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.	CSCD2012D-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 POWER CHOKE (ROHS+H.F.)	PART NO. CSCD2012D-XXXX-LRH	REV.	DATE OF ISSUE	Q'TY 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,CSCD2012D.

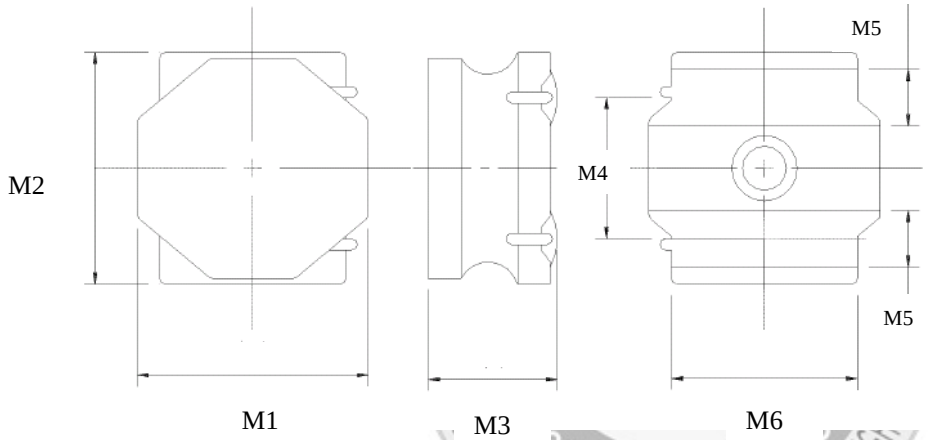
2. Ordering code:

Example: **CSCD 2012 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

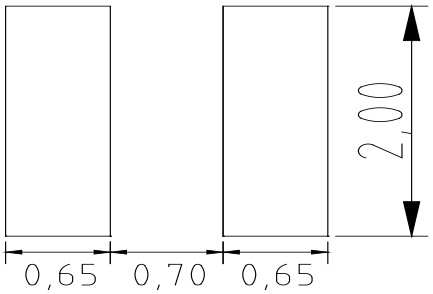
3. Mechanical Dimension:



UNIT : mm

	DIM.	TOL.
M1	2.0	±0.15
M2	2.0	±0.15
M3	1.2	MAX.
M4	1.25	±0.2
M5	0.50	±0.2
M6	1.65	TYP.

4. Recommended Land-Pattern:



(Unit: mm)

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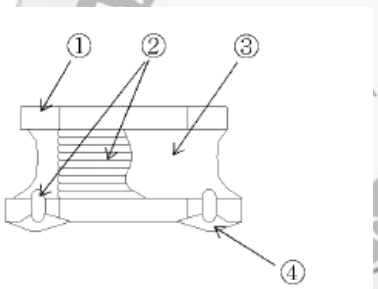
5. Electrical Characteristics:

Part Number.	Nominal Inductance (uH)	Inductance Tolerance	D.C. Resistance (mΩ)		Reted Current (mA)			
			Typ	Max	Saturation Current Idc1(Typ)	Temperature Rise Current Idc2(Typ)	Saturation Current Idc1(max)	Temperature Rise Current Idc2(max)
CSCD2012D-R47M-LRH	0.47	±20%	40	46	4800	2450	4200	2300
CSCD2012D-R68M-LRH	0.68	±20%	50	58	4100	2200	3500	2000
CSCD2012D-1R0M -LRH	1.0	±20%	56	64	2900	2050	2550	1900
CSCD2012D-1R5M-LRH	1.5	±20%	75	86	2300	1750	2000	1650
CSCD2012D-2R2M-LRH	2.2	±20%	95	109	2000	1550	1750	1450
CSCD2012D-3R3M-LRH	3.3	±20%	155	178	1550	1200	1350	1150
CSCD2012D-4R7M-LRH	4.7	±20%	210	242	1300	1050	1150	950

Maximum maximum voltage: DC25V
*)The saturation current value (Idc1) is the DC current value having inductance decrease down to 30% (at 20 deg C)
*)The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40degC. (at 20 deg C)
*)The rated current is the DC current value that satisfies both of current saturation current value and temperature rise current value.

