PolySwitch® PTC Devices

Overcurrent Protection Device

PRODUCT: TSM250-130 Series

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

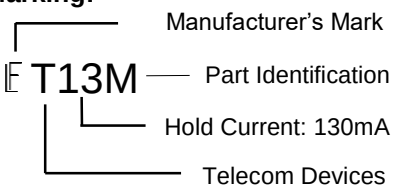
Specification Status: Released

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

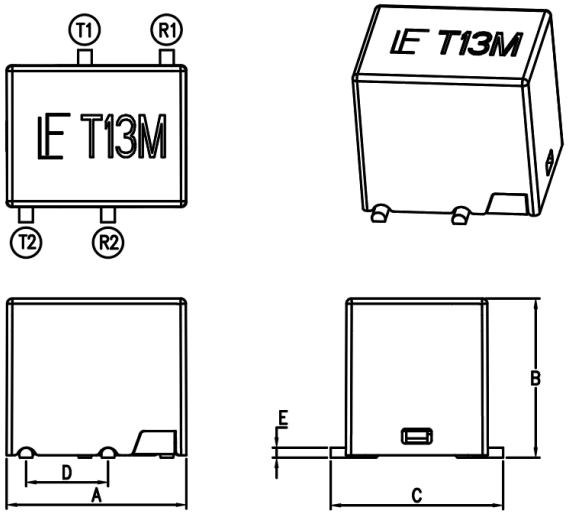


Table I. Dimensions

	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)

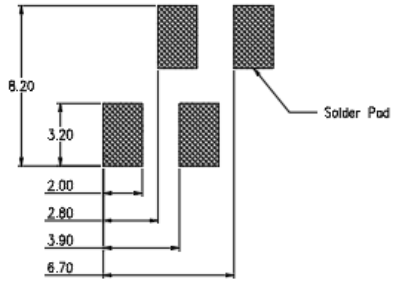
Part No.	I_{hold} (A)	I_{trip} (A)	RESISTANCE ** @ 20° C (Ω)			TIME TO TRIP @ 1.0 A (Seconds)		OPERATING TEMPERATURE (°C)		TRIPPED STATE POWER DISSIPATION @ 60V_{DC} (W)
	20°C	20°C	R_{MIN}	R_{MAX}	$R_{1\,MAX}$*	TYP	MAX	MIN	MAX	TYP
TSM250-130F	0.13	0.26	4.0	9.0	15.0	1.0	2.4	-40	85	1.5
TSM250-130F-RA	0.13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

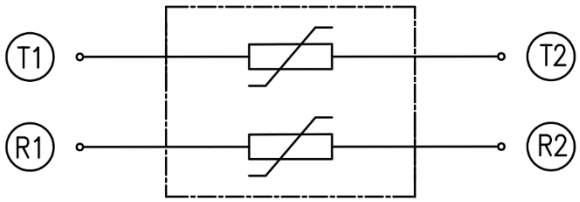
Additional Ratings @ 20℃

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)



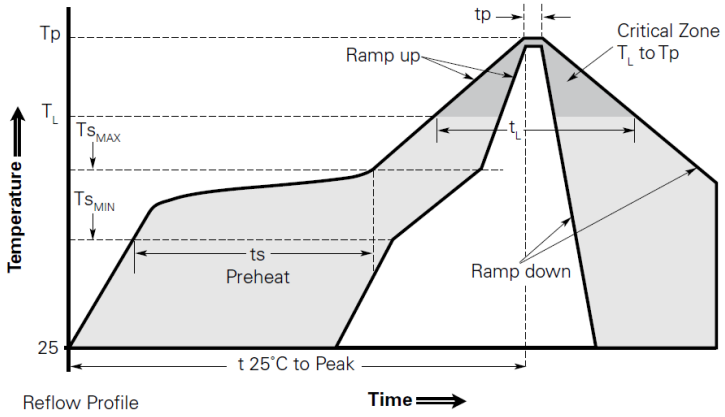
Schematic



© 2018 Littelfuse,Inc
Littelfuse.com
Specifications are subject to change without notice.

