

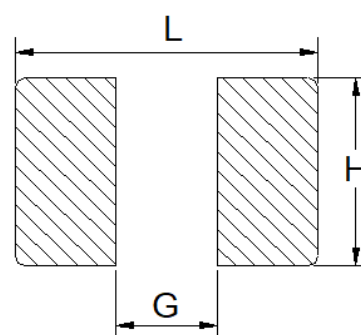
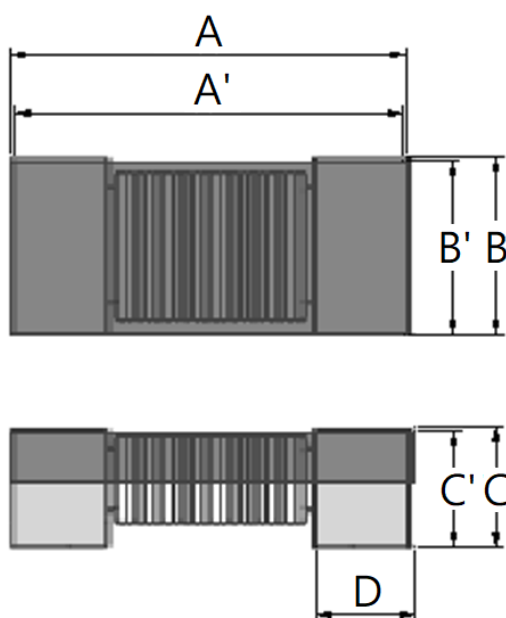
## 1. Part No. Expression

**W 4 4 2 0 F - 2 5 2 M - F 1 0**

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

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

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

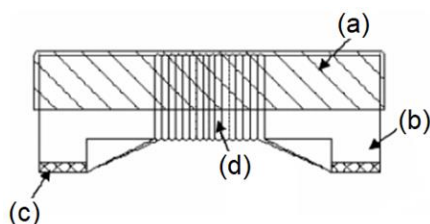


Recommended PCB Layout

A	A'	B	B'	C
4.75±0.20	4.40±0.20	2.25±0.20	2.00±0.20	1.80±0.30
C'	D	L	G	H
1.80±0.20	0.80 Ref	4.80 Ref	3.20 Ref	2.30 Ref

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

## 3. Material List



NO	Items
(a)	Upper plate
(b)	Core
(c)	Termination
(d)	Wire

## 4. 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 20°C.
- (e) Storage Condition (Component in its packaging)
  - i) Temperature: Less than 40°C
  - ii) Humidity: Less than 60% RH

## 5. Electrical Characteristics

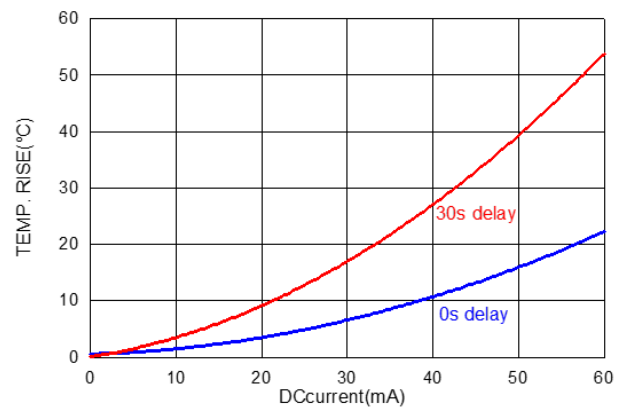
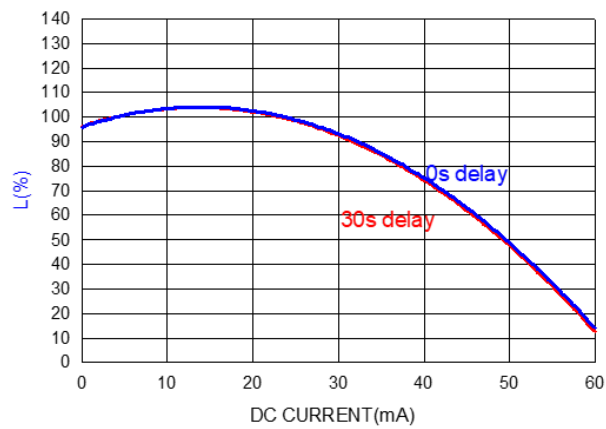
Part Number	Inductance (uH)	Test Frequency	DCR ( $\Omega$ )	Rated Current (mA) Max	SRF (MHz) Min
W4420F-252M-F10	2500	0.1V/10KHz	82 $\pm$ 10%	40	1
W4420F-352K-F10	3500	0.1V/10KHz	85 Max	20	1