※Caution for Temperature Rise.
Temperature rise of this inductor depends on the installed board condition. It shall be confirmed in the actual end product that. temperature rise of inductor is within operating temperature.

6. Structural Drawing:



① Core	Metal magnetic core	
② Winding wire	Polyurethane-copper wire	
③ Over-coating resin	Epoxy resin, containing Metal magnetic powder	
④ Electrode	External electrode (substrate)	Ag
	External electrode (top surface solder coating)	Sn－Ag－Cu

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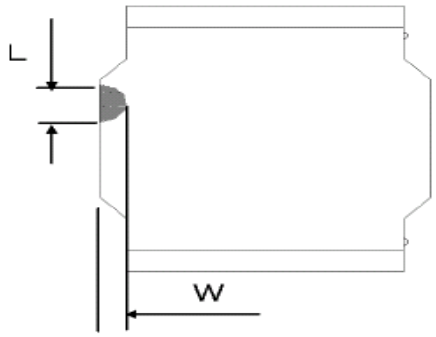
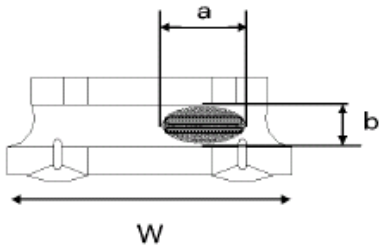
7. Core chipping: :

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



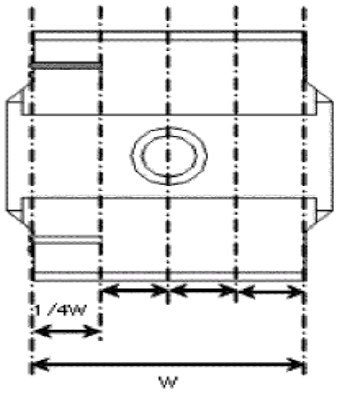
L	W
0.4mmMax.	0.4mmMax.

8. 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.

9. Electrode appearance criterion for exposed wire



Cross section of joint part	Appearance judgment
Only top side of wire is exposed. (regardless of whole tope side of wire exposed)	Good
Wire is soldered insufficiently and less than half of outer diameter is covered with solder.	Less than one-quarter of width of insufficiently soldered portion shall be acceptable. (More than one-quarter shall be segregated as reject.)

