

Surface Mountable PTC Resettable Fuse: FSMD050-24-1206R

1. Summary

- (a) **RoHS Compliant & Halogen Free**
- (b) **Applications: All high-density boards**
- (c) **Product Features: Small surface mountable, Solid state, Faster time to trip than standard SMD devices, Lower resistance than standard SMD devices**
- (d) **Operation Current: 500mA**
- (e) **Maximum Voltage: 24V**
- (f) **Temperature Range : -40°C to 85°C**

2. Agency Recognition

UL : E211981
 C-UL: E211981
 TÜV: R50090556

3. Electrical Characteristics (23°C)

Part Number	Hold Current	Trip Current	Rated Voltage	Max Current	Typical Power	Max Time to Trip		Resistance	
	I_H , A	I_T , A	V_{MAX} , Vdc	I_{MAX} , A	P_d , W	Current	Time	R_{MIN}	$R1_{MAX}$
						Amp	Sec	Ω	Ω
FSMD050-24-1206R	0.50	1.00	24	100	0.6	8.00	0.10	0.150	0.750

I_H =Hold current-maximum current at which the device will not trip at 23°C still air.
 I_T =Trip current-minimum current at which the device will always trip at 23°C still air.
 V_{MAX} =Maximum voltage device can withstand without damage at it rated current.(I_{MAX})
 I_{MAX} = Maximum fault current device can withstand without damage at rated voltage (V_{MAX}).
 P_d =Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.
 R_{MIN} =Minimum device resistance at 23°C prior to tripping.
 $R1_{MAX}$ =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

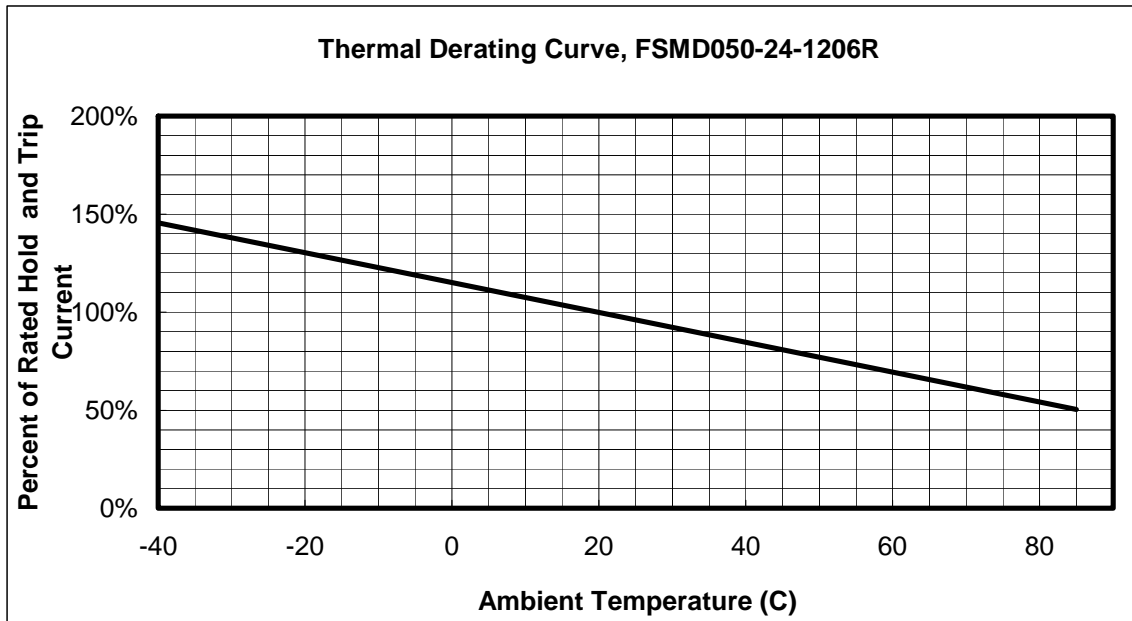
4. FSMD Product Dimensions (Millimeters)



