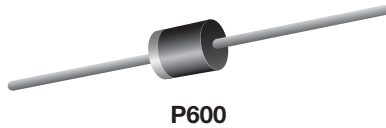


Surface Mount PAR[®] Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



FEATURES

- Junction passivation optimized design passivated anisotropic rectifier technology
- $T_J = 185\text{ }^\circ\text{C}$ capability suitable for high reliability and automotive requirement
- Available in uni-directional polarity only
- Low leakage current
- Low forward voltage drop
- High surge capability
- Solder dip $275\text{ }^\circ\text{C}$ max. 10 s, per JESD 22-B106
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC


RoHS
COMPLIANT

PRIMARY CHARACTERISTICS

V_{WM}	10 V to 36 V
P_{PPM} (10 x 1000 μs)	5000 W
P_D	5.5 W
I_{FSM}	400 A
T_J max.	$185\text{ }^\circ\text{C}$

TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting, especially for automotive load dump protection.

MECHANICAL DATA

Case: P600, molded epoxy over passivated junction
Epoxy meets UL 94 V-0 flammability rating
Base P/NHE3 - RoHS compliant, AEC-Q101 qualified

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102D
HE3 suffix for high reliability grade (AEC-Q101 qualified)

Polarity: Color band denotes cathode end

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

PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power dissipation with 10/1000 μs waveform	$P_{PPM}^{(1)}$	minimum 5000	W
Peak pulse current with a 10/1000 μs waveform	$I_{PPM}^{(1)}$	see next table	A
Power dissipation on infinite heatsink at $T_L = 75\text{ }^\circ\text{C}$ (fig. 5)	P_D	5.5	W
Peak forward surge current 8.3 ms single half sine-wave (fig. 5)	I_{FSM}	400	A
Instantaneous forward voltage at 80 A	$V_F^{(2)}$	1.8	V
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 185	$^\circ\text{C}$

Notes

(1) Non-repetitive current pulse, per fig. 3 and derated above $T_A = 25\text{ }^\circ\text{C}$ per fig. 2

(2) Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

5KA10 thru 5KA24A

Vishay General Semiconductor



ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)								
DEVICE TYPE	BREAKDOWN VOLTAGE V_{BR} (V) ⁽¹⁾		TEST CURRENT AT I_T (mA)	STAND-OFF VOLTAGE V_{WM} (V)	MAXIMUM REVERSE LEAKAGE AT V_{WM} I_D (μA)	MAXIMUM PEAK PULSE CURRENT I_{PPM} (A)	MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)	MAXIMUM TEMPERATURE COEFFICIENT OF V_{BR} ($\%/^\circ\text{C}$)
	MIN.	MAX.						
5KA10	11.1	13.6	5.0	10	15	266	18.8	0.084
5KA10A	11.1	12.3	5.0	10	15	294	17.0	0.084
5KA11	12.2	14.9	5.0	11	10	249	20.1	0.086
5KA11A	12.2	13.5	5.0	11	10	275	18.2	0.086
5KA12	13.3	16.3	5.0	12	5.0	227	22.0	0.088
5KA12A	13.3	14.7	5.0	12	5.0	251	19.9	0.088
5KA13	14.4	17.6	5.0	13	2.0	210	23.8	0.090
5KA13A	14.4	15.9	5.0	13	2.0	233	21.5	0.090
5KA14	15.6	19.1	5.0	14	1.0	194	25.8	0.092
5KA14A	15.6	17.2	5.0	14	1.0	216	23.2	0.092
5KA15	16.7	20.4	5.0	15	1.0	186	26.9	0.094
5KA15A	16.7	18.5	5.0	15	1.0	205	24.4	0.094
5KA16	17.8	21.8	5.0	16	1.0	174	28.8	0.096
5KA16A	17.8	19.7	5.0	16	1.0	192	26.0	0.096
5KA17	18.9	23.1	5.0	17	1.0	164	30.5	0.097
5KA17A	18.9	20.9	5.0	17	1.0	181	27.6	0.097
5KA18	20.0	24.4	5.0	18	1.0	155	32.2	0.098
5KA18A	20.0	22.1	5.0	18	1.0	171	29.2	0.098
5KA20	22.2	27.1	5.0	20	1.0	140	35.8	0.099
5KA20A	22.2	24.5	5.0	20	1.0	154	32.4	0.099
5KA22	24.4	29.8	5.0	22	1.0	127	39.4	0.100
5KA22A	24.4	26.9	5.0	22	1.0	141	35.5	0.100
5KA24	26.7	32.6	5.0	24	1.0	116	43.0	0.101
5KA24A	26.7	29.5	5.0	24	1.0	129	38.9	0.101

