



## Description

R12.000 Series are the fuses set the industry standard for performance, reliability and quality. The solder-free design provides excellent on-off and temperature cycling characteristics during use and also makes our SMD fuses more heat and shock tolerant than typical subminiature fuses.

## Features

- Rapid interruption of excessive current
- Compatible with reflow and wave solder
- Ceramic and glass construction
- One time positive disconnect
- Lead free and Halogen free material

## Applications

- Secondary circuit protection
- Laptop, notebook, netbook
- Flat panel displays
- High definition television(HDTV)
- LCD/LED backlighting
- Computers and peripherals
- Gaming console systems
- Handheld/portable equipment
- Mobile device charges
- Automotive
- Central body control module
- Heating ventilation and air conditioning
- Doors,window lift and seat control
- Digital instrument cluster
- In-vehicle infotainment and navigation
- Electric pumps,motor control and
- Powertrain control module(PCU)/Engine
- Transimission Control Unit(TCU)

## Electrical Characteristics

Rated Current	% of Amp Rating	Opening Time
250mA~30A	100%	4hours, min
1A~3A	200%	1.0s - 60 s
1A~5A	250%	5.0s max
1A~5A	300%	0.1s - 3.0 s
250mA~750mA	350%	5.0s max
6A~30A	350%	5.0s max
250mA~30A	1000%	0.2ms - 20.0 ms

## Agency information

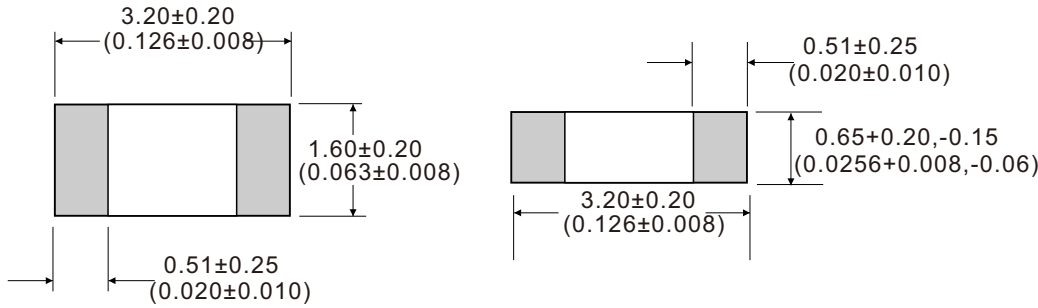
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## Specifications

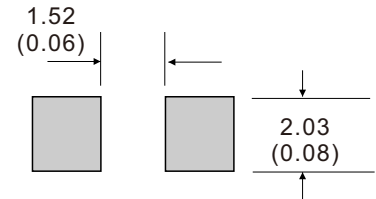
Part No.	Rated Voltage (V)			Rated Current (A)	Breaking Capacity (A)	Typical Cold Resistance (mOhms)	Typical Voltage Drop (mV)	Typical Pre-Arcing I <sup>2</sup> t (A <sup>2</sup> Sec)	Marking	
R12.000.0.25	125Vdc	72Vdc	63Vdc	250mA	100A@72Vdc	100A@32Vdc	3700	1350	0.00038	.25
R12.000.0.375				375mA			1850	720	0.00077	E
R12.000.0.5				500mA			1050	690	0.0019	B
R12.000.0.75				750mA			775	680	0.15	G
R12.000.1				1A			485	550	0.18	H
R12.000.1.5				1.5A			218	355	0.4	K
R12.000.2				2A			133	310	1.1	N
R12.000.2.5				2.5A			79	230	1.7	O
R12.000.3				3A			49	185	2.2	P
R12.000.3.5				3.5A			37	175	2.7	R
R12.000.4				4A			33	160	3.2	S
R12.000.4.5				4.5A			28	150	4.2	X
R12.000.5				5A			22	135	6	T
R12.000.6				6A			15.5	140	12	F
R12.000.7				7A			11.5	120	18	J
R12.000.8	8A	8.0	100	18	V					
R12.000.10	10A	7.0	90	30	U					
R12.000.12	12A	5.9	85	45	W					
R12.000.15	15A	3.8	75	63	Y					
R12.000.20	20A	2.9	70	80	Q					
R12.000.25	25A	1.6	60	90	25					
R12.000.30	30A	1.3	60	100	30					

## Dimensions

(Unit: mm/inch)