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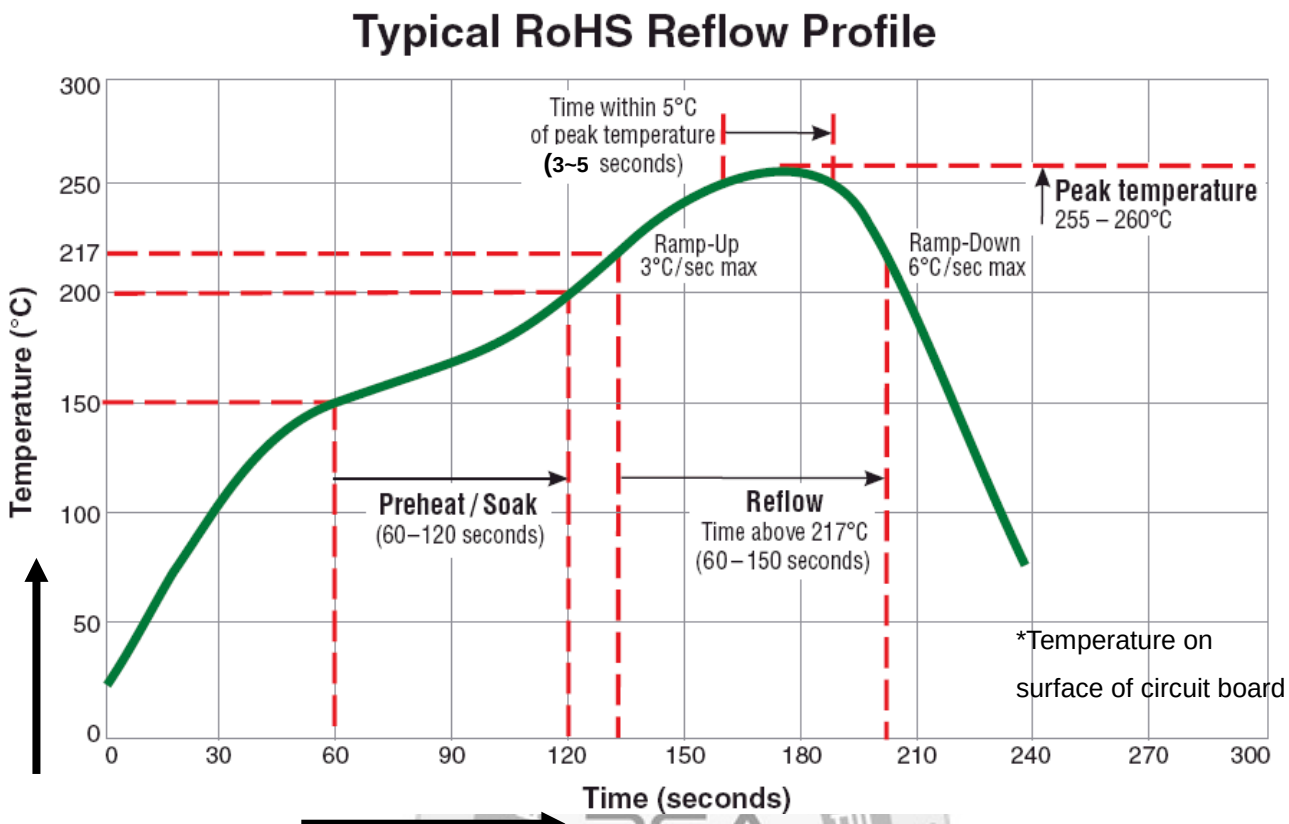
10. Reflow Profile Chart (Reference):



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

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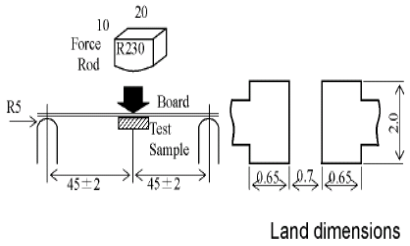
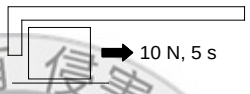
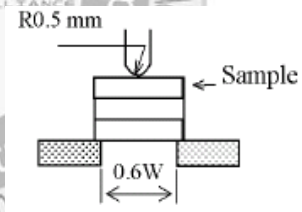
11. Mechanical Performance /Environmental Test Performance Specifications:

	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 page5 (Reflow profile chart). As illustrated bellow, 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*1.0 Test board material: 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 page5 (Reflow profile chart).  Applied force:10 N to X and Y directions Duration:5 s. Solder cream thickness:0.1mm (Refer to recommended Land Patten Defined in “Precaution”)
	Body strength	No damage.	Applied force :20 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 page5 (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>10Mz 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>Solderability</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±1.0s.</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±10%
No abnormality observed
In appearance.</td><td>Measurement of inductance shall be taken at temperature range within -40 deg C to +125 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 the test board by the reflow soldering conditions shown in page5 (Reflow profile chart).
The test samples shall be placed at specified temperature for specified time by step 1 to step 4 as shown in below table In sequence.
The temperature cycles shall be repeated 100 cycled.
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 page5 (Reflow profile chart).
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 page5 (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 Page3)</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 page5 (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 page5 (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 within 48 hours after exposure to test conditions

