

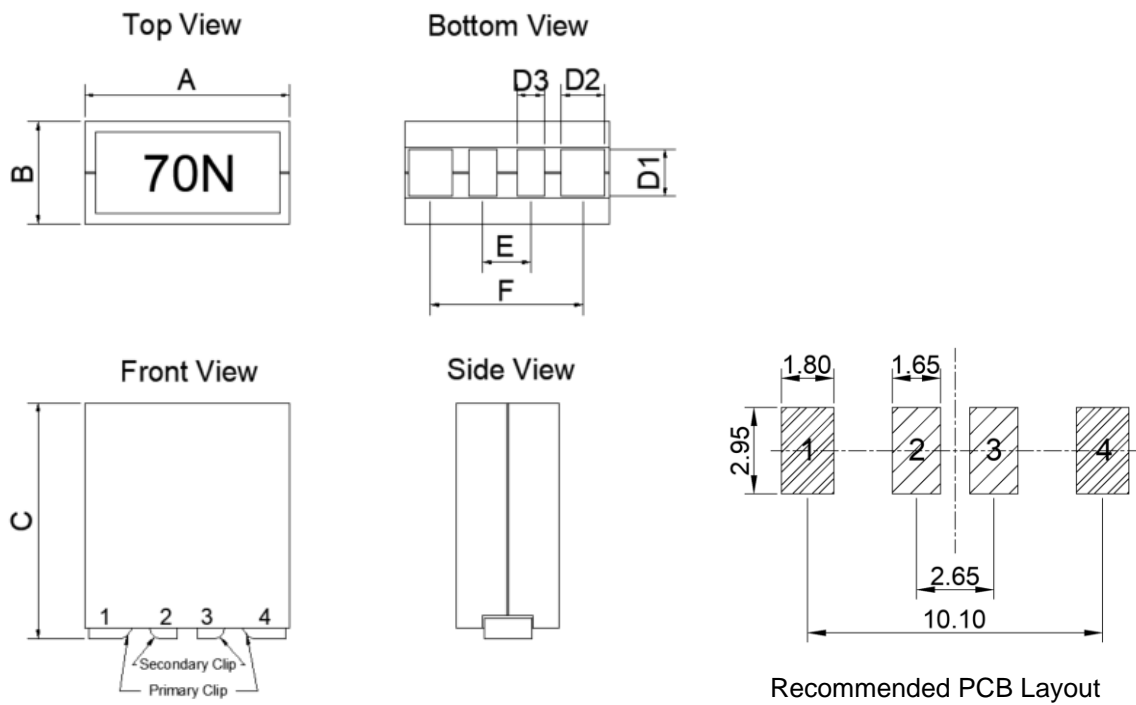
## 1. Part No. Expression

**S M F 1 1 0 5 1 1 R 0 7 L Z F**

(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)

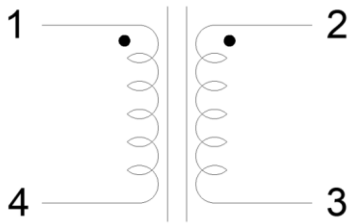


Note: 1. Marking: Inductance (Please refer to Electrical Characteristics table)

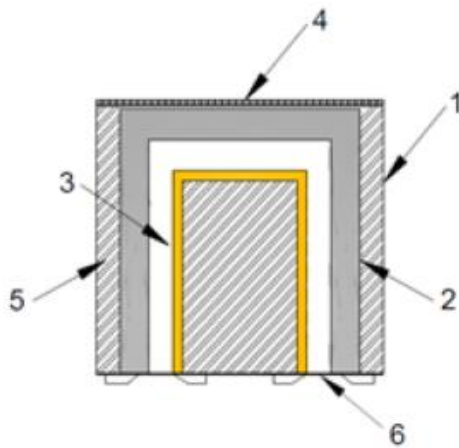
| A          | B         | C          | D1        | D2        | D3        | E         | F          |
|------------|-----------|------------|-----------|-----------|-----------|-----------|------------|
| 11.70±0.30 | 5.70±0.30 | 11.00±0.20 | 2.45±0.30 | 1.30±0.30 | 1.15±0.30 | 2.65±0.50 | 10.10±0.50 |

