信 昌 電 子 陶 瓷 股 份 有 限 公 司
PROSPERITY DIELECTRICS CO., LTD.

SPECIFICATION FOR APPROVAL

CUSTOMER	
CUST. PART NO.	
CUST. DOC. REV.	
DESCRIPTION	POWER CHOKE(RoHS+H.F.)
SAMPLE LOT NO.	
PART NO.	CSMS0315D-XXXX-LRH
DOC. REV.	
DATE	

Once you approve this part, please sign and return this page to the following marked location.

Customer Signature:_____ Date:_____

☐This part currently development section.

☐Production line can produce this series of products.

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TESTED BY	CHECKED BY	APPROVED BY

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CUSTOMER	CUSTOMER P/N	REV.	SPL. LOT NO.	
PART NAME	**PART NO.**	**REV.**	**DATE OF ISSUE**	**Q'TY**
POWER CHOKE (ROHS+H.F.)	**CSMS0315D-XXXX-LRH**			**0 PCS**

ENGINEERING CHANGE NOTICE - RECORD

REVISION NO.	REVISION DESCRIPTION	AUTHOR	DATE	REMARK

SPECIFICATION FOR APPROVAL

※This is a RoHS and REACH compliant product whose related documents are available on request.
※Graphic is only for dimensionally application.

1. Range of application:

This specifications are applied to SMD Power Inductor,CSMS0315D.

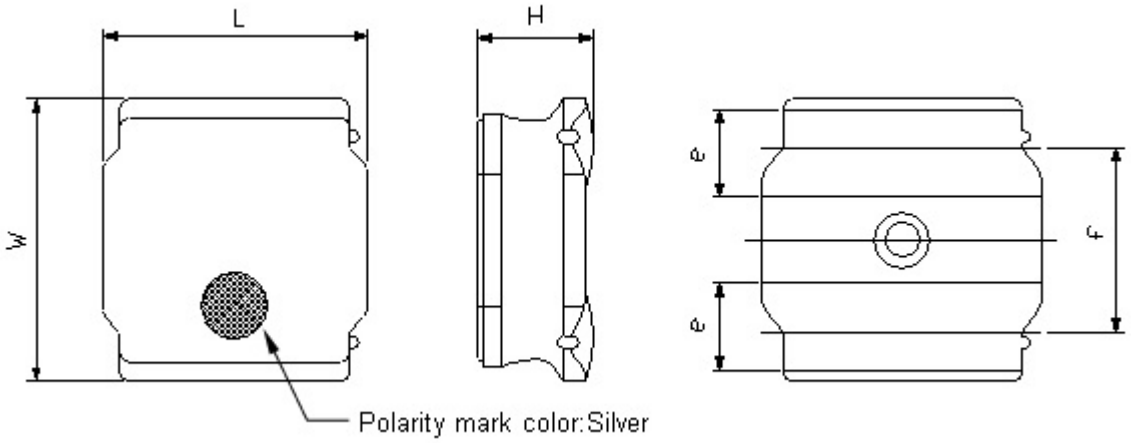
2. Ordering code:

Example: **CSMS 0315 D – XXX X - □ □ □**

(1) (2) (3) (4) (5) (6)

(1) Product Type
(2) External dimensions
(3) Solder Type
(4) Inductance
(5) Inductance tolerance
(6) ROHS+HF

3. Mechanical Dimension:

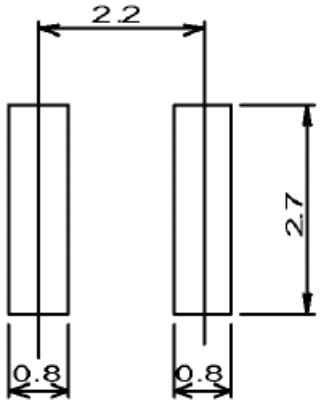


UNIT : mm

	DIM.	TOL.
L	3.0	±0.1
W	3.0	±0.1
H	1.5	MAX.
e	0.9	±0.2
f	1.9	±0.2

( ):Refeerence Value

4. Recommended Land-Pattern:



(Unit: mm)

