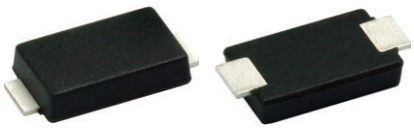
Surface-Mount PAR® Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions

eSMP® Series



Top View Bottom View

SlimSMA (DO-221AC)

Cathode ○—▶|—○ Anode

LINKS TO ADDITIONAL RESOURCES

3D Models

FEATURES

- Very low profile - typical height of 0.95 mm
- Junction passivation optimized design passivated anisotropic rectifier technology
- T_J = 185 °C capability suitable for high reliability and automotive requirement
- Ideal for automated placement
- Unidirectional only
- Excellent clamping capability
- Peak pulse power: 600 W (10/1000 µs)
- AEC-Q101 qualified
- ESD capability: IEC 61000-4-2 level 4
  - 15 kV (air)
  - 8 kV (contact)
- 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

AUTOMOTIVE GRADE

RoHS COMPLIANT

HALOGEN FREE

PRIMARY CHARACTERISTICS	
V_{BR}	6.8 V to 51 V
V_{WM}	5.8 V to 43.6 V
P_{PPM} (10 x 1000 µs)	600 W
P_D at T_M = 65 °C	6 W
T_J max.	185 °C
Polarity	Unidirectional
Package	SlimSMA (DO-221AC)

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, and telecommunication.

MECHANICAL DATA

Case: SlimSMA (DO-221AC)
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 JESD22-B102
HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

MAXIMUM RATINGS (T_A = 25 °C, unless otherwise noted)				
PARAMETER		**SYMBOL**	**VALUE**	**UNIT**
Peak pulse power dissipation	with a 10/1000 µs waveform	P_{PPM} (1)	600	W
Peak pulse current	with a 10/1000 µs waveform	I_{PPM} (1)	See next table	A
Power dissipation on infinite heat sink, T_M = 65 °C		P_D (2)	6	W
Power dissipation, T_M = 25 °C		P_D (3)	1.1	
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) Power dissipation mounted on infinite heat sink
(3) Power dissipation mounted on minimum recommended pad layout

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)	T_J = 150 °C MAXIMUM REVERSE LEAKAGE AT V_{WM} I_R (µA)	MAXIMUM PEAK PULSE SURGE CURRENT I_{PPM} (A)	MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)	TYPICAL TEMP. COEFFICIENT OF V_{BR} (2) αT (%/°C)
		MIN.	NOM.	MAX.							
TA6F6.8A	AEP	6.45	6.80	7.14	10	5.80	500	1000	57.1	10.5	0.047
TA6F7.5A	AGP	7.13	7.50	7.88	10	6.40	250	500	53.1	11.3	0.052
TA6F8.2A	AKP	7.79	8.20	8.61	10	7.02	100	200	49.6	12.1	0.056
TA6F9.1A	AMP	8.65	9.10	9.55	1.0	7.78	25	50	44.8	13.4	0.060
TA6F10A	APP	9.5	10.0	10.5	1.0	8.55	5.0	20	41.4	14.5	0.064
TA6F11A	ARP	10.5	11.0	11.6	1.0	9.40	2.0	5.0	38.5	15.6	0.067
TA6F12A	ATP	11.4	12.0	12.6	1.0	10.2	2.0	5.0	35.9	16.7	0.070
TA6F13A	AVP	12.4	13.0	13.7	1.0	11.1	2.0	5.0	33.0	18.2	0.072
TA6F15A	AXP	14.3	15.0	15.8	1.0	12.8	1.0	5.0	28.3	21.2	0.076
TA6F16A	AZP	15.2	16.0	16.8	1.0	13.6	1.0	5.0	26.7	22.5	0.078
TA6F18A	BEP	17.1	18.0	18.9	1.0	15.3	1.0	5.0	23.5	25.5	0.080
TA6F20A	BGP	19.0	20.0	21.0	1.0	17.1	1.0	5.0	21.7	27.7	0.082
TA6F22A	BKP	20.9	22.0	23.1	1.0	18.8	1.0	5.0	19.6	30.6	0.084
TA6F24A	BMP	22.8	24.0	25.2	1.0	20.5	1.0	5.0	18.1	33.2	0.085
TA6F27A	BPP	25.7	27.0	28.4	1.0	23.1	1.0	5.0	16.0	37.5	0.087
TA6F30A	BRP	28.5	30.0	31.5	1.0	25.6	1.0	5.0	14.5	41.4	0.088
TA6F33A	BTP	31.4	33.0	34.7	1.0	28.2	1.0	5.0	13.1	45.7	0.089
TA6F36A	BVP	34.2	36.0	37.8	1.0	30.8	1.0	5.0	12.0	49.9	0.090
TA6F39A	BXP	37.1	39.0	41.0	1.0	33.3	1.0	5.0	11.1	53.9	0.091
TA6F43A	BZP	40.9	43.0	45.2	1.0	36.8	1.0	10.0	10.1	59.3	0.092
TA6F47A	CEP	44.7	47.0	49.4	1.0	40.2	1.0	10.0	9.3	64.8	0.092
TA6F51A	CGP	48.5	51.0	53.6	1.0	43.6	1.0	10.0	8.6	70.1	0.093

