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,CSCA2510D.

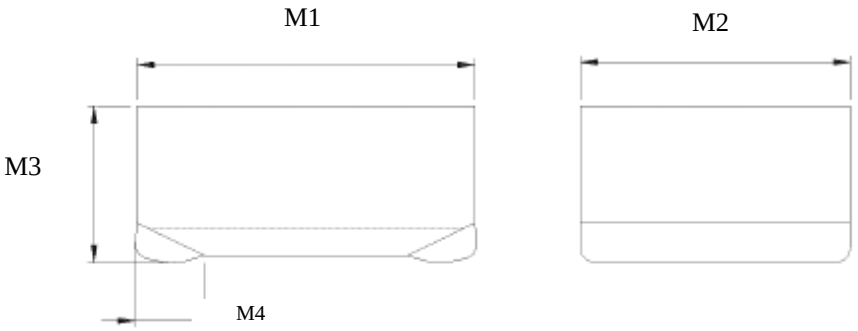
2. Ordering code:

Example: **CSCA 2510 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

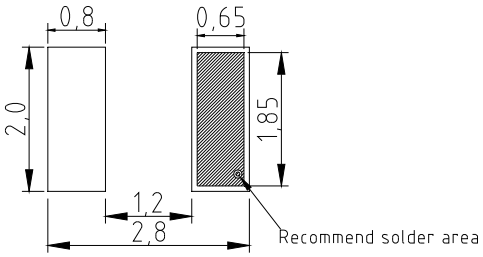
3. Mechanical Dimension:



UNIT : mm

	DIM.	TOL.
M1	2.5	±0.2
M2	2.0	±0.2
M3	1.0	MAX.
M4	0.5	±0.3

4. Recommended Land-Pattern:



(Unit: mm)

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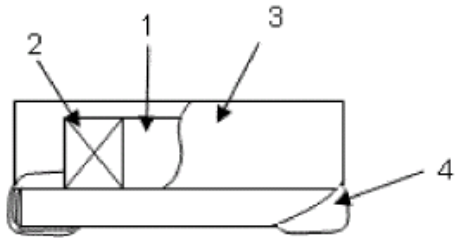
5. Electrical Characteristics:

Part Number.	Nominal Inductance (uH)	Inductance Tolerance	D.C. Resistance (Ω)	Reted Current (mA)		Measuring Frequency (MHz)
				Max		
			Max	Idc1	Idc2	
CSCA2510D-R47M-LRH	0.47	±20%	0.046	3900	3200	2
CSCA2510D-R68M-LRH	0.68	±20%	0.059	3700	2900	2
CSCA2510D-1R0M-LRH	1.0	±20%	0.072	2700	2500	2
CSCA2510D-2R2M-LRH	2.2	±20%	0.156	1900	1500	2
CSCA2510D-4R7M-LRH	4.7	±20%	0.300	1300	1100	2

Maximum rated voltage: DC20V
*)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.

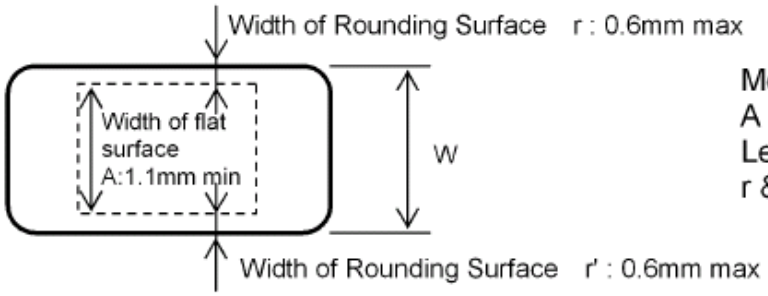
※Caution for Temperature Rise.
Temperature rise of this inductor depends on the installed board condition. It shall be confirmed in the actual end product that temperature rise of inductor is within operating temperature.

