

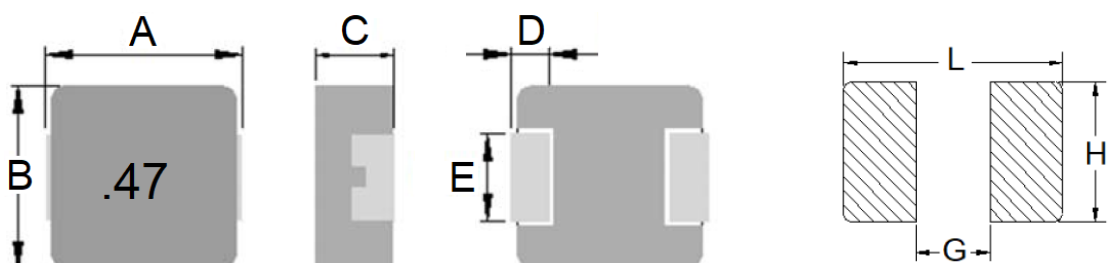
## 1. Part No. Expression

**P I C 0 3 1 8 H R 4 7 M F**

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

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

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

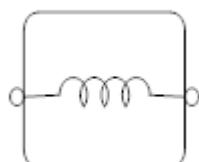


Recommended PCB Layout

- Note:
1. The above PCB layout reference only.
  2. Marking: Inductance, Black

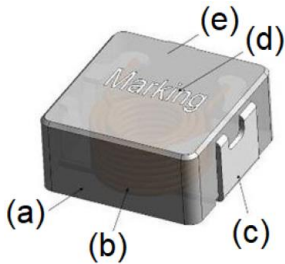
| A         | B         | C         | D         | E         | L        | G        | H        |
|-----------|-----------|-----------|-----------|-----------|----------|----------|----------|
| 3.50±0.30 | 3.20±0.20 | 1.60±0.20 | 0.70±0.20 | 1.20±0.20 | 4.10 Ref | 1.90 Ref | 1.45 Ref |

## 3. Schematic



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

## 4. Material List



| NO  | Items    |
|-----|----------|
| (a) | Core     |
| (b) | Wire     |
| (c) | Terminal |
| (d) | Ink      |
| (e) | Paint    |

## 5. General Specifications

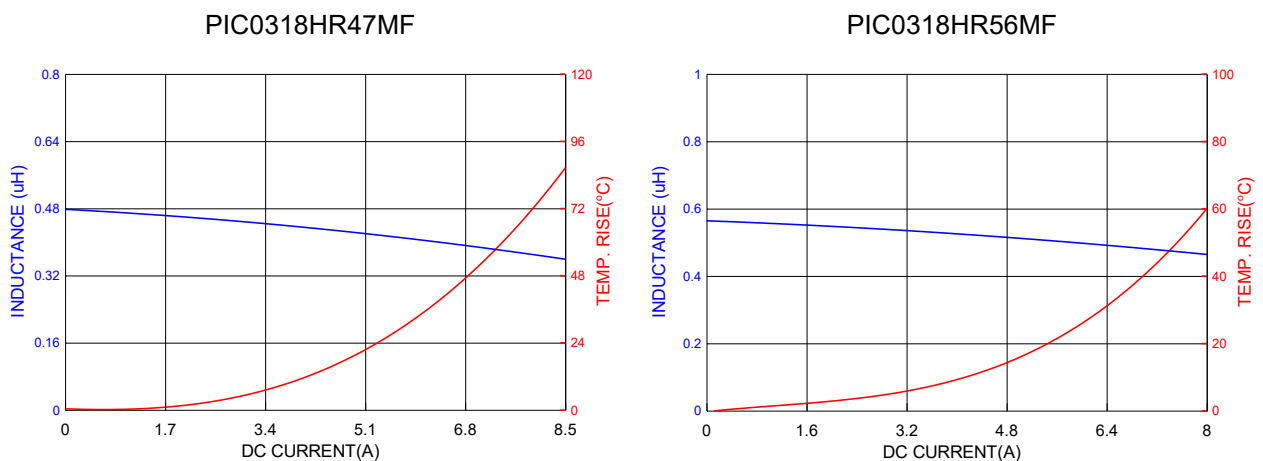
- (a) Operating Temp.: - 40°C to + 125°C (including self-temperature rise)
- (b) All test data referenced to 25°C ambient.
- (c) Heat Rated Current (Irms) will cause the coil temperature rise approximately  $\Delta T$  of 40°C. (keep 1 min)
- (d) Saturation Current (Isat) will cause inductance  $L_0$  to drop approximately 30%.
- (e) Rated DC Current: The lower value of Irms and Isat.
- (f) Part Temperature (Ambient + Temp. Rise): Should not exceed 125°C under worst case operating conditions.
- (g) Maximum Operating Voltage: 20V
- (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