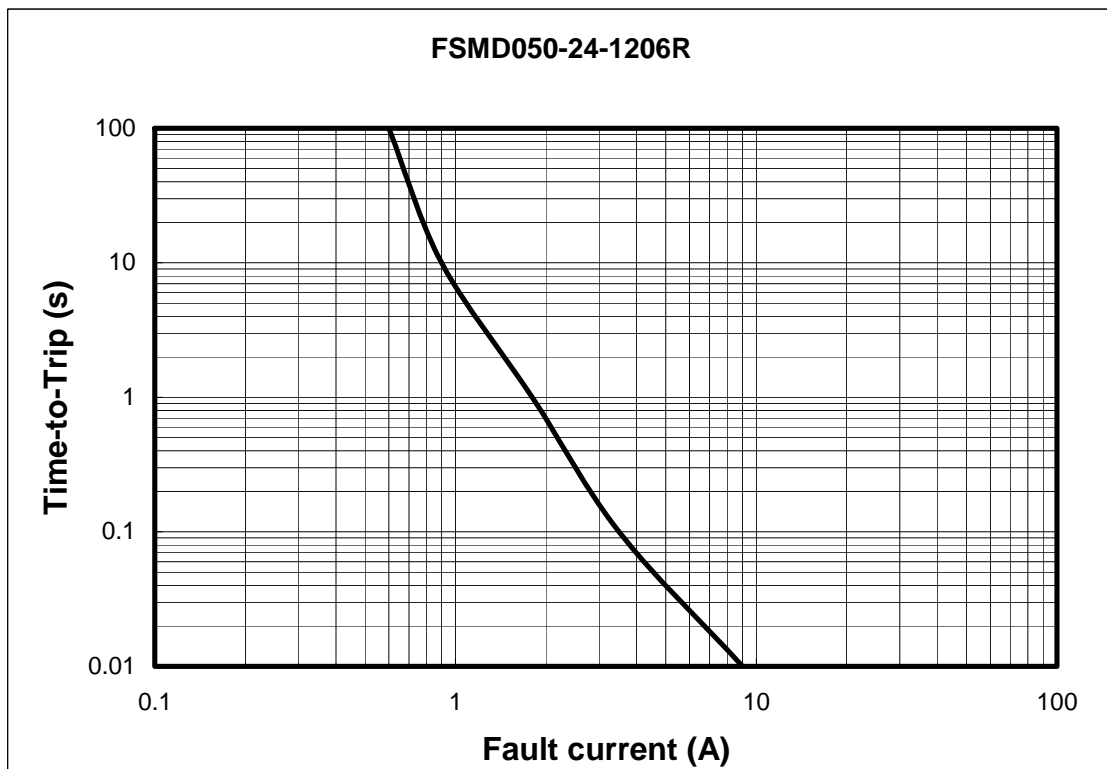
Part Number	A		B		C		D		E	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
FSMD050-24-1206R	3.00	3.50	1.50	1.80	0.90	1.30	0.25	0.75	0.10	0.45

NOTE : Specification subject to change without notice.

5. Thermal Derating Curve



6. Typical Time-To-Trip at 23°C



NOTE : Specification subject to change without notice.

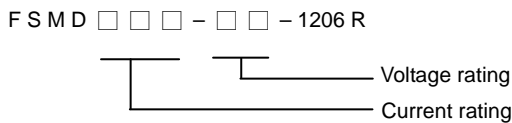
7. Material Specification

Terminal pad material: Pure Tin

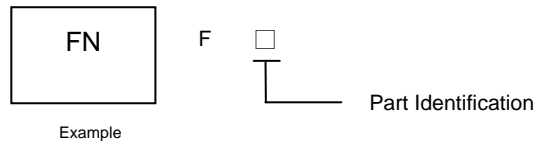
Soldering characteristics: Meets EIA specification RS 186-9E, ANSI/J-std-002 Category 3

8. Part Numbering and Marking System

Part Numbering System

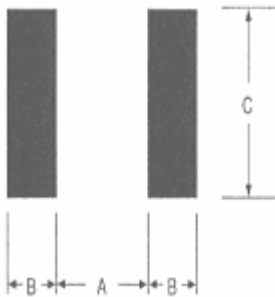


Part Marking System



9. Pad Layouts 、 Solder Reflow and Rework Recommendations

The dimension in the table below provide the recommended pad layout for each FSMD1206 device



Pad dimensions (millimeters)

Device	A Nominal	B Nominal	C Nominal
FSMD050-24-1206R	2.00	1.00	1.90

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (T_{smax} to T_p)	3 °C/second max.
Preheat :	
Temperature Min (T _{smin})	150 °C
Temperature Max (T _{smax})	200 °C
Time (t _{smin} to t _{smax})	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 max.
Time 25 °C to Peak Temperature :	8 minutes max.

