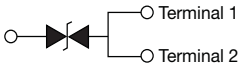
Surface Mount PAR® Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions

eSMP® Series

TO-277A (SMPC)



FEATURES

- Junction passivation optimized PAR® design
- T_J = 175 °C capability suitable for high reliability and automotive requirement
- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Bi-direction only
- Excellent clamping capability
- Low leakage current
- Very fast response time
- AEC-Q101 qualified available
  - Automotive ordering code: base P/NHM3
- 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

RoHS COMPLIANT
HALOGEN FREE

PRIMARY CHARACTERISTICS	
V_{WM}	10.5 V to 37.8 V
V_{BR} (Bi-directional)	11 V to 36 V
P_{PPM}	1500 W
T_J max.	175 °C
Polarity	Bi-directional
Package	TO-277A (SMPC)

Note

- All electrical characteristics are only applicable when two identical polarity terminals are connected.

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 automotive, consumer, computer, industrial, and telecommunication.

MECHANICAL DATA

Case: TO-277A (SMPC)
Molding compound meets UL 94 V-0 flammability rating Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
HM3 suffix meets JESD 201 class 2 whisker test

Polarity: no marking on bi-directional types

MAXIMUM RATINGS (T_A = 25 °C, unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Peak power dissipation with a 10/1000 µs waveform (1)	P_{PPM}	1500	W
Peak pulse current with a 10/1000 µs waveform (1)	I_{PPM}	See next table	A
Operating junction and storage temperature range	T_J, T_{STG}	-65 to +175	°C

Note

(1) Non-repetitive current pulse per fig.3 and derated above T_A = 25 °C

ELECTRICAL CHARACTERISTICS (T_A = 25 °C, unless otherwise noted)								
DEVICE TYPE	**DEVICE MARKING CODE**	**BREAKDOWN VOLTAGE V_{BR} (1) AT I_T (V)**		**TEST CURRENT I_T (mA)**	**STAND-OFF VOLTAGE V_{WM} (V)**	**MAXIMUM REVERSE LEAKAGE AT V_{WM} I_D (µA)**	**MAXIMUM PEAK PULSE SURGE CURRENT I_{PPM} (2) (A)**	**MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)**
	BI	**MIN.**	**MAX.**					
TPC11CA	BAF	10.5	11.6	1.0	9.40	5.0	96.2	15.6
TPC12CA	BAG	11.4	12.6	1.0	10.2	2.0	89.8	16.7
TPC13CA	BAH	12.4	13.7	1.0	11.1	2.0	82.4	18.2
TPC15CA	BAI	14.3	15.8	1.0	12.8	1.0	70.8	21.2
TPC16CA	BAJ	15.2	16.8	1.0	13.6	1.0	66.7	22.5
TPC18CA	BAK	17.1	18.9	1.0	15.3	1.0	59.5	25.2
TPC20CA	BAL	19.0	21.0	1.0	17.1	1.0	54.2	27.7
TPC22CA	BAM	20.9	23.1	1.0	18.8	1.0	49	30.6
TPC24CA	BAN	22.8	25.2	1.0	20.5	1.0	45.2	33.2
TPC27CA	BAO	25.7	28.4	1.0	23.1	1.0	40	37.5
TPC30CA	BAP	28.5	31.5	1.0	25.6	1.0	36.2	41.4
TPC33CA	BAQ	31.4	34.7	1.0	28.2	1.0	32.8	45.7
TPC36CA	BAR	34.2	37.8	1.0	30.8	1.0	30.1	49.9

Notes

- All terms and symbols are consistent with ANSI/IEEE C62.35

(1) V_{BR} measured after I_T applied for 300 µs, I_T = square wave pulse or equivalent

(2) Surge current waveform per fig.3

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TPC11CAHM3/H (1)	0.10	H	1500	7" diameter plastic tape and reel
TPC11CAHM3/I (1)	0.10	I	6500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C, unless otherwise noted)

