

# 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	Max 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	
0.10	0.30	60	10	0.8	8.0	0.020	1.600	15.00	MC36204
0.35	0.70	16	40	0.8	8.0	0.100	0.320	1.500	MC36209
0.75	1.50	24	40	1.0	8.0	0.200	0.110	0.290	MC36218
0.75	1.50	33	40	1.0	8.0	0.200	0.110	0.400	MC36219
1.10	1.95	16	100	0.8	8.0	0.500	0.040	0.180	MC36224
1.10	2.20	24	100	1.0	8.0	0.500	0.060	0.200	MC36225
1.25	2.50	6	100	0.8	8.0	0.400	0.050	0.140	MC36226
1.25	2.50	6	100	0.8	8.0	0.400	0.050	0.140	MC36227
1.50	3.00	8	100	0.8	8.0	0.500	0.040	0.110	MC36228
1.50	3.00	12	100	1.0	8.0	0.500	0.040	0.110	MC36231
1.50	3.00	24	100	1.0	8.0	1.500	0.040	0.120	MC36232
1.60	3.20	8	100	0.8	8.0	0.500	0.030	0.100	MC36233
1.60	3.20	12	100	1.0	8.0	1.000	0.030	0.100	MC36234
1.60	3.20	16	100	1.0	8.0	1.000	0.030	0.100	MC36235
1.90	4.90	6	100	1.0	8.0	5.000	0.003	0.025	MC36237
2.00	3.50	8	100	1.0	8.0	2.000	0.020	0.070	MC36238
2.60	5.00	13.2	100	1.3	8.0	5.000	0.015	0.050	MC36242
2.60	5.00	16	100	1.3	8.0	5.000	0.015	0.050	MC36243
2.60	5.00	6	100	1.0	8.0	2.500	0.015	0.047	MC36244

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 its 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.

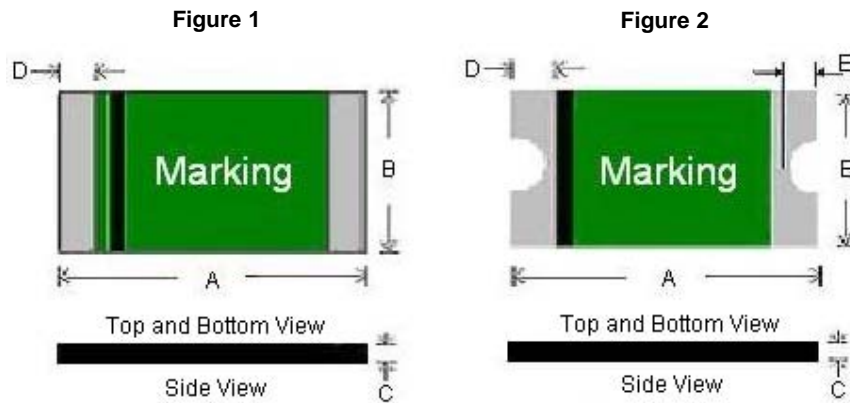
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## FSMD Product Dimensions (Millimetres)



## Dimensions Table

A		B		C		D		E		Figure	Part Number
Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum		
4.37	4.73	3.07	3.41	0.60	0.90	0.30	0.95	-	-	1	MC36204
4.37	4.73	3.07	3.41	0.40	0.70	0.30	0.95	-	-	1	MC36209
4.37	4.73	3.07	3.41	0.80	1.55	0.25	0.95	0.25	0.65	2	MC36218
4.37	4.73	3.07	3.41	0.80	1.55	0.25	0.95	0.25	0.65	2	MC36219
4.37	4.73	3.07	3.41	0.25	0.90	0.30	0.95	-	-	1	MC36224
4.37	4.73	3.07	3.41	0.80	1.30	0.25	0.95	0.25	0.65	2	MC36225
4.37	4.73	3.07	3.41	0.25	0.55	0.30	0.95	-	-	1	MC36226
4.37	4.73	3.07	3.41	0.25	0.55	0.30	0.95	-	-	1	MC36227
4.37	4.73	3.07	3.41	0.25	0.55	0.30	0.95	-	-	1	MC36228
4.37	4.73	3.07	3.41	0.60	1.10	0.25	0.95	0.25	0.65	2	MC36231
4.37	4.73	3.07	3.41	0.60	1.55	0.25	0.95	0.25	0.65	2	MC36232
4.37	4.73	3.07	3.41	0.25	0.90	0.30	0.95	-	-	1	MC36233
4.37	4.73	3.07	3.41	0.60	1.35	0.25	0.95	0.25	0.65	2	MC36234
4.37	4.73	3.07	3.41	0.60	1.35	0.25	0.95	0.25	0.65	2	MC36235
4.37	4.73	3.07	3.41	0.30	0.70	0.25	0.95	0.25	0.65	2	MC36237
4.37	4.73	3.07	3.41	0.55	1.20	0.25	0.95	0.25	0.65	2	MC36238
4.37	4.73	3.07	3.41	0.80	1.55	0.25	0.95	0.25	0.65	2	MC36242
4.37	4.73	3.07	3.41	0.80	1.55	0.25	0.95	0.25	0.65	2	MC36243
4.37	4.73	3.07	3.41	0.55	1.20	0.25	0.95	0.25	0.65	2	MC36244

