



**THE DATASHEET OF  
P2SMA220A-M3/61T**





Surface Mount TRANSZORB® Transient Voltage Suppressors



SMA (DO-214AC)



RoHS COMPLIANT HALOGEN FREE

FEATURES

- Low profile package
• Ideal for automated placement
• Glass passivated chip junction
• Available in uni-directional 200 W peak pulse power capability with a 10/1000 µs waveform
• Excellent clamping capability
• Very fast response time
• Low incremental surge resistance
• Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
• Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Table with 2 columns: Parameter and Value. Rows include VBR (130 V to 220 V), PPPM (200 W), PD (0.5 W), VWM (111 V to 185 V), TJ max. (150 °C), Polarity (Uni-directional), and Package (SMA (DO-214AC)).

MECHANICAL DATA

Case: SMA (DO-214AC)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes the cathode end

TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, automotive and telecommunication.

Table with 4 columns: PARAMETER, SYMBOL, VALUE, UNIT. Rows include Peak pulse power dissipation, Peak pulse current, Power dissipation at TA = 25 °C, and Operating junction and storage temperature range.

Notes

- (1) Non-repetitive current pulse, per fig. 3 and derated above TA = 25 °C per fig. 2
(2) Mounted on 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pads to each terminal



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)									
DEVICE TYPE	DEVICE MARKING CODE	BREAKDOWN VOLTAGE $V_{BR}$ AT $I_T$ <sup>(1)</sup> (V)		TEST CURRENT $I_T$ (mA)	STAND-OFF VOLTAGE $V_{WM}$ (V)	MAXIMUM REVERSE LEAKAGE AT $V_{WM}$ $I_D$ ( $\mu\text{A}$ ) <sup>(1)</sup>	MAXIMUM PEAK PULSE SURGE CURRENT $I_{PPM}$ (A) <sup>(2)</sup>	MAXIMUM CLAMPING VOLTAGE AT $I_{PPM}$ $V_C$ (V)	MAXIMUM TEMPERATURE OF $V_{BR}$ (%/ $^\circ\text{C}$ )
		MIN.	MAX.						
P2SMA130A	2VK	124	137	1.0	111	1.0	1.11	179	0.140
P2SMA140A	2VL	133	147	1.0	119	1.0	1.04	192	0.140
P2SMA150A	2VM	143	158	1.0	128	1.0	0.97	207	0.140
P2SMA170A	2VN	162	179	1.0	145	1.0	0.85	234	0.150
P2SMA180A	2VP	171	189	1.0	154	1.0	0.81	246	0.150
P2SMA200A	2VQ	190	210	1.0	171	1.0	0.73	274	0.150
P2SMA220A	2VR	209	231	1.0	185	1.0	0.61	328	0.150

**Notes**

- (1) Pulse test:  $t_p \leq 50\text{ ms}$
- (2) Surge current waveform per fig. 3 and derate per fig. 2

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Thermal resistance, junction to ambient air	$R_{\theta JA}$ <sup>(1)</sup>	250	$^\circ\text{C/W}$
Thermal resistance, junction to mount	$R_{\theta JM}$ <sup>(1)</sup>	50	$^\circ\text{C/W}$

**Note**

- (1) Mounted on minimum recommended pad layout

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
P2SMA130A-M3/61T	0.064	61T	1800	7" diameter plastic tape and reel
P2SMA130A-M3/5AT	0.064	5AT	7500	13" diameter plastic tape and reel