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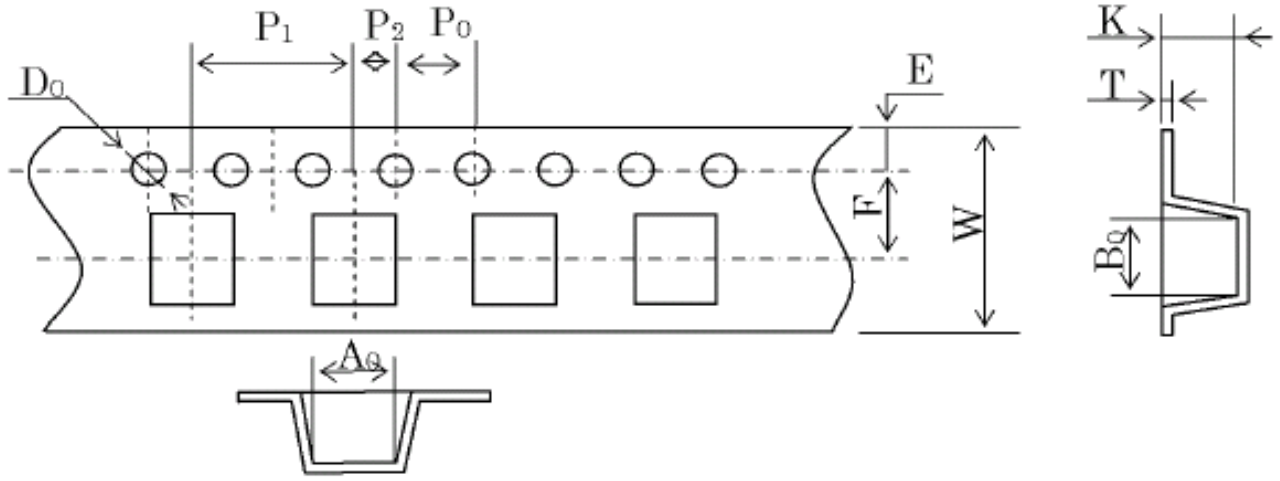
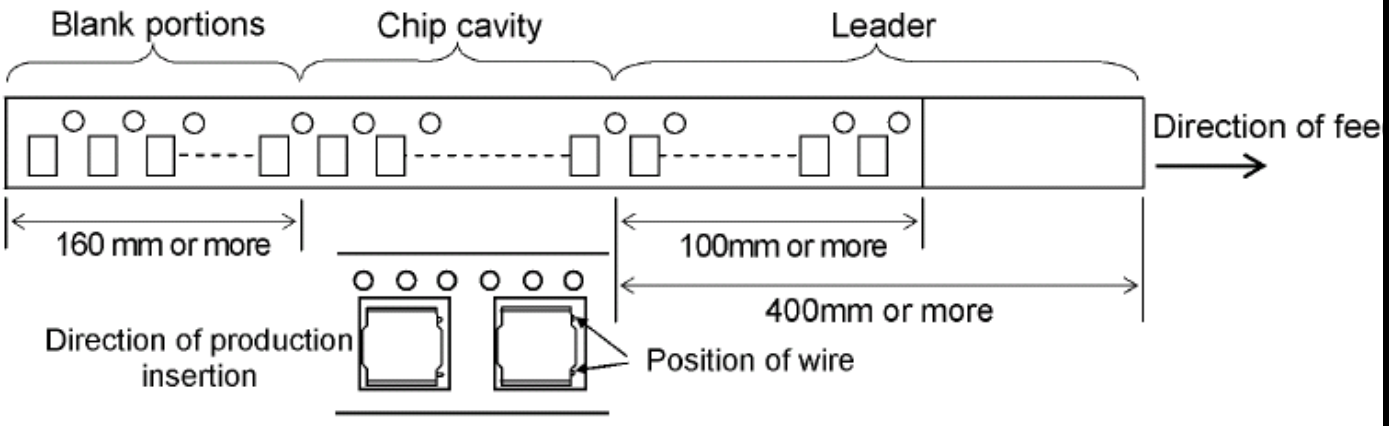
12. Tape & Reel Packaging Dimensions:

