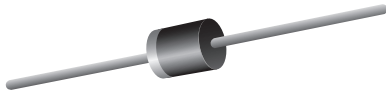


# PAR<sup>®</sup> Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



P600

## 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](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

PRIMARY CHARACTERISTICS	
$V_{WM}$	24 V
$V_{BR}$	26.7 V to 36.2 V
$P_{PPM}$ (10 x 1000 $\mu\text{s}$ )	6000 W
$P_{PPM}$ (10 $\mu\text{s}$ /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

## 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 - RoHS-compliant, AEC-Q101 qualified  
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

MAXIMUM RATINGS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER		SYMBOL	LIMIT	UNIT
Peak pulse power dissipation	with 10/1000 $\mu\text{s}$ waveform <sup>(1)</sup>	$P_{PPM}$	6000	W
	with 10 $\mu\text{s}$ /50 ms waveform <sup>(2)</sup>		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 <sup>(3)</sup>		$I_{FSM}$	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 $\mu\text{s}$  waveform
- (2) Non-repetitive current pulse, per fig. 5, with a 10  $\mu\text{s}$ /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 <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	LIMIT	UNIT
Maximum DC reverse leakage current	V <sub>WM</sub> = 24 V	T <sub>A</sub> = 25 °C	I <sub>D</sub>	1.0	μA
		T <sub>A</sub> = 150 °C		50	
Reverse breakdown voltage	100 mA	T <sub>A</sub> = 150 °C min.	V <sub>BR</sub>	29.7	V
		T <sub>A</sub> = 150 °C max.		36.7	
Maximum clamping voltage	I <sub>PP</sub> = 90 A <sup>(1)</sup>	T <sub>A</sub> = 25 °C	V <sub>C</sub>	40	V
		T <sub>A</sub> = 150 °C		45	
Maximum instantaneous forward voltage	100 A <sup>(2)</sup>		V <sub>F</sub>	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
6KA24HE3/54 <sup>(1)</sup>	2.710	54	800	13" diameter paper tape and reel
6KA24HE3_A/C <sup>(1)</sup>	2.710	C	800	13" diameter paper tape and reel

**Note**

- (1) AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)**

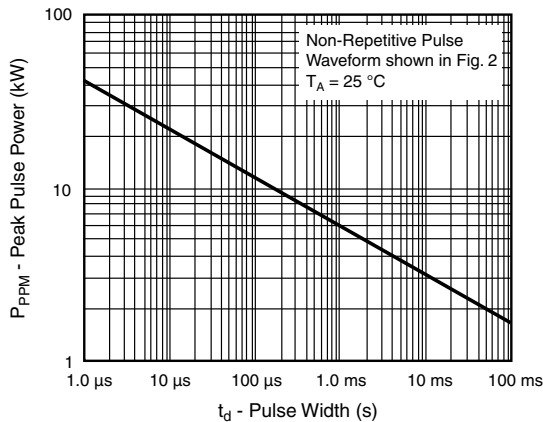


Fig. 1 - Peak Pulse Power Rating Curve

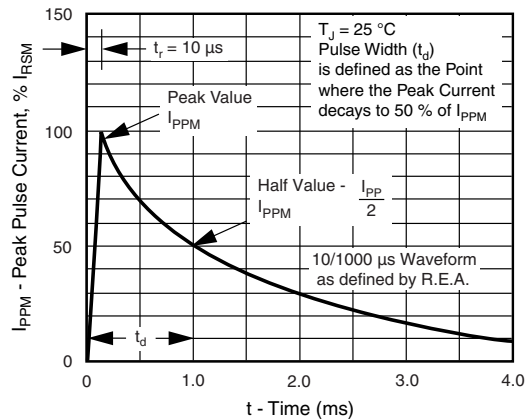


Fig. 2 - 10/1000 μs Pulse Waveform

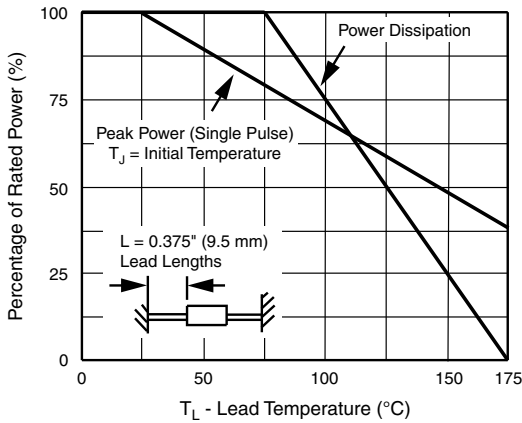


Fig. 3 - Pulse Derating Curve

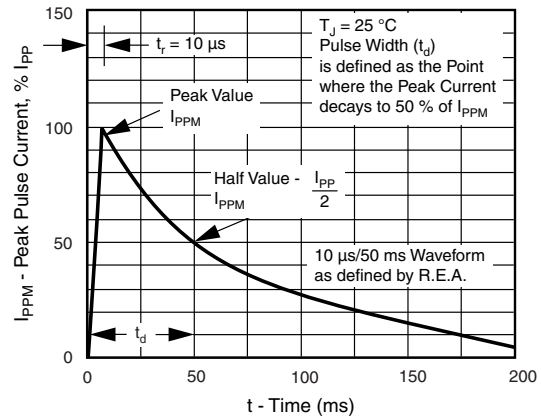


Fig. 5 - 10  $\mu$ s/50 ms Pulse Waveform

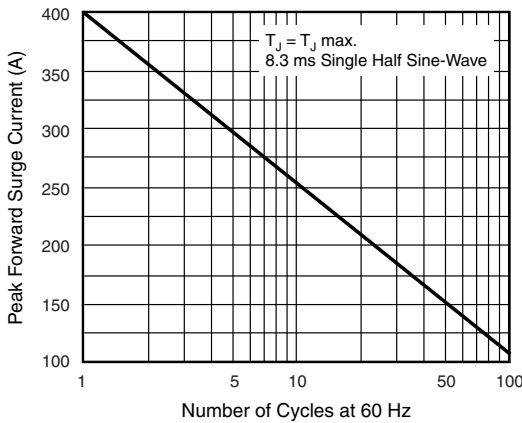
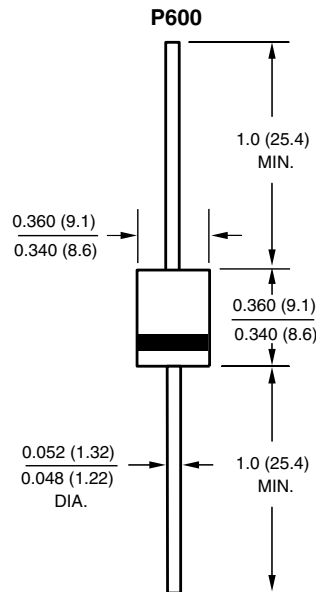


Fig. 4 - Maximum Non-Repetitive Peak Forward Surge Current

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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