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 ( $I_{rms}$ ) will cause the coil temperature rise approximately  $\Delta T$  of 40°C.
- (e) Saturation Current ( $I_{sat 1}$ ) will cause inductance  $L_0$  to drop approximately 20% at +25°C.
- (f) Saturation Current ( $I_{sat 2}$ ) will cause inductance  $L_0$  to drop approximately 20% at +100°C.
- (g) Saturation Current ( $I_{sat 3}$ ) will cause inductance  $L_0$  to drop approximately 20% at +125°C.
- (h) Rated Current: The lower value of  $I_{sat}$  and  $I_{rms}$ .
- (i) Storage Condition (Component in its packaging)
  - i) Temperature: Less than 40°C
  - ii) Humidity: Less than 60% RH

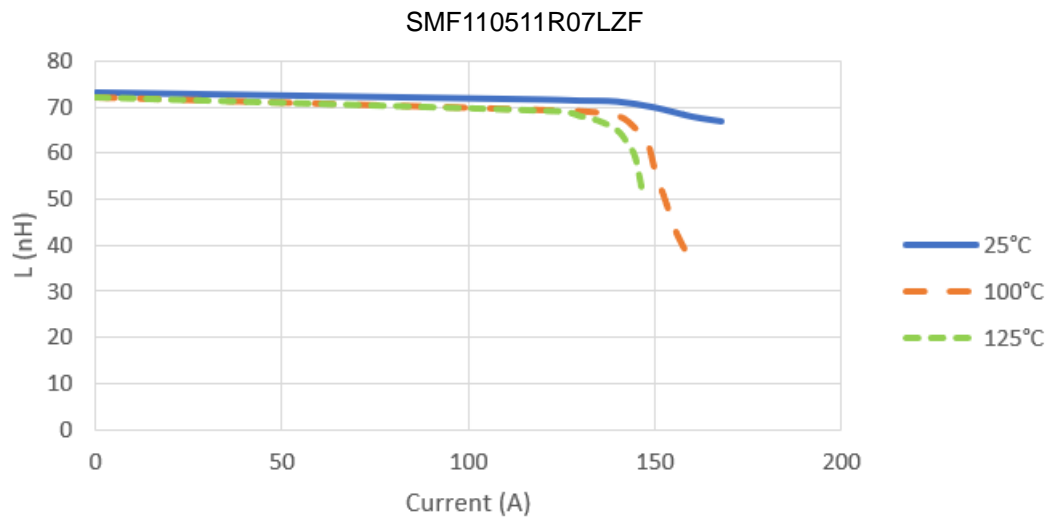
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## 6. Electrical Characteristics

