

APPROVAL SHEET

WLPM252012 Series SMD Molded Power Inductors

*Contents in this sheet are subject to change without prior notice.

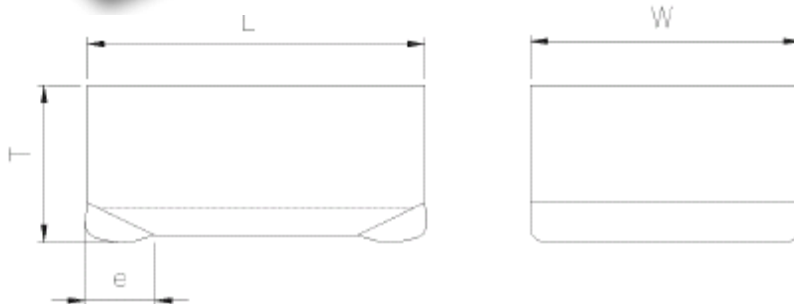
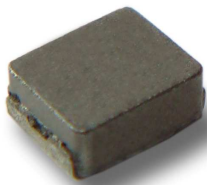
Features

1. Shielded construction.
2. Ultra low buzz noise.
3. Low DCR/ μH .
4. Handles high transient current spikes without saturation.
5. Encapsulated body offers improved environmental protection and moisture resistance.
6. Higher dielectric withstanding voltage.
7. Corrosion resistant package.
8. RoHS Compliance.

Applications

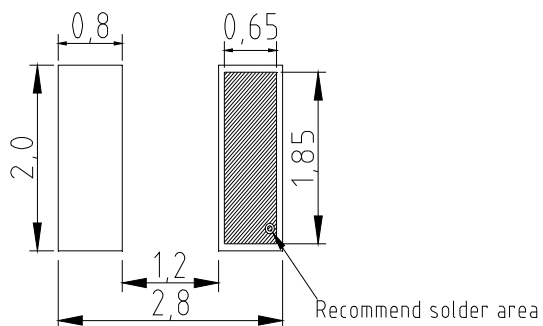
1. PDA/Notebook/Desktop/Server applications high current and low profile power supplier.
2. High current POL converters.
3. Battery powered devices.

Shape and Dimension



Code	Dimensions(mm)
L	2.5 ± 0.2
W	2.0 ± 0.2
T	1.2 MAX.
e	0.5 ± 0.3

Recommend Pattern



(Unit: mm)

Ordering Information

WL	PM	2520	12	M	R33	P	B
Product Code WL: Inductor	Series SMD molded power inductor.	Dimensions 2.5 * 2.0mm	Thickness 1.2mm	Tolerance M: ± 20%	Value R33=0.33uH 2R2=2.20uH	Packing Code P=7" Reeled (Embossed tape)	B:STD

Electrical Characteristics

WLPM252012 series

Walsin Part Number	L(uH)	Tolerance	Measuring Frequency (MHz),1V	RDC Maximum (Ω)	Rated Current (mA) (MAX.)	
				(MAX.)	Idc 1	Idc 2
WLPM252012MR47PB	0.47	M	2	0.039	4000	3400
WLPM252012MR68PB	0.68	M	2	0.048	3000	3000
WLPM252012M1R0PB	1.00	M	2	0.059	2700	2700
WLPM252012M1R5PB	1.50	M	2	0.072	2600	2400
WLPM252012M2R2PB	2.20	M	2	0.117	1900	1900
WLPM252012M3R3PB	3.30	M	2	0.156	1600	1700
WLPM252012M4R7PB	4.70	M	2	0.260	1300	1300

Maximum rated voltage: DC25V

*)The saturation current value (Idc1) is the maximum DC current value having inductance decrease down to 30% (at 20 deg C)

*)The temperature rise current value (Idc2) is the maximum DC current value having temperature increase up to 40degC. (at 20 deg C)

*)The rated current is following either Idc1 or Idc2. which is the lower one.

※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.