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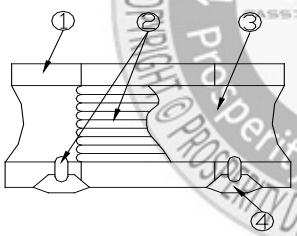
5. Electrical Characteristics:

Part Number	Nominal Inductance (uH)	Inductance Tolerance	D.C. Resistance (Ω) ±20%	Rated Current (mA)		Self-resonant Frequency (MHz) Min.
				Saturation Current Idc1	Temperature Rise Current Idc2	
CSMS0315D-1R0N -LRH	1.0	±30%	0.030	2100	2100	100
CSMS0315D-1R5N-LRH	1.5	±30%	0.038	1800	1820	87
CSMS0315D-2R2M-LRH	2.2	±20%	0.058	1480	1500	64
CSMS0315D-3R3M-LRH	3.3	±20%	0.078	1210	1230	49
CSMS0315D-4R7M-LRH	4.7	±20%	0.120	1020	1040	40
CSMS0315D-6R8M-LRH	6.8	±20%	0.160	870	880	36
CSMS0315D-100M-LRH	10	±20%	0.220	700	710	28
CSMS0315D-220M-LRH	22	±20%	0.520	470	470	20

1. Test Frequency: 100KHz,1V.
2. Test Equipment:
   Inductance: Chroma3302+1320+16502. or equivalent.
   DCR: Chroma16502 or equivalent.
   SRF: HP4291B or equivalent.
3. Saturation Current Idc1: The value of current causes a 30% inductance reduction from initial value.
4. Temperature rise current Idc2: The value of current causes a 40℃ temperature rise.
5. Rated Current: Either Idc1 or Idc2 whichever is smaller.
6. Operating Temperature Range:-25℃ to +125℃ (Including self-temperature rise)
7. Storage Temp. Range：-40℃ to +85℃
8. MSL：Level 1

6. Structural Drawing:



(Magnetic Shielded Type)

1.	Ferrite core.	Ni-Zn ferrite	
2.	Winding wire	Polyurethane-copper wire	
3.	Over-coating resin.	Epoxy resin, containing ferrite powder	
4.	Electrode	External electrode (substrate)	Ag
		External electrode (base plating)	Ni-Sn
		External electrode (top surface solder coating)	Sn-Ag-Cu

