

Summary

- **RoHS Compliant & Halogen Free**
- **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
- **Operation Current:** 0.05A~2.0A
- **Maximum Voltage:** 6V~60V_{DC}
- **Temperature Range :** -40°C to 85°C

Agency Recognition

UL : File No. E211981
 C-UL: File No. E211981
 TÜV: File No. R50090556

Electrical Characteristics (23°C)

Part Number	Hold	Trip	Rated	Max	Typical	Max Time to Trip		Resistance	
	Current	Current	Voltage	Current	Power	Current	Time	R _{MIN}	R _{1MAX}
	I _H , A	I _T , A	V _{MAX} , VDC	I _{MAX} , A	P _d , W	Amp	Sec	Ohms	Ohms
TSMD005-1206	0.05	0.15	60	10	0.4	0.25	1.50	3.60	50.00
TSMD005-1206-R	0.05	0.15	60	100	0.4	0.25	1.50	3.60	50.00
TSMD010-1206	0.10	0.25	60	10	0.4	0.50	1.00	1.60	15.00
TSMD010-1206-R	0.10	0.25	60	100	0.4	0.50	1.00	1.60	15.00
TSMD012-1206	0.12	0.39	48	100	0.6	1.00	0.20	1.40	6.50
TSMD012-1206-R	0.12	0.39	48	100	0.6	1.00	0.20	1.40	6.50
TSMD016-1206	0.16	0.45	48	100	0.6	1.00	0.30	1.10	5.00
TSMD016-1206-R	0.16	0.45	48	100	0.6	1.00	0.30	1.10	5.00
TSMD020-1206	0.20	0.40	30	100	0.4	8.00	0.10	0.600	2.500
TSMD020-1206-R	0.20	0.40	30	100	0.4	8.00	0.10	0.600	2.500
TSMD025-1206	0.25	0.50	16	100	0.6	8.00	0.08	0.550	2.300
TSMD025-1206-R	0.25	0.50	16	100	0.6	8.00	0.08	0.550	2.300
TSMD025-24-1206-R	0.25	0.50	24	100	0.6	8.00	0.08	0.550	2.300
TSMD035-1206	0.35	0.75	16	100	0.4	8.00	0.10	0.300	1.200
TSMD035-1206-R	0.35	0.75	16	100	0.4	8.00	0.10	0.300	1.200
TSMD035-30-1206R	0.35	0.75	30	100	0.6	8.00	0.10	0.300	1.200
TSMD050-1206	0.50	1.00	8	100	0.4	8.00	0.10	0.150	0.700
TSMD050-1206-R	0.50	1.00	8	100	0.4	8.00	0.10	0.150	0.700
TSMD050-24-1206R	0.50	1.00	24	100	0.6	8.00	0.10	0.150	0.750
TSMD075-1206R	0.75	1.50	6	100	0.6	8.00	0.20	0.090	0.290
TSMD075-16-1206R	0.75	1.50	16	100	0.6	8.00	0.20	0.090	0.290
TSMD100-1206R	1.00	1.80	6	100	0.6	8.00	0.30	0.055	0.210
TSMD110-1206R	1.10	2.20	6	100	0.8	8.00	0.30	0.040	0.180
TSMD150-1206R	1.50	3.00	6	100	0.8	8.00	1.00	0.040	0.120
TSMD200-1206R	2.00	3.50	6	100	0.8	8.00	1.50	0.018	0.080

NOTE : Specification subject to change without notice.

Specifications are subject to change without notice

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.

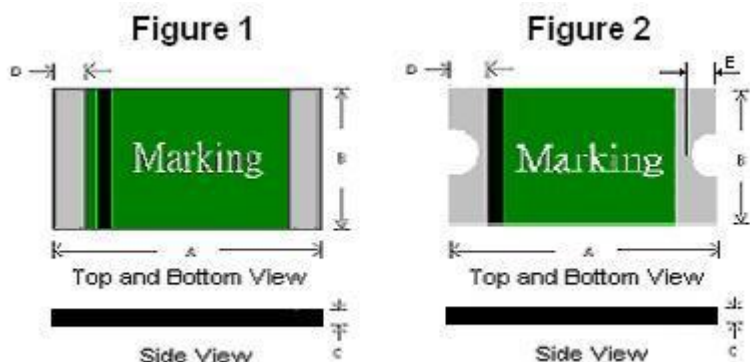
R_{MIN} =Minimum device resistance at 23°C prior to tripping.