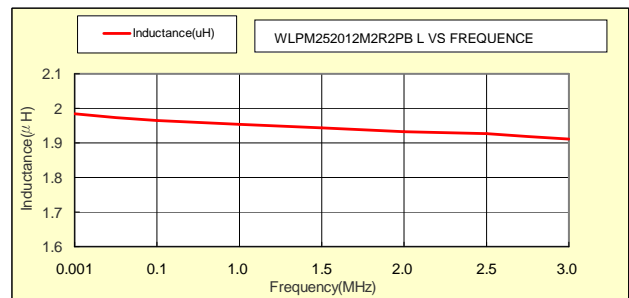
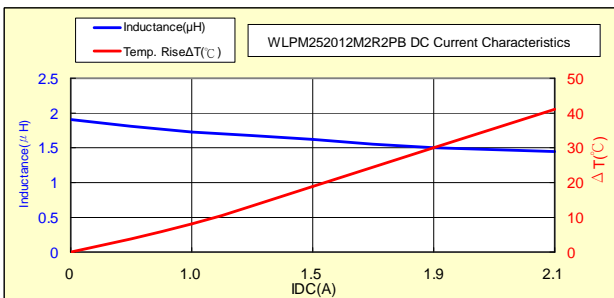
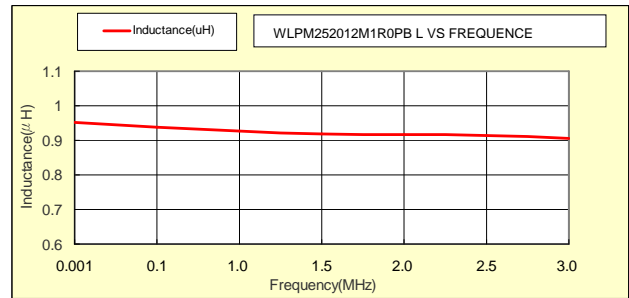
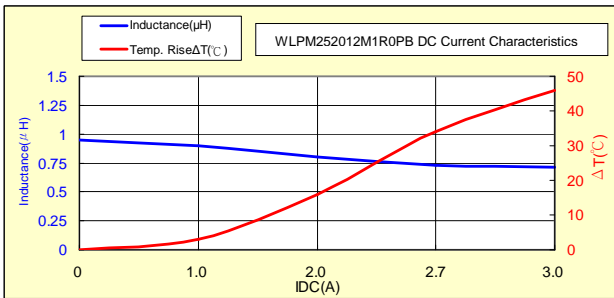
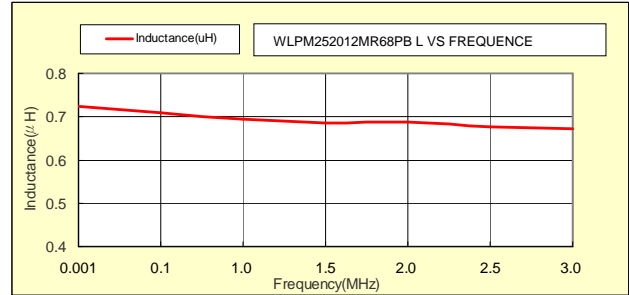
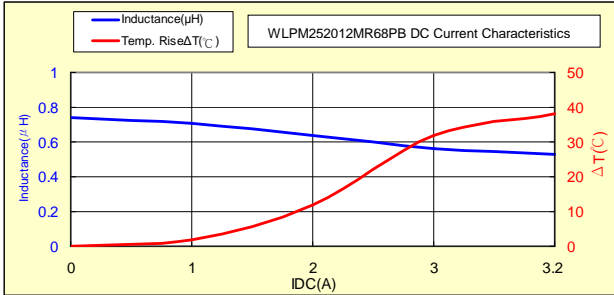
※Operating temperature:-40℃~105℃

※Storage temperature:-40℃~+85℃

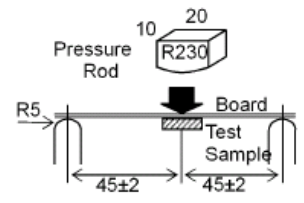
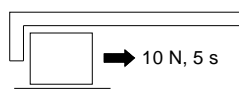
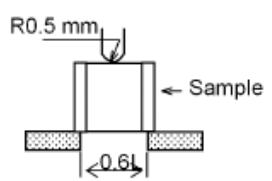
Electrical Properties