6. Structural Drawing:



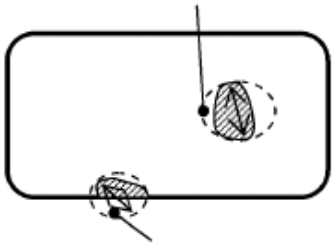
1. Core	Metal magnetic
2. Coil material	Polyurethane-copper wire
3. Over-coating resin	Epoxy resin, containing metal powder
4. Electrode	Base material : Ag Foundation plating : Ni Surface plating : Sn

7. Appearance Criteria for Chip-off Mode



More than 1.1mm width of flat surface A shall be acceptable.
Less than 0.6mm width of rounding surface r & r' shall be acceptable.

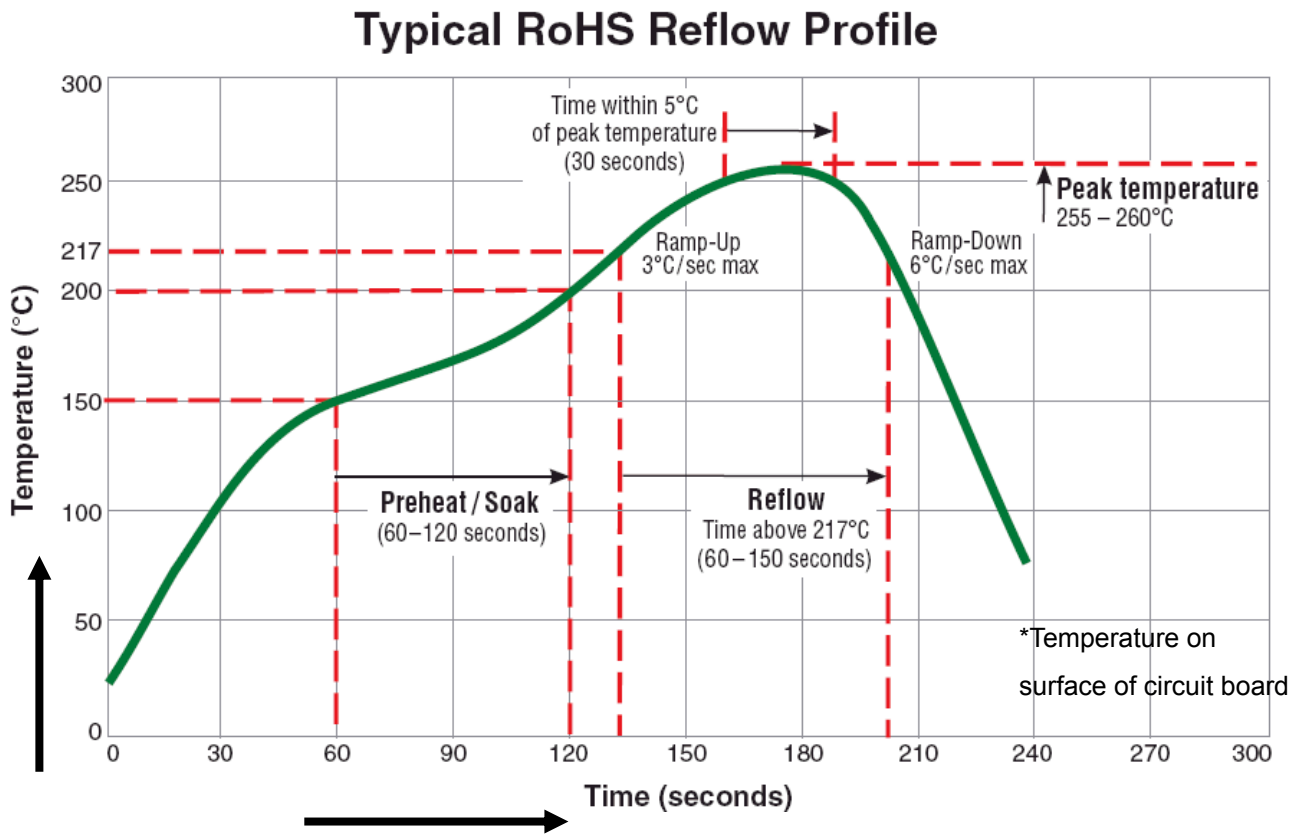
Max. Trajectory Diameter of Pinhole: 0.5mm max



Less than φ0.5mm max. trajectory diameter of pinhole and / or chip-off of whole surface shall be acceptable.

