

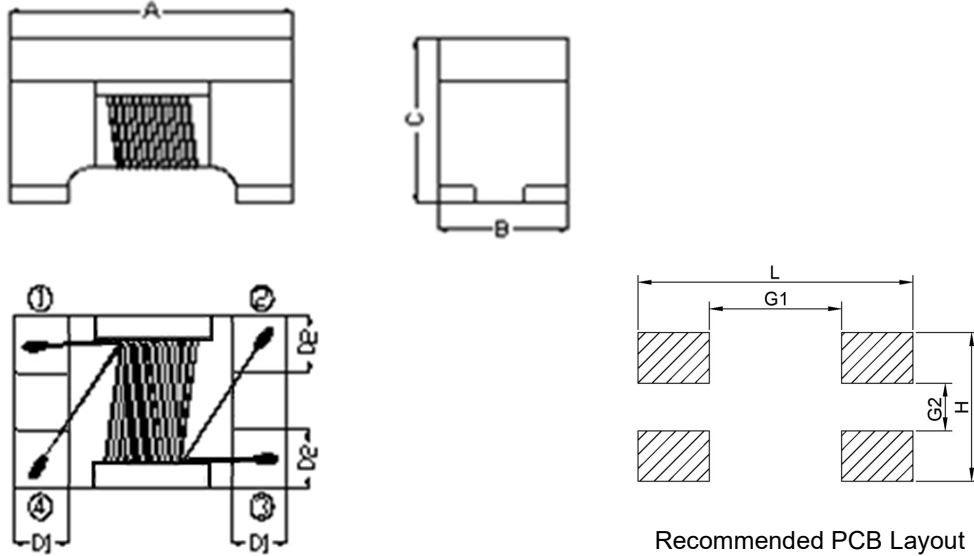
## 1. Part No. Expression

**WAQ 5 F US 510 - RB - 10**

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

- |                    |                     |
|--------------------|---------------------|
| (a) Series Code    | (e) Inductance Code |
| (b) Dimension Code | (f) Packaging Code  |
| (c) Material Code  | (g) Current Code    |
| (d) Type Code      | (h) Internal Code   |

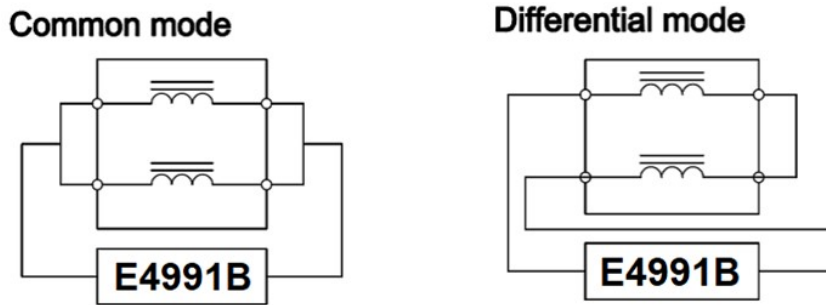
## 2. Configuration & Dimensions (Unit: mm)



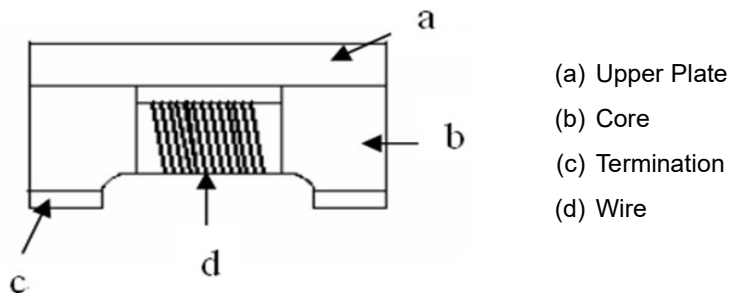
A	B	C	D1	D2	L	H	G1	G2
3.30±0.20	2.50±0.20	2.50 Max	0.55±0.15	1.00±0.20	3.70 Ref	2.80 Ref	2.40 Ref	0.60 Ref

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

## 3. Schematic



## 4. Material List



## 5. General Specifications

- (a) Reliability test for this part meets AEC-Q200 standard.
- (b) Operating Temp.: -40°C to +125°C (including self-temperature rise)
- (c) Storage Temp.: -40°C to +125°C (on board)
- (d) All test data referenced to 25°C ambient.
- (e) Rated Current will cause the coil temperature rise approximately  $\Delta T$  of 40°C Max.
- (f) Storage Condition (Component in its packaging)
  - i) Temperature: Less than 40°C
  - ii) Humidity: Less than 60% RH