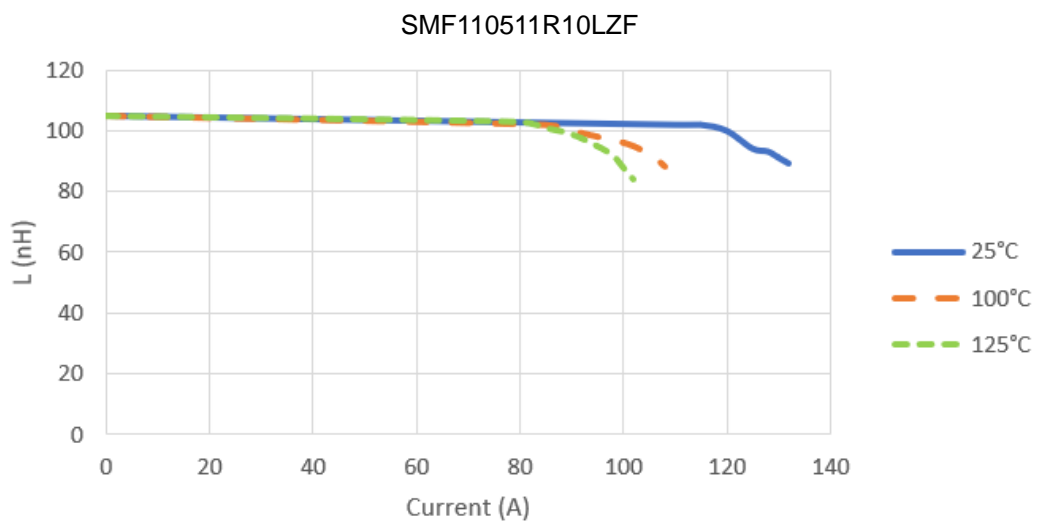
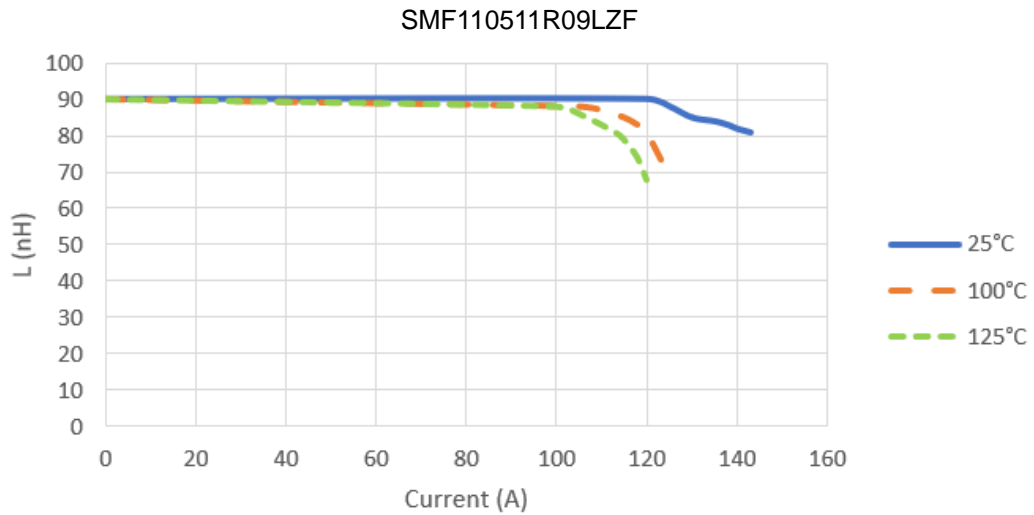
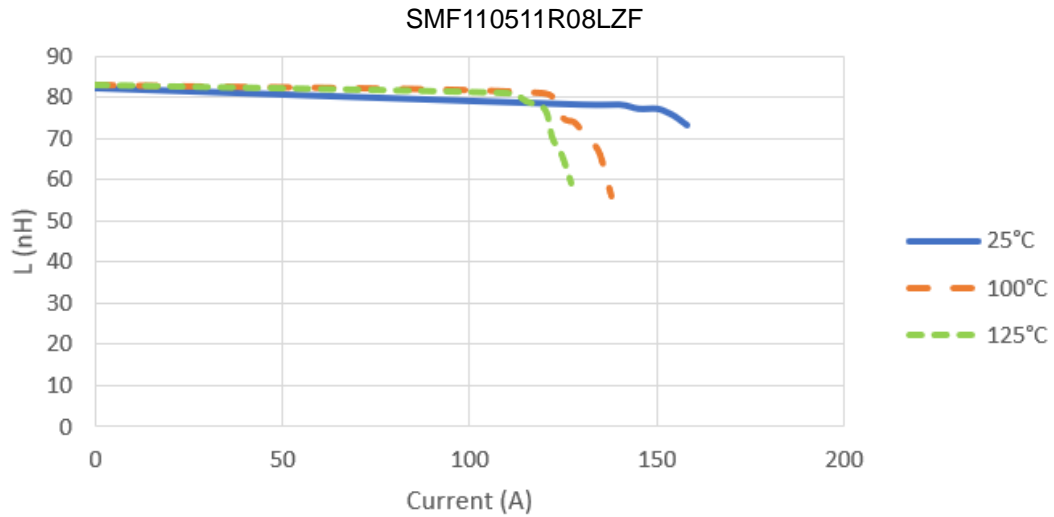
| Part Number     | Inductance (nH) @0A<br>1-4/2-3<br>±15% | Inductance (nH) @Isat1<br>1-4<br>Min | DCR (mΩ)<br>±10% |       | Isat 1 (A) | Isat 2 (A) | Isat 3 (A) | I <sub>rms</sub> (A) |     | Leakage Inductance (nH)<br>Typ | Coupling Coefficient<br>Typ | Marking |
|-----------------|--|--------------------------------------|------------------|-------|------------|------------|------------|----------------------|-----|--------------------------------|-----------------------------|---------|
|                 |  |                                      | 1-4              | 2-3   |            |            |            | 1-4                  | 2-3 |                                |                             |         |
| SMF110511R07LZF | 70.0                                   | 47.6                                 | 0.125            | 0.370 | 160        | 140        | 130        | 77                   | 45  | 12.0                           | 0.92                        | 70N     |
| SMF110511R08LZF | 80.0                                   | 54.4                                 | 0.125            | 0.370 | 150        | 120        | 110        | 77                   | 45  | 12.0                           | 0.92                        | 80N     |
| SMF110511R09LZF | 90.0                                   | 61.2                                 | 0.125            | 0.370 | 135        | 115        | 105        | 77                   | 45  | 12.0                           | 0.93                        | 90N     |
| SMF110511R10LZF | 105.0                                  | 71.4                                 | 0.125            | 0.370 | 125        | 106        | 98         | 77                   | 45  | 12.0                           | 0.94                        | R10     |
| SMF110511R12LZF | 120.0                                  | 81.6                                 | 0.125            | 0.370 | 102        | 87         | 80         | 77                   | 45  | 12.0                           | 0.95                        | R12     |
| SMF110511R15LZF | 150.0                                  | 102.0                                | 0.125            | 0.370 | 84         | 71         | 58         | 77                   | 45  | 12.0                           | 0.95                        | R15     |
| SMF110511R17LZF | 170.0                                  | 115.6                                | 0.125            | 0.370 | 70         | 60         | 53         | 77                   | 45  | 12.0                           | 0.96                        | R17     |
| SMF110511R20LZF | 200.0                                  | 136.0                                | 0.125            | 0.370 | 58         | 50         | 43         | 77                   | 45  | 12.0                           | 0.96                        | R20     |

