

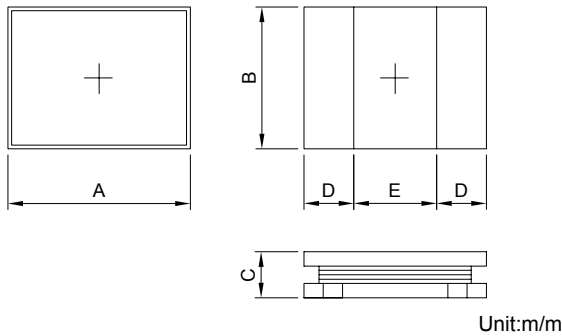
### 1. PART NO. EXPRESSION :

$\frac{S}{(a)} \frac{P}{(b)} \frac{S}{(c)} \frac{2}{(d)} \frac{5}{(e)} \frac{2}{(f)} \frac{0}{(g)} \frac{1}{(h)} \frac{2}{(i)} \frac{U}{(j)} \frac{1}{(k)} \frac{R}{(l)} \frac{0}{(m)} \frac{Y}{(n)}$

- (a) Series code
- (b) Dimension code
- (c) U: Uncoated

- (d) Inductance code : 1R0 = 1.0  $\mu$ H
- (e) Tolerance code : M= $\pm$ 20% Y= $\pm$ 30%

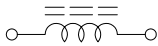
### 2. CONFIGURATION & DIMENSIONS :



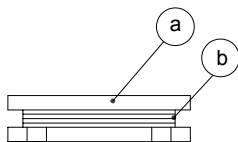
Unit:m/m

A	B	C	D	E
2.50 $\pm$ 0.1	2.20 $\pm$ 0.1	1.2 max.	0.85 ref.	0.80 ref.

### 3. SCHEMATIC :



### 4. MATERIALS :



- (a) Core : Ferrite Core
- (b) Wire : Copper Wire

### 5. GENERAL SPECIFICATION :

- a) Isat : Based on inductance change ( $\Delta L/L0 : \leq -30\%$ ) @ ambient temp. 25°C
- b) Irms: Based on temperature rise ( $\Delta T: 40^\circ\text{C}.$ )
- c) Storage temp. : -40° C to +105° C, 50-60%RH (Product without taping)
- d) Operating temp. : -40° C to +105° C
- e) Resistance to solder heat : 260 $\pm$ 5° C 10 $\pm$ 0.5secs



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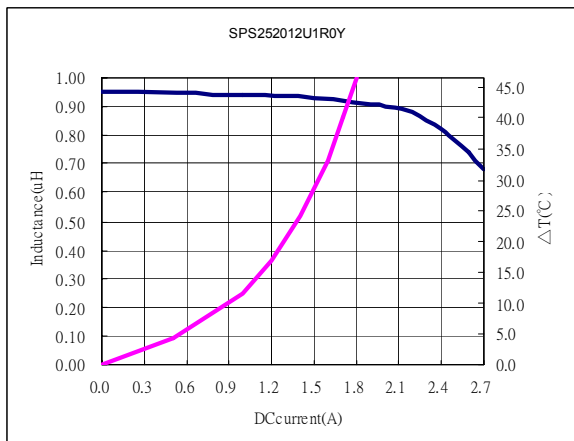


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## 6. ELECTRICAL CHARACTERISTICS :

Part Number	Inductance ( $\mu\text{H}$ )	Tolerance ( % )	Test Frequency ( Hz )	DCR ( $\Omega$ ) $\pm 20\%$	Isat ( A ) Typ.	Isat ( A ) Typ.
SPS252012U1R0Y	1.0	$\pm 30\%$	0.1V/1M	0.083	2.60	1.70
SPS252012U1R5Y	1.5	$\pm 30\%$	0.1V/1M	0.103	2.20	1.45
SPS252012U2R2M	2.2	$\pm 20\%$	0.1V/1M	0.130	1.90	1.30
SPS252012U3R3M	3.3	$\pm 20\%$	0.1V/1M	0.200	1.40	0.98
SPS252012U4R7M	4.7	$\pm 20\%$	0.1V/1M	0.290	1.25	0.81
SPS252012U6R8M	6.8	$\pm 20\%$	0.1V/1M	0.450	1.00	0.65
SPS252012U100M	10	$\pm 20\%$	0.1V/1M	0.630	0.84	0.59