Tolerance Code: K=  $\pm$ 10%, M=  $\pm$ 20%

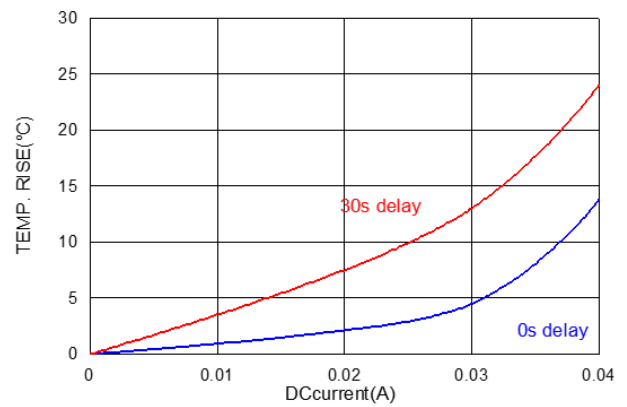
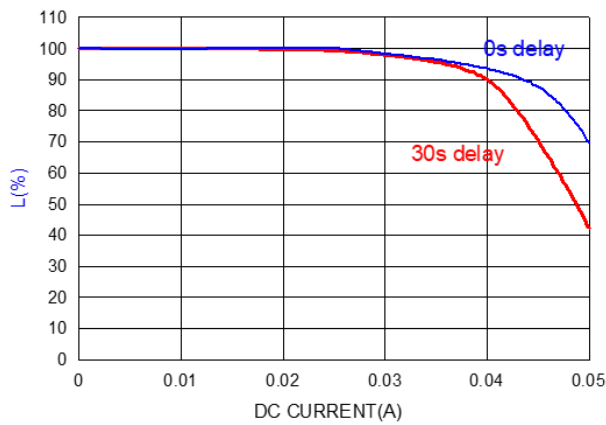
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## 6. Characteristics Curve

W4420F-252M-F10



W4420F-352K-F10



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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

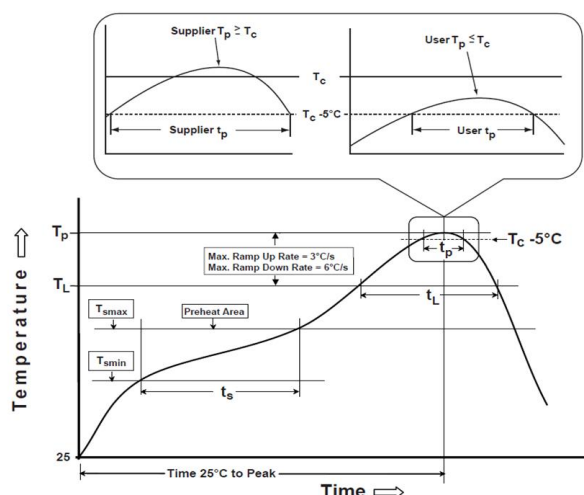
Recommended temperature profiles for lead free re-flow soldering in Figure 1, Table 1.1 & 1.2 (J-STD-020E).

### 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).

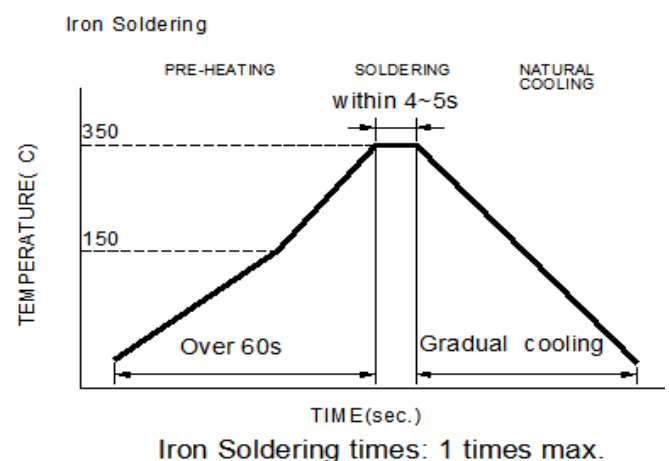
Note:

- 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



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 ( $T_{\min}$ )	150°C
-Temperature Max ( $T_{\max}$ )	200°C
-Time ( $t_s$ ) from ( $T_{\min}$ to $T_{\max}$ )	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