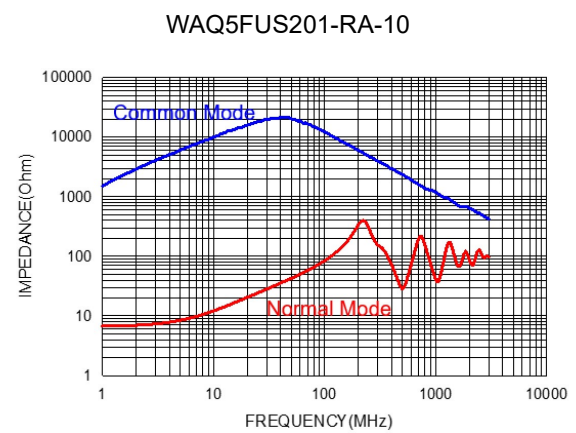
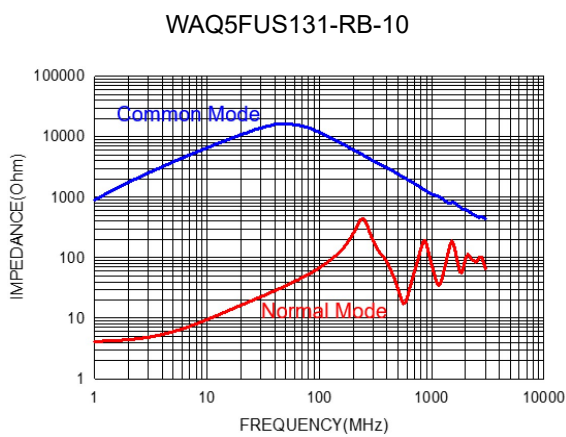
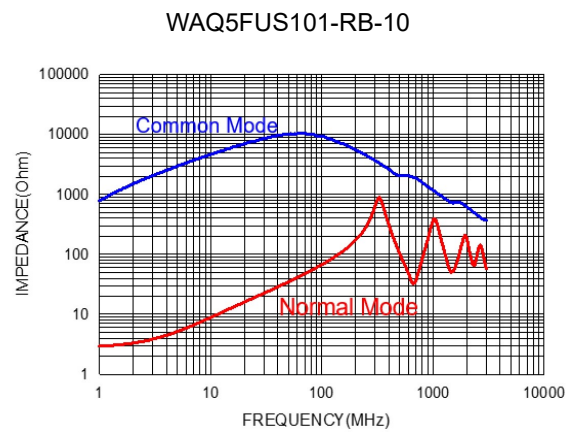
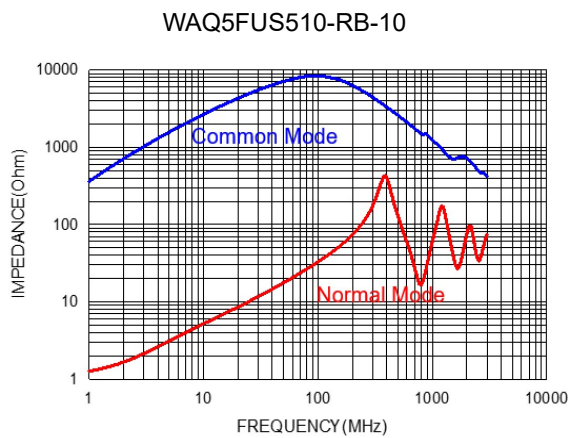
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## 6. Electrical Characteristics

Part Number	Inductance (μH)	Inductance Tolerance	DCR (Ω) Max	Rated Current (mA) Max	Rated Voltage (V <sub>DC</sub> ) Max	IR (MΩ) Min
WAQ5FUS510-RB-10	51	+50/-30%	0.7	200	80	10
WAQ5FUS101-RB-10	100	+50/-30%	1.5	150	80	10
WAQ5FUS131-RB-10	130	+30/-10%	3.5	115	80	10
WAQ5FUS201-RA-10	200	+30/-10%	5.5	70	80	10

Test Frequency: 0.1V/100kHz

## 7. Characteristics Curve



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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

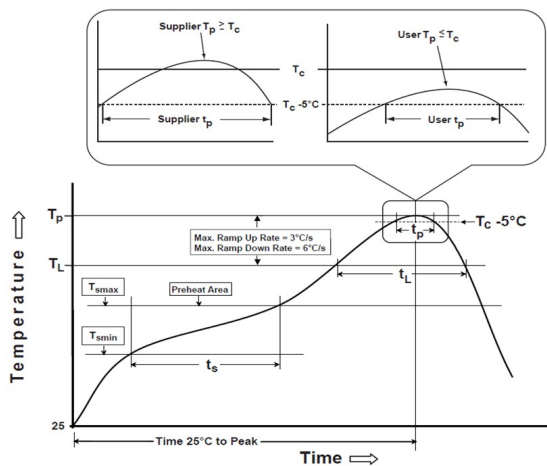
Recommended temperature profiles for lead free re-flow soldering in Figure 1, Table 1.1 & 1.2 (J-STD-020E).