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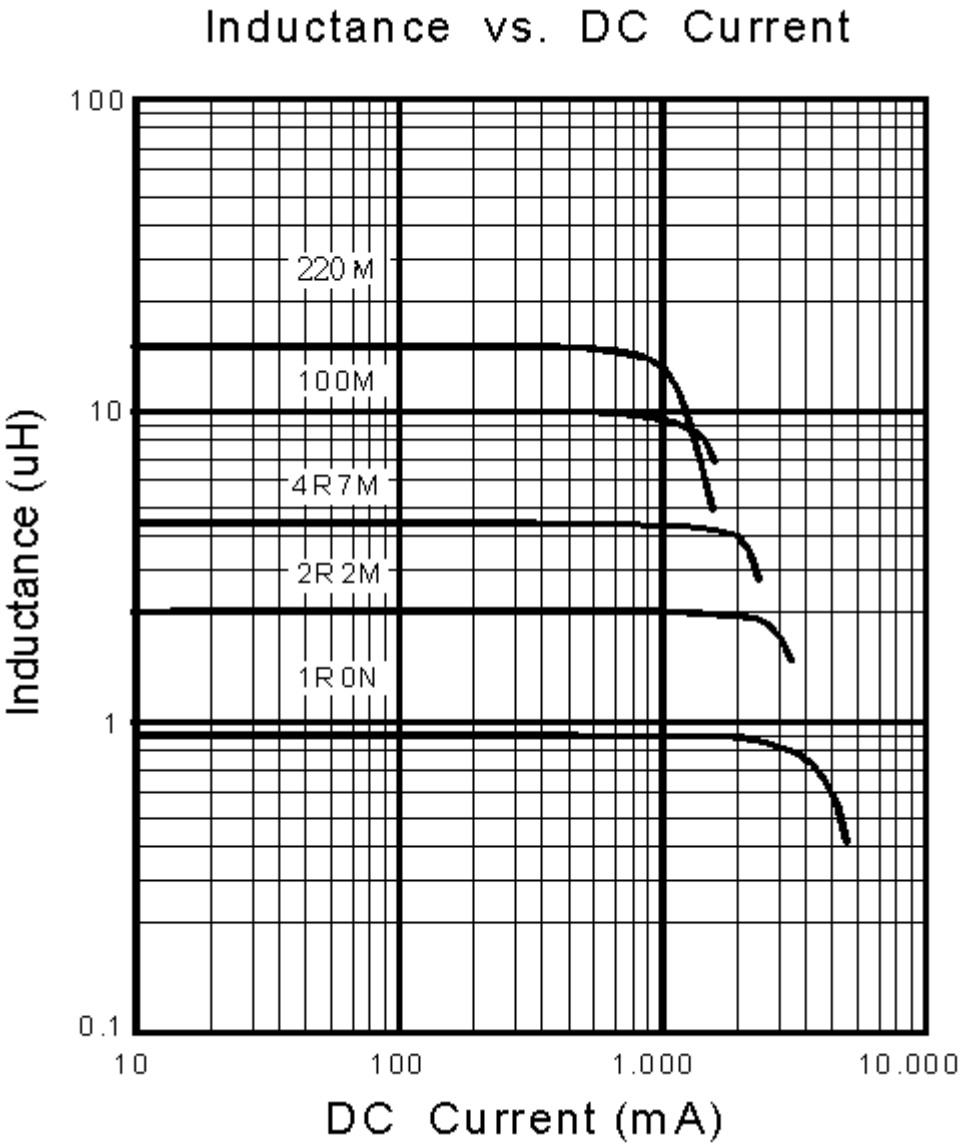
7. Electrical Curve：



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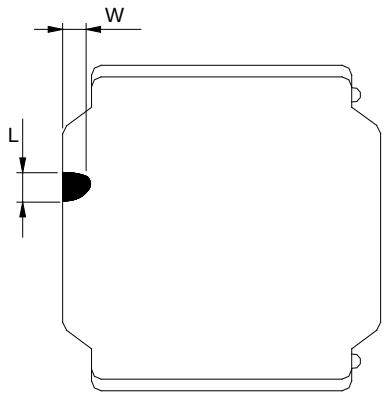
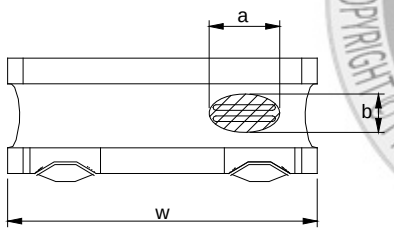
8. Core Chipping:

The appearance standard of the chipping size in top side, of bottom side ferrite Core is following dimension

L	W
0.6mmMax.	0.6mmMax.



9. Exposed wire tolerance limit of coating resin part on product side
Size of exposed wire occurring to coating resin is specified below.



① Width direction (dimension a): Acceptable when a<=w/2
Nonconforming when a>w/2
② Length direction (dimension b): Dimension b is not specified.
③ When total area of exposed wire occurring to each sides is not greater than 50% of coating resin area, that is acceptable.