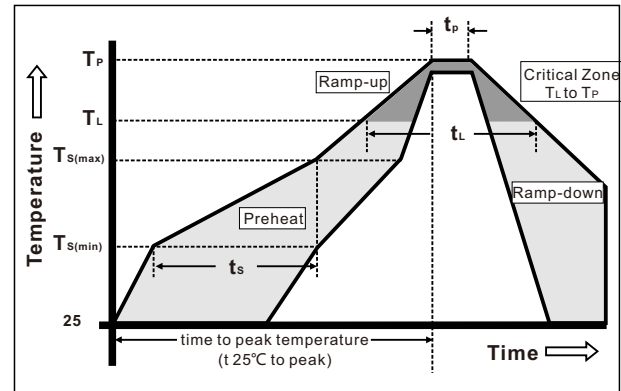
## Pad layout



## Installation Recommendations

### 1 Wave Soldering Parameters

Reflow Condition		Pb-free assembly
Pre Heat	- Temperature Min ( $T_{s(min)}$ )	150°C
	- Temperature Max ( $T_{s(max)}$ )	200°C
	- Time (Min to Max) ( $t_s$ )	60 – 120 seconds
Average Ramp-up Rate (Liquidus Temp (TL) to peak)		3°C/second max.
TS(max) to TL - Ramp-up Rate		5°C/second max.
Reflow	- Temperature (TL) (Liquidus)	217°C
	- Temperature (tL)	60 – 150 seconds
Peak Temperature ( $T_P$ )		260+0/-5°C
Time within 5°C of actual peak Temperature ( $t_p$ )		30 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature ( $T_P$ )		8 minutes max.
Do not exceed		260°C



Solder Pot Temperature: 260°C max  
Solder Dwell Time: 10 Seconds max

### 2 Hand-Solder Parameters

Solder Iron Temperature: 280±5°C  
Heating Time: 5 Seconds min  
Generally, hand-soldering is not recommended

