

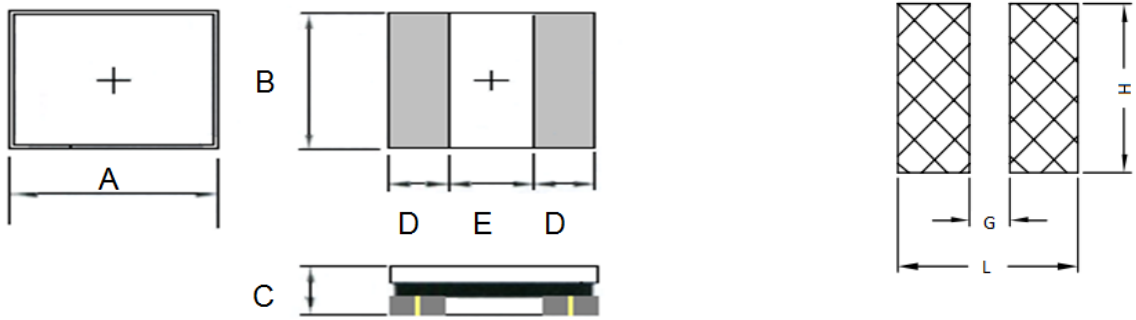
1. Part No. Expression:

S P S 2 0 1 6 1 2 D R 2 4 M F

(a) (b) (c) (d) (e) (f)

- (a) Series code
- (b) Dimension code
- (c) Material code
- (d) Inductance code
- (e) Tolerance Code
- (f) RoHS Compliant

2. Configuration & Dimensions : (Unit: mm)



Recommended PCB Pattern

Unit : mm

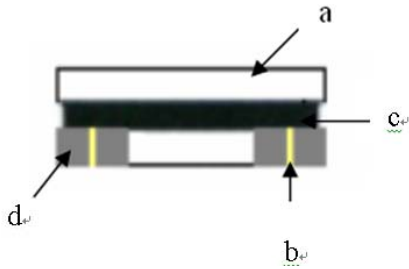
| A | B | C | D | E | G | H | L |
|---------------|---------------|-----------|-----------|-----------|------|------|------|
| 2.0 -0.1/+0.2 | 1.6 -0.1/+0.2 | 1.20 Max. | 0.60 Ref. | 0.80 Ref. | 0.70 | 1.70 | 2.30 |

3. Schematic



NOTE: Specifications subject to change without notice. Please check our website for latest information.

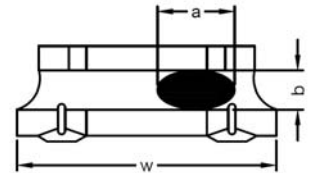
4. Material List



- a) Core
- b) Wire
- c) Glue
- d) Terminal

Exposed wire tolerance limit of coating resin part on product side:

1. Width direction (dimension a) : Acceptable when $a \leq w/2$;
Nonconforming when $a > w/2$
2. Length direction (dimension b): Dimension b is not specified
3. The total area of exposed wire occurring to each sides is not greater than 50% of coating resin area and is acceptable



5. General Specification

- a) Isat: Based on inductance change ($\Delta L/L_0: \leq 30\%$ Typ.)
- b) Irms: Based on temperature rise (Approximately $\Delta T: 40^\circ\text{C}$)
- c) Operating Temperature: -40°C to $+125^\circ\text{C}$ (including self-temperature rise)
- d) Storage Temperature: -40°C to $+125^\circ\text{C}$
- e) Storage Condition (component in its packaging)
 - i) Temperature: Less than 40°C
 - ii) Humidity: 60% RH

