

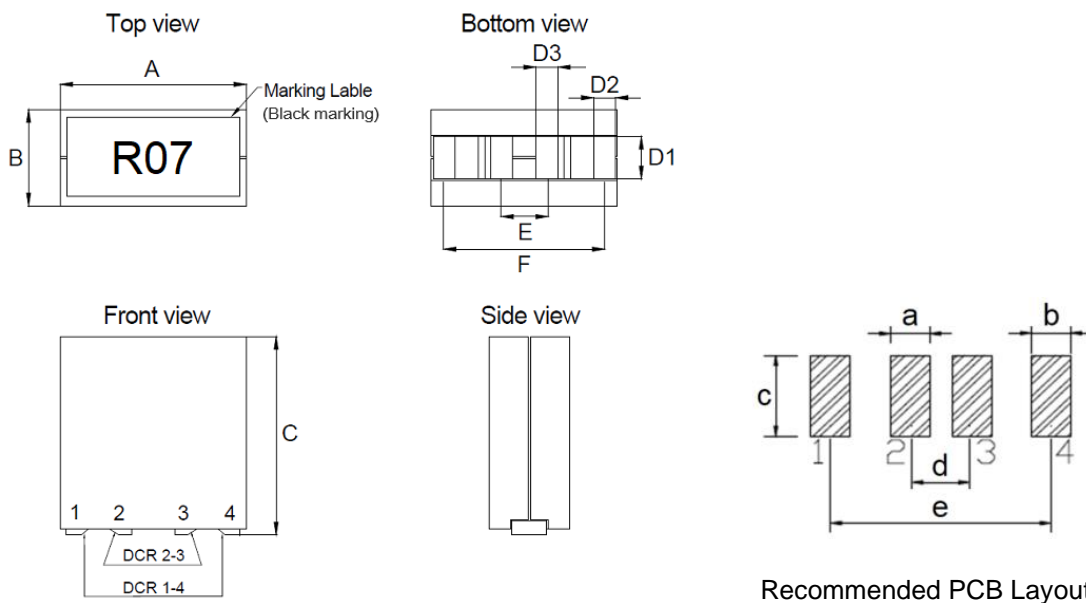
## 1. Part No. Expression

**SMF090610R07LZF**

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

- |                     |                    |
|---------------------|--------------------|
| (a) Series Code     | (d) Tolerance Code |
| (b) Dimension Code  | (e) Special Code   |
| (c) Inductance Code | (f) Packaging Code |

## 2. Configuration & Dimensions (Unit: mm)

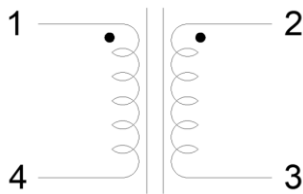


- Note:
1. The above PCB layout reference only.
  2. Marking: Inductance Code (Please refer to Electrical Characteristics table)
  3. PAD surface flatness 0.1 mm max.
  4. Recommended: modules should be surface- mounted on the second time (last time) of customer's double-sided PCB to prevent shift of parts.
  5. Before soldering, be sure to preheat components. The recommended preheating condition is 150°C for 3 minutes.

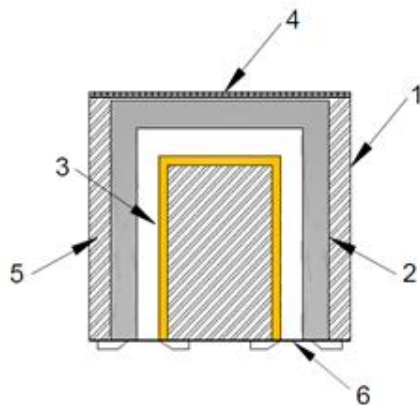
| A         | B         | C         | D1        | D2        | D3        | E         |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 9.30±0.30 | 6.10±0.30 | 10.20±0.3 | 3.20±0.30 | 1.15±0.30 | 0.60±0.30 | 2.20±0.30 |
| F         | a         | b         | c         | d         | e         | -         |
| 7.85±0.30 | 1.40 Ref  | 1.65 Ref  | 3.70 Ref  | 1.90 Ref  | 7.85 Ref  | -         |

