PolySwitch® PTC Devices

Overcurrent Protection Device

PRODUCT: TSM250-130 Series

DOCUMENT: SCD29377
REV LETTER: C
REV DATE: June 10, 2019

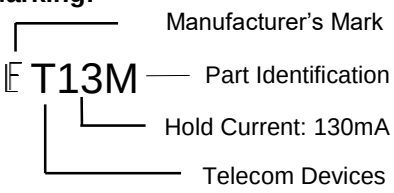
Specification Status: Released

Maximum Operating Voltage: 60V_{DC}

Fault Ratings at 20°C:
250 V_{RMS}, 3A, 10 applications
600 V_{RMS}, 1A, 5 applications

Configuration: Two PPTC devices per TSM250 part

Marking:



Terminal Description:
T1 = Tip In T2 = Tip Out
R1 = Ring In R2 = Ring Out

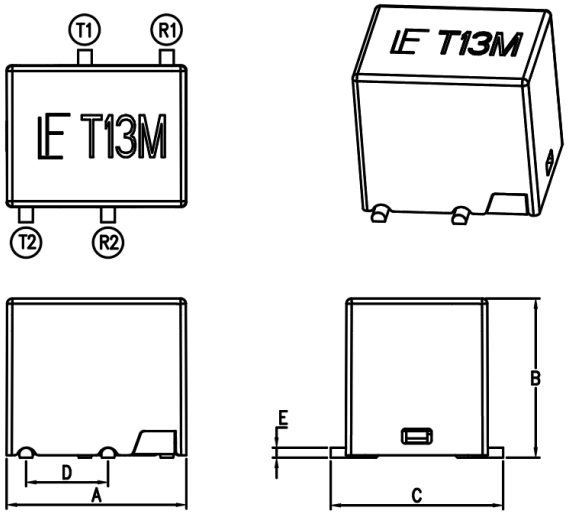


Table I. Dimensions

	A		B		C		D		E	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
mm:	8.2	8.9	--	9.0	7.8	8.6	--	3.9	--	0.7
in:	(0.323)	(0.350)	--	(0.354)	(0.307)	(0.339)	--	(0.154)	--	(0.026)

Table II. Performance Ratings @ 20℃ (unless otherwise noted)

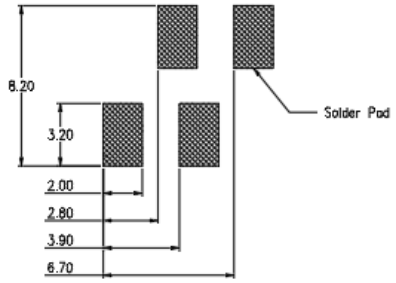
Part No.	I_{hold} (A)	I_{trip} (A)	RESISTANCE ** @ 20° C (Ω)			TIME TO TRIP @ 1.0 A (Seconds)		OPERATING TEMPERATURE (°C)		TRIPPED STATE POWER DISSIPATION @ 60V_{DC} (W)
	20°C	20°C	R_{MIN}	R_{MAX}	$R_{1\,MAX}$*	TYP	MAX	MIN	MAX	TYP
TSM250-130F	0.13	0.26	4.0	9.0	15.0	1.0	2.4	-40	85	1.5
TSM250-130F-RA	0.13	0.26	4.0	22.0	30.0	1.0	2.4	-40	85	1.5

*** Maximum device resistance: measured 1-hour post reflow or post trip.**
**** Resistance per PPTC device.**

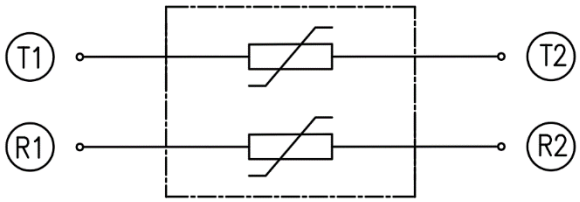
Additional Ratings @ 20℃

Line Balance:	0.5 Ohm
Lightning Withstand: 10/700μS, 40Ω (ITU-T K.20, K.21):	1.5kV, 10 shots, 1 minute interval
Lightning Withstand: 10/1000μS, 60Ω:	2.0kV, 30 shots, 3 minutes interval
Moisture Sensitivity Level (MSL):	1

Recommended Pad Layout (mm)

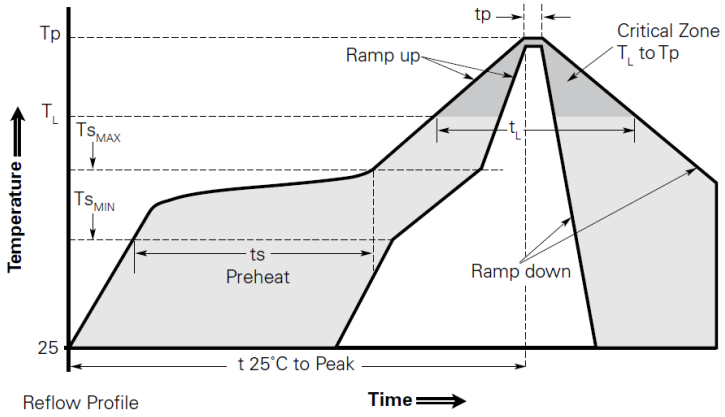


Schematic



Recommended Reflow Profile

Profile Feature	Pb-Free Assembly
Average ramp up rate (Ts_{MAX} to Tp)	3℃/second max.
Preheat	
* Temperature min. (Ts_{MIN})	150℃
* Temperature max. (Ts_{MAX})	200℃
* Time (ts_{MIN} to ts_{MAX})	60-180 seconds
Time maintained above:	
* Temperature (T_L)	217 °C
* Time (t_L)	60-150 seconds
Peak/Classification Temperature (Tp)	260℃
Time within 5℃ of actual peak temperature	
* Time (tp)	20-40 seconds
Ramp down rate	6℃/second max.
Time 25℃ to peak temperature	8 minutes max.