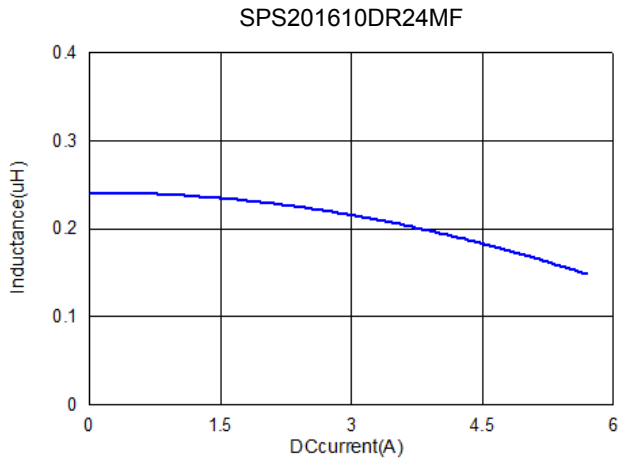
6. Electrical Characteristics

| Part No. | Inductance (μH) | Test Frequency (Hz) | DCR (Ω) Max. | Isat (A) Max. | Irms (A) Max. |
|-----------------|------------------------------|---------------------|-----------------------|---------------|---------------|
| SPS201612DR24MF | $0.24 \pm 20\%$ | 0.1V/1M | 0.033 | 4.80 | 3.50 |
| SPS201612DR33MF | $0.33 \pm 20\%$ | 0.1V/1M | 0.034 | 3.90 | 3.20 |
| SPS201612DR47MF | $0.47 \pm 20\%$ | 0.1V/1M | 0.046 | 3.50 | 2.90 |
| SPS201612DR56MF | $0.56 \pm 20\%$ | 0.1V/1M | 0.064 | 3.00 | 2.60 |
| SPS201612DR68MF | $0.68 \pm 20\%$ | 0.1V/1M | 0.066 | 2.80 | 2.60 |
| SPS201612D1R0MF | $1.00 \pm 20\%$ | 0.1V/1M | 0.104 | 2.50 | 2.30 |
| SPS201612D1R2MF | $1.20 \pm 20\%$ | 0.1V/1M | 0.106 | 2.50 | 2.30 |
| SPS201612D1R5MF | $1.50 \pm 20\%$ | 0.1V/1M | 0.108 | 2.00 | 1.80 |
| SPS201612D2R2MF | $2.20 \pm 20\%$ | 0.1V/1M | 0.186 | 1.60 | 1.30 |

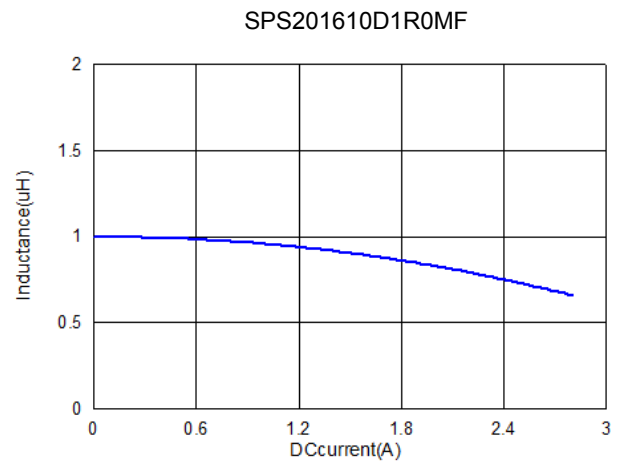
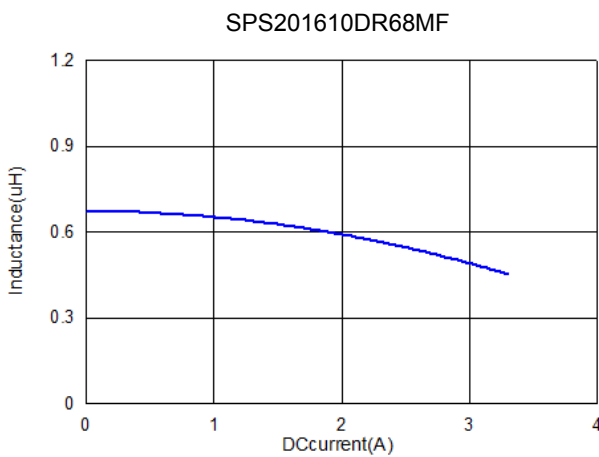
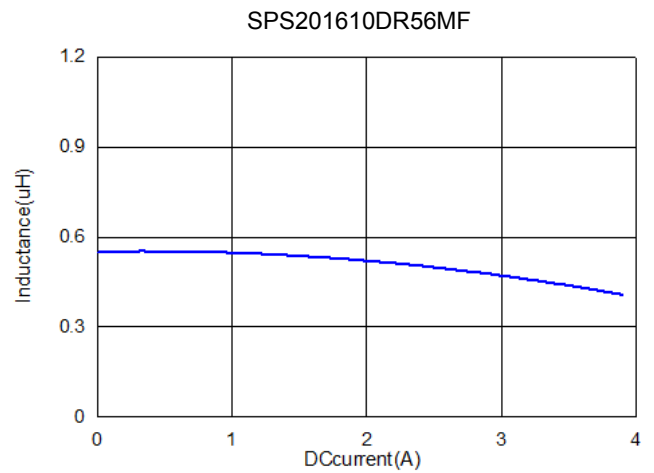
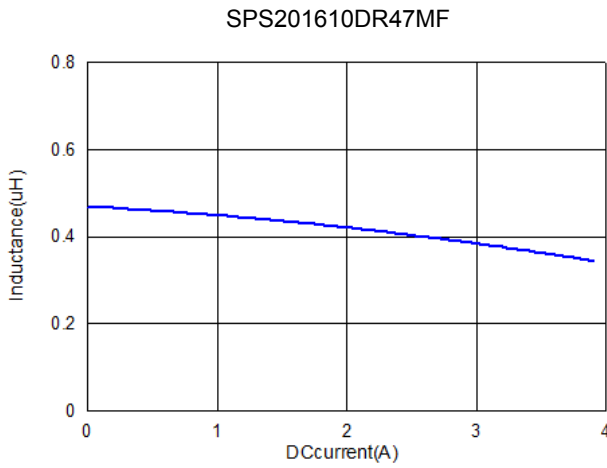
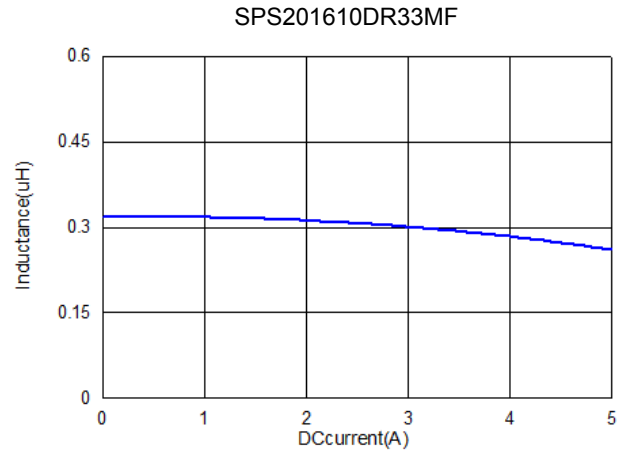
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7. Characteristics Curves



