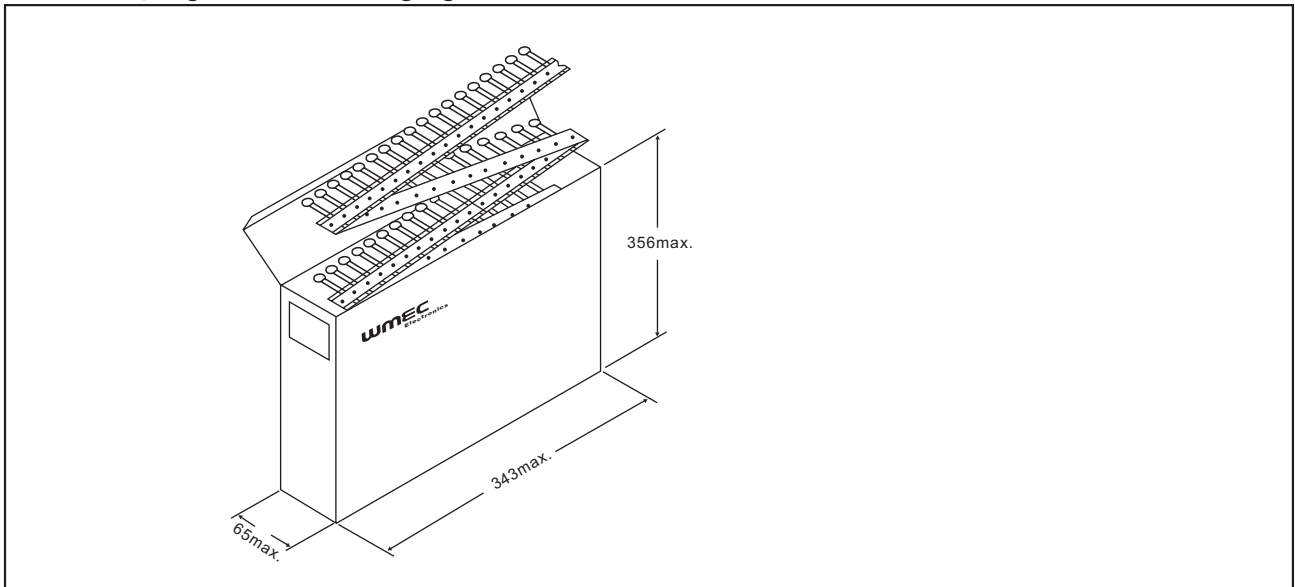
(in mm)

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 8.0 mm : 1000 pcs
  - Body Diameter 9.0 mm over : 500 pcs
- 11.2 Taping (Pitch : 12.7 mm )
  - Taping: 2000 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) Manufacturers Name.



