

# Surface Mountable PTC Resettable Fuse



## Specifications:

Applications : All high-density boards.  
 Product features : Small surface mountable, solid state, faster time to trip than standard SMD devices, lower resistance than standard SMD devices.  
 Maximum voltage : 6V to 60V.  
 Temperature range : -40°C to 85°C.



UL : E-345437



## Electrical Characteristics (23°C)

Hold Current	Trip Current	Rated Voltage	Maximum Current	Typical Power	Maximum Time to Trip		Resistance		Part Number
					Current	Time	R <sub>Min</sub>	R <sub>1Max</sub>	
I <sub>H</sub> , A	I <sub>T</sub> , A	V <sub>Max</sub> , V dc	I <sub>Max</sub> , A	P <sub>d</sub> , W	Amperes	Seconds	Ω	Ω	
0.05	0.15	60	10	0.60	0.25	3.00	3.600	50.000	MC36203
0.10	0.25	60	10	0.60	0.50	1.50	1.600	15.000	MC36205
0.20	0.40	30	10	0.60	8.00	0.02	0.800	5.000	MC36208
0.35	0.70	16	40	0.60	8.00	0.20	0.320	1.300	MC36212
0.50	1.00	16	40	0.60	8.00	0.10	0.250	0.900	MC36214
0.75	1.50	8	40	0.60	8.00	0.10	0.130	0.400	MC36217
1.10	2.20	6	100	0.80	8.00	0.30	0.060	0.210	MC36223
1.50	3.00	6	100	0.80	8.00	0.50	0.040	0.110	MC36230
1.75	4.00	6	100	0.8	8.00	0.60	0.020	0.080	MC36236
2.00	4.00	6	100	0.8	8.00	1.00	0.015	0.070	MC36239

I<sub>H</sub> = Hold current-maximum current at which the device will not trip at 23°C still air.

I<sub>T</sub> = Trip current-minimum current at which the device will always trip at 23°C still air.

V<sub>MAX</sub> = Maximum voltage device can withstand without damage at it rated current (I maximum).

I<sub>MAX</sub> = Maximum fault current device can withstand without damage at rated voltage (V maximum).

P<sub>d</sub> = Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.

R<sub>MIN</sub> = Minimum device resistance at 23°C prior to tripping.

R<sub>1MAX</sub> = Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

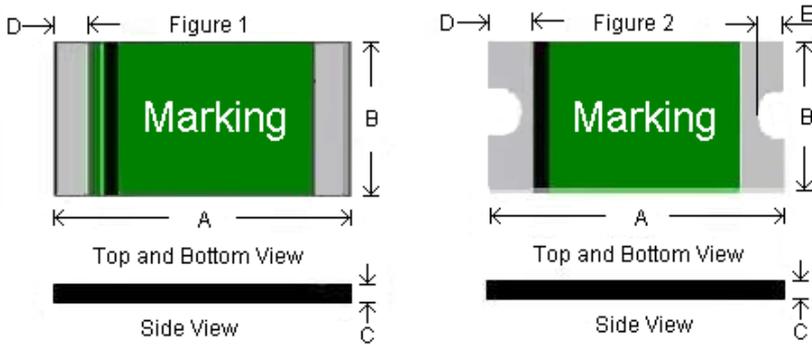
Termination pad characteristics

Termination pad materials: Pure tin.