## RATINGS AND CHARACTERISTICS CURVES

( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

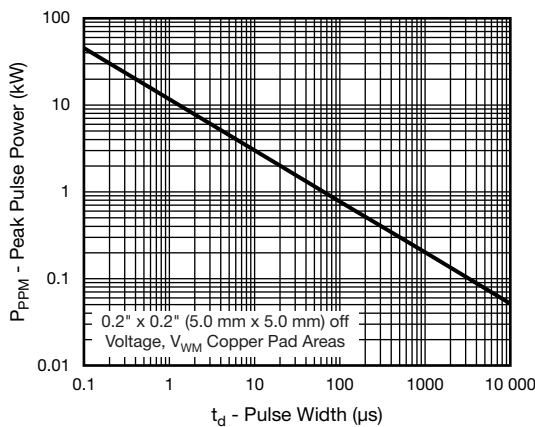


Fig. 1 - Peak Pulse Power Rating Curve

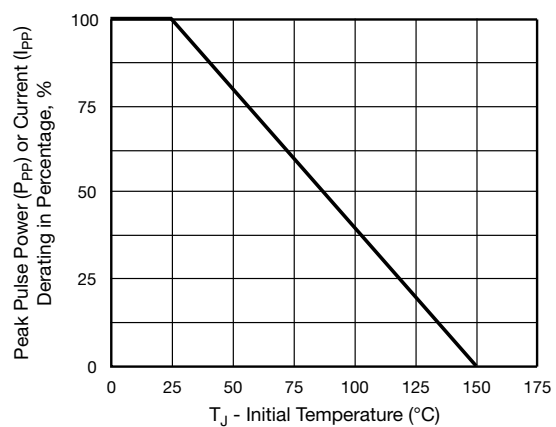


Fig. 2 - Pulse Derating Curve

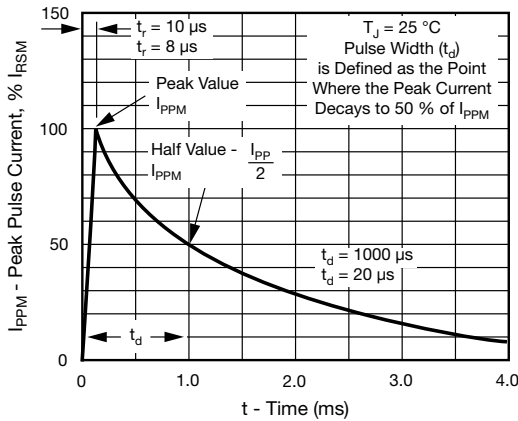


Fig. 3 - Pulse Waveform

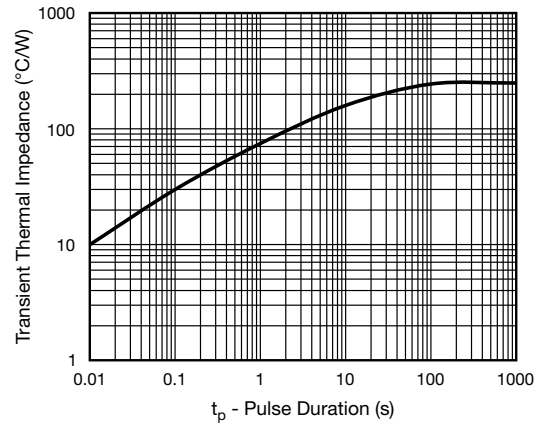


Fig. 5 - Typical Transient Thermal Impedance

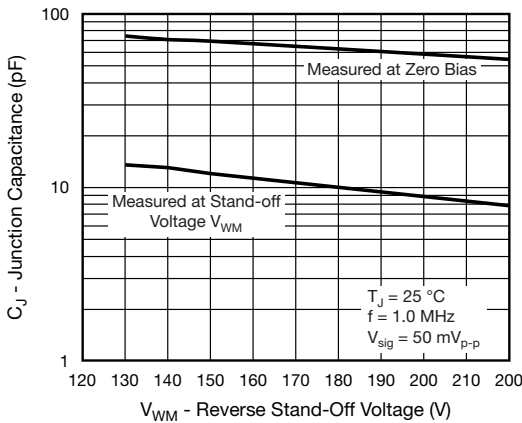


Fig. 4 - Typical Junction Capacitance

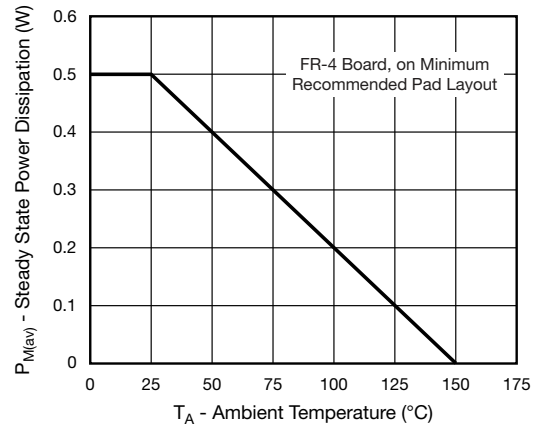
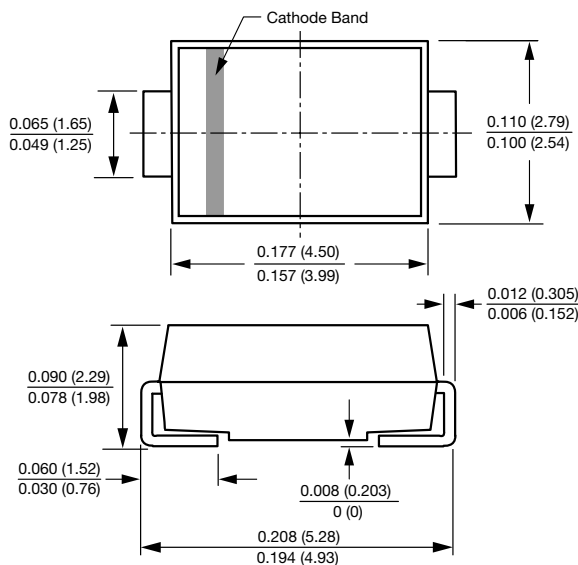


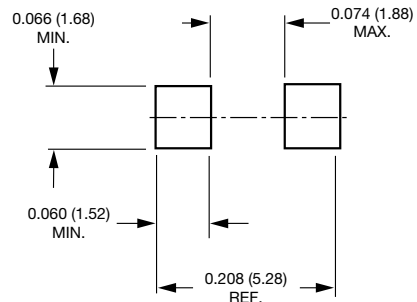
Fig. 6 - Power Derating Curve

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### SMA (DO-214AC)



### Mounting Pad Layout





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