

PAR[®] Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions


P600

RoHS
COMPLIANT

FEATURES

- Junction passivation optimized design passivated anisotropic rectifier technology
- $T_J = 185\text{ }^\circ\text{C}$ capability suitable for high reliability and automotive requirement
- Excellent clamping capability
- Low leakage current
- High surge capability
- Solder dip $275\text{ }^\circ\text{C}$ max. 10 s, per JESD 22-B106
- 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, especially for automotive load dump protection application.

MECHANICAL DATA

Case: P600, molded epoxy over passivated junction
Molding compound meets UL 94 V-0 flammability rating
Base P/NHE3_X - 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
HE3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

PRIMARY CHARACTERISTICS	
V_{WM}	24 V
V_{BR}	26.7 V to 32.6 V
P_{PPM} (10 x 1000 μs)	6000 W
P_{PPM} (10 μs /50 ms)	2000 W
P_D	6.5 W
I_{RSM}	90 A
I_{FSM}	400 A
T_J max.	$185\text{ }^\circ\text{C}$
Polarity	Uni-directional
Package	P600

MAXIMUM RATINGS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER		SYMBOL	LIMIT	UNIT
Peak pulse power dissipation	with 10/1000 μs waveform ⁽¹⁾	P_{PPM}	6000	W
	with 10 μs /50 ms waveform ⁽²⁾		2000	
Power dissipation on infinite heatsink at $T_L = 75\text{ }^\circ\text{C}$ (fig. 3)		P_D	6.5	W
Maximum working stand-off voltage		V_{WM}	24	V
Peak forward surge current 8.3 ms single half sine-wave ⁽³⁾		I_{FSM}	400	A
Operating junction and storage temperature range		T_J, T_{STG}	-65 to +185	$^\circ\text{C}$

Notes

- (1) Non-repetitive current pulse, per fig. 2, with a 10/1000 μs waveform
- (2) Non-repetitive current pulse, per fig. 5, with a 10 μs /50 ms waveform
- (3) Measured on 8.3 ms half sine-wave, or equivalent square wave, duty cycle = 4 pulses per minute maximum

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
DEVICE TYPE	BREAKDOWN VOLTAGE V_{BR} AT I_T (V)		TEST CURRENT I_T (mA)	STAND-OFF VOLTAGE V_{WM} (V)
	MIN.	MAX.		
6KA24	26.7	32.6	100	24



ADDITIONAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	LIMIT	UNIT
Maximum DC reverse leakage current	V _{WM} = 24 V	T _A = 25 °C	I _D	1.0	μA
		T _A = 150 °C		50	
Reverse breakdown voltage	100 mA	T _A = 150 °C min.	V _{BR}	29.7	V
		T _A = 150 °C max.		36.7	
Maximum clamping voltage	I _{PP} = 90 A ⁽¹⁾	T _A = 25 °C	V _C	40	V
		T _A = 150 °C		45	
Maximum instantaneous forward voltage	100 A ⁽²⁾		V _F	1.8	V

Notes

- (1) Measured on 80 μs square pulse width
- (2) Measured on 300 μs square pulse width

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
6KA24HE3_A/C ⁽¹⁾	2.710	C	800	13" diameter paper tape and reel