Notes

(1) Pulse test: $t_p \leq 50$ ms

(2) 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, junction to ambient	$R_{\theta JA}$ (1)	145	°C/W
Typical thermal resistance, junction to mount	$R_{\theta JM}$(2)	20	°C/W

Notes

(1) Mounted on minimum recommended pad layout

(2) Mounted on infinite heat sink

IMMUNITY TO STATIC ELECTRICAL DISCHARGE TO THE FOLLOWING STANDARDS (T_A = 25 °C unless otherwise noted)

STANDARD	TEST TYPE	TEST CONDITIONS	SYMBOL	CLASS	VALUE
IEC 61000-4-2	Human body model (contact mode)	C = 150 pF, R = 330 Ω	V_C	4	> 8 kV
	Human body model (air discharge mode)				> 15 kV

ORDERING INFORMATION (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TA6F6.8AHM3_A/H (1)	0.032	H	3500	7" diameter plastic tape and reel
TA6F6.8AHM3_A/I (1)	0.032	I	14 000	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

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

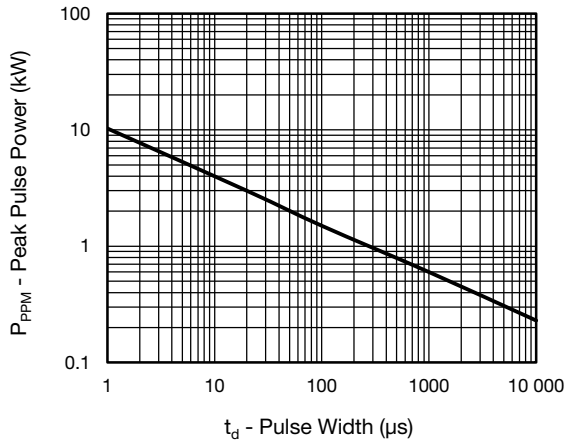


Fig. 1 - Peak Pulse Power Rating Curve

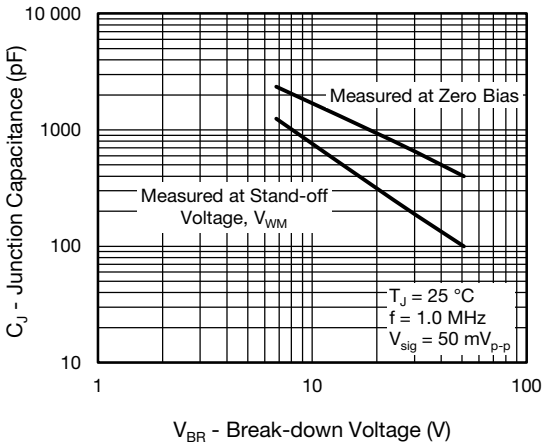


Fig. 4 - Typical Junction Capacitance

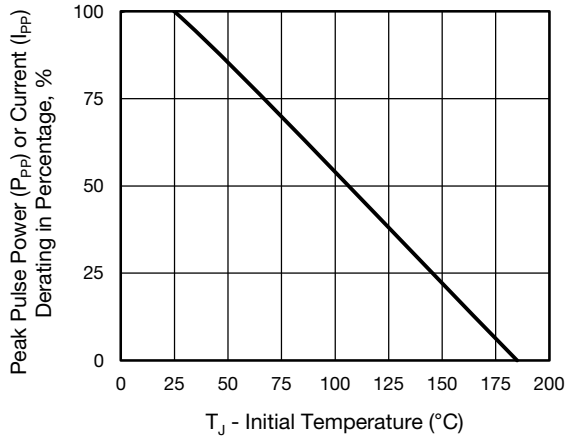


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

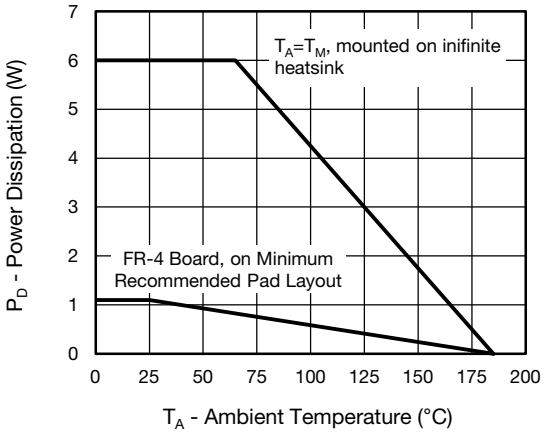


Fig. 5 - Power Dissipation Derating Curve

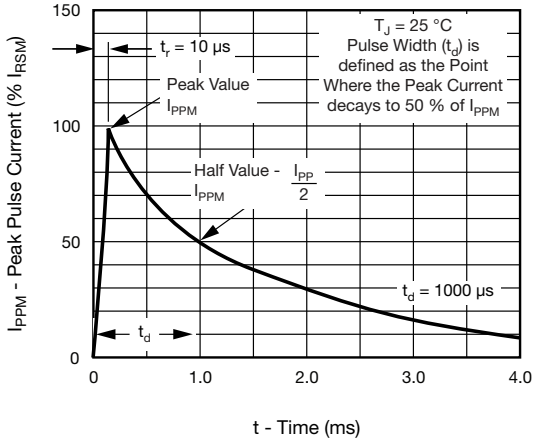


Fig. 3 - Pulse Waveform

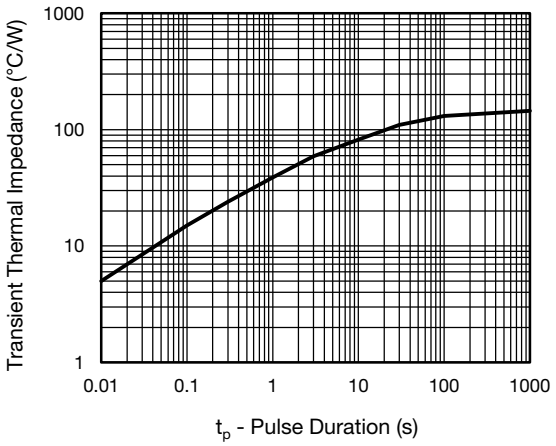
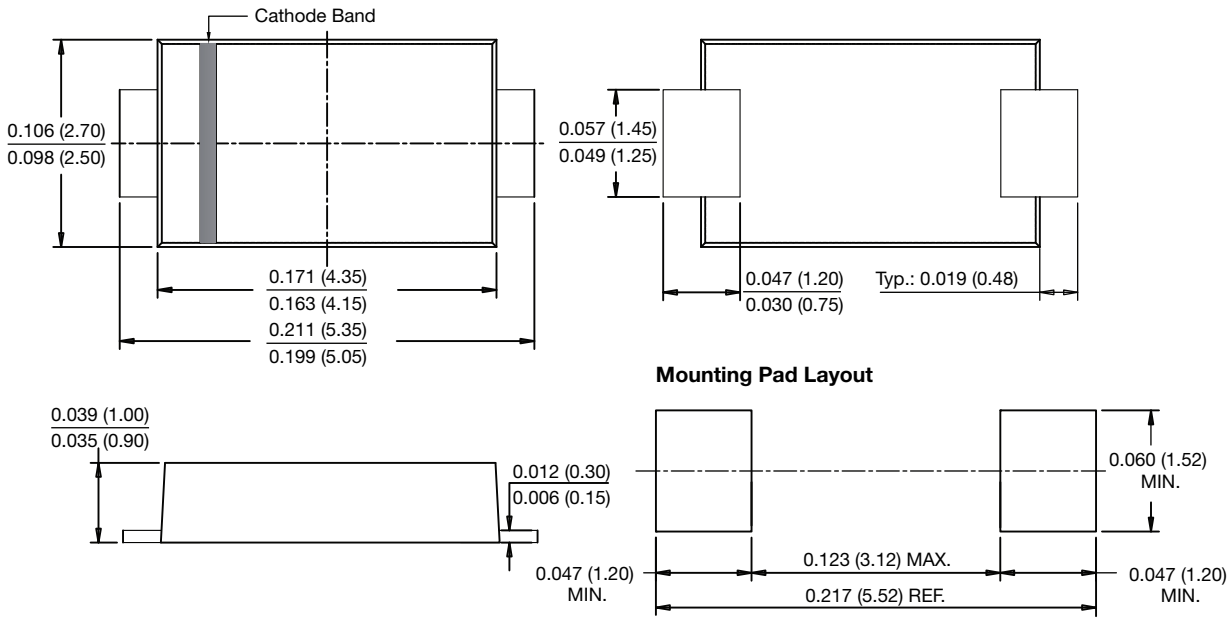


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SlimSMA (DO-221AC)



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