DC Current Characteristics

L VS Frequency Current Characteristics



Reliability Testing

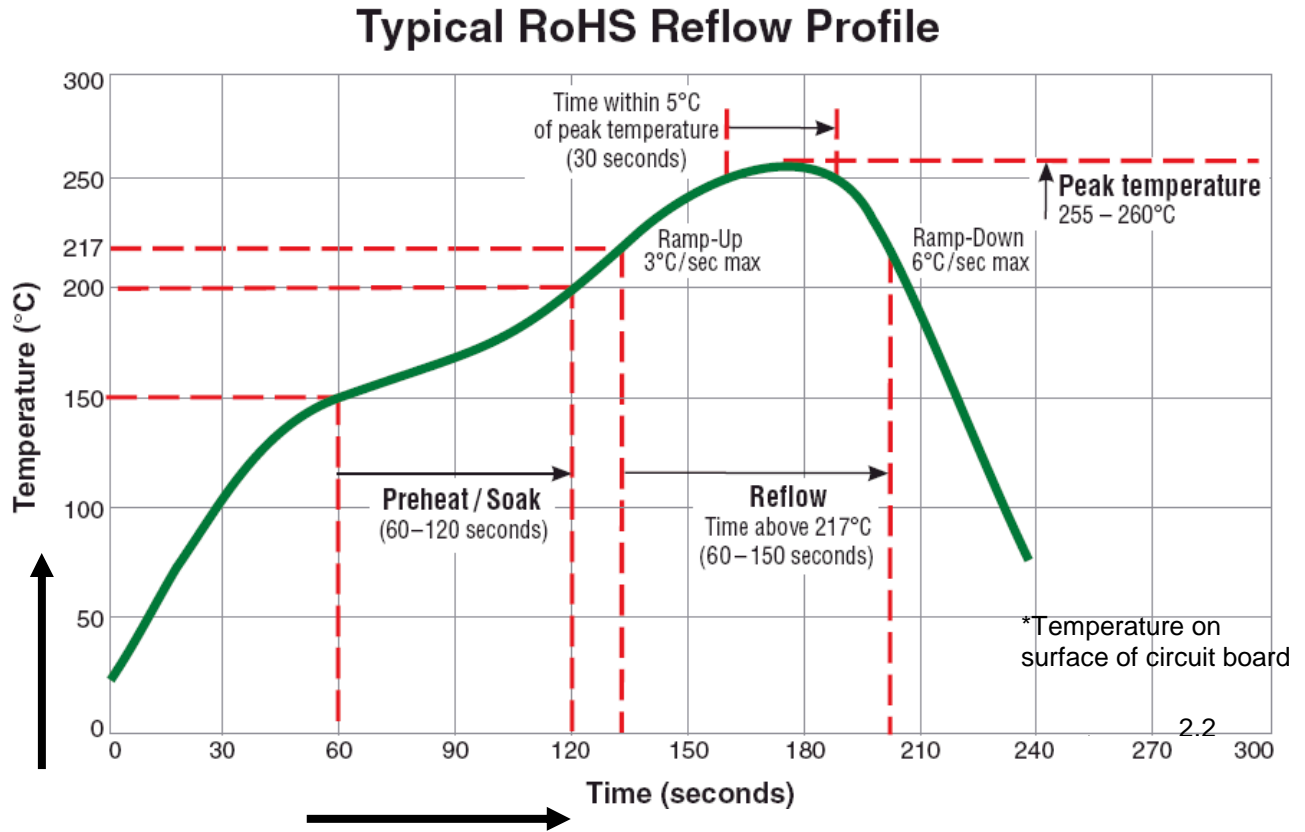
	Test Item	Standard	Test method
MECHANICAL CHARACTERISTICS	Resistance to flexure substrate	No damage.	<p>The test samples shall be soldered to the testing board and by reflow soldering conditions as show in page5 (Reflow profile chart). Apply pressure in the direction of the arrow until bent width reaches 2 mm.</p>  <p style="text-align: right;">Unit : mm</p> <p>Substrate size:100*40*1.0 Substrate material:glass epoxy-resin Solder cream thickness :0.12 (Land size refer to recommended Land Pattern Dimensions of "Precaution:)</p>
	Adhesion of Terminal electrode	No abnormality.	<p>The test samples shall be soldered to the testing board and by reflow soldering conditions as shown page5 (Reflow profile chart).</p>  <p>Applied force:10 N to X and Y directions Duration:5 s. Solder cream thickness:0.12mm (Land size refer to recommended Land pattern defined in "Precaution")</p>
	Body strength	No damage.	<p>Applied force :10 N Duration :10 s</p> 