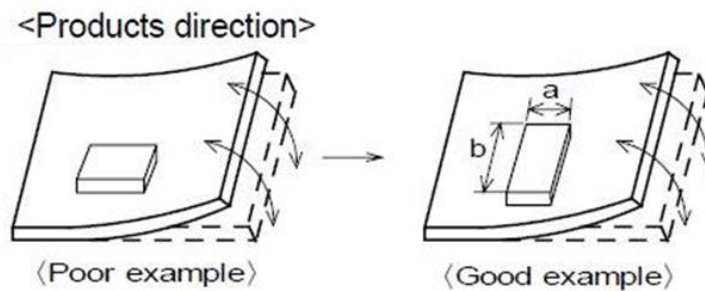
Reflow is referred to standard IPC/JEDEC J-STD-020E.

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## 7-3. Attention regarding P.C.B. bending

The following shall be considered when designing P.C.B.'S

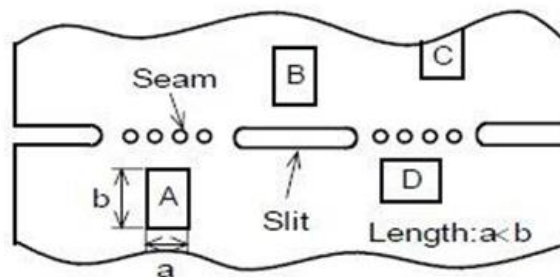
- (a) P.C.B. shall be designed so that products are not subjected to the mechanical stress for board warpage.



Products shall be located in the sideways direction (Length:  $a < b$ ) to against the mechanical stress.

- (b) Products location on P.C.B.:

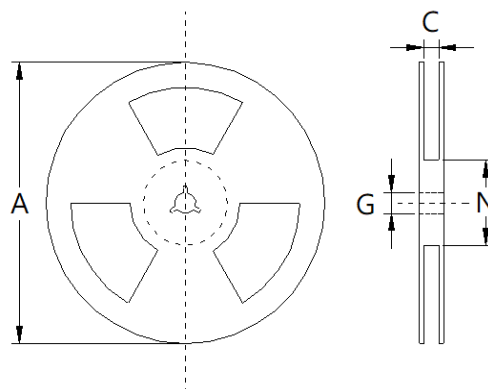
Products (A,B,C,D) shall be located carefully to prevent mechanical stress when warping the board. Products may be subjected to the mechanical stress in the order of  $A > C > B \approx D$ .



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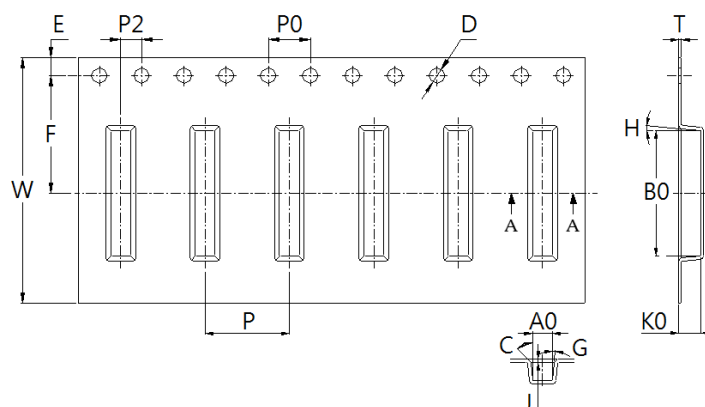
## 8. Packaging Information

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



Type	A	C	G	N
7"x12mm	180.0±2.0	16.5±1.0	13.5±0.5	100.0±2.0

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



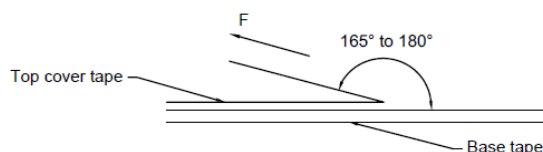
P	P0	P2	B0	A0
8.00±0.10	4.00±0.10	2.00±0.10	5.00±0.10	2.50±0.10
K0	D	E	F	W
2.10±0.10	1.50+0.10/-0.00	1.75±0.10	5.50±0.10	12.00±0.30
T	C	G	H	J
0.30±0.05	45°	5°	5°	0.30

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

Chip/ Reel	1,000
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## 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)	Tape Size	8 mm	12 to 56 mm	72 mm or Wider
5~35	45~85	860~1060	300±10	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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