#### 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).

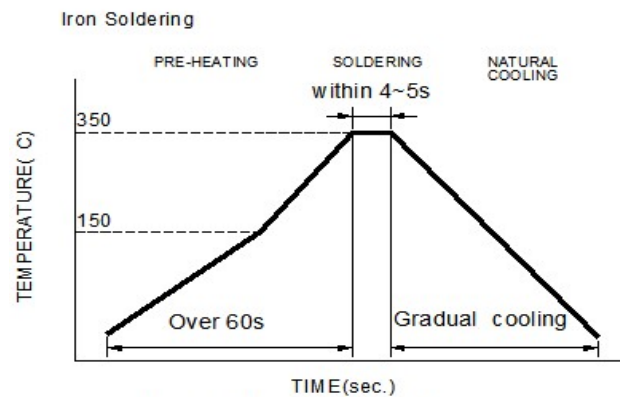
Note:

- (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



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<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 ( $T_c$ )**

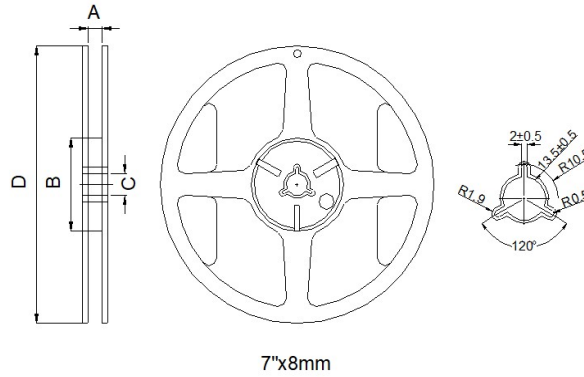
	Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350-2000	Volume mm <sup>3</sup> >2000
PB-Free Assembly	<1.6mm	260°C	260°C	260°C
	1.6-2.5mm	260°C	250°C	245°C
	≥2.5mm	250°C	245°C	245°C

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

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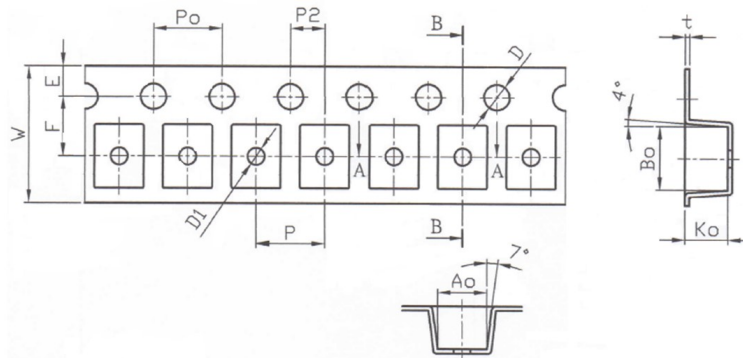
9. Packaging Information

9-1. Reel Dimension (Unit: mm)



Type	A(mm)	B(mm)	C(mm)	D(mm)
7" x 8mm	9.0±0.5	60.0±2.0	13.5±0.5	178.0±2.0

9-2. Tape Dimension (Unit: mm)



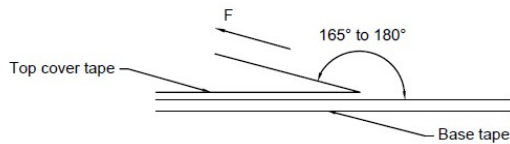
W	P	E	F	P2	D
8.00±0.10	4.00±0.10	1.75±0.10	3.50±0.05	2.00±0.05	1.50+0.10/-0.00
D1	Po	Ao	Bo	Ko	t
1.00±0.10	4.00±0.10	2.88±0.10	3.72±0.10	2.50±0.10	0.26±0.05

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

Chip/ Reel	2,000
Inner Box	10,000
Middle Box	50,000
Carton	100,000

### 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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