Note

⁽¹⁾ Mounted on copper pad area of 1.6" x 1.6" (40 mm x 40 mm) per fig. 5

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to ambient	$R_{\theta JA}$ ⁽¹⁾	30	$^\circ\text{C/W}$
Typical thermal resistance, junction to lead	$R_{\theta JL}$ ⁽¹⁾	10	$^\circ\text{C/W}$

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
5KA10HE3/54 ⁽¹⁾	2.302	54	800	13" diameter plastic tape and reel

Note

⁽¹⁾ AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

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

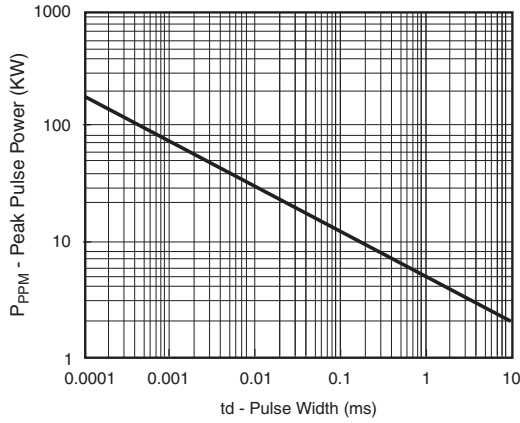


Fig. 1 - Pulse Peak Power Rating Curve

