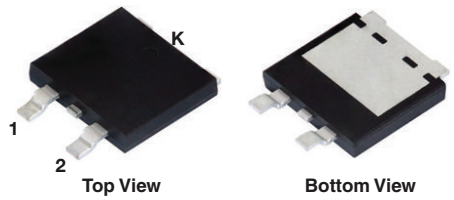
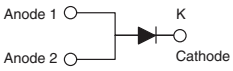
Surface-Mount TRANSZORB® Transient Voltage Suppressors

eSMP® Series
SMPD (TO-263AC)





LINKS TO ADDITIONAL RESOURCES

Related Documents | Packages | Marking

PRIMARY CHARACTERISTICS	
V_{WM}	10 V to 43 V
V_{BR}	11.1 V to 52.8 V
P_{PPM} (10 x 1000 µs)	7000 W
P_D	2.7 W
I_{FSM}	600 A
T_J max.	175 °C
Polarity	Unidirectional
Package	SMPD (TO-263AC)

FEATURES

- Junction passivation optimized design passivated anisotropic rectifier technology
- Unidirectional
- Low leakage current
- Low forward voltage drop
- High surge capability
- 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

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: SMPD (TO-263AC)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - RoHS-compliant and industrial grade

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

HM3 suffix meets JESD 201 class 2 whisker test

Polarity: heatsink is cathode

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER		SYMBOL	VALUE	UNIT
Peak pulse power dissipation	with 10/1000 µs waveform	P_{PPM}	7000	W
	with 10/10 000 µs waveform		2200	
Power dissipation on infinite heatsink at T_A = 25 °C		P_D	2.7	W
Peak pulse current with 10/1000 µs waveform		I_{PPM} (1)	See next table	A
Peak forward surge current 8.3 ms single half sine-wave		I_{FSM}	600	A
Operating junction and storage temperature range		T_J, T_{STG}	-55 to +175	°C

Note

(1) Non-repetitive current pulse at T_A = 25 °C

ELECTRICAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)											
DEVICE TYPE	DEVICE MARKING CODE	BREAKDOWN VOLTAGE V_{BR} (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 = 175 °C I_R (µA)	MAX. PEAK PULSE CURRENT AT 10/1000 µs WAVEFORM I_{PPM} (A)	MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)	TYPICAL TEMP. COEFFICIENT OF V_{BR} (1) αT (%/°C)
		MIN.	NOM.	MAX.							
7KPD10A	7KPD10A	11.1	11.7	12.3	5.0	10.0	10	250	412	17.0	0.069
7KPD11A	7KPD11A	12.2	12.9	13.5	5.0	11.0	10	150	385	18.2	0.072
7KPD12A	7KPD12A	13.3	14.0	14.7	5.0	12.0	10	150	352	19.9	0.074
7KPD13A	7KPD13A	14.4	15.2	15.9	5.0	13.0	5	150	326	21.5	0.076
7KPD14A	7KPD14A	15.6	16.4	17.2	5.0	14.0	5	150	302	23.2	0.078
7KPD15A	7KPD15A	16.7	17.6	18.5	5.0	15.0	5	150	287	24.4	0.080
7KPD16A	7KPD16A	17.8	18.8	19.7	5.0	16.0	5	150	269	26.0	0.081
7KPD17A	7KPD17A	18.9	19.9	20.9	5.0	17.0	5	150	254	27.6	0.082
7KPD18A	7KPD18A	20.0	21.1	22.1	5.0	18.0	5	150	240	29.2	0.083
7KPD20A	7KPD20A	22.2	23.4	24.5	5.0	20.0	5	150	216	32.4	0.085
7KPD22A	7KPD22A	24.4	25.7	26.9	5.0	22.0	5	150	197	35.5	0.086
7KPD24A	7KPD24A	26.7	28.1	29.5	5.0	24.0	5	150	180	38.9	0.087
7KPD26A	7KPD26A	28.9	30.4	31.9	5.0	26.0	5	150	166	42.1	0.088
7KPD28A	7KPD28A	31.1	32.8	34.4	5.0	28.0	5	150	154	45.4	0.089
7KPD30A	7KPD30A	33.3	35.1	36.8	5.0	30.0	5	150	145	48.4	0.090
7KPD33A	7KPD33A	36.7	38.7	40.6	5.0	33.0	5	150	131	53.3	0.091
7KPD36A	7KPD36A	40.0	42.1	44.2	5.0	36.0	5	150	120	58.1	0.091
7KPD40A	7KPD40A	44.4	46.8	49.1	5.0	40.0	5	150	109	64.5	0.092
7KPD43A	7KPD43A	47.8	50.3	52.8	5.0	43.0	5	150	101	69.4	0.093

Notes

- For all types maximum V_F = 1.9 V at I_F = 100 A measured on 300 µs square pulse width

(1) 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))

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Typical thermal resistance	$R_{\theta JA}$ (1)	55	°C/W
	$R_{\theta JM}$ (2)	1.1	°C/W