Dimensions : Millimetres

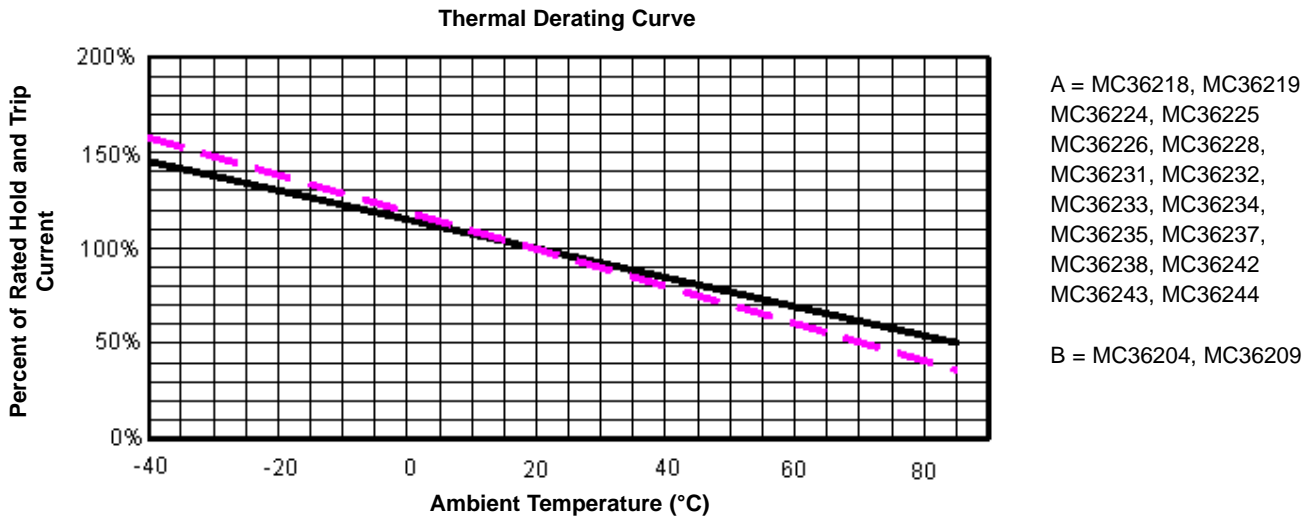
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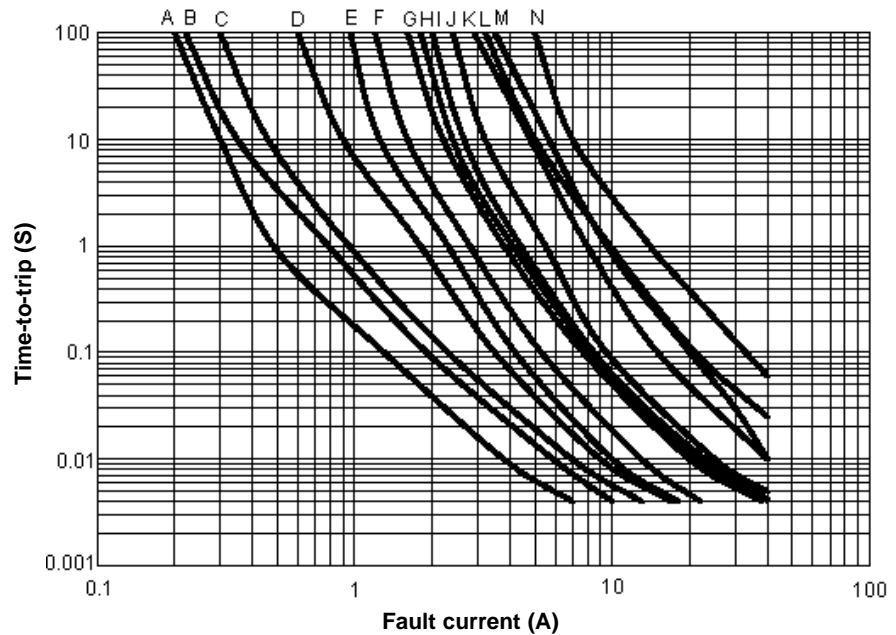