Test Frequency: 1.0V/100kHz

## 7. Characteristics Curve

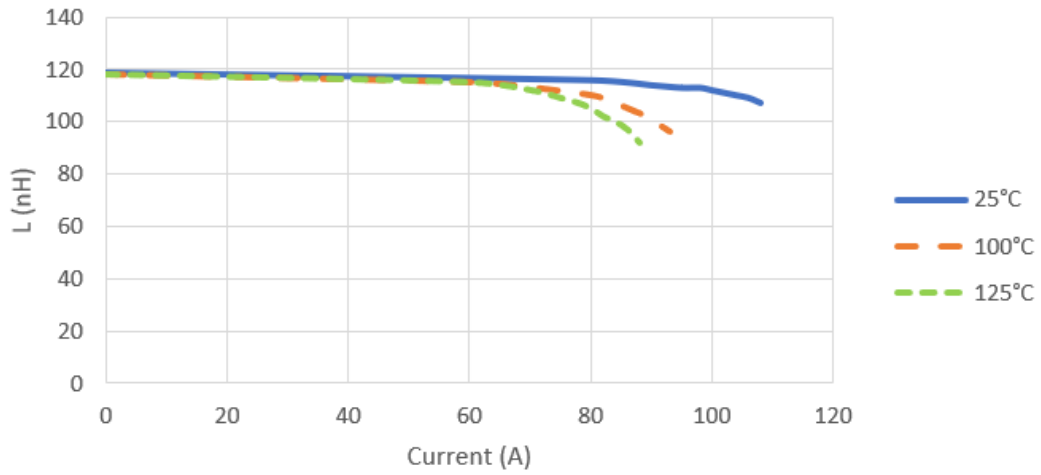


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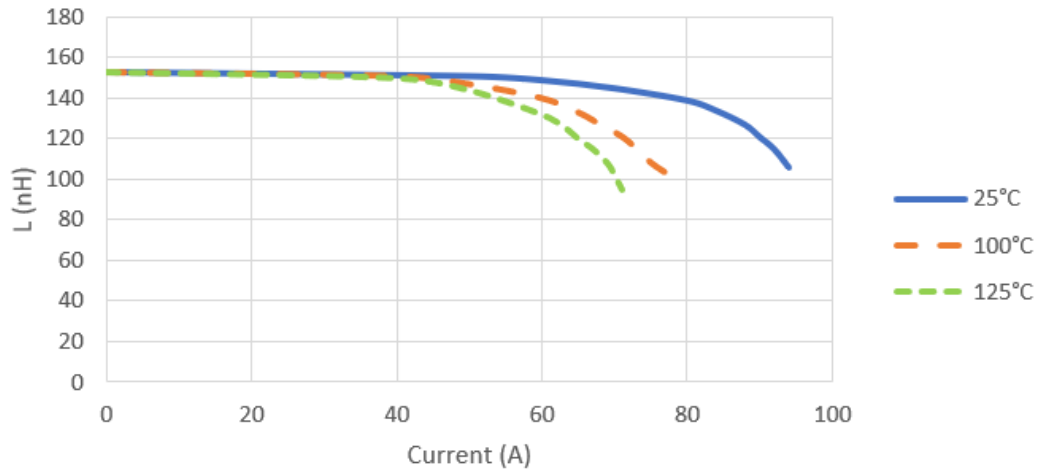


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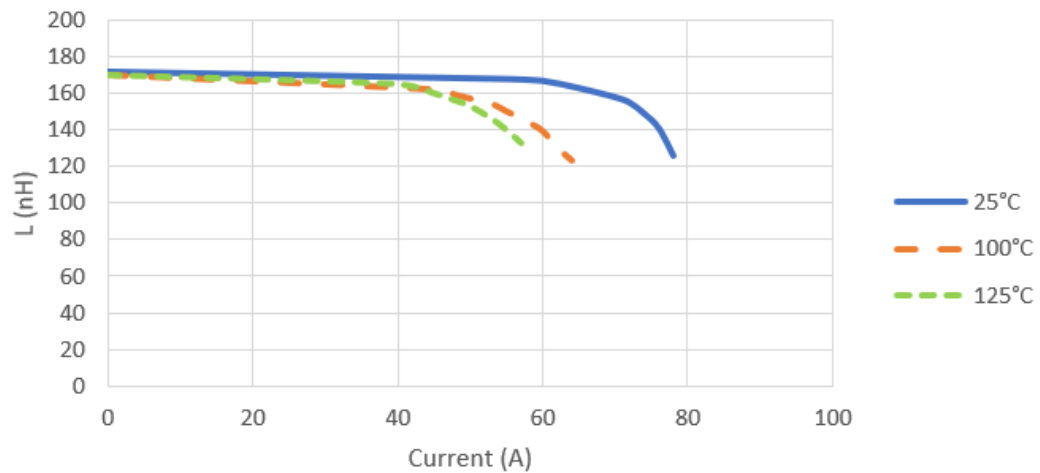
SMF110511R12LZF