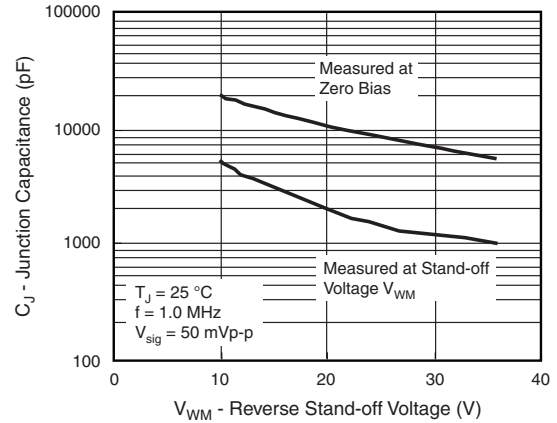


Fig. 4 - Typical Junction Capacitance

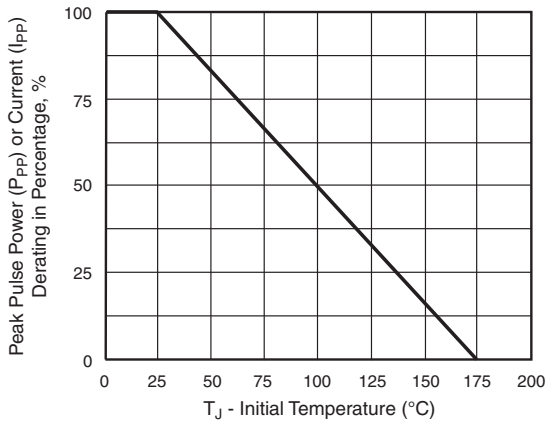


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

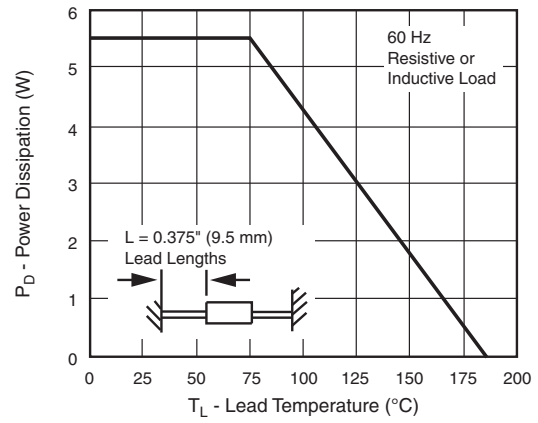


Fig. 5 - Power Derating Curve

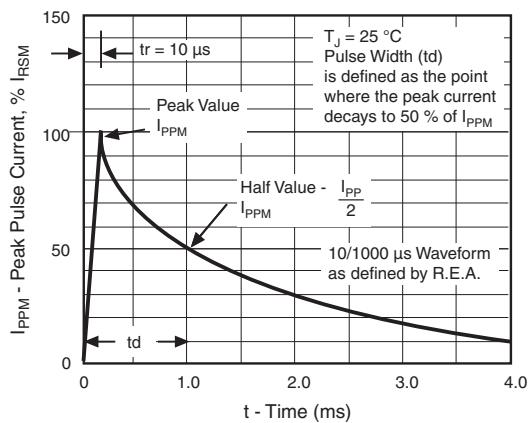


Fig. 3 - Pulse Waveform

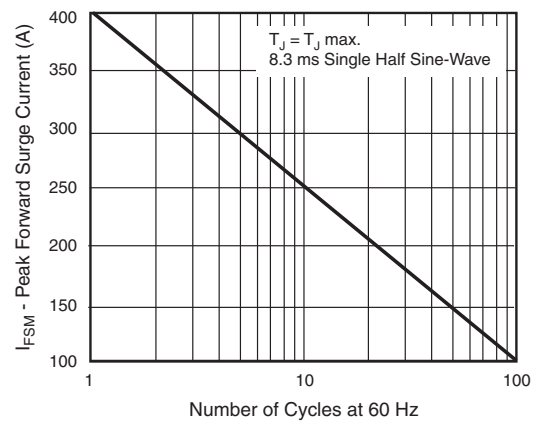


Fig. 6 - Maximum Non-Repetitive Forward Surge Current

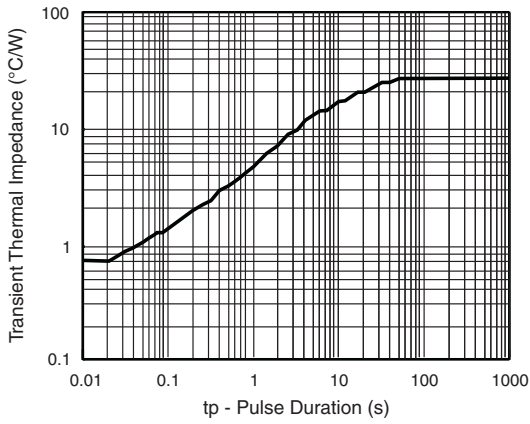
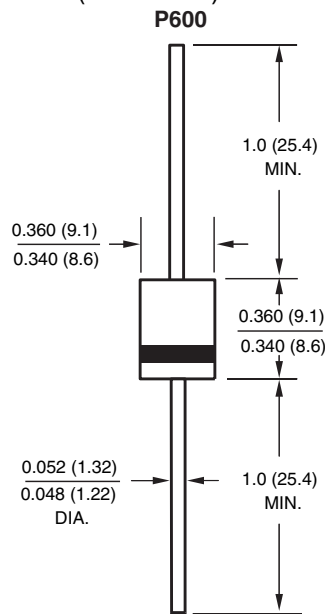


Fig. 7 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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