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

## 3. Schematic



## 4. Material List



- (1) Core
- (2) Clip
- (3) Wire
- (4) Tape
- (5) Glue
- (6) Coating

## 5. General Specifications

- (a) Operating Temp.: -40°C to +125°C (including self-temperature rise)
- (b) Storage Temp.: -40°C to +125°C (on board)
- (c) All test data referenced to 25°C ambient.
- (d) Heat Rated Current (Irms) will cause the coil temperature rise approximately  $\Delta T$  of 40°C.
- (e) Saturation Current (Isat1) will cause inductance L0 to drop approximately 20% at +25°C.  
Saturation Current (Isat2) will cause inductance L0 to drop approximately 20% at +100°C.  
Saturation Current (Isat3) will cause inductance L0 to drop approximately 20% at +125°C.
- (f) Rated DC Current: The lower value of Irms and Isat.
- (g) Maximum Operating Voltage: 80V
- (h) Storage Condition (Component in its packaging)
  - i) Temperature: Less than 40°C
  - ii) Humidity: Less than 60% RH

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## 6. Electrical Characteristics

| Part Number     | L(nH)<br>1-4/2-3<br>±15% | Li<br>(nH)<br>Min | DCR<br>(mΩ)<br>±10% |       | I <sub>rms</sub><br>(A) |     | Isat 1<br>(A) | Isat 2<br>(A) | Isat 3<br>(A) | K <sub>ps</sub><br>Typ | L <sub>k</sub><br>(nH)<br>Typ | Marking |
|-----------------|--------------------------|-------------------|---------------------|-------|-------------------------|-----|---------------|---------------|---------------|------------------------|-------------------------------|---------|
|                 |                          |                   | 1-4                 | 2-3   | 1-4                     | 2-3 | @25°C         | @100°C        | @125°C        |                        |                               |         |
| SMF090610R07LZF | 70                       | 47.6              | 0.125               | 0.330 | 75                      | 40  | 140           | 116           | 109           | 0.92                   | 8                             | 70N     |
| SMF090610R10LZF | 100                      | 64                | 0.125               | 0.330 | 75                      | 40  | 112           | 83            | 78            | 0.94                   | 8                             | R10     |
| SMF090610R12LZF | 120                      | 77                | 0.125               | 0.330 | 75                      | 40  | 93            | 67            | 63            | 0.95                   | 8                             | R12     |
| SMF090610R15LZF | 150                      | 96                | 0.125               | 0.330 | 75                      | 40  | 67            | 53            | 49            | 0.94                   | 8                             | R15     |
| SMF090610R17LZF | 170                      | 107               | 0.125               | 0.330 | 75                      | 40  | 56            | 48            | 45            | 0.96                   | 8                             | R17     |
| SMF090610R18LZF | 180                      | 115               | 0.125               | 0.330 | 75                      | 40  | 54            | 46            | 43            | 0.97                   | 8                             | R18     |
| SMF090610R20LZF | 200                      | 128               | 0.125               | 0.330 | 75                      | 40  | 52            | 42            | 39            | 0.97                   | 8                             | R20     |
| SMF090610R22LZF | 220                      | 140               | 0.125               | 0.330 | 75                      | 40  | 50            | 38            | 35            | 0.97                   | 8                             | R22     |

Notes:

1. L1 @ 1.0V/100KHz, 0A, 25°C
2. Li @ 1.0V/100KHz, I<sub>SAT</sub>
3. K<sub>ps</sub>: Coupling Coefficient
4. L<sub>k</sub>: Leakage inductance

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## 7. Soldering Specification

Mildly activated rosin fluxes are preferred. Our terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

### 7-1. IR Soldering Reflow

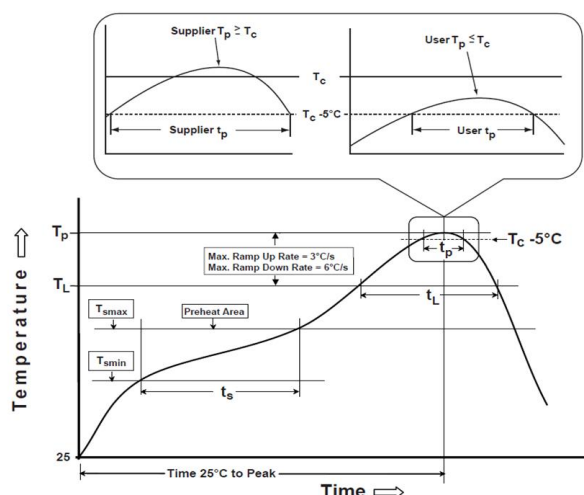
Recommended temperature profiles for lead free re-flow soldering in Figure 1, Table 1.1 & 1.2 (J-STD-020E).