## 7. CHARACTERISTIC CURVES :



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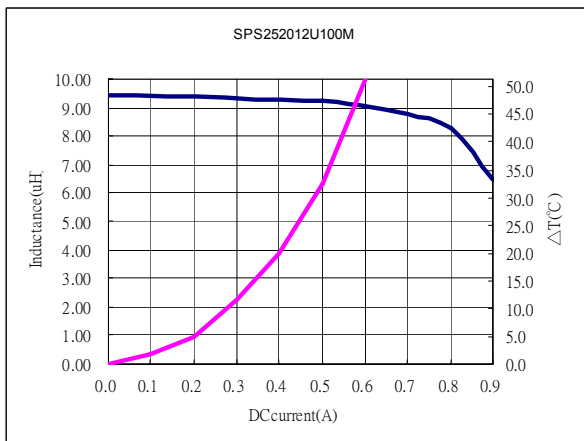
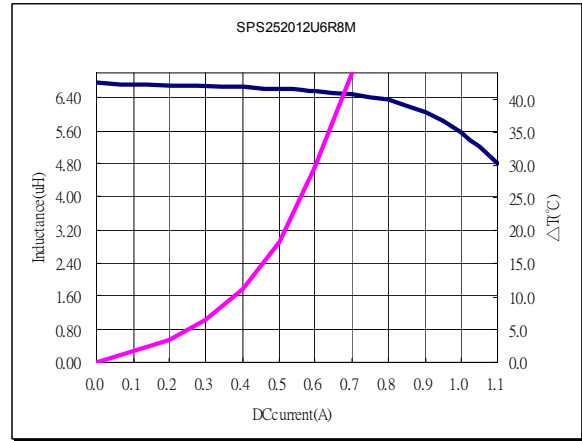
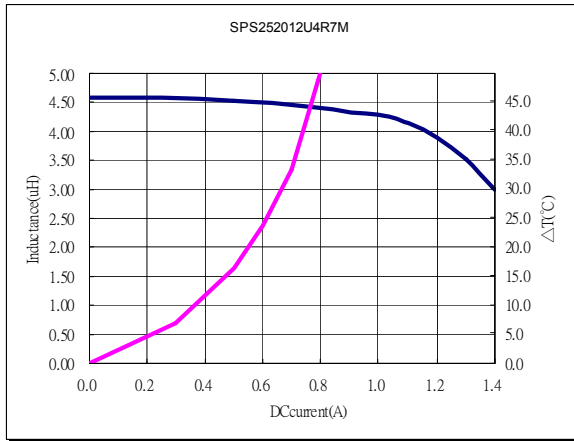
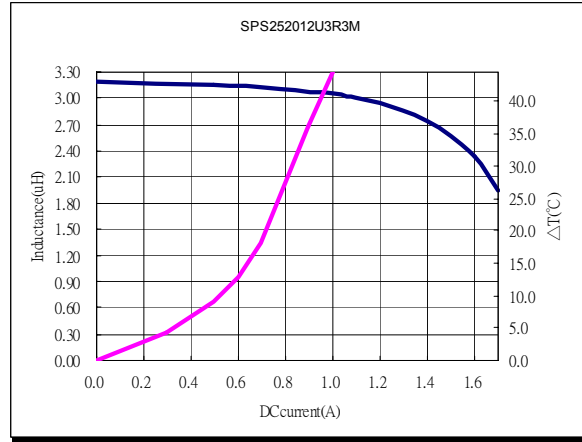
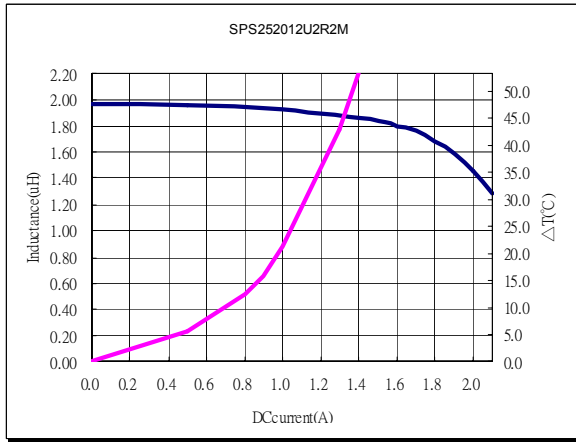
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## 7. CHARACTERISTIC CURVES :