SMF110511R15LZF

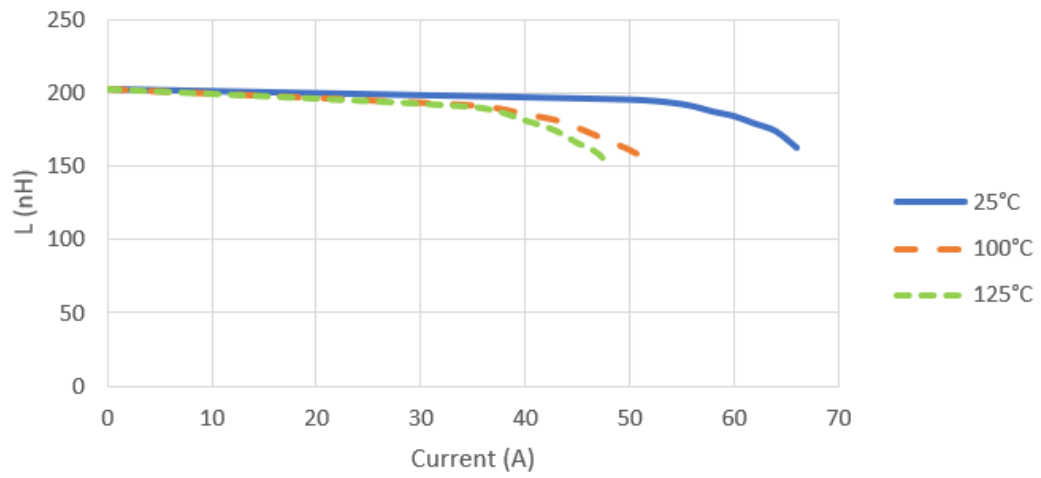


SMF110511R17LZF



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

SMF110511R20LZF



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

### 8. 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.

#### 8-1. IR Soldering Reflow

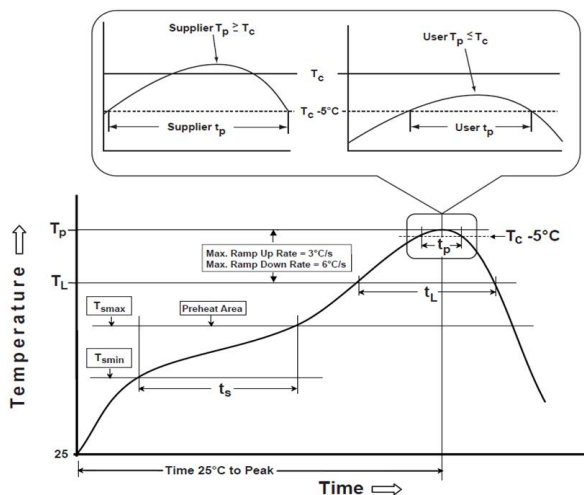
Recommended temperature profiles for lead free re-flow soldering in Figure 1, Table 1.1 & 1.2 (J-STD-020E).

#### 8-2. 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).

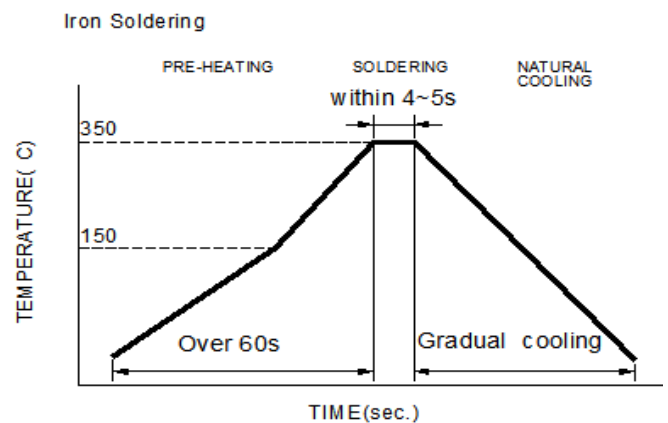
Note:

- (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 sec.