Note

- (1) AEC-Q101 qualified

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

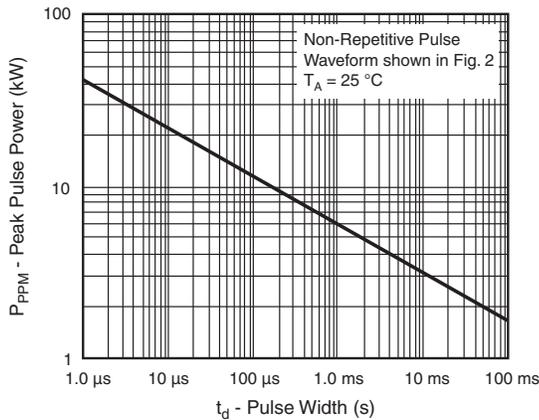


Fig. 1 - Peak Pulse Power Rating Curve

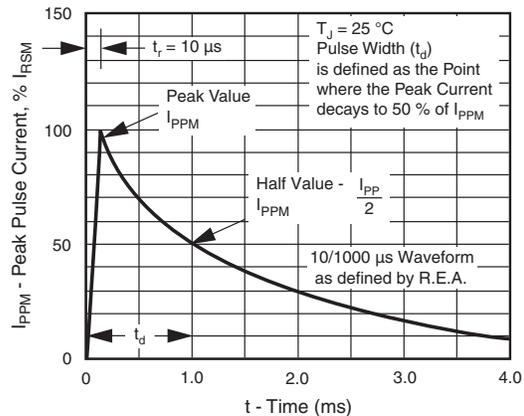


Fig. 2 - 10/1000 μs Pulse Waveform

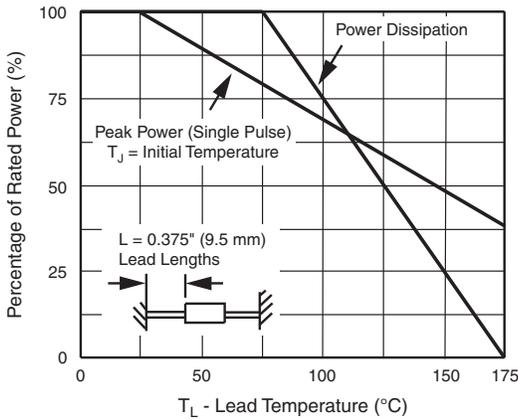


Fig. 3 - Pulse Derating Curve

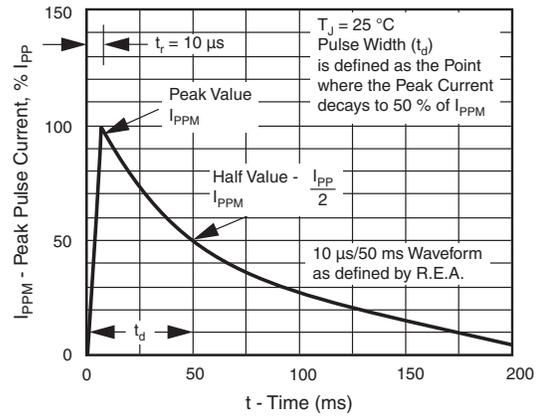


Fig. 5 - 10 μ s/50 ms Pulse Waveform

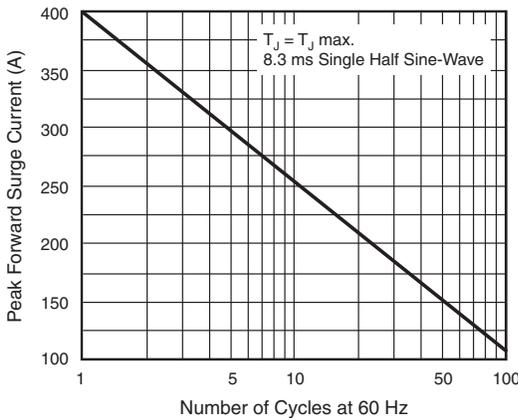
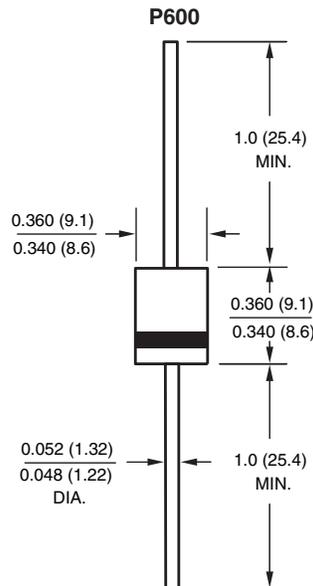


Fig. 4 - Maximum Non-Repetitive Peak Forward Surge Current

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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