12-1 Dimensions Unit: mm



A_0	B_0	W	F	E	P_1	P_2	P_0	D_0	T	K
2.2 ±0.1	2.2 ±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	0.25 ±0.05	1.3 ±0.05

12-2 Direction of rolling



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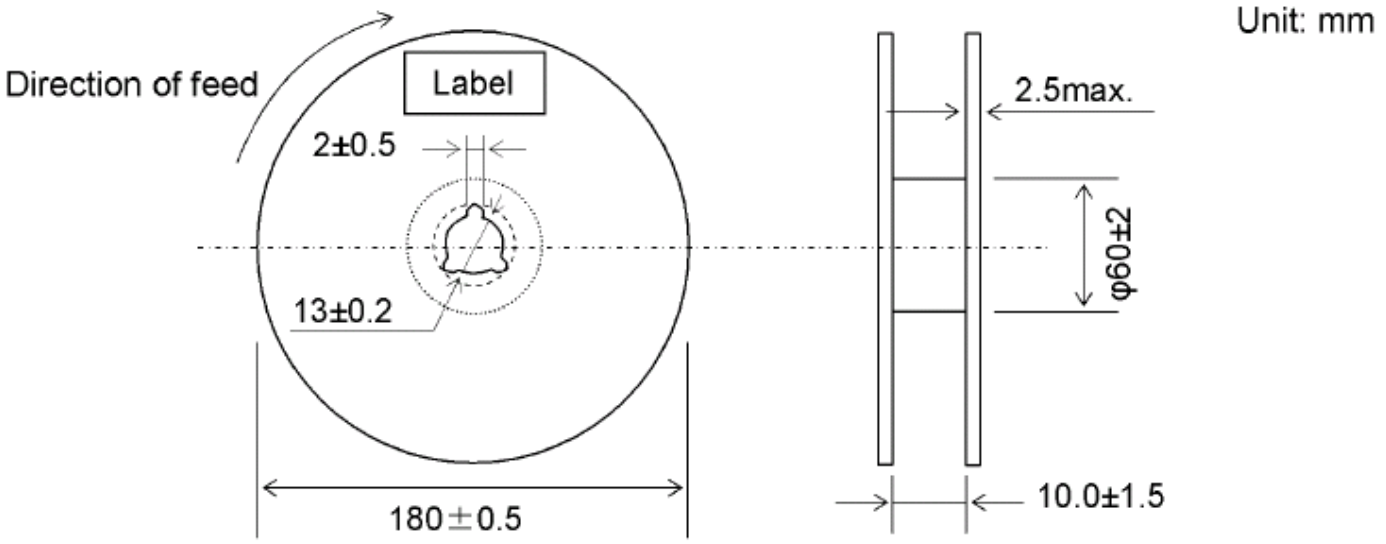
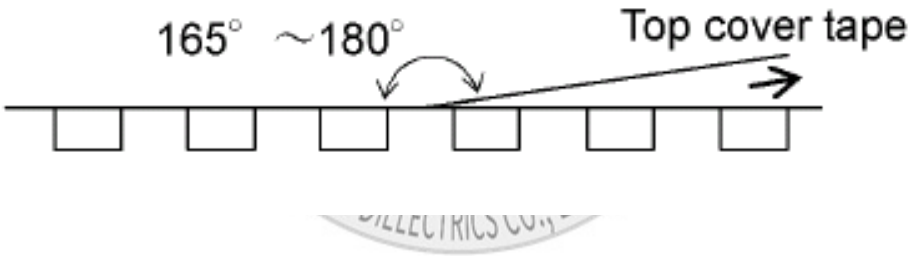
12-3 Reel



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

12-4 Top tape strength



Peel-off strength: 0.1N~1.3N

Peel-off angle:165°~180°

Peel-off speed: 300mm/min

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

Length	135 mm
Width	185 mm
Height	185 mm

Standard Quantity: 25000 pcs.
A packing box contains 10 reels maximum.