Reflow Profile

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

Agency Recognitions: UL (File #E74889)
Reference Documents: PS300
Precedence: This specification takes precedence over documents referenced herein
Effectivity: Reference documents shall be the issue in effect on the date of invitation for bid.

Part Numbering System and Ordering Information

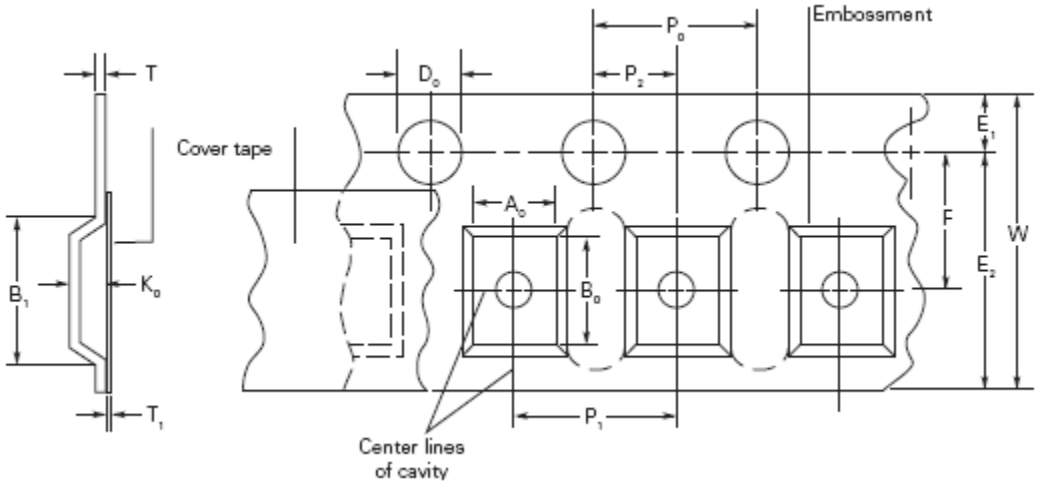
TSM 250 - 130 F - RA - 2

- Packaging: 2 = Tape and Reel, (Blank)=Bulk
- Resistance Range
- F = RoHS Compliant, ELV Compliant
- Hold Current, mA
- Maximum Voltage Withstand, V
- Product Series: Dual Channels Surface Mount Device

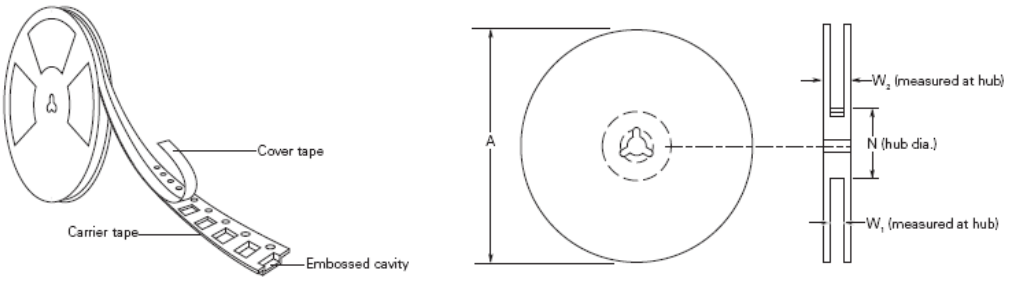
- Packaged with Tape and Reel only, Per EIA481-2
- Standard Package Quantity: 600pcs per reel
- MPQ/MOQ: 3000pcs

TSM250 Tape and Reel Specifications: per EIA 481 standard

Description	EIA Mark	Dimension (mm)	Tolerance (mm)
Carrier tape width	W	24.0	±0.5
Sprocket hole pitch	P_0	4.0	±0.1
	P_1	16.0	±0.1
	P_2	2.0	±0.1
	A_0	7.05	±0.2
	B_0	8.85	±0.2
	B_1 max.	12.45	
Sprocket hole diameter	D	1.5	-0/+1.0
	F	11.5	±0.1
	E_1	1.75	±0.1
	E2 max.	22.25	
Tape thickness	T max.	0.5	±0.5
Tape thickness with splice	T_1 max.	0.1	
	K_0	8.55	±0.2
Reel Dimensions			
Reel diameter	A max.	390	
Core diameter	N min.	75	
Space between flanges less device	W_1	25.4	±0.5
Reel width	W_2 max.	30.4	



EIA Referenced Reel Dimensions for TSM250 Devices



Materials Information

ROHS Compliant	ELV Compliant	Pb-Free
Directive 2011/65/EU Compliant	Directive 2000/53/EC Compliant	Pb