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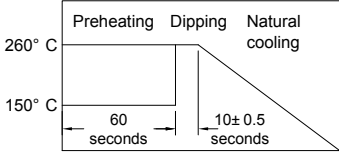
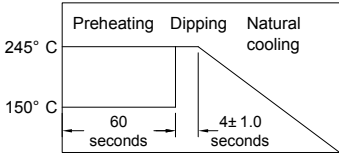
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### 8. RELIABILITY & TEST CONDITION :

ITEM	PERFORMANCE	TEST CONDITION															
Operating Temperature	-40 to +105° C																
Storage Temperature	-40 to +105° C, 50-60%RH Product without taping																
Rated Current	Base on temp. rise & $\Delta L/L0A \cong 30\%$ .	Saturation DC current (Isat) will cause L0 to drop approximately $\Delta L(\%)$															
Temperature Rise Test	40°C max. ( $\Delta t$ )	Heat Rated Current (Irms) will cause the coil temperature 1. Applied the allowed DC current 2. Temperature measured by hte digital surface thermometer															
Solder Heat Resistance	Appearance : No significant abnormality Impedance change : Within $\pm 20\%$ 	Preheat : 150° C, 60sec. Solder : Sn-Cu0.5% Solder Temperature : 260 $\pm$ 5° C Flux for lead free : rosin Dip Time : 10 $\pm$ 0.5sec.															
Solderability	More than 90% of the terminal electrode should be covered with solder. 	Preheat : 150° C, 60sec. Solder : Sn-Ag3.0-Cu0.5 Solder Temperature : 245 $\pm$ 5° C Flux for lead free : rosin Dip Time : 4 $\pm$ 1sec.															
Thermal shock	Appearance: no damage Inductance: within $\pm 20\%$ initial value <table border="1" data-bbox="470 1240 874 1393"> <thead> <tr> <th>Phase</th> <th>Temperature (° C)</th> <th>Times (min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55 +0/-2° C</td> <td>15<math>\pm</math> 1</td> </tr> <tr> <td>2</td> <td>Room temp.</td> <td>5</td> </tr> <tr> <td>3</td> <td>+85 +2/-0° C</td> <td>15<math>\pm</math> 1</td> </tr> <tr> <td>4</td> <td>Room Temp.</td> <td>5</td> </tr> </tbody> </table> Measured : 100 times	Phase	Temperature (° C)	Times (min.)	1	-55 +0/-2° C	15 $\pm$ 1	2	Room temp.	5	3	+85 +2/-0° C	15 $\pm$ 1	4	Room Temp.	5	Condition for 1 cycle Step 1: -55+0/-2° C 15 $\pm$ 1 min. Step 2: Room temperature 5 min. Step 3: +85 +2/-0° C 15 $\pm$ 1min. Step 4: Room temperature 5 min. Number of cycles: 100
Phase	Temperature (° C)	Times (min.)															
1	-55 +0/-2° C	15 $\pm$ 1															
2	Room temp.	5															
3	+85 +2/-0° C	15 $\pm$ 1															
4	Room Temp.	5															
Humidity Resistance Test	Appearance : No damage. Impedance : Within $\pm 20\%$ of initial value.	Humidity : 90~95% RH. Temperature : 40 $\pm$ 2° C Duration : 500 hrs Measured at room temperature after placing for 2 to 3hrs.															



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### 8. RELIABILITY & TEST CONDITION :

ITEM	PERFORMANCE	TEST CONDITION
High Temp. Resistance Test	Appearance : No damage. Impedance : Within $\pm 20\%$ of initial value.	Temperature : $-40\pm 2^\circ$ C Applied current : rated current Duration : 500 hrs
Low Temp. Life Test	Appearance : No damage. Impedance : Within $\pm 20\%$ of initial value.	Temperature : $105\pm 2^\circ$ C Duration : 500 hrs
Random Vibration Test	Appearance : Cracking, shipping & any other defects harmful to the characteristics should not be allowed. Impedance : Within $\pm 20\%$	Frequency : 10-55-10Hz for 15 min. Amplitude : 1.52mm Directions & times : X, Y, Z directions for 15 mins. this cycle shall be performed 12 times in each of the three mutually perpendicular directions. (Total 9hours).