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

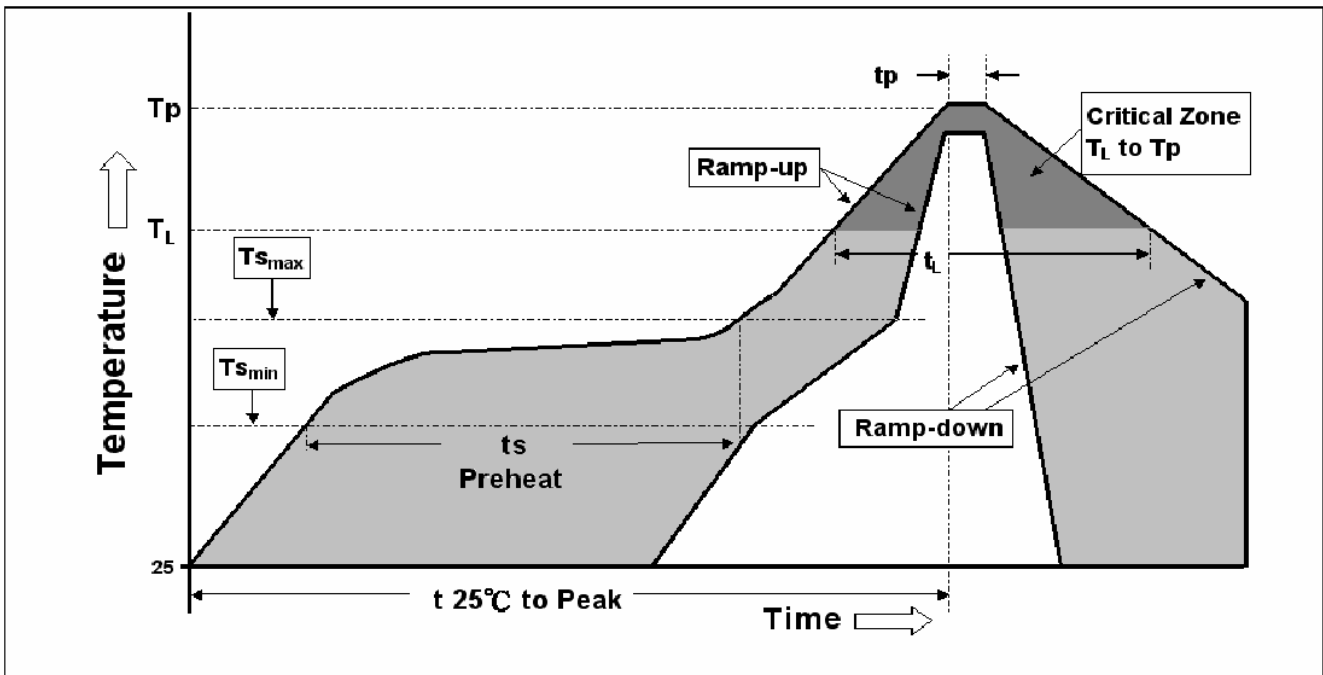
Solder reflow

- ※ 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.

Reflow Profile



Warning: -Operation beyond the specified maximum ratings or improper use may result in damage and possible electrical arcing and/or flame.



-PPTC device are intended for occasional overcurrent protection. Application for repeated overcurrent condition and/or prolonged trip are not anticipated.

-Avoid contact of PPTC device with chemical solvent. Prolonged contact will damage the device performance.

FSMD1206 Series tape and reel specifications (dimensions in millimeters)

EIA MARK	Dimension	
	Dim(mm)	Tol.(mm)
W	8.0	± 0.3
P ₀	4.0	± 0.10
P ₁	4.0	± 0.10
P ₂	2.0	± 0.10
A ₀	1.95	± 0.10
B ₀	3.58	± 0.10
B _{1max}	4.35	
D ₀	1.5	± 0.10
F	3.5	± 0.05
E ₁	1.75	± 0.10
E _{2 min.}	6.25	
T min.	0.6	
T _{1 max.}	0.1	
K ₀ (FSMD005-1206~FSMD050-1206 & FSMD005-1206-R~FSMD050-1206-R)	0.8	± 0.10
K ₀ (FSMD075-1206R~FSMD200-1206R & FSMD050-24-1206R)	1.7	± 0.10
Leader min.	390	
Trailer min.	160	
Reel Dimensions		
A max	185	max
N min.	50	
W ₁	8.4	+1.5/-0.0
W _{2 max.}	14.4	

FSMD1206 Series Standard Package

P/N	Pcs /Bag	Reel/Tape
FSMD005-1206	-----	3000
FSMD005-1206-R	-----	3000
FSMD010-1206	-----	3000
FSMD010-1206-R	-----	3000
FSMD012-1206	-----	3000
FSMD012-1206-R	-----	3000
FSMD016-1206	-----	3000
FSMD016-1206-R	-----	3000
FSMD020-1206	-----	3000
FSMD020-1206-R	-----	3000
FSMD025-1206	-----	3000
FSMD025-1206-R	-----	3000

