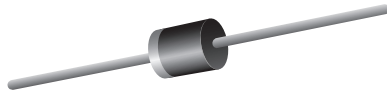


# PAR<sup>®</sup> Transient Voltage Suppressors

## 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)


**TYPICAL APPLICATIONS**

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lightning, 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 $\mu\text{s}$ )	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	Unidirectional
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 $\mu\text{s}$ 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**

- <sup>(1)</sup> Non-repetitive current pulse, per fig. 2, with a 10/1000 $\mu\text{s}$  waveform  
<sup>(2)</sup> Non-repetitive current pulse, per fig. 5, with a 10  $\mu\text{s}/50$  ms waveform  
<sup>(3)</sup> 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_B/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)**

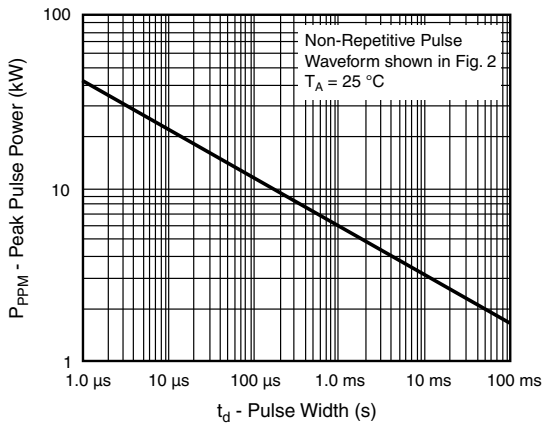


Fig. 1 - Peak Pulse Power Rating Curve

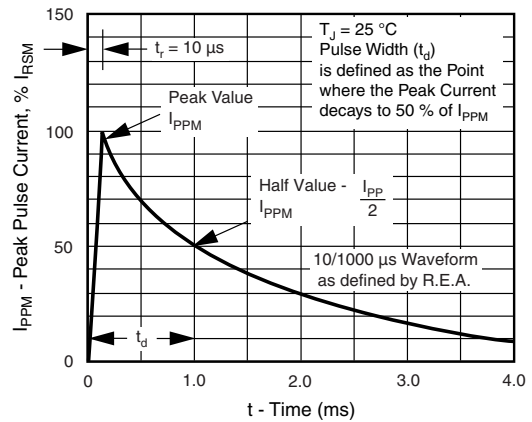


Fig. 2 - 10/1000 μs Pulse Waveform

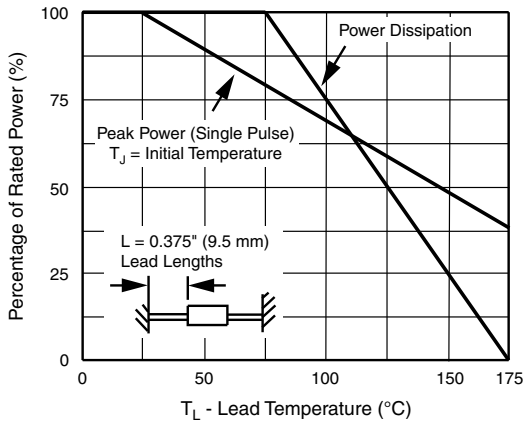


Fig. 3 - Pulse Derating Curve

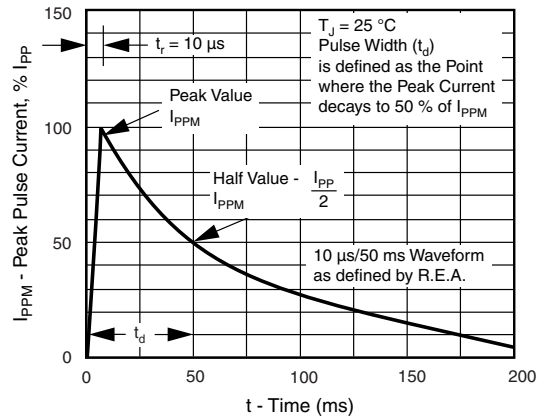


Fig. 5 - 10  $\mu$ s/50 ms Pulse Waveform

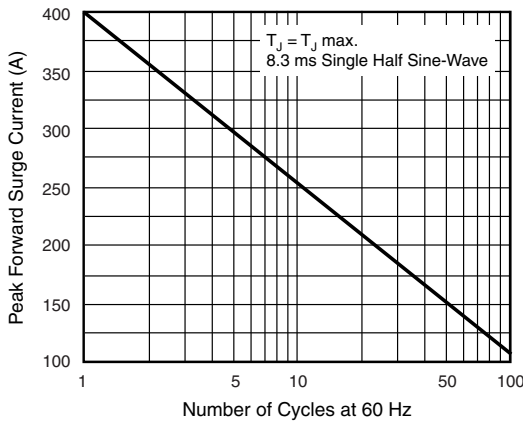
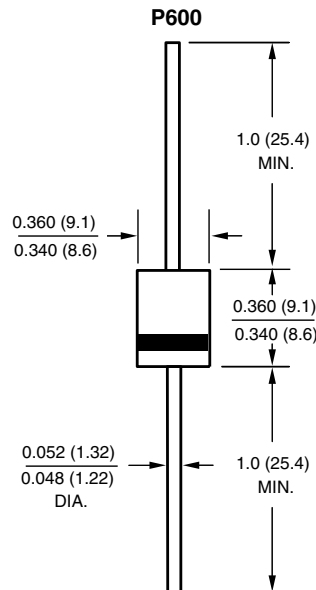


Fig. 4 - Maximum Non-Repetitive Peak Forward Surge Current

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





## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.