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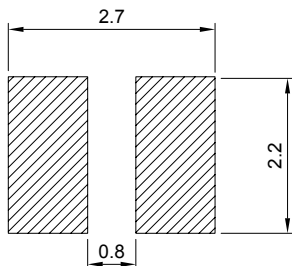
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## 9. SOLDERING AND MOUNTING :

### 9-1. Recommended PC Board Pattern



### 9-2. Soldering

Mildly activated rosin fluxes are preferred. The minimum amount of solder can lead to damage from the stresses caused by the difference in coefficients of expansion between solder, chip and substrate. The terminations are suitable for all wave and re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

#### 9-2.1 Lead Free Solder Re-flow :

Recommended temperature profiles for re-flow soldering in Figure 1.

#### 9-2.2 Soldering Iron (Figure 2) :

Products attachment with soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

Note :

- a) Preheat circuit and products to 150° C.
- b) 355° C tip temperature (max)
- c) Never contact the ceramic with the iron tip
- d) 1.0mm tip diameter (max)
- e) Use a 20 watt soldering iron with tip diameter of 1.0mm
- f) Limit soldering time to 4-5 secs.

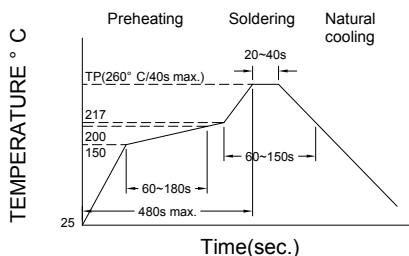


Figure 1. Re-flow Soldering

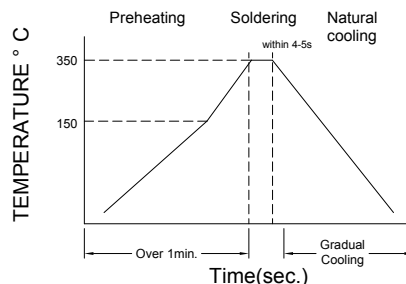


Figure 2. Hand Soldering



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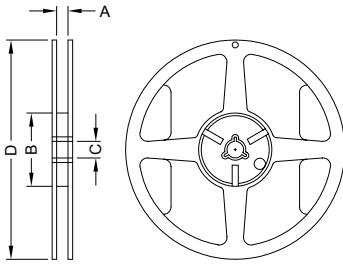
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## 10. PACKAGING INFORMATION :

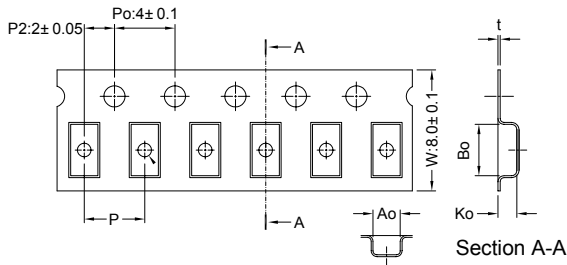
### 10-1. Reel Dimension



7" x 8mm

Type	A(mm)	B(mm)	C(mm)	D(mm)
7" x 8mm	8.4± 1.0	50 min	13.0± 0.8	178.0± 2.0

### 10-2 Tape Dimension / 8mm



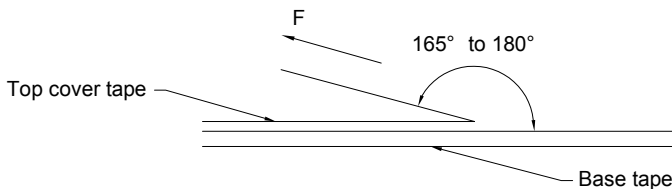
Series	Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)	D1(mm)
SPS	252012	2.74± 0.05	2.27± 0.05	1.40± 0.2	4.0± 0.05	0.23± 0.05	none

### 10-3. Packaging Quantity

Chip Size	252012
Chip / Reel	2000

### 10-4. Tearing Off Force

The force for tearing off cover tape is 15 to 60 grams in the arrow direction under the following conditions.



Room Temp. (° C)	Room Humidity (%)	Room atm (hPa)	Tearing Speed (mm/min)
5~35	45~85	860~1060	300

## Application Notice

### 1. Storage Conditions :

To maintain the solderability of terminal electrodes :

- Temperature and humidity conditions : -10 ~ 40° C and 30 ~ 70% RH.
- Recommended products should be used within 6 months from the time of delivery.
- The packaging material should be kept where no chlorine or sulfur exists in the air.

### 2. Transportation :

- Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
- The use of tweezers or vacuum pick up is strongly recommended for individual components.
- Bulk handling should ensure that abrasion and mechanical shock are minimized.



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