## Thermal Derating Curve



## Typical Time-To-Trip at 23°C

- A = MC36204
- D = MC36209
- F = MC36218, MC36219
- G = MC36224, MC36225
- H = MC36226
- I = MC36228, MC36231, MC36232
- J = MC36233, MC36234, MC36235
- M = MC36237
- K = MC36238
- L = MC36242, MC36243, MC36244



## Material Specification

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

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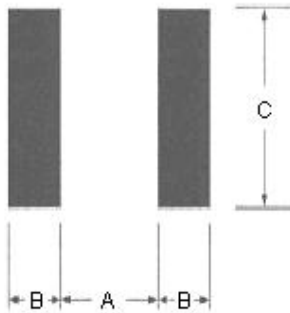


# Surface Mountable PTC Resettable Fuse



## Pad Layouts Solder Reflow and Rework Recommendations

The dimension in the table below provide the recommended pad layout for each 1812 device.



### Pad Dimensions

Device	A Nominal	B Nominal	C Nominal
All 1812 Series	3.45	1.78	3.50

Dimensions : Millimetres

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate ( $T_s$ maximum to $T_p$ )	3°C/second maximum
Preheat: Temperature Minimum ( $T_s$ minimum)	150°C
Temperature Maximum ( $T_s$ maximum)	200°C
Time ( $t_s$ minimum to $t_s$ maximum)	60-180 seconds
Time maintained above: Temperature ( $T_L$ )	217°C
Time ( $t_L$ )	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/second maximum
Time 25°C to Peak Temperature:	8 minutes maximum

Note 1: All 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.

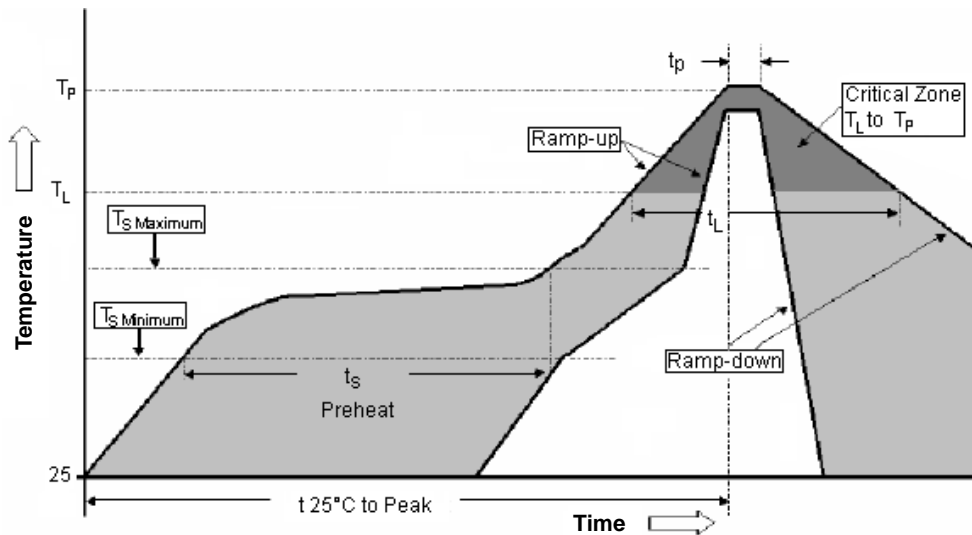
## Caution:

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.

# Surface Mountable PTC Resettable Fuse



## Reflow Profile



## Part Number Table

Description	Part Number
Surface Mountable PTC Resettable Fuse	MC36204
Surface Mountable PTC Resettable Fuse	MC36209
Surface Mountable PTC Resettable Fuse	MC36218
Surface Mountable PTC Resettable Fuse	MC36219
Surface Mountable PTC Resettable Fuse	MC36224
Surface Mountable PTC Resettable Fuse	MC36225
Surface Mountable PTC Resettable Fuse	MC36226
Surface Mountable PTC Resettable Fuse	MC36227
Surface Mountable PTC Resettable Fuse	MC36228
Surface Mountable PTC Resettable Fuse	MC36231
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Surface Mountable PTC Resettable Fuse	MC36242
Surface Mountable PTC Resettable Fuse	MC36243
Surface Mountable PTC Resettable Fuse	MC36244

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