### 7-2. Iron Reflow

Products attachment with a 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 (Figure 2).

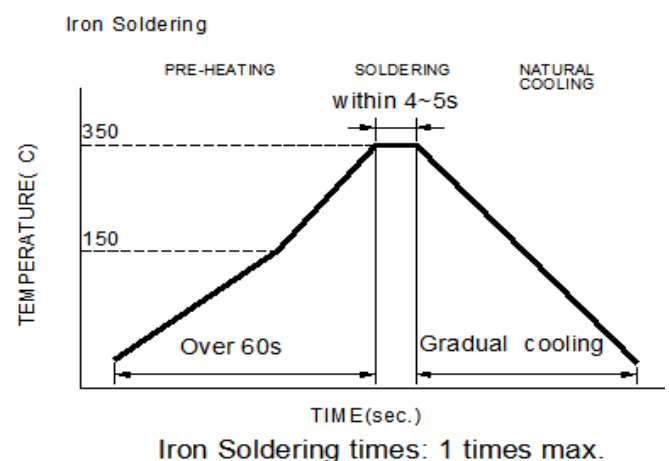
Note:

- Preheat circuit and products to 150°C.
- 355°C tip temperature (Max.)
- Never contact the ceramic with the iron tip
- 1.0mm tip diameter (Max.)
- Use a 20 watt soldering iron with tip diameter of 1.0mm
- Limit soldering time to 4~5 sec.



Reflow times: 3 times Max

Figure 1: IR Soldering Reflow



Iron Soldering times: 1 times max.

Soldering iron method: 350±5°C Max

Figure 2: Iron soldering temperature profiles

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**Table (1.1) Reflow Profiles**

|  |                  |
|--|------------------|
| Profile Type:  | Pb-Free Assembly |
| Preheat  |                  |
| -Temperature Min ( $T_{smin}$ )  | 150°C            |
| -Temperature Max ( $T_{smax}$ )  | 200°C            |
| -Time ( $t_s$ ) from ( $T_{smin}$ to $T_{smax}$ )  | 60-120seconds    |
| Ramp-up rate ( $T_L$ to $T_p$ )  | 3°C /second max. |
| Liquids temperature ( $T_L$ )  | 217°C            |
| Time ( $t_L$ ) maintained above $T_L$  | 60-150 seconds   |
| Classification temperature ( $T_c$ )   | See Table (1.2)  |
| Time ( $t_p$ ) at $T_c - 5^\circ\text{C}$ ( $T_p$ should be equal to or less than $T_c$ .) | * < 30 seconds   |
| Ramp-down rate ( $T_p$ to $T_L$ )  | 6°C /second max. |
| Time 25°C to peak temperature  | 8 minutes max.   |

**$T_p$** : maximum peak package body temperature,  **$T_c$** : the classification temperature.

For user (customer)  **$T_p$**  should be equal to or less than  **$T_c$** .

\*Tolerance for peak profile temperature ( $T_p$ ) is defined as a supplier minimum and a user maximum.

**Table (1.2) Package Thickness/Volume and Classification Temperature ( $T_c$ )**

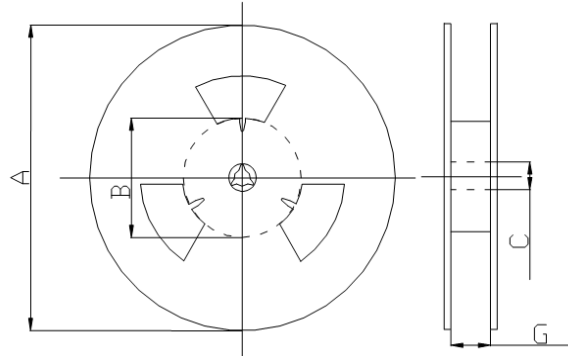
|                  | Package Thickness | Volume mm <sup>3</sup> <350 | Volume mm <sup>3</sup> 350-2000 | Volume mm <sup>3</sup> >2000 |
|------------------|-------------------|-----------------------------|---------------------------------|------------------------------|
| PB-Free Assembly | <1.6mm            | 260°C                       | 260°C                           | 260°C                        |
|                  | 1.6-2.5mm         | 260°C                       | 250°C                           | 245°C                        |
|                  | ≥2.5mm            | 250°C                       | 245°C                           | 245°C                        |

Reflow is referred to standard IPC/JEDEC J-STD-020E.