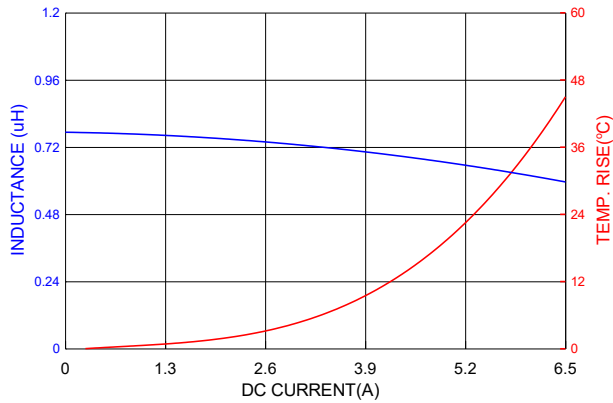
| Part Number   | Inductance<br>( $\mu$ H) @0A<br>$\pm 20\%$ | Test<br>Frequency | I <sub>rms</sub><br>(A)<br>Typ | I <sub>sat</sub><br>(A)<br>Typ | DCR<br>(m $\Omega$ ) |      |
|---------------|--------------------------------------------|-------------------|--------------------------------|--------------------------------|----------------------|------|
|               |                                            |                   |                                |                                | Typ                  | Max  |
| PIC0318HR47MF | 0.47                                       | 1.0V/100KHz       | 6.0                            | 8.5                            | 21.5                 | 25.0 |
| PIC0318HR56MF | 0.56                                       | 1.0V/100KHz       | 5.0                            | 8.0                            | 21.0                 | 26.0 |
| PIC0318HR68MF | 0.68                                       | 1.0V/100KHz       | 5.0                            | 6.5                            | 29.0                 | 33.5 |
| PIC0318H1R0MF | 1.00                                       | 1.0V/100KHz       | 3.8                            | 5.0                            | 38.0                 | 44.0 |
| PIC0318H1R5MF | 1.50                                       | 1.0V/100KHz       | 3.5                            | 4.0                            | 56.0                 | 65.0 |
| PIC0318H2R2MF | 2.20                                       | 1.0V/100KHz       | 3.3                            | 3.7                            | 73.0                 | 85.0 |
| PIC0318H3R3MF | 3.30                                       | 1.0V/100KHz       | 2.7                            | 3.3                            | 136                  | 158  |
| PIC0318H4R7MF | 4.70                                       | 1.0V/100KHz       | 2.3                            | 2.9                            | 180                  | 208  |
| PIC0318H5R6MF | 5.60                                       | 1.0V/100KHz       | 1.9                            | 2.3                            | 238                  | 275  |
| PIC0318H6R8MF | 6.80                                       | 1.0V/100KHz       | 1.5                            | 2.1                            | 275                  | 320  |
| PIC0318H8R2MF | 8.20                                       | 1.0V/100KHz       | 1.4                            | 1.9                            | 350                  | 405  |
| PIC0318H100MF | 10.0                                       | 1.0V/100KHz       | 1.3                            | 1.6                            | 375                  | 450  |
| PIC0318H150MF | 15.0                                       | 1.0V/100KHz       | 1.2                            | 1.5                            | 520                  | 600  |

