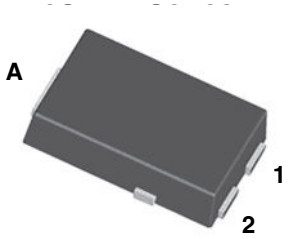
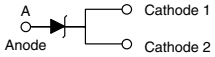
Surface Mount PAR® Transient Voltage Suppressors

Unidirectional 1500 W TVS in SMPC (TO-277) Package



TO-277A (SMPC)



LINKS TO ADDITIONAL RESOURCES

3D Models

PRIMARY CHARACTERISTICS	
V_{WM}	5.8 V to 43.6 V
V_{BR}	6.8 V to 51 V
P_{PPM}	1500 W
T_J max.	185 °C
Polarity	Unidirectional
Package	SMPC (TO-277A)

FEATURES

AUTOMOTIVE GRADE Available

RoHS COMPLIANT HALOGEN FREE

- Junction passivation optimized design passivated anisotropic rectifier technology
- T_J = 185 °C capability suitable for high reliability and automotive requirement
- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Unidirection only
- Excellent clamping capability
- Low incremental surge resistance
- Very fast response time
- Meets MSL level 1, per J-STD-020
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

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.

MECHANICAL DATA

Case: SMPC (TO-277A)
Molding compound meets UL 94 V-0 flammability rating
Base P/NHM3_X - halogen-free, RoHS-compliant, and AEC-Q101 qualified (“X” denotes revision code e.g. A, B, ...)

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

MAXIMUM RATINGS (T_A = 25 °C, unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Peak power dissipation with a 10/1000 µs waveform (fig. 3) (1)(2)	P_{PPM}	1500	W
Peak power pulse current with a 10/1000 µs waveform (fig. 1) (1)	I_{PPM}	See next table	A
Peak forward surge current 8.3 ms single half sine-wave (2)	I_{FSM}	200	A
Maximum instantaneous forward voltage at 100 A (3)	V_F	3.5	V
Operating junction and storage temperature range	T_J, T_{STG}	-65 to +185	°C

Notes

(1) Non-repetitive current pulse, per fig. 3 and derated above T_A = 25 °C per fig. 2
(2) Measured on 8.3 ms single half sine-wave, or equivalent square wave, duty cycle = 4 pulses per minute maximum
(3) Pulse test: 300 µs pulse width, 1 % duty cycle

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_R (µA)	MAXIMUM REVERSE LEAKAGE AT V_{WM} T_J = 150 °C I_D (µA)	MAXIMUM PEAK PULSE SURGE CURRENT I_{PPM} (2) (A)	MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)	TYPICAL TEMP. COEFFICIENT OF V_{BR} (3) αT (%/°C)
		MIN.	NOM.	MAX.							
TPC6.8A	DEP	6.45	6.80	7.14	10	5.80	1500	10 000	143	10.5	0.047
TPC7.5A	DGP	7.13	7.50	7.88	10	6.40	500	5000	133	11.3	0.052
TPC8.2A	DKP	7.79	8.20	8.61	10	7.02	200	2000	124	12.1	0.056
TPC9.1A	DMP	8.65	9.10	9.55	1.0	7.78	50	500	112	13.4	0.060
TPC10A	DPP	9.5	10.0	10.5	1.0	8.55	20	200	103	14.5	0.064
TPC11A	DRP	10.5	11.0	11.6	1.0	9.40	5.0	50	96.2	15.6	0.067
TPC12A	DTP	11.4	12.0	12.6	1.0	10.2	2.0	10	89.8	16.7	0.070
TPC13A	DVP	12.4	13.0	13.7	1.0	11.1	2.0	10	82.4	18.2	0.072
TPC15A	DXP	14.3	15.0	15.8	1.0	12.8	1.0	10	70.8	21.2	0.076
TPC16A	DZP	15.2	16.0	16.8	1.0	13.6	1.0	10	66.7	22.5	0.078
TPC18A	EEP	17.1	18.0	18.9	1.0	15.3	1.0	10	59.5	25.2	0.080
TPC20A	EGP	19.0	20.0	21.0	1.0	17.1	1.0	10	54.2	27.7	0.082
TPC22A	EKP	20.9	22.0	23.1	1.0	18.8	1.0	10	49.0	30.6	0.084
TPC24A	EMP	22.8	24.0	25.2	1.0	20.5	1.0	10	45.2	33.2	0.085
TPC27A	EPP	25.7	27.0	28.4	1.0	23.1	1.0	10	40.0	37.5	0.087
TPC30A	ERP	28.5	30.0	31.5	1.0	25.6	1.0	10	36.2	41.4	0.088
TPC33A	ETP	31.4	33.0	34.7	1.0	28.2	1.0	10	32.8	45.7	0.089
TPC36A	EVP	34.2	36.0	37.8	1.0	30.8	1.0	15	30.1	49.9	0.090
TPC39A	EXP	37.1	39.0	41.0	1.0	33.3	1.0	15	27.8	53.9	0.091
TPC43A	EZP	40.9	43.0	45.2	1.0	36.8	1.0	20	25.3	59.3	0.092
TPC47A	FEP	44.7	47.0	49.4	1.0	40.2	1.0	20	23.1	64.8	0.092
TPC51A	FGP	48.5	51.0	53.6	1.0	43.6	1.0	20	21.4	70.1	0.093