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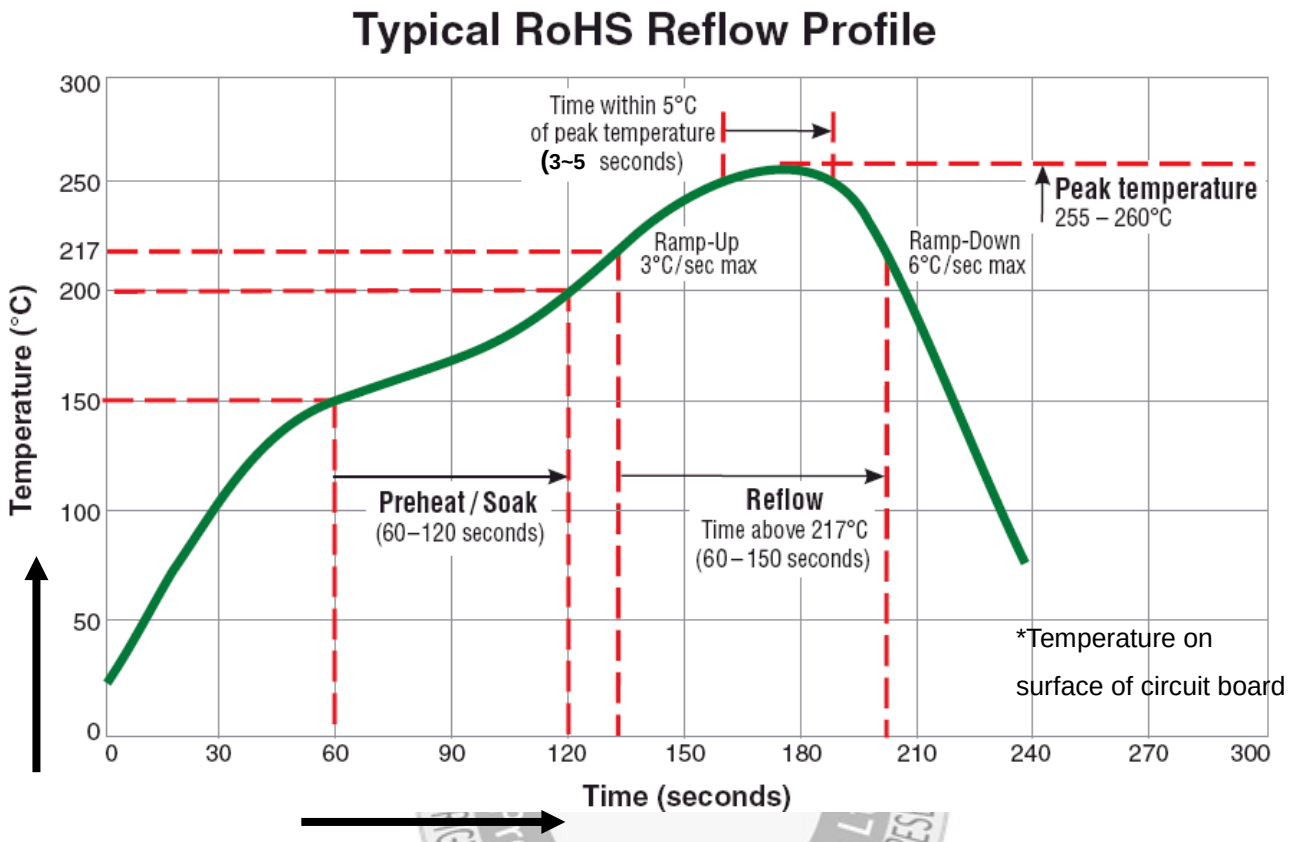
10. Reflow Profile Chart (Reference):



The products may be exposed to reflow soldering process of above profile up to two times.