Max. Trajectory Diameter of Chip-off : 0.5mm max

8. Reflow Profile Chart (Reference):



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

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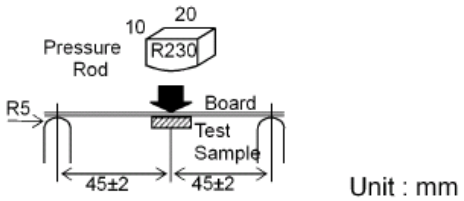
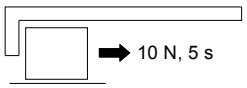
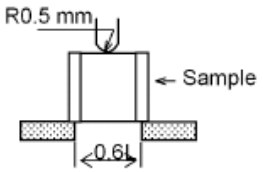
9. Mechanical Performance /Environmental Test Performance Specifications:

	Test Item	Standard	Test method
MECHANICAL CHARACTERISTICS	Resistance to flexure substrate	No damage.	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.  Unit : mm 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:)
	Adhesion of Terminal electrode	No abnormality.	The test samples shall be soldered to the testing board and by reflow soldering conditions as shown page5 (Reflow profile chart).  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 of “Precaution”)
	Body strength	No damage.	Applied force :10 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 rowspan="5"></td><td>Resistance to vibration</td><td>Inductance change:
Within±10%
No abnormality
observed in appearance.</td><td>The test samples shall be soldered to testing jig as shown in under table.
<table><tr><td>Frequency range</td><td>10~55Hz</td></tr><tr><td>Overall Amplitude</td><td>1.5mm(Shall not exceed acceleration 196 m/S^2)</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></td></tr>
<tr><td>Resistance to Soldering</td><td>Inductance change:
Within±10%
No abnormality
observed in appearance.</td><td>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</td></tr>
<tr><td>Solderability</td><td>At least 90% of electrode
is covered by new solder.</td><td>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}
<table><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>{Eutectic solder}
<table><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></td></tr>
<tr><td>Temperature characteristics</td><td>Inductance change:
Within±15%
No abnormality.
Observed in appearance.</td><td>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.</td></tr>
<tr><td rowspan="2"></td><td>Thermal shock</td><td>Inductance change:
Within±10%
No abnormality
observed in appearance.</td><td>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.
<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>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></table></td></tr>
<tr><td>Low Temperature life test</td><td>Inductance change:
Within±10%
No abnormality
observed in appearance.</td><td>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><tr><td>Temperature</td><td>-40±2 deg C</td></tr><tr><td>Time</td><td>500 +24</td></tr></table></td></tr>
</table>

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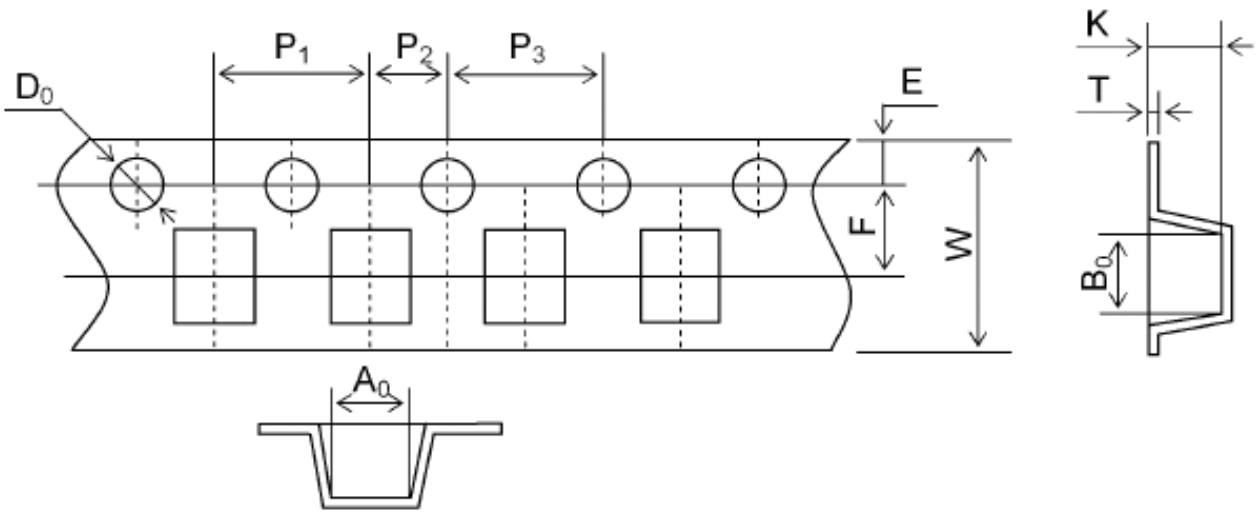
<table>
<tr><th></th><th>Test Item</th><th>Standard</th><th>Test method</th></tr>
<tr><td rowspan="3">ENVIRONMENT TESTS</td><td>Hihg temperature life test</td><td>Inductance change: Within±10%
No abnormality observed in appearance.</td><td>The test samples shall be soldered to the testing jig and by reflow soldering conditions as shown in page5 (Reflow profile chart).
And after that proceed the test as shown condition under table.
<table><tr><td>Temperature</td><td>85±2 deg C</td></tr><tr><td>Time</td><td>500+24h</td></tr></table></td></tr>
<tr><td>Damp heat life test</td><td>Inductance change: Within±10%
No abnormality observed in appearance.</td><td>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><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></td></tr>
<tr><td>Loading under damp heat life test</td><td>Inductance change: Within±10%
No abnormality observed in appearance.</td><td>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><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></td></tr>
</table>