# Surface Mountable PTC Resettable Fuse



## FSMD Production Dimensions (Millimetre)

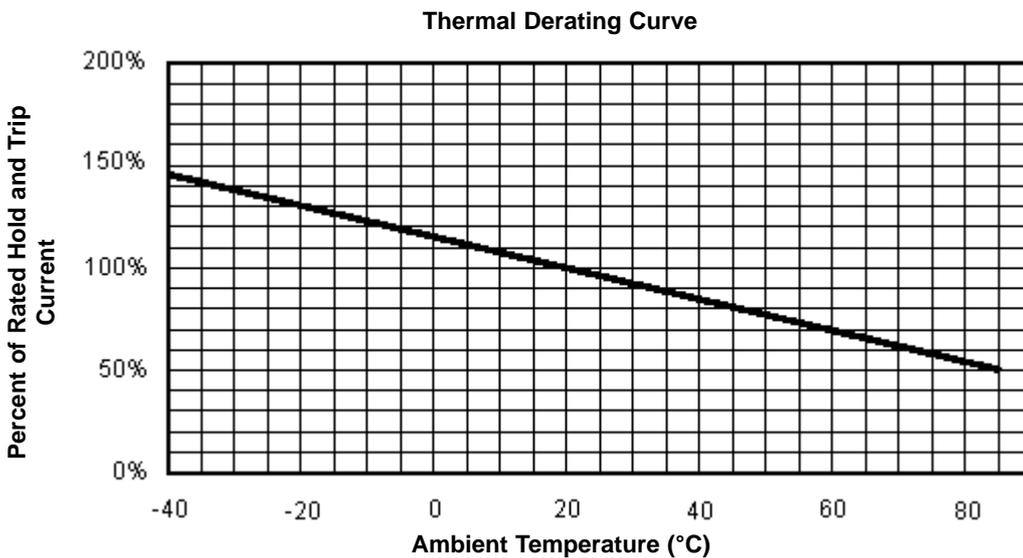


## Dimensions Table

A		B		C		D		E		Figure	Part Number
Minimum	Maximum										
3.00	3.43	2.35	2.80	0.60	1.15	0.25	0.75	—	—	1	MC36203
3.00	3.43	2.35	2.80	0.60	1.15	0.25	0.75	—	—	1	MC36205
3.00	3.43	2.35	2.80	0.40	0.85	0.25	0.75	—	—	1	MC36208
3.00	3.43	2.35	2.80	0.40	0.80	0.25	0.75	—	—	1	MC36212
3.00	3.43	2.35	2.80	0.30	0.75	0.25	0.75	—	—	1	MC36214
3.00	3.43	2.35	2.80	0.30	0.70	0.25	0.75	—	—	1	MC36217
3.00	3.43	2.35	2.80	0.60	1.00	0.25	0.75	0.10	0.45	2	MC36223
3.00	3.43	2.35	2.80	0.50	0.90	0.25	0.75	0.10	0.45	2	MC36230
3.00	3.43	2.35	2.80	0.80	1.40	0.25	0.75	0.10	0.45	2	MC36236
3.00	3.43	2.35	2.80	0.80	1.40	0.25	0.75	0.10	0.45	2	MC36239

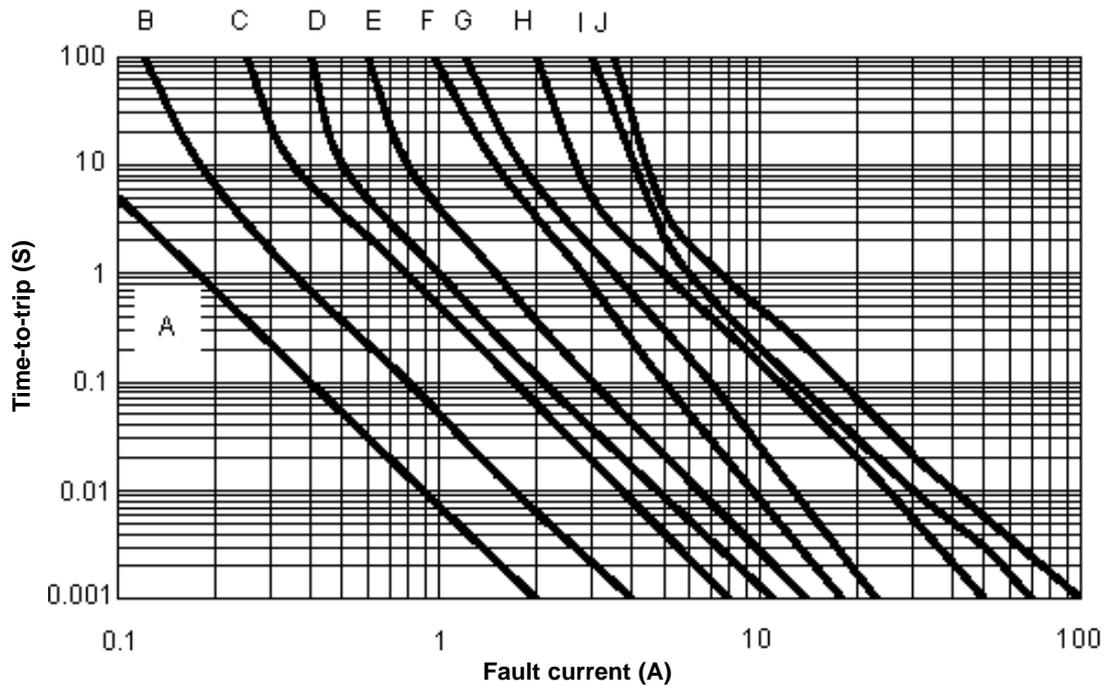
Dimensions : Millimetres

## Thermal Derating Curve



## Typical Time-To-Trip at 23°C

- A = MC36203
- B = MC36205
- C = MC36208
- D = MC36212
- E = MC36214
- F = MC36217
- G = MC36223
- H = MC36230
- I = MC36236
- J = MC36239

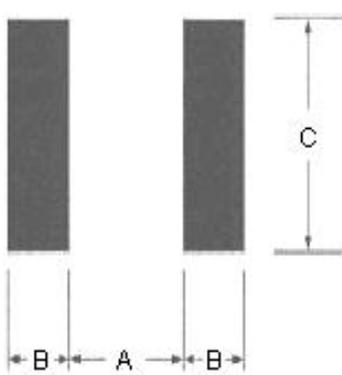


## Material Specification

- Terminal pad material : Pure tin.
- Soldering characteristics : Meets EIA specification RS 186-9E, ANSI/J-std-002 category 3.