Notes

(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 and derated per fig. 2

(3) To calculate V_{BR} vs. junction temperature, use the following formula: V_{BR} at T_J = V_{BR} at 25 °C x (1 + αT x (T_J - 25))

(4) All terms and symbols are consistent with ANSI/IEEE C62.35

ORDERING INFORMATION (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TPC10AHM3_A/H (1)	0.10	H	1500	7" diameter plastic tape and reel
TPC10AHM3_A/I (1)	0.10	I	6500	13" diameter plastic tape and reel

Note

(1) Automotive grade

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

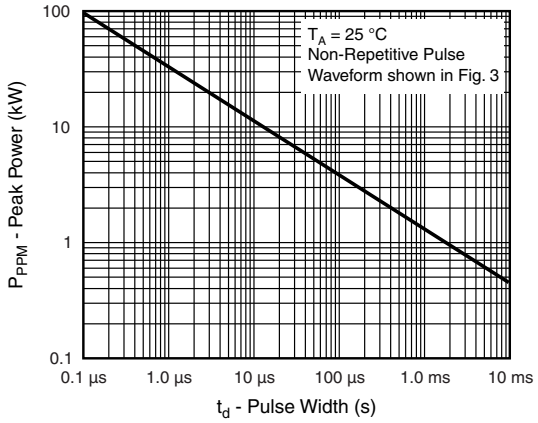


Fig. 1 - Peak Pulse Power Rating Curve

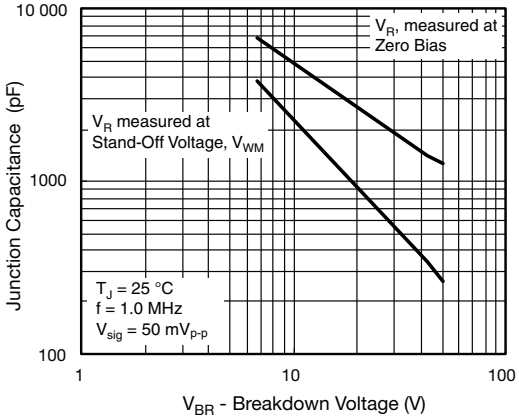


Fig. 4 - Typical Junction Capacitance

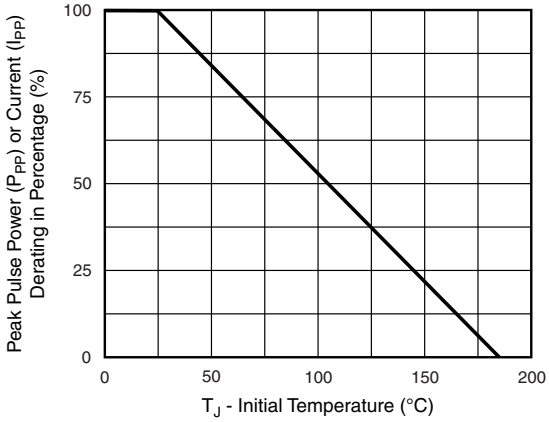


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

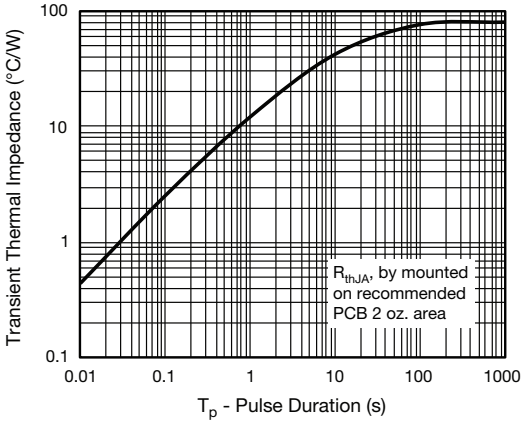


Fig. 5 - Typical Transient Thermal Impedance

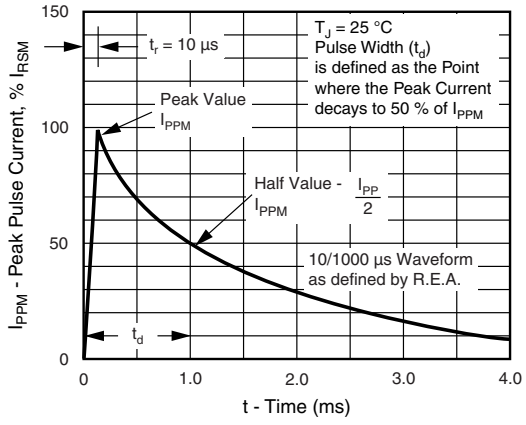
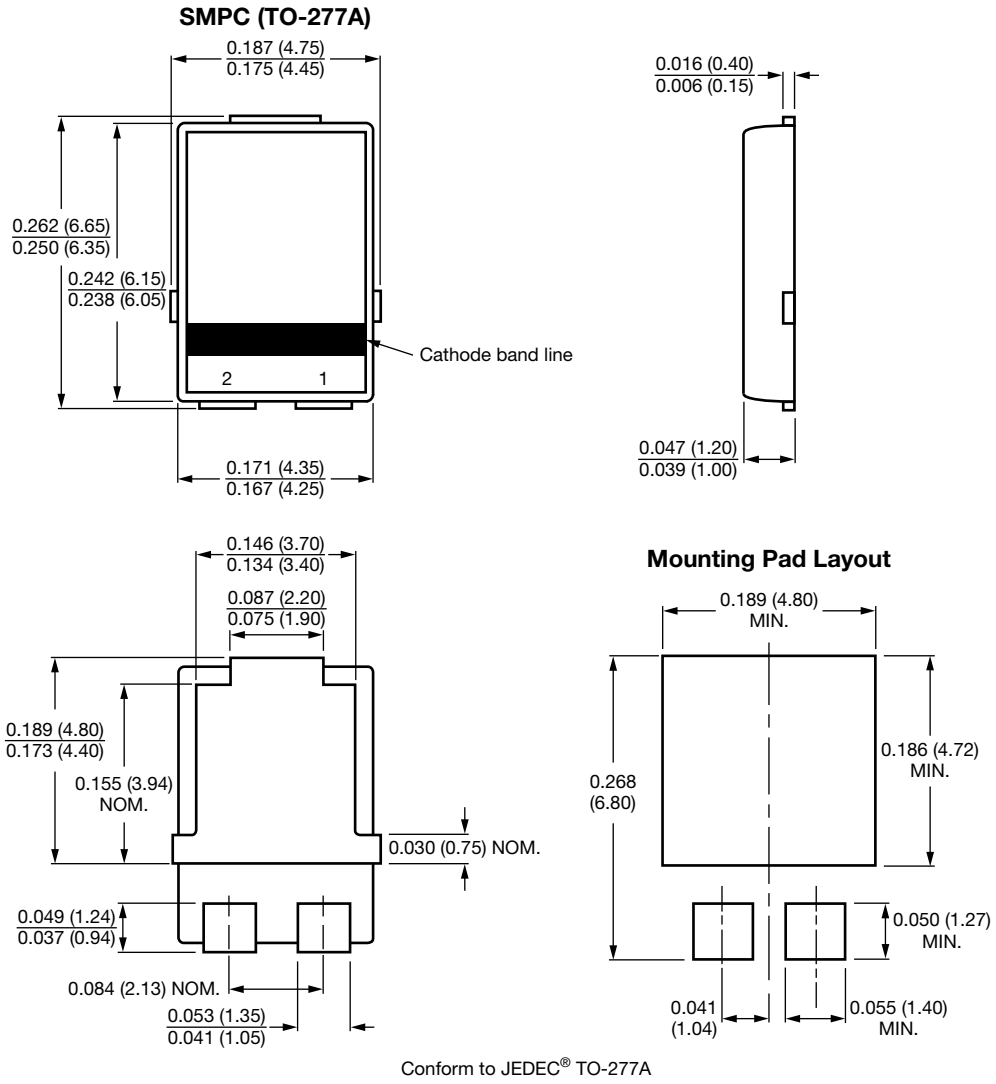


Fig. 3 - Pulse Waveform

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC® TO-277A

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