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

10. Tape & Reel Packaging Dimensions:

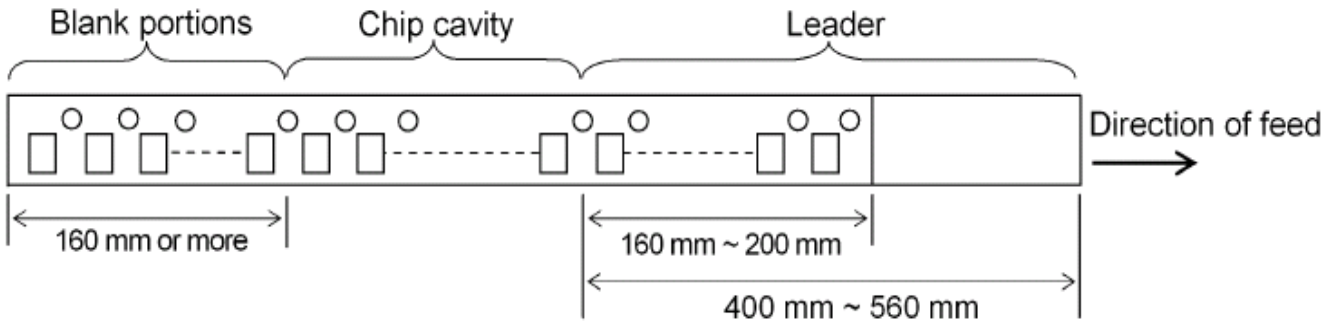
10-1 Dimensions

Unit: mm

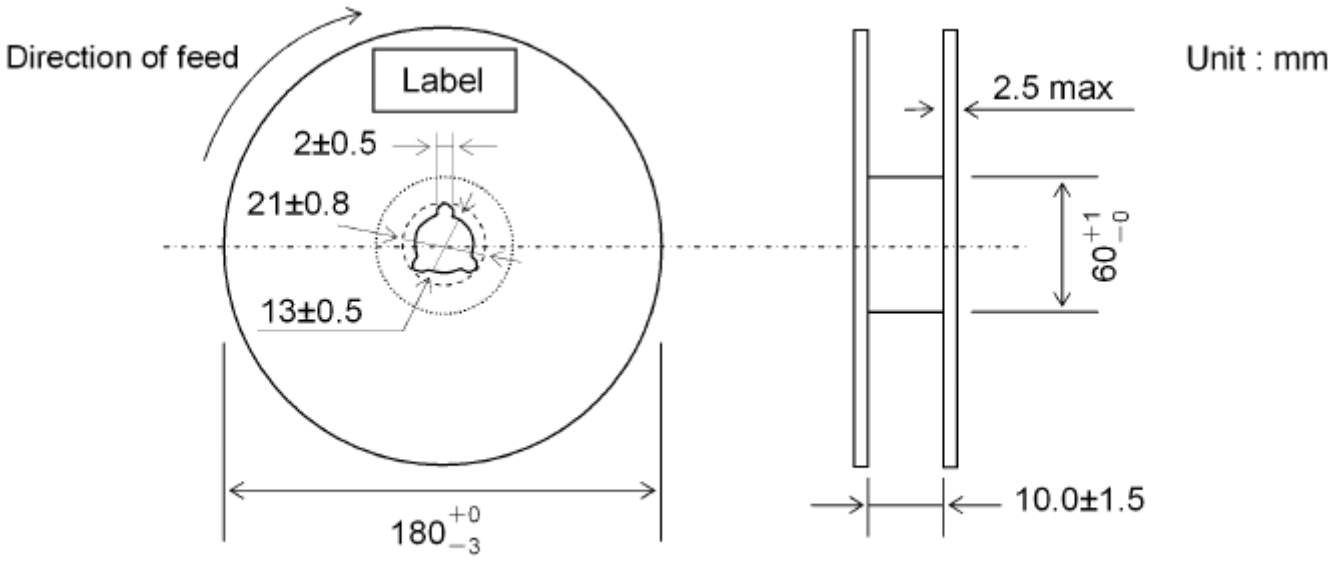


A_0	B_0	W	F	E	P_1	P_2	P_0	D_0	T	K
2.30 ±0.10	2.80 ±0.10	8.00 ±0.20	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.05	4.00 ±0.10	Φ1.5 +0.10 -0	0.30 ±0.05	1.1 max

10-2 Direction of rolling