Resistance to vibration	Inductance change: Within±10% No abnormality observed in appearance.	<p>The test samples shall be soldered to testing jig as shown in under table.</p> <table border="1" data-bbox="746 311 1415 483"> <tr> <td>Frequency range</td> <td>10~55Hz</td> </tr> <tr> <td>Overall Amplitude</td> <td>1.5mm(Shall not exceed acceleration 196 m/S²)</td> </tr> <tr> <td>Sweeping Method</td> <td>10 to 55 to 10 Hz for 1 min.</td> </tr> <tr> <td>Time</td> <td>2 hours each in X,Y, and Z direction.</td> </tr> </table>	Frequency range	10~55Hz	Overall Amplitude	1.5mm(Shall not exceed acceleration 196 m/S ²)	Sweeping Method	10 to 55 to 10 Hz for 1 min.	Time	2 hours each in X,Y, and Z direction.							
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Sweeping Method	10 to 55 to 10 Hz for 1 min.																
Time	2 hours each in X,Y, and Z direction.																
Resistance to Soldering	Inductance change: Within±10% No abnormality observed in appearance.	<p>3 time of reflow oven at 230 degC min for 40 sec max. with peak temperature at 260+0/-5 degC for 5 sec max. Substrate thickness. 1.0mm Substrate material:glass epoxy-resin</p>															
Solderability	At least 90% of surface of terminal electrode is covered by new solder.	<p>The test samples shall be submerged molten solder as shown in under table. Flux: methanol solution with 25% of rosin or equivalent. { Pb free solder: Sn-3Ag-0.5Cu}</p> <table border="1" data-bbox="746 750 1241 864"> <tr> <td>Solder Temperature</td> <td>245±5 deg C</td> </tr> <tr> <td>Time</td> <td>5±0.5s.</td> </tr> <tr> <td>Immersing Speed</td> <td>25 mm/s</td> </tr> </table> <p>{Eutectic solder}</p> <table border="1" data-bbox="746 891 1241 1005"> <tr> <td>Solder Temperature</td> <td>230±5 deg C</td> </tr> <tr> <td>Time</td> <td>5±0.5s.</td> </tr> <tr> <td>Immersing Speed</td> <td>25 mm/s</td> </tr> </table>	Solder Temperature	245±5 deg C	Time	5±0.5s.	Immersing Speed	25 mm/s	Solder Temperature	230±5 deg C	Time	5±0.5s.	Immersing Speed	25 mm/s			
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Temperature characteristics	Inductance change: Within±15% No abnormality. observed in appearance.	<p>Measurement shall be taken in a temperature range of -40 degC to +85 degC and the value at +20 degC was used as the standard value.</p>															
Thermal shock	Inductance change: Within±10% No abnormality observed in appearance.	<p>The test samples shall be soldered to the testing jig and by reflow soldering conditions as shown in page5 (Reflow profile chart). The test samples shall be left for the specified time at each of temperature in steps from 1 to 4, as shown in under table in sequence. The temperature cycles shall be repeated 100 cycled in the Method. Conditions for 1 cycle.</p> <table border="1" data-bbox="746 1335 1331 1525"> <thead> <tr> <th>Step</th> <th>Temperature</th> <th>Time(min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40±3 deg C</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room Temp</td> <td>Within 3</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>Within 3</td> </tr> </tbody> </table>	Step	Temperature	Time(min)	1	-40±3 deg C	30±3	2	Room Temp	Within 3	3	85±2 deg C	30±3	4	Room Temp	Within 3
Step	Temperature	Time(min)															
1	-40±3 deg C	30±3															
2	Room Temp	Within 3															
3	85±2 deg C	30±3															
4	Room Temp	Within 3															
Low temperature life test	Inductance change: Within±10% No abnormality observed in appearance.	<p>The test samples shall be soldered to the testing jig and by reflow soldering conditions as shown in page5 (Reflow profile chart). And after that proceed the test as shown condition under table.</p> <table border="1" data-bbox="746 1615 1220 1688"> <tr> <td>Temperature</td> <td>-40±2 deg C</td> </tr> <tr> <td>Time</td> <td>1000+24 h</td> </tr> </table>	Temperature	-40±2 deg C	Time	1000+24 h											
Temperature	-40±2 deg C																
Time	1000+24 h																