Reflow times: 3 times Max

Figure 1: IR Soldering Reflow



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<sub>p</sub>**: maximum peak package body temperature, **T<sub>c</sub>**: the classification temperature.

For user (customer) **T<sub>p</sub>** should be equal to or less than **T<sub>c</sub>**.

\*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                        |

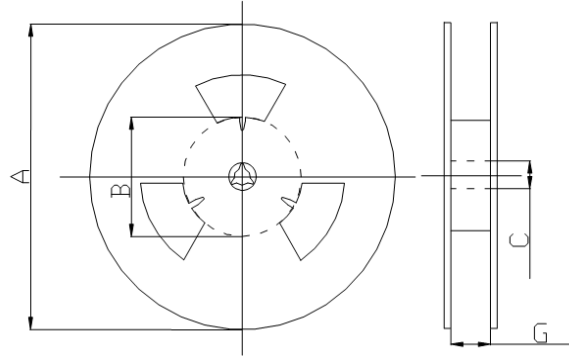
Reflow is referred to standard IPC/JEDEC J-STD-020E.

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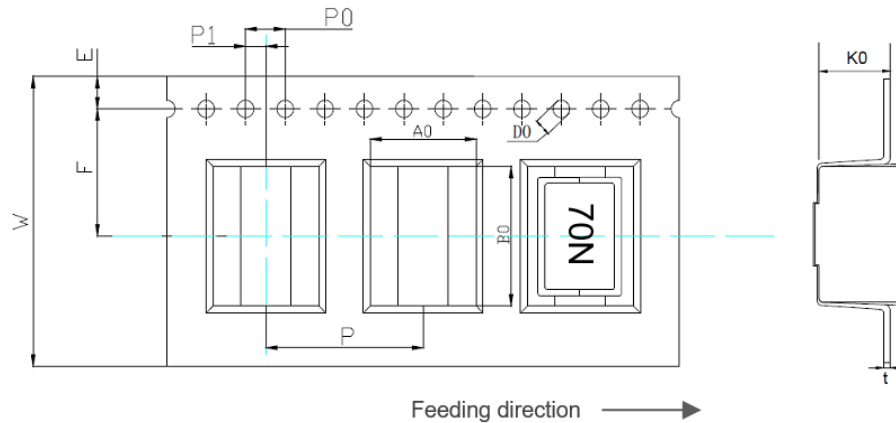
9. Packaging Information

9-1. Reel Dimension (Unit: mm)



| Type       | A     | B     | C    | D    |
|------------|-------|-------|------|------|
| 13" x 24mm | 330.0 | 100.0 | 13.5 | 24.5 |

9-2. Tape Dimension (Unit: mm)



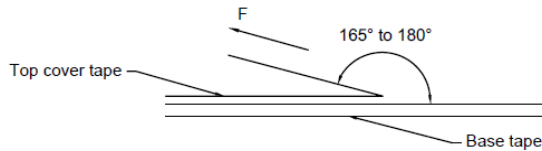
| B0         | A0         | K0         | P          | P0        | P1        |
|------------|------------|------------|------------|-----------|-----------|
| 12.20±0.10 | 6.20±0.10  | 11.30±0.10 | 12.00±0.10 | 4.00±0.10 | 2.00±0.10 |
| W          | F          | E          | D0         | t         | -         |
| 24.00±0.30 | 11.50±0.10 | 1.75±0.10  | 1.50±0.10  | 0.50±0.05 | -         |

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### 9-3. Packaging Quantity (Unit: Pcs)

|            |     |
|------------|-----|
| Chip/ Reel | 400 |
|------------|-----|

### 9-4. 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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