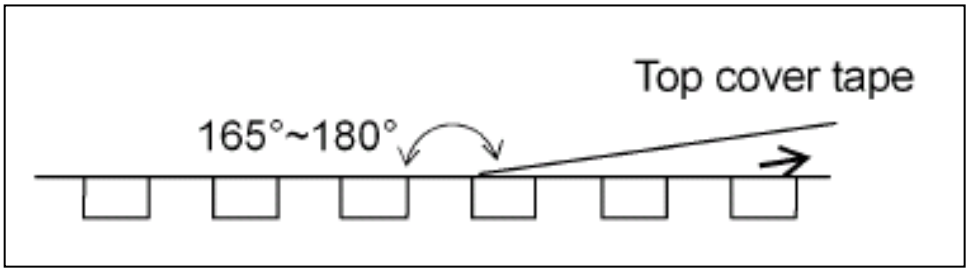


10-3 Reel



Label position : the opposite side of pilot holes

10-4 Top tape strength

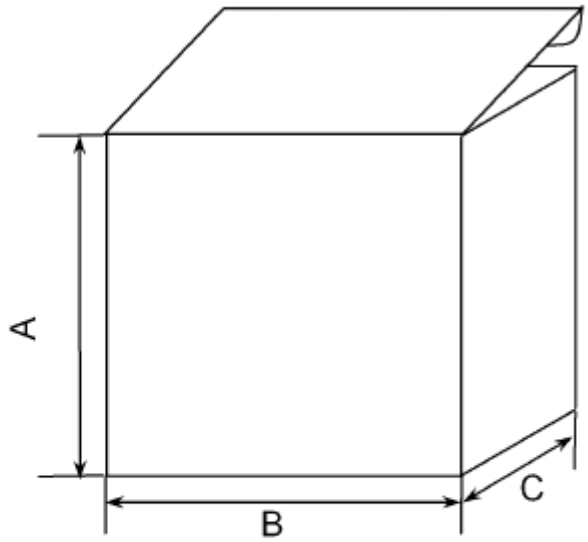


Peel-off strength: 0.1N~1.2N

Peel-off angle:165°~180°

Peel-off speed: 300mm/min

10-5 Dimensions of packing box (for Tape & Reel package)



Code	A	B	C	Standard Quantity
Size	190	185	75	15, 000 pcs. max
			140	30, 000 pcs. max

[Unit : mm]