R_{1MAX} =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

TSMD Product Dimensions (Millimeters)

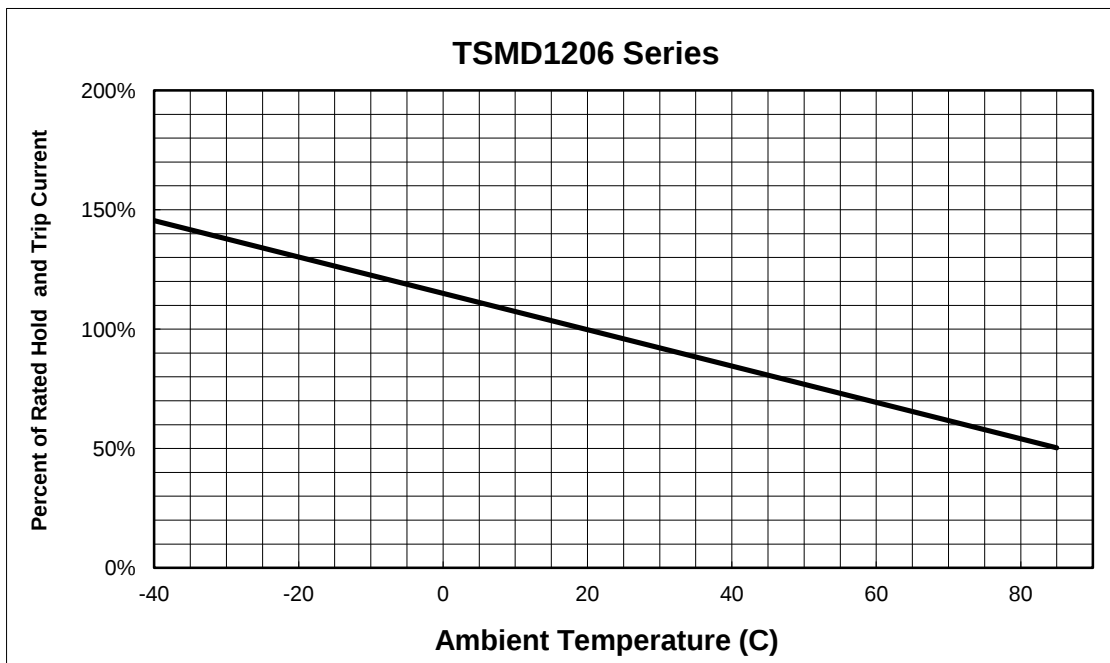


Part Number	Figure	A		B		C		D		E	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
TSMD005-1206	1	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	—	—
TSMD005-1206-R	2	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	0.10	0.45
TSMD010-1206	1	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	—	—
TSMD010-1206-R	2	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	0.10	0.45
TSMD012-1206	1	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	—	—
TSMD012-1206-R	2	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	0.10	0.45
TSMD016-1206	1	3.00	3.50	1.50	1.80	0.45	0.75	0.10	0.75	—	—
TSMD016-1206-R	2	3.00	3.50	1.50	1.80	0.45	0.75	0.10	0.75	0.10	0.45
TSMD020-1206	1	3.00	3.50	1.50	1.80	0.45	0.75	0.10	0.75	—	—
TSMD020-1206-R	2	3.00	3.50	1.50	1.80	0.45	0.75	0.10	0.75	0.10	0.45
TSMD025-1206	1	3.00	3.50	1.50	1.80	0.45	0.75	0.10	0.75	—	—
TSMD025-1206-R	2	3.00	3.50	1.50	1.80	0.45	0.75	0.10	0.75	0.10	0.45
TSMD025-24-1206-R	2	3.00	3.50	1.50	1.80	0.45	0.75	0.10	0.75	0.10	0.45
TSMD035-1206	1	3.00	3.50	1.50	1.80	0.30	0.75	0.10	0.75	—	—
TSMD035-1206-R	2	3.00	3.50	1.50	1.80	0.30	0.75	0.10	0.75	0.10	0.45
TSMD035-30-1206R	2	3.00	3.50	1.50	1.80	0.90	1.30	0.25	0.75	0.10	0.45
TSMD050-1206	1	3.00	3.50	1.50	1.80	0.25	0.55	0.10	0.75	—	—
TSMD050-1206-R	2	3.00	3.50	1.50	1.80	0.25	0.55	0.10	0.75	0.10	0.45
TSMD050-24-1206R	2	3.00	3.50	1.50	1.80	0.90	1.30	0.25	0.75	0.10	0.45
TSMD075-1206R	2	3.00	3.50	1.50	1.80	0.45	1.25	0.25	0.75	0.10	0.45
TSMD075-16-1206R	2	3.00	3.50	1.50	1.80	0.45	1.25	0.25	0.75	0.10	0.45
TSMD100-1206R	2	3.00	3.50	1.50	1.80	0.45	1.00	0.25	0.75	0.10	0.45
TSMD110-1206R	2	3.00	3.50	1.50	1.80	0.45	1.00	0.25	0.75	0.10	0.45
TSMD150-1206R	2	3.00	3.50	1.50	1.80	0.80	1.40	0.25	0.75	0.10	0.45
TSMD200-1206R	2	3.00	3.50	1.50	1.80	0.85	1.60	0.25	0.75	0.10	0.45

NOTE : Specification subject to change without notice.