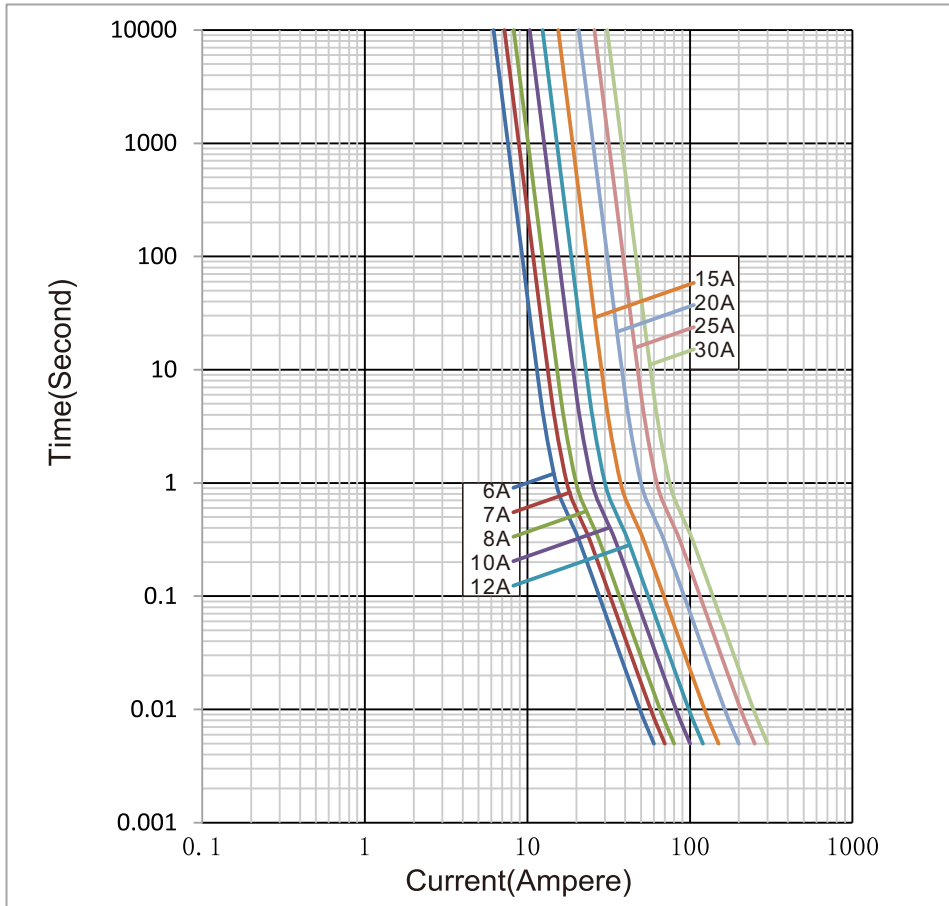
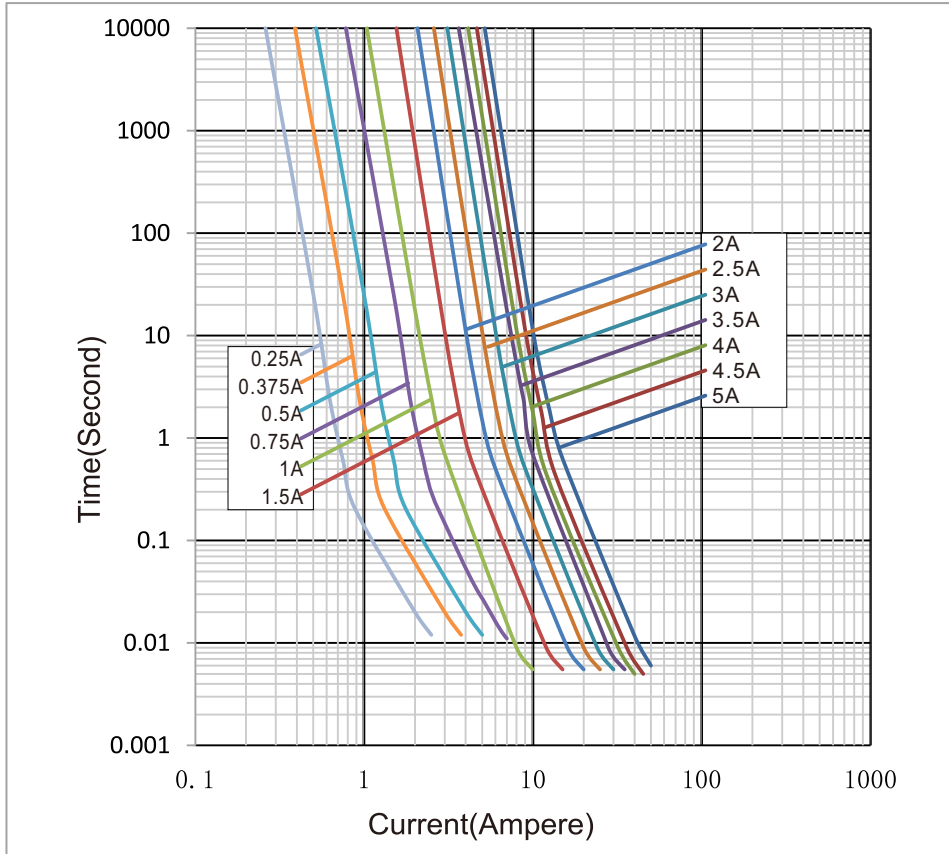
## Part Numbering System



## Product Characteristics

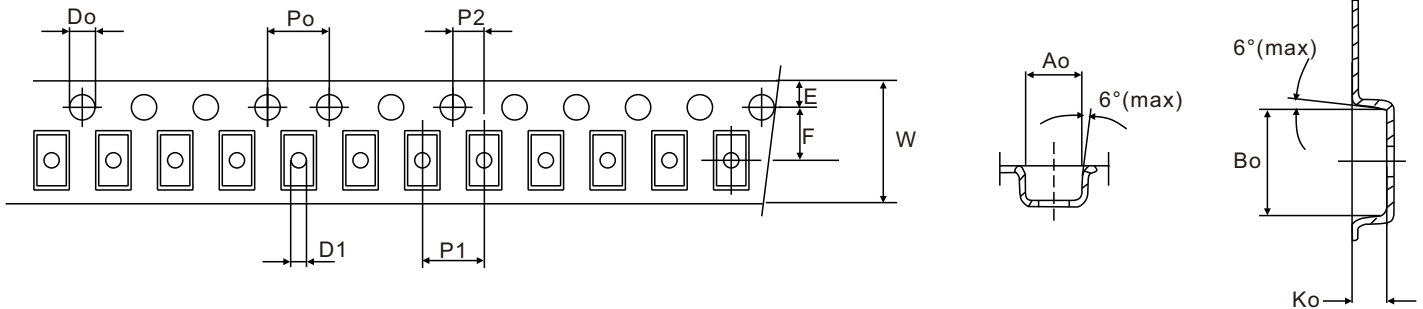
Materials	Body: Ceramic Terminations: Silver over-plated with tin Element: Alloy(Ag,Cu,Zn) Cover Coat: Glass
Operating Temperature	-55°C to 125°C Consult temperature derating curve chart.
Thermal Shock	300 cycles -55°C to 125°C
Humidity	MIL-STD-202F, Method 103B, Condition D
Vibration	Per MIL-STD-202F, Method 201A
Insulation Resistance (After Opening)	Greater than 10,000 ohms
Resistance to Soldering Heat	MIL-STD-202G, Method 210F, Condition D