**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

## NPO Characteristics

Part Number	Rated Voltage.	Capacitance (pF)	Capacitance Tol.	Body Dia.D (mm)	Lead Spacing F(mm)	Body Thickness T(mm)	Lead Package Long Bulk	Lead Package Short Bulk	Lead Package Taping
HLT1HC0R5○□□□	50VDC	0.5	C / D	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC010○□□□	50VDC	1	C / D	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC1R5○□□□	50VDC	1.5	C / D	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC020○□□□	50VDC	2	C / D	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC030○□□□	50VDC	3	C / D	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC040○□□□	50VDC	4	C / D	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC4R7○□□□	50VDC	4.7	C / D	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC050○□□□	50VDC	5	C / D	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC060○□□□	50VDC	6	C / D	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC070○□□□	50VDC	7	C / D	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC080○□□□	50VDC	8	C / D	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC090○□□□	50VDC	9	C / D	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC100○□□□	50VDC	10	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC120○□□□	50VDC	12	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC150○□□□	50VDC	15	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC180○□□□	50VDC	18	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC220○□□□	50VDC	22	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC270○□□□	50VDC	27	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC300○□□□	50VDC	30	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC330○□□□	50VDC	33	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC390○□□□	50VDC	39	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC470○□□□	50VDC	47	J / K	6.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC560○□□□	50VDC	56	J / K	6.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC680○□□□	50VDC	68	J / K	6.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC820○□□□	50VDC	82	J / K	7.0	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC101○□□□	50VDC	100	J / K	7.0	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC121○□□□	50VDC	120	J / K	8.0	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC151○□□□	50VDC	150	J / K	8.0	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC181○□□□	50VDC	180	J / K	9.0	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HC221○□□□	50VDC	220	J / K	10	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT2HC010○□□□	500VDC	1	C / D	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HC1R5○□□□	500VDC	1.5	C / D	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HC020○□□□	500VDC	2	C / D	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HC030○□□□	500VDC	3	C / D	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HC040○□□□	500VDC	4	C / D	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HC050○□□□	500VDC	5	C / D	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HC060○□□□	500VDC	6	C / D	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HC070○□□□	500VDC	7	C / D	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HC080○□□□	500VDC	8	C / D	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HC090○□□□	500VDC	9	C / D	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HC100○□□□	500VDC	10	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HC120○□□□	500VDC	12	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HC150○□□□	500VDC	15	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HC180○□□□	500VDC	18	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HC220○□□□	500VDC	22	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HC270○□□□	500VDC	27	J / K	6.5	5.0	3.5	A2B	D2B	D2A

① Circle is filled with one to tolerance code of Capacitance C=±0.25pF.D=±0.5pF.J=±5%.K=±10%.

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

## Attached Table 2

## NPO Characteristics

Part Number	Rated Voltage.	Capacitance (pF)	Capacitance Tol.	Body Dia.D (mm)	Lead Spacing F(mm)	Body Thickness T(mm)	Lead Package Long Bulk	Lead Package Short Bulk	Lead Package Taping
HLT2HC330○□□□	500VDC	33	J / K	6.5	5.0	3.5	A2B	D2B	D2A
HLT2HC390○□□□	500VDC	39	J / K	6.5	5.0	3.5	A2B	D2B	D2A
HLT2HC470○□□□	500VDC	47	J / K	7.0	5.0	3.5	A2B	D2B	D2A
HLT2HC560○□□□	500VDC	56	J / K	7.5	5.0	3.5	A2B	D2B	D2A
HLT2HC680○□□□	500VDC	68	J / K	7.5	5.0	3.5	A2B	D2B	D2A
HLT2HC820○□□□	500VDC	82	J / K	8.5	5.0	3.5	A2B	D2B	D2A
HLT2HC101○□□□	500VDC	100	J / K	8.5	5.0	3.5	A2B	D2B	D2A
HLT2HC121○□□□	500VDC	120	J / K	10	5.0	3.5	A2B	D2B	D2A
HLT2HC151○□□□	500VDC	150	J / K	11	5.0	3.5	A2B	D2B	D2A
HLT2HC181○□□□	500VDC	180	J / K	12	5.0	3.5	A2B	D2B	D2A
HLT2HC221○□□□	500VDC	220	J / K	13	5.0	3.5	A2B	D2B	D2A

## N750 Characteristics

Part Number	Rated Voltage.	Capacitance (pF)	Capacitance Tol.	Body Dia.D (mm)	Lead Spacing F(mm)	Body Thickness T(mm)	Lead Package Long Bulk	Lead Package Short Bulk	Lead Package Taping
HLT1HN150○□□□	50VDC	15	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HN180○□□□	50VDC	18	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HN220○□□□	50VDC	22	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HN270○□□□	50VDC	27	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HN330○□□□	50VDC	33	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HN390○□□□	50VDC	39	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HN470○□□□	50VDC	47	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HN560○□□□	50VDC	56	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HN680○□□□	50VDC	68	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HN820○□□□	50VDC	82	J / K	6.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HN101○□□□	50VDC	100	J / K	6.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT2HN150○□□□	500VDC	15	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HN180○□□□	500VDC	18	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HN220○□□□	500VDC	22	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HN270○□□□	500VDC	27	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HN330○□□□	500VDC	33	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HN390○□□□	500VDC	39	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HN470○□□□	500VDC	47	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HN560○□□□	500VDC	56	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HN680○□□□	500VDC	68	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HN820○□□□	500VDC	82	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HN101○□□□	500VDC	100	J / K	6.0	5.0	3.5	A2B	D2B	D2A

① Circle is filled with one to tolerance code of Capacitance C=±0.25pF,D=±0.5pF,J=±5%,K=±10%.