## 7. Characteristics Curve

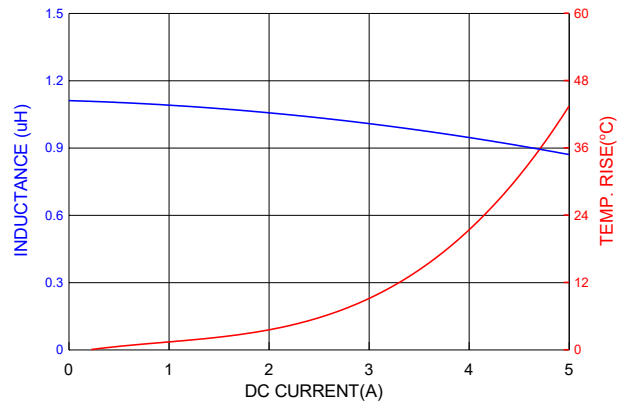


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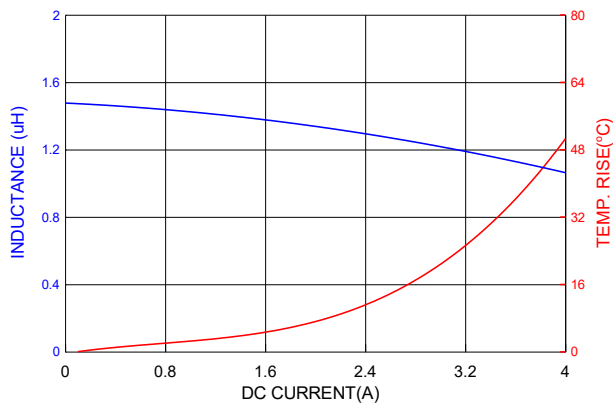
PIC0318HR68MF