ENVIRONMENT TESTS	Hihg temperature life test	Inductance change: Within±10% No abnormality observed in appearance.	The test samples shall be soldered to the testing jig and by reflow soldering conditions as shown in page5 (Reflow profile chart). And after that proceed the test as shown condition under table. <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Temperature</td> <td>-40±2 deg C</td> </tr> <tr> <td>Time</td> <td>500+24h</td> </tr> </table>	Temperature	-40±2 deg C	Time	500+24h			
	Temperature	-40±2 deg C								
	Time	500+24h								
Damp heat life test	Inductance change: Within±10% No abnormality observed in appearance.	The test samples shall be soldered to the testing jig and by reflow soldering conditions as shown in page5 (Reflow profile chart). The test samples shall be put in thermostatic oven set at temperature with humidity as shown in under table. <table border="1" style="margin-left: auto; margin-right: auto;"> <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 h</td> </tr> </table>	Temperature	60±2 deg C	Humidity	90~95%RH	Time	500+24 h		
Temperature	60±2 deg C									
Humidity	90~95%RH									
Time	500+24 h									
Loading under damp heat life test	Inductance change: Within±10% No abnormality observed in appearance.	The test samples shall be soldered to the testing jig and by reflow soldering conditions as shown in page5 (Reflow profile chart). The test samples shall be put in thermostatic oven set at temperature with humidity, as shown in under table and with the rated current continuously applied. <table border="1" style="margin-left: auto; margin-right: auto;"> <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>Refer to Page 3</td> </tr> <tr> <td>Time</td> <td>500+24 h</td> </tr> </table>	Temperature	60±2 deg C	Humidity	90~95%RH	Applied current	Refer to Page 3	Time	500+24 h
Temperature	60±2 deg C									
Humidity	90~95%RH									
Applied current	Refer to Page 3									
Time	500+24 h									

Standard measuring condition	Unless otherwise specified, at least 2 hrs of recovery under the room temperature and normal humidity after the test. followed by the measurement within 48 hrs
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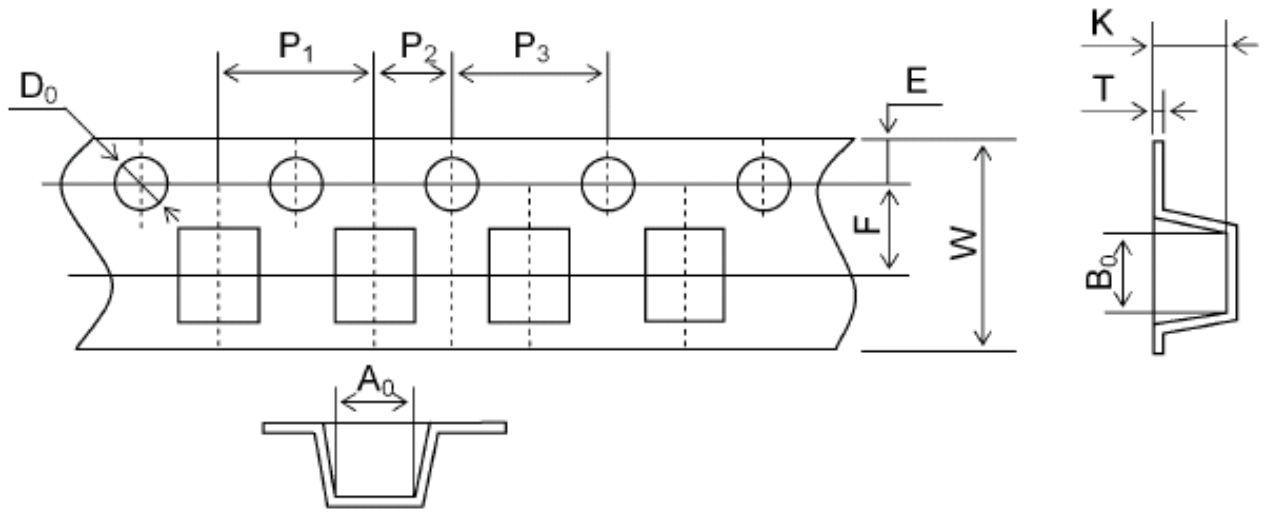
Reflow Profile Chart (Reference):