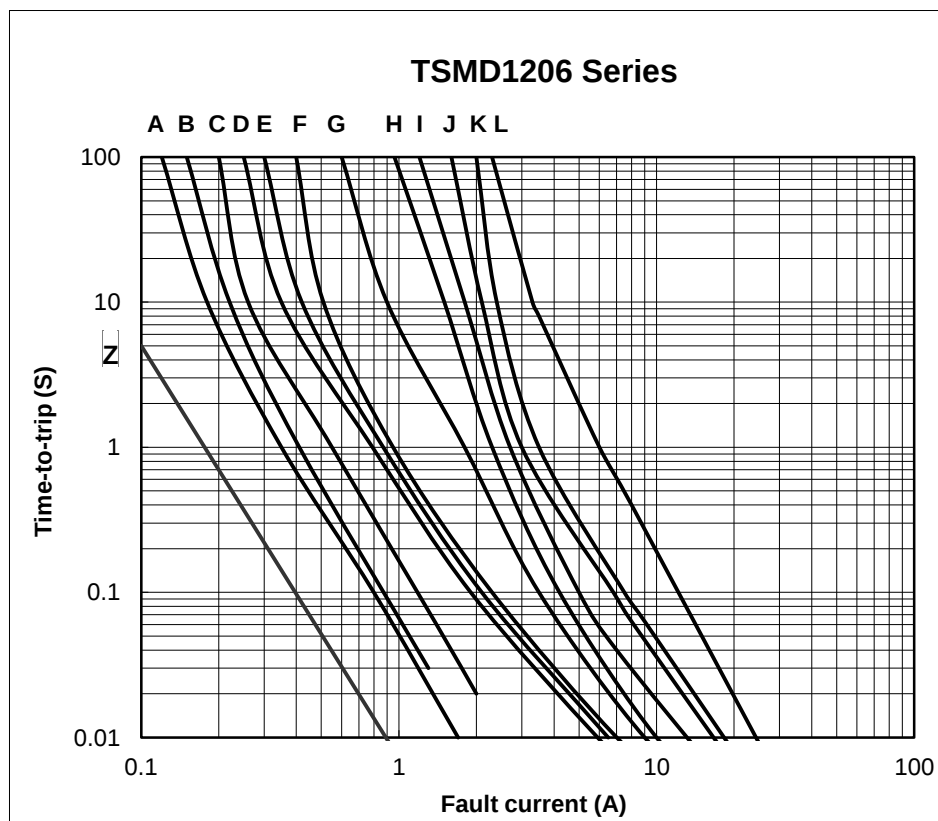
Specifications are subject to change without notice

Thermal Derating Curve



Typical Time-To-Trip at 23°C

Z=TSMD005-1206 / -R
A=TSMD010-1206 / -R
B=TSMD012-1206 / -R
C=TSMD016-1206 / -R
D=TSMD020-1206 / -R
E=TSMD025-1206 / -R
025-24-1206-R
F=TSMD035-1206 / -R
035-60-1206R
G=TSMD050-1206 / -R/
FSMD050-24-1206R
H=TSMD075-1206R /
075-16-1206R
I=TSMD100-1206R
J=TSMD110-1206R
K=TSMD150-1206R
L=TSMD200-1206R



NOTE : Specification subject to change without notice.

Material Specification

Terminal pad material: Pure Tin

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

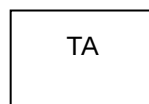
Part Numbering and Marking System

Part Numbering System

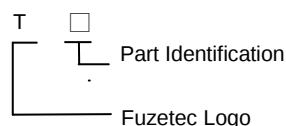
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Current Rating

Part Marking System



Example



TZ = TSMD005-1206-R
 TA = TSMD010-1206-R
 TJ = TSMD012-1206-R
 TK = TSMD016-1206-R
 TB = TSMD020-1206-R
 TL = TSMD025-1206-R
 TP = TSMD025-24-1206-R
 TC = TSMD035-1206-R
 TM = TSMD035-30-1206-R
 TD = TSMD050-1206-R
 TN = TSMD050-24-1206-R
 TE = TSMD075-1206-R
 TO = TSMD075-16-1206-R
 TF = TSMD100-1206-R
 TG = TSMD110-1206-R
 TH = TSMD150-1206-R
 TI = TSMD200-1206-R

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

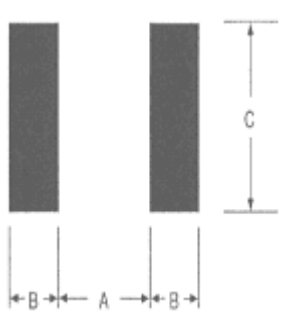


-PPTC device are intended for occasional overcurrent protection. Application for repeated overcurrent condition and/or prolonged trip are not anticipated.

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

Pad Layouts 、 Solder Reflow and Rework Recommendations

The dimension in the table below provide the recommended pad layout for each TSMD1206 device



Pad dimensions (millimeters)

Device	A Nominal	B Nominal	C Nominal
All 1206 Series	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.