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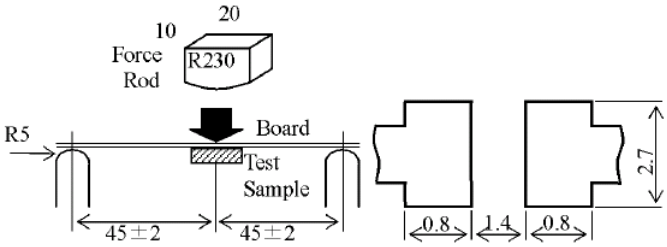
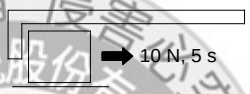
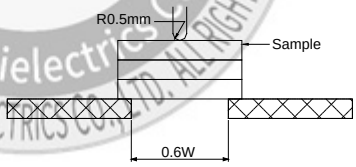
11. Mechanical Performance /Environmental Test Performance Specifications:

	Test Item	Standard	Test method
MECHANICAL CHARACTERISTICS	Resistance to Deflection	No damage.	The test samples shall be soldered to the test board by the reflow soldering conditions show in Reflow Profile Chart As illustrated below, apply force in the direction of the Arrow indicating until deflection of the test board Reaches to 2 mm.  Land dimensions Test board size :100×40×10 Test board material l: glass epoxy-resin Solder cream thickness:0.1 Unit: mm
	Adhesion of Terminal Electrode	Shall not come off PC board	The test samples shall be soldered to the test board By the reflow soldering conditions shown in Reflow Profile Chart  Applied force:10 N to X and Y directions Duration:5 s. Solder cream thickness:0.1mm (Refer to recommended Land Pattern Dimensions Defined in “Precaution”)
	Body strength	No damage	Applied force :30 N Duration :10 s 

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<table>
<tr><th></th><th>Test Item</th><th>Standard</th><th>Test method</th></tr>
<tr><td></td><td>Resistance to
Vibration</td><td>△L/L:within±10%
No abnormality observed
In appearance</td><td>The test samples shall be soldered to the test board by
The reflow soldering conditions shown in Reflow Profile Chart.Then It shall be submitted to below test conditions
<table>
<tr><td>Frequency range</td><td>10Hz~55Hz</td></tr>
<tr><td>Total Amplitude</td><td>1.5mm(May not exceed acceleration 196 m/S^2)</td></tr>
<tr><td>Sweeping Method</td><td>10Hz to 55Hz to 10 Hz for 1 min.</td></tr>
<tr><td>Time</td><td>For 2 hours on each X,Y, and Z axis.</td></tr>
</table></td></tr>
<tr><td></td><td>Resistance to
Soldering heat
(Reflow)</td><td>△L/L:within±10%
No abnormality observed
In appearance</td><td>The test sample shall be exposed to reflow oven at
230±5 deg C for 40 seconds, with peak temperature at
260±5 deg C for 5 seconds, 2 times.

Test board thickness:1.0 mm
Test board material :glass epoxy-resin</td></tr>
<tr><td></td><td>Solder ability</td><td>At least 90% of surface
of terminal electrode is
covered by new solder.</td><td>The test samples shall be dipped in flux, and then
Immersed in molten solder as shown in below table.
Flux: Methanol solution containing rosin 25%
<table>
<tr><td>Solder Temperature</td><td>245±deg C</td></tr>
<tr><td>Time</td><td>5±1.0 S.</td></tr>
<tr><td>Immersing Speed</td><td>25 mm/s</td></tr>
</table></td></tr>
<tr><td></td><td>Temperature
Characteristics</td><td>△L/L:within±20%
No abnormality observed
In appearance</td><td>Measurement of inductance shall be taken at temperature
Range within -25 deg C to +85 deg C.
With reference to inductance value at +20 deg C, change
Rate shall be calculated.</td></tr>
<tr><td></td><td>Thermal shock</td><td>△L/L:within±10%
No abnormality observed
In appearance</td><td>The test samples shall be soldered to test board
By the reflow soldering conditions shown in Reflow Profile Chart The test samples shall be placed at specified temperature for specified time by step 1 to 4 as shown in below table in sequence.
Shown in below table in sequence.
The temperature cycle shall be repeated 100 cycles.
Conditions of steps for 1 cycle
<table>
<tr><th>Step</th><th>Temperature</th><th>Time(min)</th></tr>
<tr><td>1</td><td>-40±3 deg C</td><td>30±3</td></tr>
<tr><td>2</td><td>Room Temp</td><td>3 maximum</td></tr>
<tr><td>3</td><td>85±2 deg C</td><td>30±3</td></tr>
<tr><td>4</td><td>Room Temp</td><td>3 maximum</td></tr>
</table></td></tr>
<tr><td></td><td>Low
Temperature life
Test</td><td>△L/L:within±10%
No abnormality observed
In appearance</td><td>The test samples shall be soldered to the test board by
The reflow soldering conditions shown in Reflow Profile Char.
After that, the test samples shall be placed at test
Conditions as shown in below table.
<table>
<tr><td>Temperature</td><td>-40±2 deg C</td></tr>
<tr><td>Time</td><td>500 +24/-0 h</td></tr>
</table></td></tr>
</table>