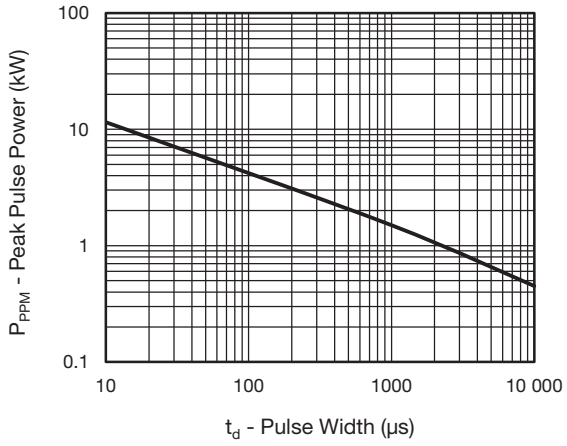


Fig. 1 - Peak Pulse Power Rating Curve

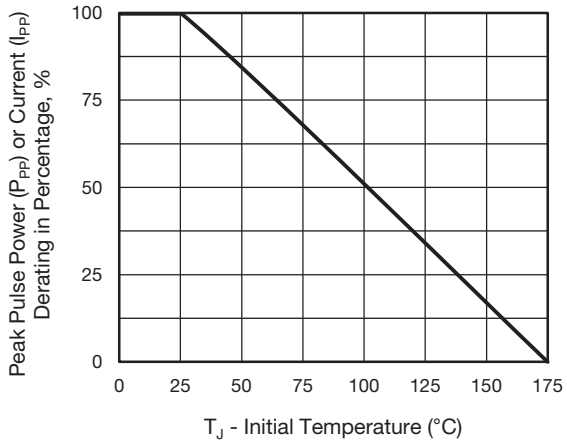


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

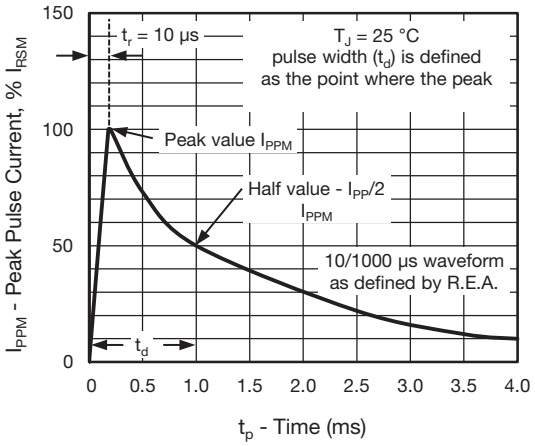


Fig. 3 - Pulse Waveform

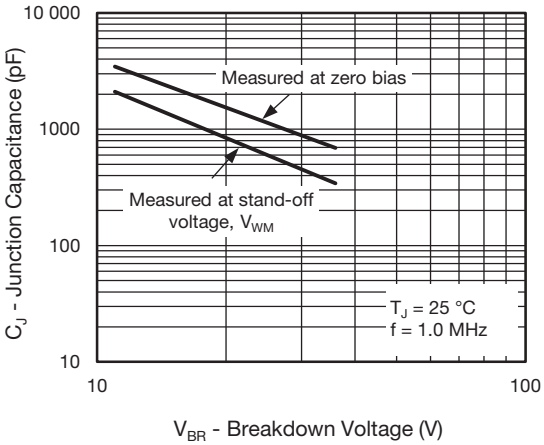
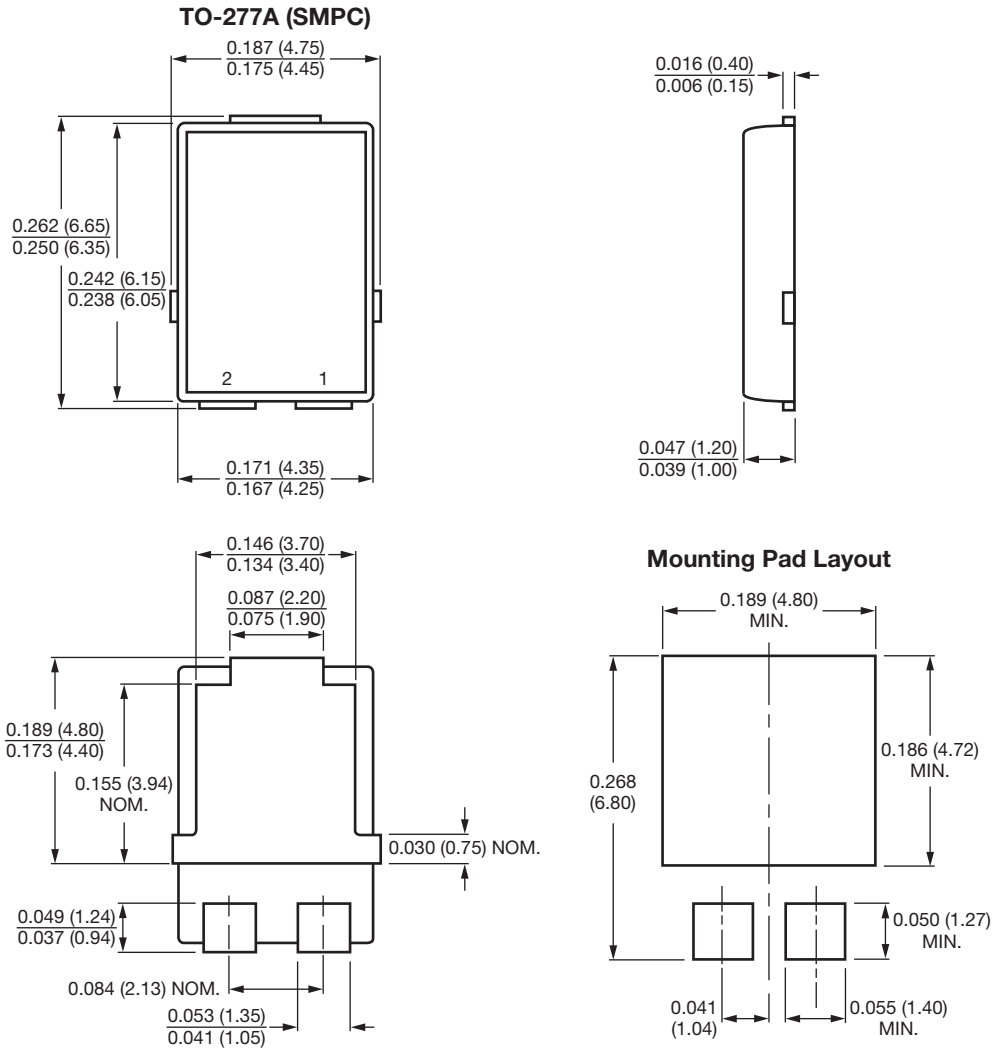


Fig. 4 - Typical Junction Capacitance

Note

- Fig.1 power calculation is based on I_{PPM}, times defined maximum clamping voltage by pulse width.

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC® TO-277A

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Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

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Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru
moschip.ru_4
moschip.ru_6
moschip.ru_9