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

Attached Table 3

SL Characteristics

Part Number	Rated Voltage.	Capacitance (pF)	Capacitance Tol.	Body Dia.D (mm)	Lead Spacing F(mm)	Body Thickness T(mm)	Lead Package Long Bulk	Lead Package Short Bulk	Lead Package Taping
HLT1HS220○□□□	50VDC	22	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HS270○□□□	50VDC	27	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HS330○□□□	50VDC	33	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HS390○□□□	50VDC	39	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HS470○□□□	50VDC	47	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HS560○□□□	50VDC	56	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HS680○□□□	50VDC	68	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HS820○□□□	50VDC	82	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HS101○□□□	50VDC	100	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HS121○□□□	50VDC	120	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HS151○□□□	50VDC	150	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HS181○□□□	50VDC	180	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HS221○□□□	50VDC	220	J / K	5.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HS271○□□□	50VDC	270	J / K	7.0	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HS331○□□□	50VDC	330	J / K	7.5	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HS391○□□□	50VDC	390	J / K	8.0	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HS471○□□□	50VDC	470	J / K	9.0	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HS561○□□□	50VDC	560	J / K	10.0	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT1HS681○□□□	50VDC	680	J / K	11.0	2.5 / 5.0	3.0	A1B/A2B	D1B/D2B	D2A
HLT2HS100○□□□	500VDC	10	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HS120○□□□	500VDC	12	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HS150○□□□	500VDC	15	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HS180○□□□	500VDC	18	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HS220○□□□	500VDC	22	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HS270○□□□	500VDC	27	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HS330○□□□	500VDC	33	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HS390○□□□	500VDC	39	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HS470○□□□	500VDC	47	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HS560○□□□	500VDC	56	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HS680○□□□	500VDC	68	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HS820○□□□	500VDC	82	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HS101○□□□	500VDC	100	J / K	6.0	5.0	3.5	A2B	D2B	D2A
HLT2HS121○□□□	500VDC	120	J / K	7.0	5.0	3.5	A2B	D2B	D2A
HLT2HS151○□□□	500VDC	150	J / K	8.0	5.0	3.5	A2B	D2B	D2A
HLT2HS181○□□□	500VDC	180	J / K	8.0	5.0	3.5	A2B	D2B	D2A
HLT2HS221○□□□	500VDC	220	J / K	8.5	5.0	3.5	A2B	D2B	D2A
HLT2HS271○□□□	500VDC	270	J / K	9.5	5.0	3.5	A2B	D2B	D2A
HLT2HS331○□□□	500VDC	330	J / K	10.5	5.0	3.5	A2B	D2B	D2A
HLT2HS391○□□□	500VDC	390	J / K	11.0	5.0	3.5	A2B	D2B	D2A
HLT2HS471○□□□	500VDC	470	J / K	12.0	5.0	3.5	A2B	D2B	D2A
HLT2HS561○□□□	500VDC	560	J / K	13.0	5.0	3.5	A2B	D2B	D2A
HLT2HS681○□□□	500VDC	680	J / K	14.0	5.0	3.5	A2B	D2B	D2A
HLT2HS821○□□□	500VDC	820	J / K	15.0	5.0	3.5	A2B	D2B	D2A
HLT2HS102○□□□	500VDC	1000	J / K	15.0	5.0	3.5	A2B	D2B	D2A

①Circle is filled with one to tolerance code of Capacitance C=±0.25PF.D=±0.5PF.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.