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<table>
<tr><th></th><th>Test Item</th><th>Standard</th><th>Test method</th></tr>
<tr><td rowspan="3">ENVIRONMENT TESTS</td><td>Loading at high temperature life test</td><td>△L/L:within±10%
No abnormality observed in appearance.</td><td>The test samples shall be soldered to the test board by the reflow soldering conditions shown in Reflow Profile Chart.
The test samples shall be placed in thermostatic oven set at specified temperature and applied the rated current continuously as shown in below table.
<table><tr><td>Temperature</td><td>85±2 deg C</td></tr><tr><td>Applied current</td><td>Rated current
(Refer to Page 2)</td></tr><tr><td>Time</td><td>500+24/-0 h</td></tr></table></td></tr>
<tr><td>Damp heat life test</td><td>△L/L:within±10%
No abnormality observed in appearance.</td><td>The test samples shall be soldered to the test board by the reflow soldering conditions shown in Reflow Profile Chart.
The test samples shall be placed in thermostatic oven set at specified temperature and humidity as shown in below table.
<table><tr><td>Temperature</td><td>60±2 deg C</td></tr><tr><td>Humidity</td><td>90~95%RH</td></tr><tr><td>Time</td><td>500+24/-0 h</td></tr></table></td></tr>
<tr><td>Loading under Damp heat life test</td><td>△L/L:within±10%
No abnormality observed in appearance.</td><td>The test samples shall be soldered to the test board by the reflow soldering conditions shown in Reflow Profile Chart.
The test samples shall be placed in thermostatic oven set at specified temperature and humidity and applied the rated current continuously as shown in below table.
<table><tr><td>Temperature</td><td>60±2 deg C</td></tr><tr><td>Humidity</td><td>90~95%RH</td></tr><tr><td>Applied current</td><td>Rated current
(Refer to Page3))</td></tr><tr><td>Time</td><td>500+24/-0 h</td></tr></table></td></tr>
</table>

Standard measuring condition	Uless otherwise specified,the test samples are placed at room temperature and humidity and measured with 48 hours after exposure to test conditions