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

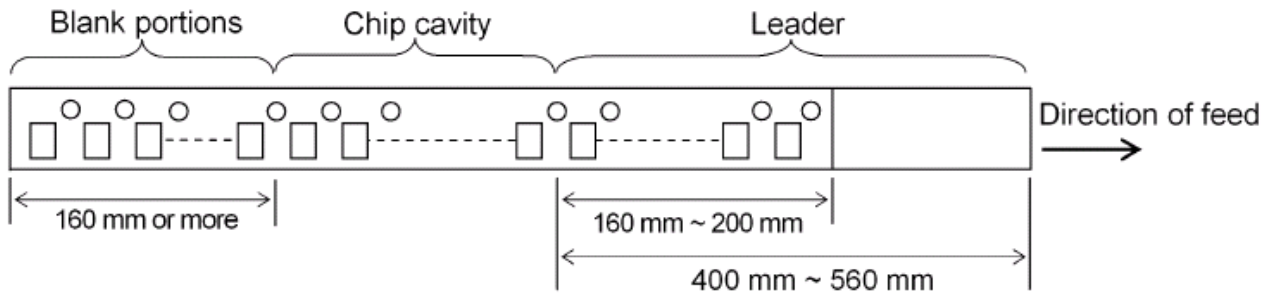
Tape & Reel Packaging Dimensions

Dimensions

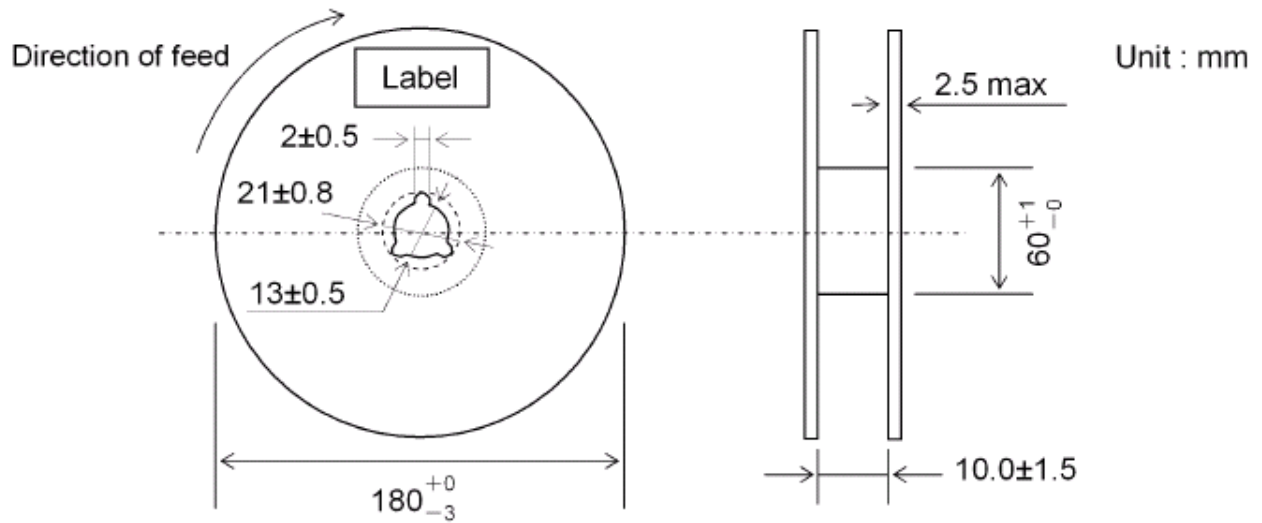


A_0	B_0	W	F	E	P_1	P_2	P_0	D_0	T	K
2.30 ± 0.10	2.80 ± 0.10	8.00 ± 0.20	3.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	$\Phi 1.5$ $+0.10$ -0	0.30 ± 0.05	1.45 max

Direction of rolling

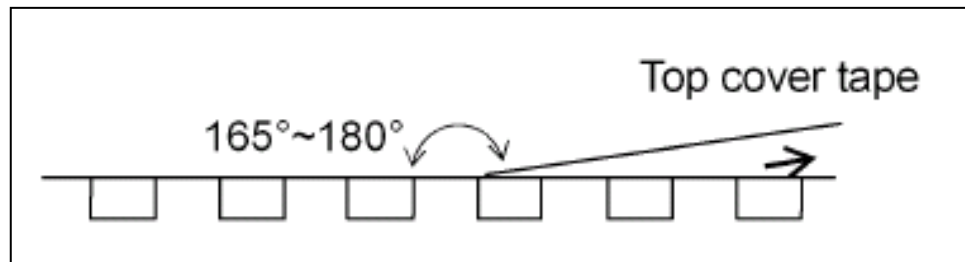


Reel



Label position : the opposite side of pilot holes

Top tape strength



Peel-off strength: 0.1N~1.2N

Peel-off angle: 165°~180°

Peel-off speed: 300mm/min

Quantity per reel : 3K pcs