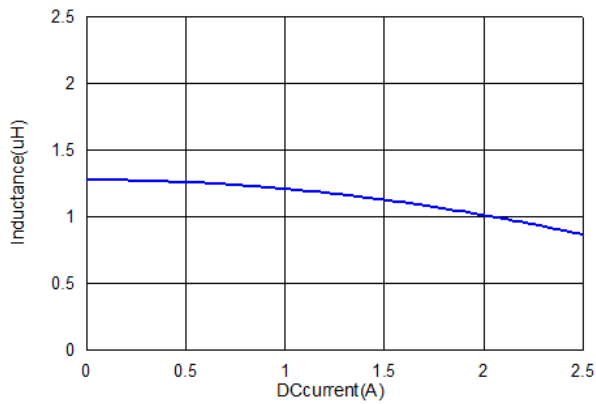
5



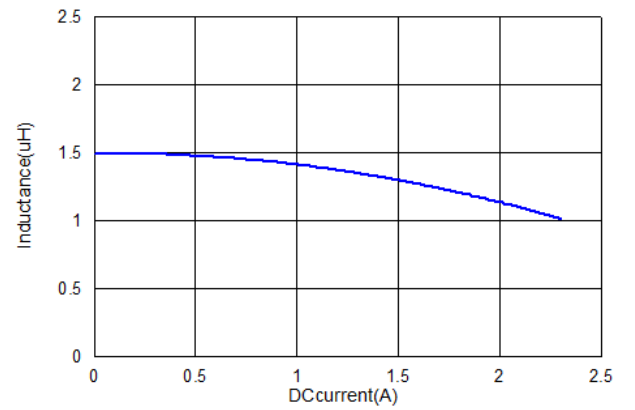
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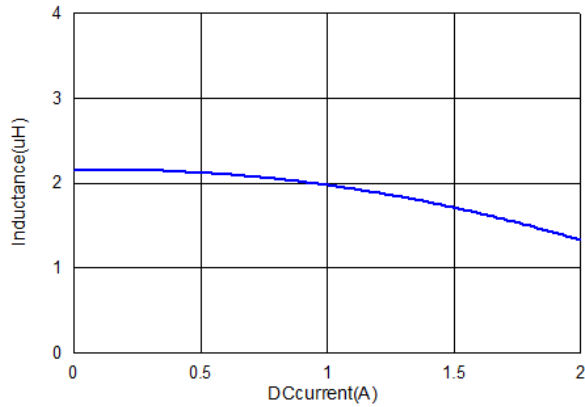
SPS201610D1R2MF



SPS201610D1R5MF



SPS201610D2R2MF



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8. Soldering

Mildly activated rosin fluxes are preferred. 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.