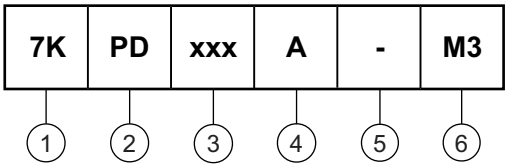
Notes

(1) Thermal resistance junction-to-ambient to follow JEDEC®51-2A, device mounted on FR4 PCB, 2 oz. standard footprint

(2) Thermal resistance junction-to-mount to follow JEDEC®51-14 using Transient Dual Interface Test Method (TDIM)

ORDERING INFORMATION TABLE

Device code



1 - Peak pulse power rating (7K = 7000 W)

2 - Package type (PD = SMPD package)

3 - Stand-off voltage

4 - Breakdown voltage tolerance and polarity (A ± 5 %, unidirectional)

5 - Quality grade (H = AEC-Q101 qualified, otherwise = industry grade)

6 - Material / environment category (M3 = halogen-free, RoHS-compliant, and termination lead (Pb)-free

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
7KPD10A-M3/I	0.645	I	2000	13" diameter plastic tape and reel, anode towards the sprocket hole

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

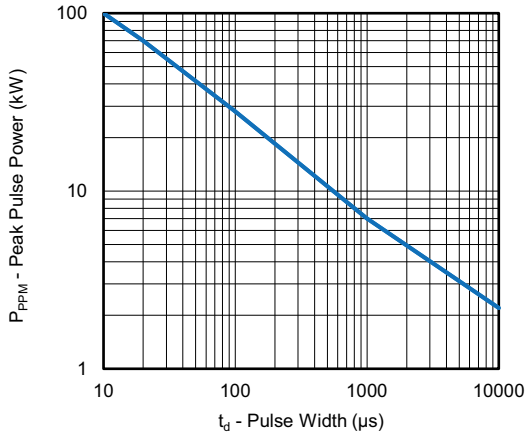


Fig. 1 - Peak Pulse Power Derating Curve

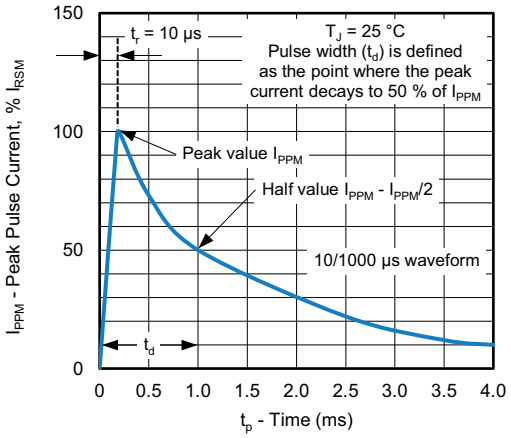


Fig. 4 - Pulse Waveform

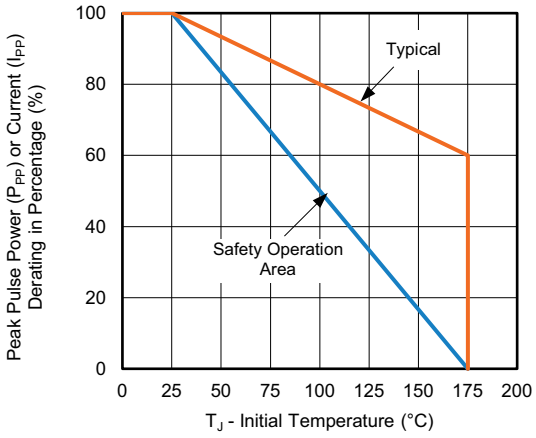


Fig. 2 - Power Derating Curve

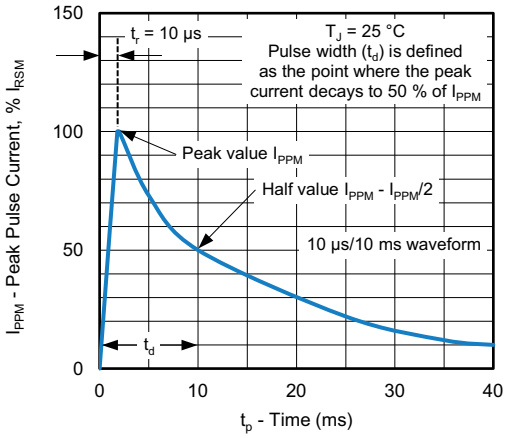


Fig. 5 - Pulse Waveform

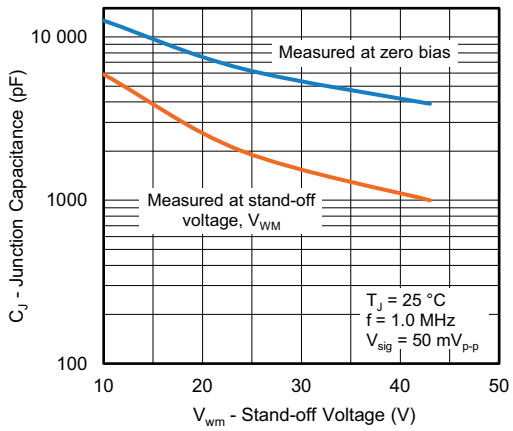


Fig. 3 - Typical Junction Capacitance

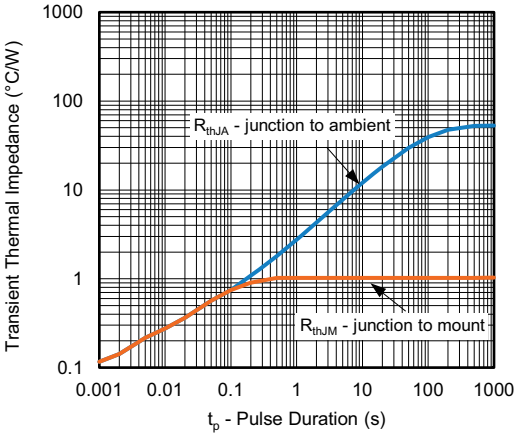
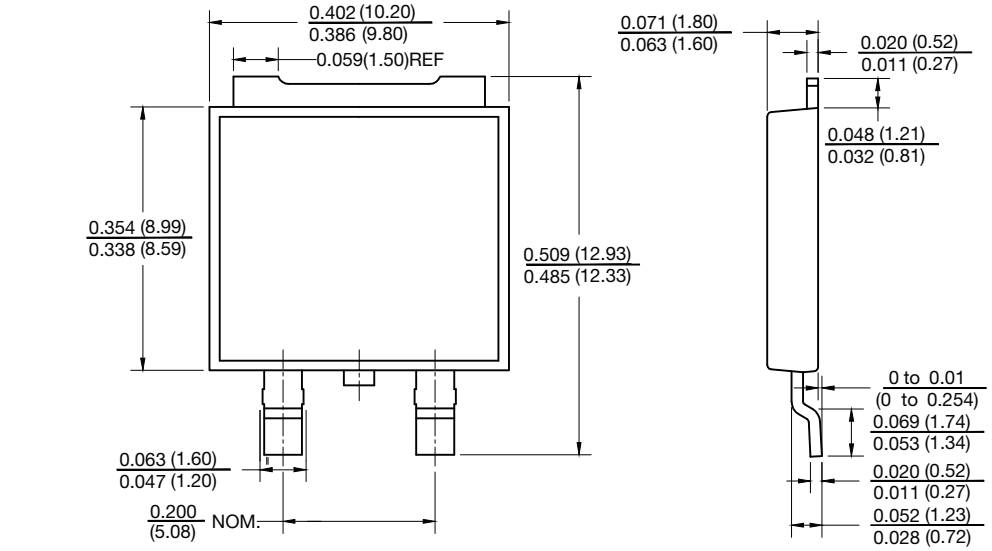


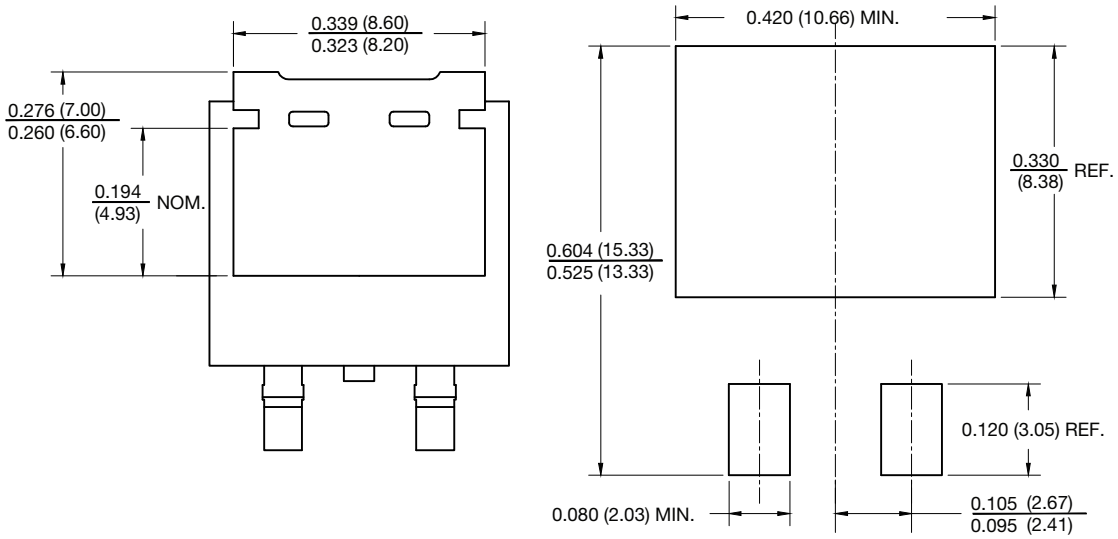
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMPD (TO-263AC)



Mounting Pad Layout



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