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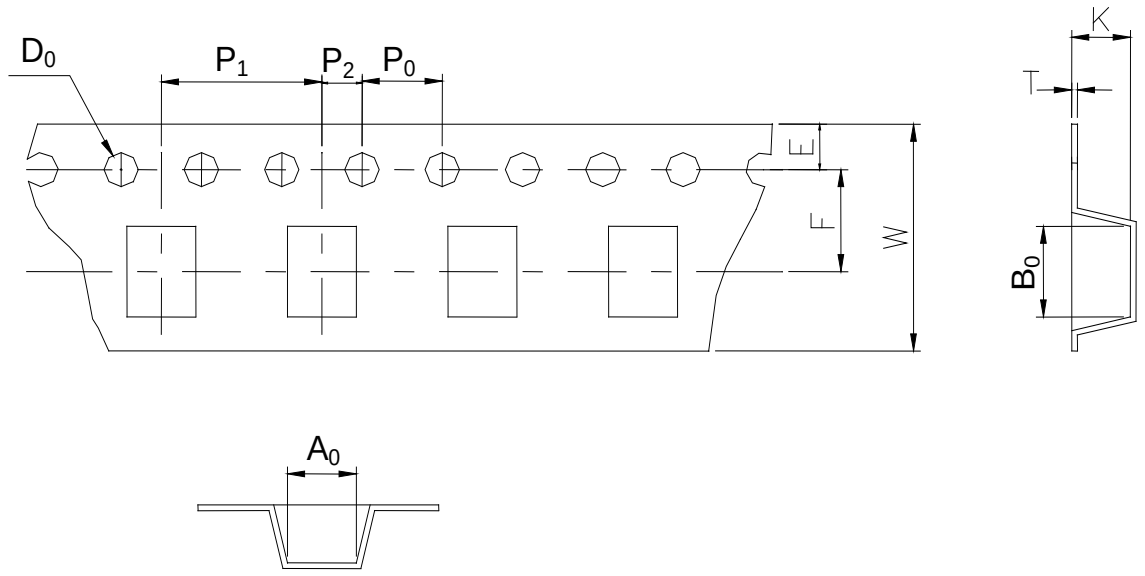
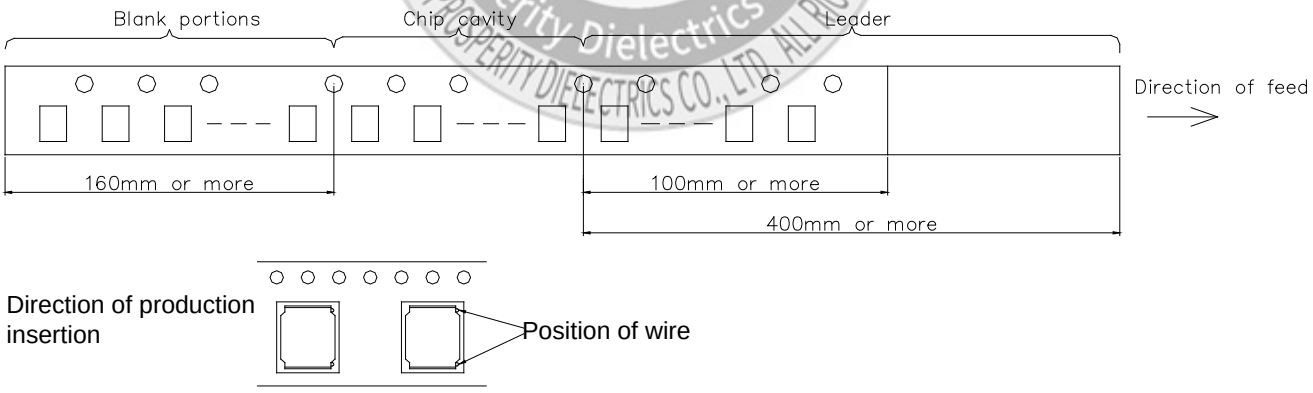
12. Tape & Reel Packaging Dimensions:

12-1 Dimensions Unit: mm



A_0	B_0	W	F	E	P_1	P_2	P_0	D_0	T	K
3.2 ±0.1	3.2 ±0.1	8.0 ±0.2	3.5 ±0.1	1.75 ±0.1	4.0 ±0.1	2.0 ±0.05	4.0 ±0.1	Φ1.5 +0.1 -0	0.3 ±0.05	1.9 ±0.1