8-1 Solder Re-flow:

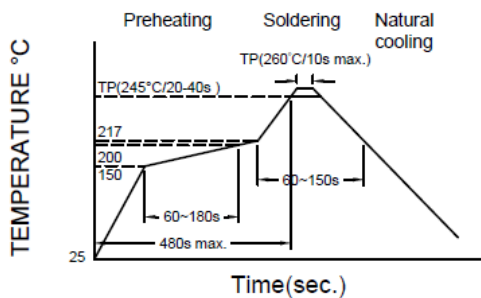
Recommended temperature profiles for re-flow soldering in Figure 1.

8-2 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.

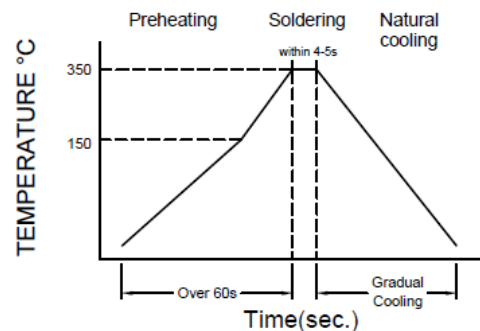
Note :

- 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.



Reflow times: 3 times Max.

Fig.1



Iron Soldering times: 1 times Max.

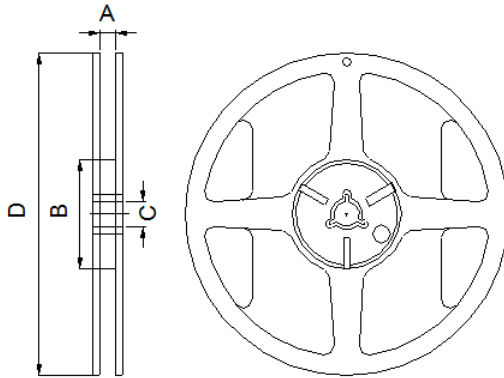
Fig.2

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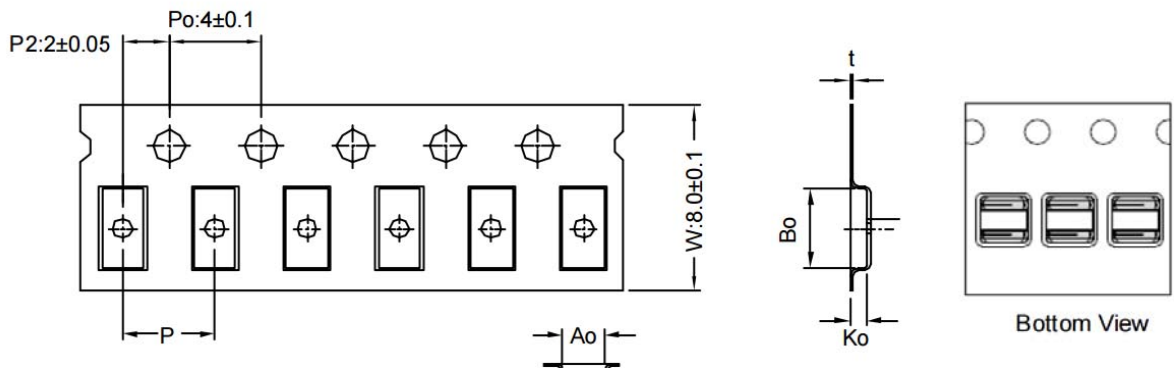
9. Packaging Information

9-1. Reel Dimension



| 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 |

9-2. Tape Dimension



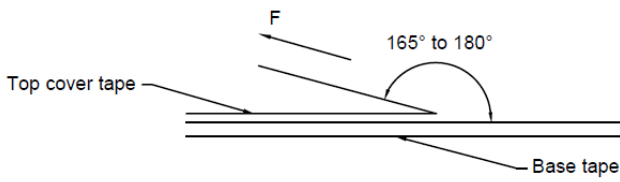
| Series | Ao(mm) | Bo(mm) | Ko(mm) | P(mm) | t(mm) |
|-----------|-------------|-------------|-------------|-------------|-------------|
| SPS201612 | 2.00 ± 0.10 | 2.50 ± 0.10 | 1.40 ± 0.10 | 4.00 ± 0.10 | 0.23 ± 0.05 |

9-3. Packaging Quantity

| | |
|------------|--------|
| Size | 201612 |
| Chip/ Reel | 2000 |

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9-4. Tearing Off Force



The force for tearing off cover tape is 15 to 80 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:

- a) Recommended products should be used within 12 months from the time of delivery.
- b) The packaging material should be kept where no chlorine or sulfur exists in the air.

2. Transportation:

- a) Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
- b) Vacuum pick up is strongly recommended for individual components.
- c) Bulk handling should ensure that abrasion and mechanical shock are minimized.

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