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

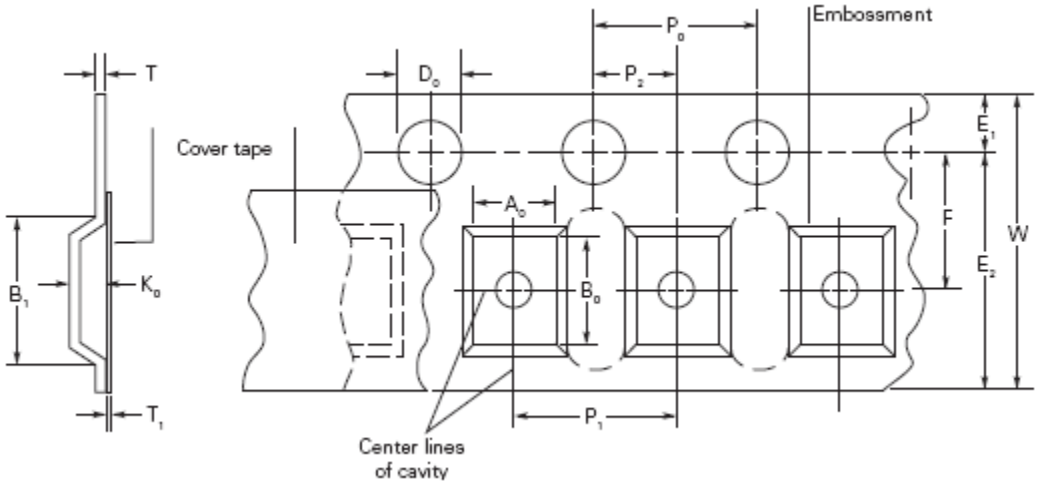
- Packaging: 2 = Tape and Reel, (Blank)=Bulk
- Resistance Range
- F = RoHS Compliant, ELV Compliant
- Hold Current, mA
- Maximum Voltage Withstand, V
- Product Series: Dual Channels Surface Mount Device

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

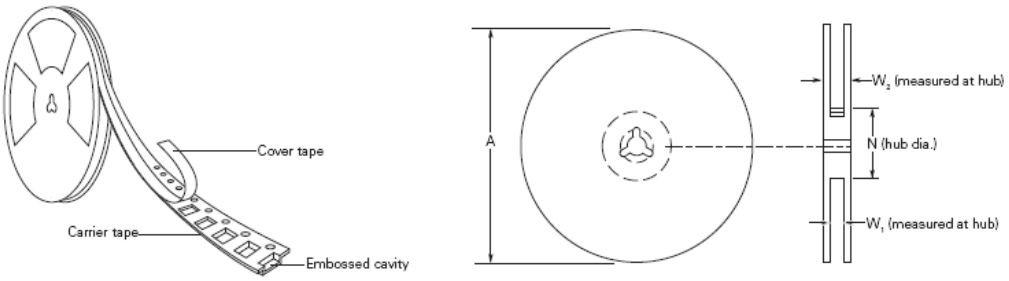
© 2018 Littelfuse,Inc
Littelfuse.com
Specifications are subject to change without notice.
Revised Jun 10, 2019

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



© 2018 Littelfuse,Inc
Littelfuse.com
Specifications are subject to change without notice.
Revised Jun 10, 2019

Materials Information

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

Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and shall not be used for, any purpose (including, without limitation, military, aerospace, medical, lifesaving, life-sustaining or nuclear facility applications, devices intended for surgical implant into the body, or any other application in which the failure or lack of desired operation of the product may result in personal injury, death, or property damage) other than those expressly set forth in applicable Littelfuse product documentation. Warranties granted by Littelfuse shall be deemed void for products used for any purpose not expressly set forth in applicable Littelfuse documentation. Littelfuse shall not be liable for any claims or damages arising out of products used in applications not expressly intended by Littelfuse as set forth in applicable Littelfuse documentation. The sale and use of Littelfuse products is subject to Littelfuse Terms and Conditions of Sale, unless otherwise agreed by Littelfuse.

© 2018 Littelfuse,Inc
Littelfuse.com
Specifications are subject to change without notice.
Revised Jun 10, 2019