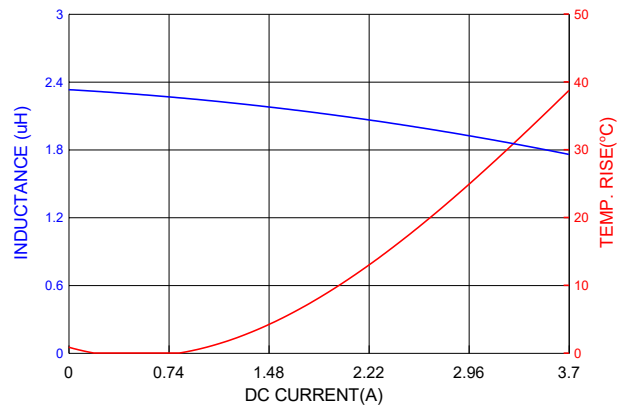
PIC0318H1R0MF



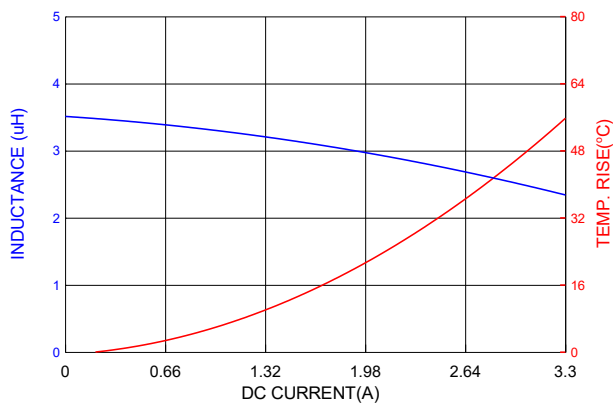
PIC0318H1R5MF



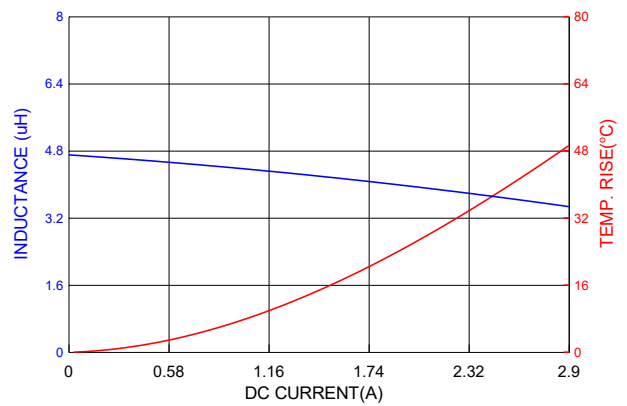
PIC0318H2R2MF



PIC0318H3R3MF

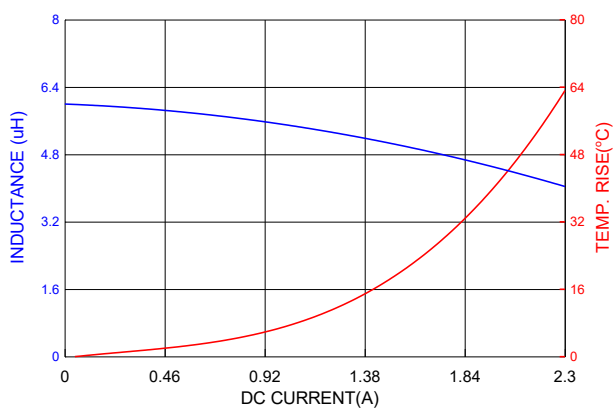


PIC0318H4R7MF

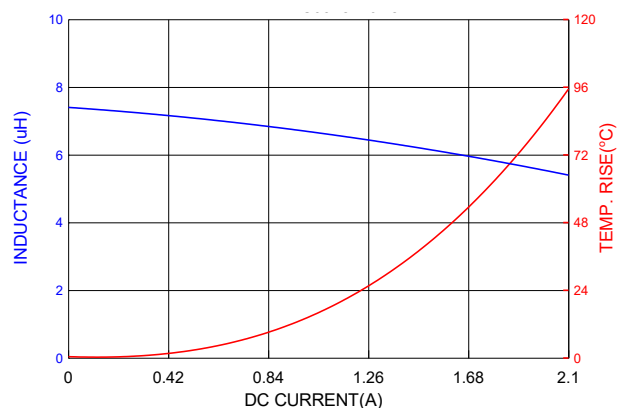


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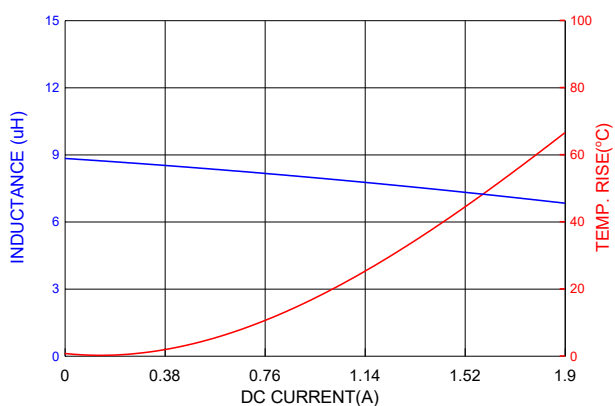
PIC0318H5R6MF