12-2 Direction of rolling



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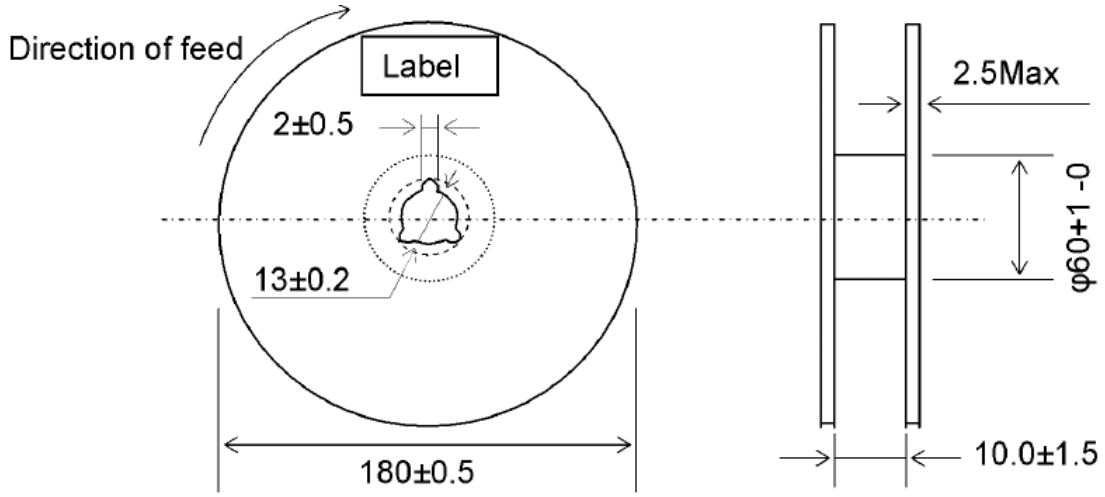
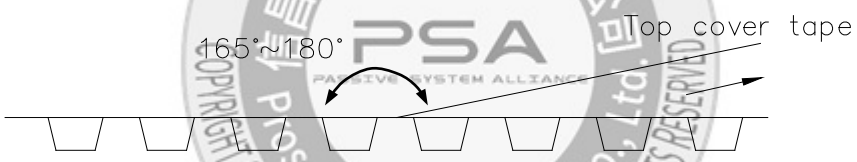
12-3 Reel



Label position: On the opposite side of sprocket holes side of reel

12-4 Top tape strength



Peel-off strength: 0.1N~0.7N

Peel-off angle:165°~180°

Peel-off speed: 300mm/min

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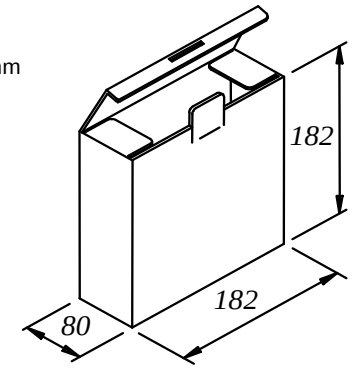
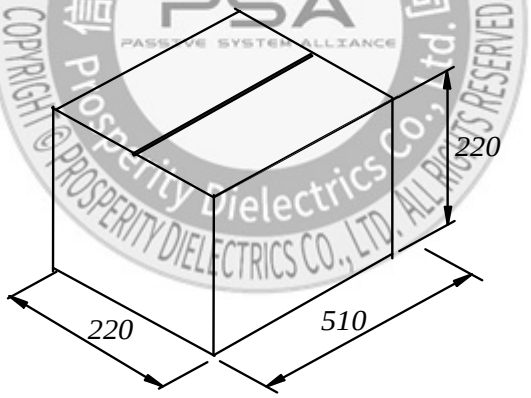
12-5 Dimensions of packing box (for Tape & Reel package)

UNIT : mm



CONSTURCTION:
THE CASE CONTAINS 6-8mm WIDE CARRIER TAPES.
Q'TY : 2,000/ REEL



TOTAL Q'TY : 72,000 PCS