P/N	Pcs /Bag	Reel/Tape
FSMD035-1206	-----	4000
FSMD035-1206-R	-----	4000
FSMD050-1206	-----	4000
FSMD050-1206-R	-----	4000
FSMD050-24-1206R	-----	3000
FSMD075-1206R	-----	3000
FSMD075-16-1206R	-----	3000
FSMD100-1206R	-----	3000
FSMD110-1206R	-----	3000
FSMD150-1206R	-----	2000
FSMD200-1206R	-----	2000

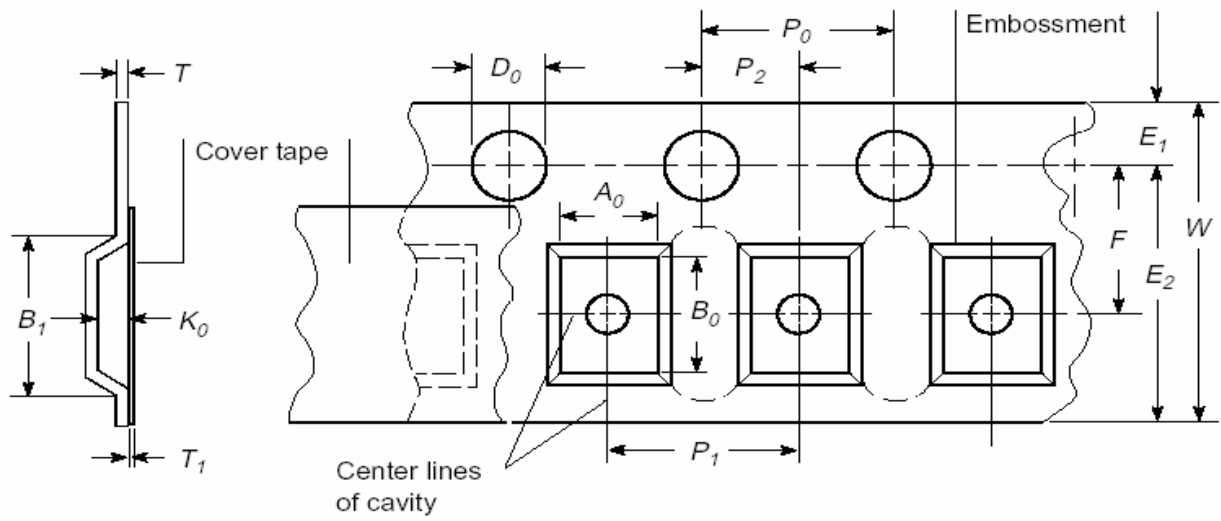


Figure 1: EIA Taped Component Dimensions

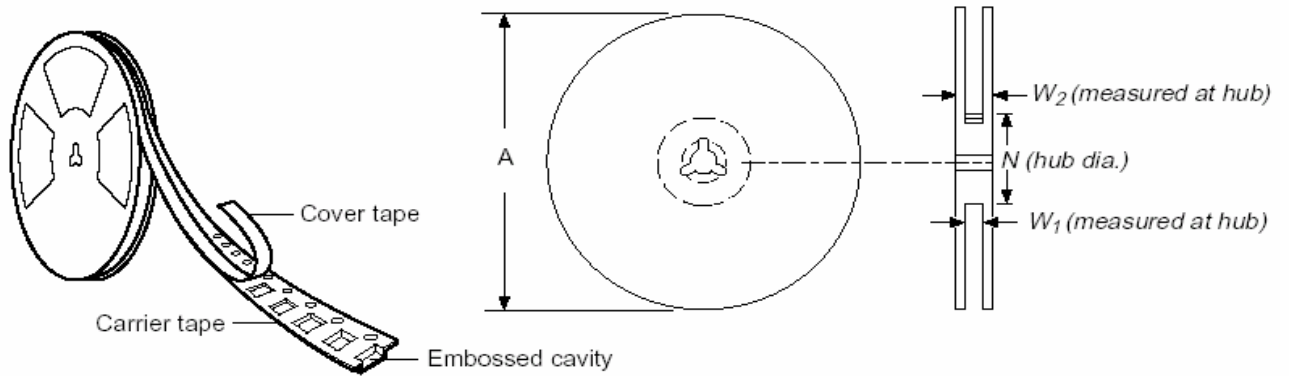


Figure 2: EIA Reel Dimensions