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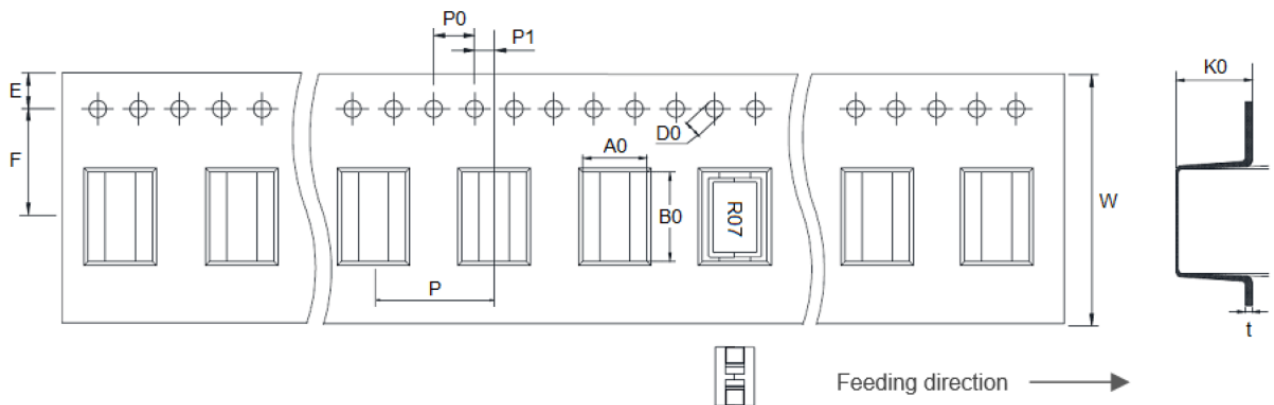
## 8. Packaging Information

### 8-1. Reel Dimension (Unit: mm)



| Type     | A     | B     | C    | G    |
|----------|-------|-------|------|------|
| 13"x24mm | 330.0 | 100.0 | 13.5 | 24.5 |

### 8-2. Tape Dimension (Unit: mm)



| B0         | A0         | K0         | P          | P0        | P1        |
|------------|------------|------------|------------|-----------|-----------|
| 9.80±0.30  | 6.60±0.30  | 10.70±0.30 | 12.00±0.10 | 4.00±0.10 | 2.00±0.10 |
| W          | F          | E          | D0         | t         | -         |
| 24.00±0.30 | 11.50±0.10 | 1.75±0.10  | 1.50±0.10  | 0.50±0.05 | -         |

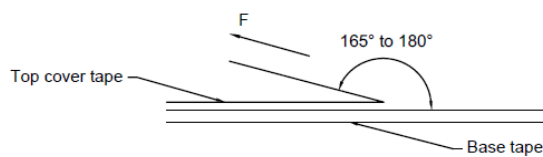
NOTE: Specifications subject to change without notice. Please check our website for latest information.

## 8-3. Packaging Quantity (Unit: Pcs)

|            |       |
|------------|-------|
| Chip/ Reel | 500   |
| Carton     | 4,000 |

Carton size: 352\*352\*358mm

## 8-4. Tearing Off Force



The force for tearing off cover tape is according to the follow table, in the arrow direction under the following conditions.

(Referenced ANSI/EIA-481-D-2008 of 4.11 standard)

| Room Temp. (°C) | Room Humidity (%) | Room atm (hPa) | Tearing Speed (mm/min) |
|-----------------|-------------------|----------------|------------------------|
| 5~35            | 45~85             | 860~1060       | 300±10                 |

| Tape Size                 | 8 mm   | 12 to 56 mm | 72 mm or Wider |
|---------------------------|--------|-------------|----------------|
| Tearing Off Force (grams) | 10~100 | 10~130      | 10~150         |

## 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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