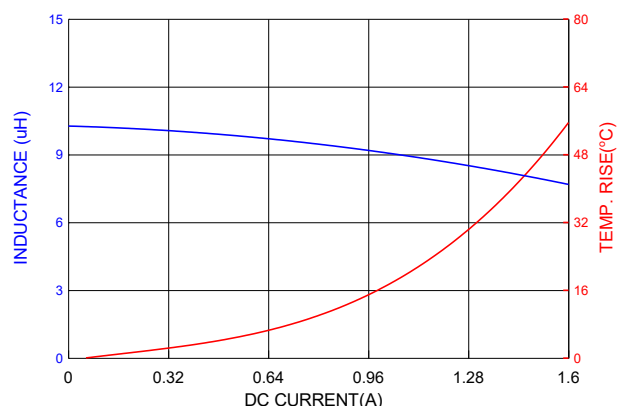
PIC0318H6R8MF



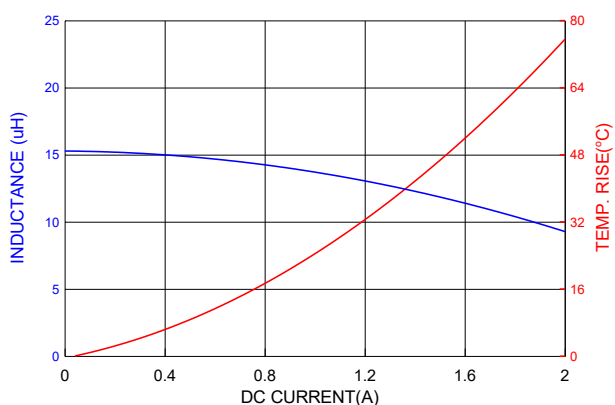
PIC0318H8R2MF



PIC0318H100MF



PIC0318H150MF



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## 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

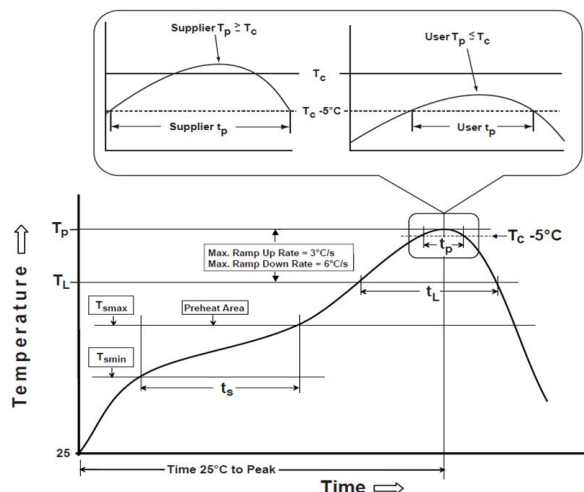
Recommended temperature profiles for lead free re-flow soldering in Figure 1, Table 1.1 & 1.2 (J-STD-020E).

### 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).

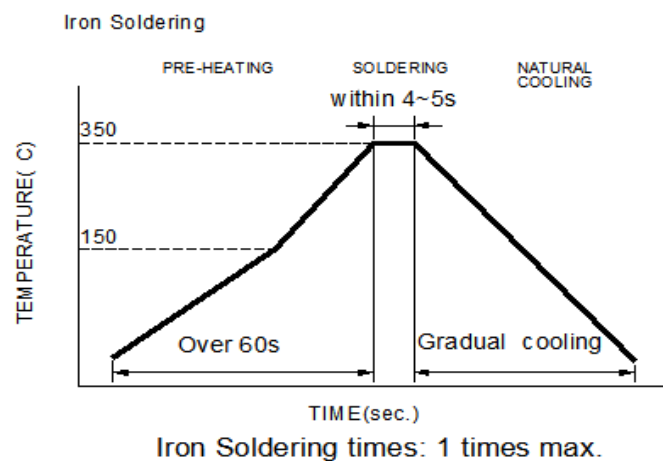
Note:

- 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



Soldering iron method: 350±5°C Max

Figure 2: Iron soldering temperature profiles

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

**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 ( $T_c$ )**

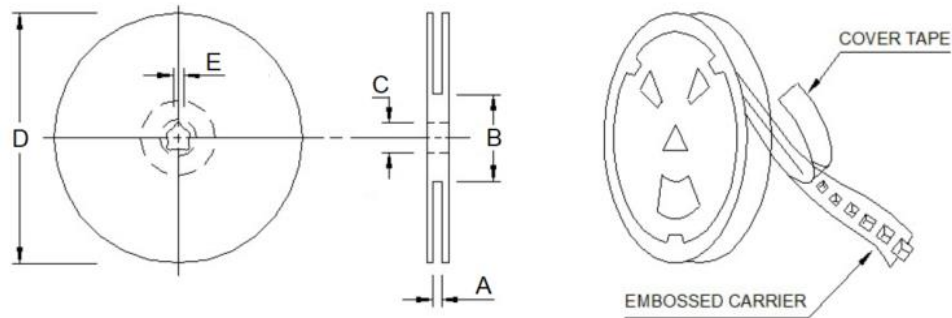
|                  | Package Thickness | Volume mm <sup>3</sup> <350 | Volume mm <sup>3</sup> 350-2000 | Volume mm <sup>3</sup> >2000 |
|------------------|-------------------|-----------------------------|---------------------------------|------------------------------|
| PB-Free Assembly | <1.6mm            | 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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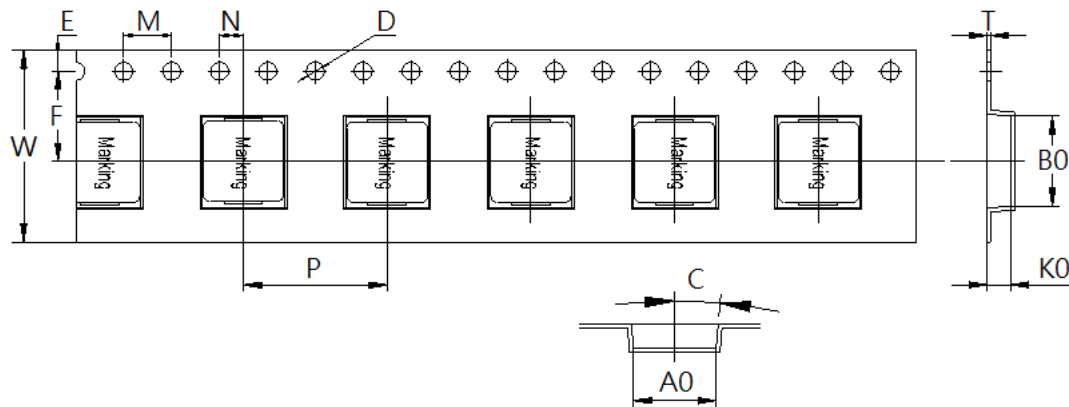
## 9. Packaging Information

### 9-1. Reel Dimension (Unit: mm)



| Type     | A             | B         | C        | D     | E       |
|----------|---------------|-----------|----------|-------|---------|
| 13"x12mm | 12.4+2.0/-0.0 | 100.0±2.0 | 13.5 Ref | 330.0 | 2.0 Ref |

### 9-2. Tape Dimension (Unit: mm)



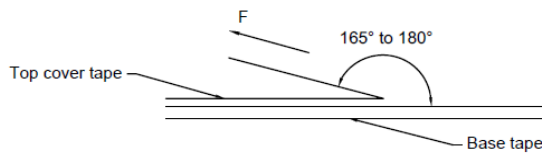
| B0        | A0        | K0        | P         | W          | F         |
|-----------|-----------|-----------|-----------|------------|-----------|
| 4.00±0.10 | 3.50±0.10 | 2.00±0.10 | 8.00±0.10 | 12.00±0.30 | 5.50±0.10 |
| T         | E         | M         | N         | D          | C         |
| 0.35±0.05 | 1.75      | 4.00      | 2.00      | 1.50       | 3°        |

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

|            |        |
|------------|--------|
| Chip/ Reel | 3,000  |
| Inner box  | 6,000  |
| Carton     | 24,000 |

## 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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