## Pad Layouts Solder Reflow and Rework Recommendations

The dimension in the table below provide the recommended pad layout for each 1210 device.



### Pad Dimensions

Device	A Nominal	B Nominal	C Nominal
All 1210 Series	2.00	1.00	2.80

Dimensions : Millimetres

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Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate ( $T_s$ maximum to $T_p$ )	3°C/seconds maximum
Preheat: Temperature Minimum ( $T_s$ minimum) Temperature Maximum ( $T_s$ maximum) Time ( $t_s$ minimum to $t_s$ maximum)	150°C 200°C 60 -180 seconds
Time maintained above: Temperature( $T_L$ ) Time ( $t_L$ )	217°C 60-150 seconds
Peak/Classification Temperature( $T_p$ ):	260°C
Time within 5°C of actual Peak : Temperature ( $t_p$ )	20-40 seconds
Ramp-Down Rate:	6°C/seconds maximum
Time 25°C to Peak Temperature:	8 minutes maximum

Note: 1All temperatures refer to of the package, measured on the package body surface.

## Solder reflow

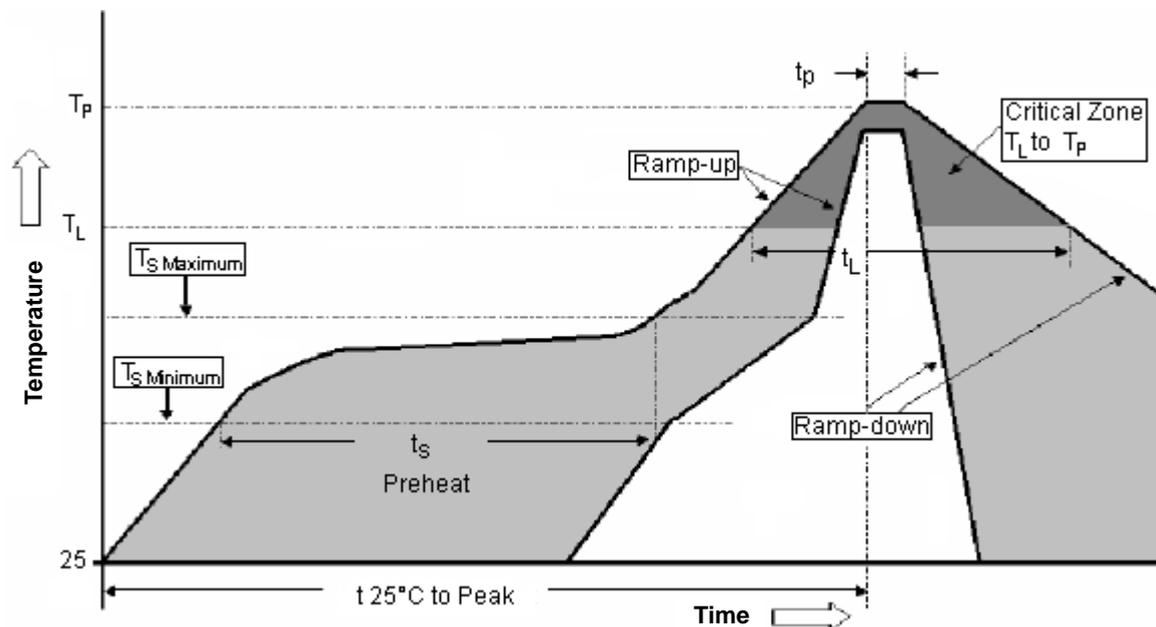
Due to "Lead Free" nature, Temperature and Dwelling time for the soldering zone is higher than those for Regular. This may cause damage to other components.

1. Recommended max past thickness > 0.25mm.
2. Devices can be cleaned using standard methods and aqueous solvent.
3. Rework use standard industry practices.
4. Storage Environment : < 30°C/60% RH.

## Caution:

1. If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.
2. Devices are not designed to be wave soldered to the bottom side of the board.

## Reflow Profile



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## Part Number Table

Description	Part Number
Surface Mountable PTC Resettable Fuse	MC36203
Surface Mountable PTC Resettable Fuse	MC36205
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Surface Mountable PTC Resettable Fuse	MC36223
Surface Mountable PTC Resettable Fuse	MC36230
Surface Mountable PTC Resettable Fuse	MC36236
Surface Mountable PTC Resettable Fuse	MC36239

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