## Time Current Curve



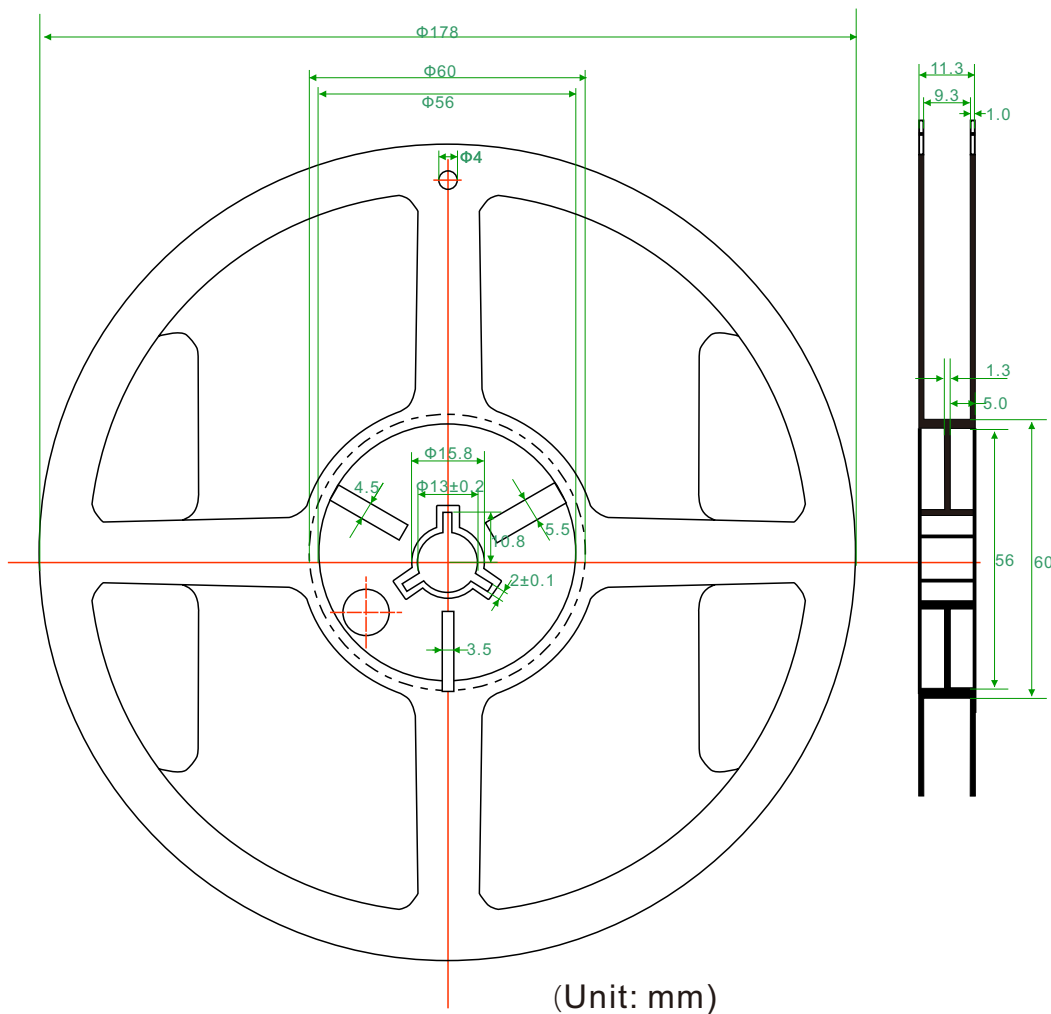
## Packaging

3,000 pieces of fuses in plastic or paper taper (3000pcs)



Symbol	Ao	Bo	Ko	Po	P1	P2
Spec	1.80±0.10	3.50±0.10	1.27±0.10	4.00±0.10	4.00±0.10	2.00±0.10
Symbol	E	F	Do	D1	W	T
Spec	1.75±0.10	3.50±0.10	1.50±0.10	1.00(Max)	8.00±0.10	0.25±0.05

(Unit: mm)



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