

Automotive Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



Case Style P600

Patented*

*Patent #s
4,980,315
5,166,769
5,278,094

FEATURES

- Patented PAR[®] construction
- Excellent clamping capability
- Low leakage current
- High surge capability
- Solder dip 260 °C, 40 s
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



RoHS
COMPLIANT

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, high reliability/automotive grade (AEC Q101 qualified)

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

HE3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

PRIMARY CHARACTERISTICS

V_{WM}	24 V
P_{PPM} (10 x 1000 μ s)	6000 W
P_{PPM} (10 μ s/50 ms)	2000 W
P_D	6.5 W
I_{RSM}	90 A
I_{FSM}	400 A
T_J max.	185 °C

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Peak pulse power dissipation with 10/1000 μ s waveform ⁽¹⁾ with 10 μ s/50 ms waveform ⁽²⁾	P_{PPM}	6000 2000	W
Power dissipation on infinite heatsink at $T_L = 75$ °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	°C

Notes:

(1) Non-repetitive current pulse, per Fig. 2, with a 10/1000 μ s waveform

(2) Non-repetitive current pulse, per Fig. 5, with a 10 μ 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)				
PARAMETER	TEST CONDITIONS	SYMBOL	LIMIT	UNIT
Maximum DC reverse leakage current	at $V_{WM} = 24\text{ V}$, $T_A = 25\text{ }^{\circ}\text{C}$ $T_A = 150\text{ }^{\circ}\text{C}$	I_D	1.0 50	μA
Reverse breakdown voltage	at 100 mA, $T_A = 25\text{ }^{\circ}\text{C}$ min. $T_A = 25\text{ }^{\circ}\text{C}$ max. $T_A = 150\text{ }^{\circ}\text{C}$ min. $T_A = 150\text{ }^{\circ}\text{C}$ max.	V_{BR}	26.7 32.6 29.7 36.7	V
Maximum clamping voltage	at $I_{PP} = 90\text{ A}$ ⁽¹⁾ , $T_A = 25\text{ }^{\circ}\text{C}$ $T_A = 150\text{ }^{\circ}\text{C}$	V_C	40 45	V
Maximum instantaneous forward voltage	at 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
6KA24HE3/54 ⁽¹⁾	2.710	54	800	13" diameter paper tape and reel

Note:

(1) Automotive grade AEC Q101 qualified

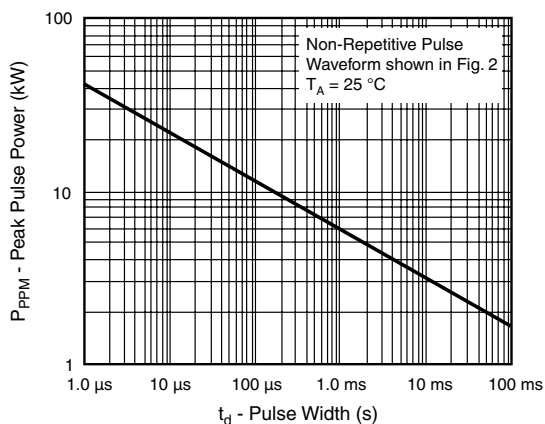
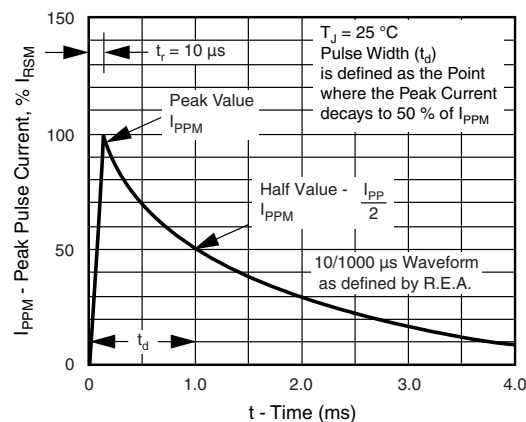
RATINGS AND CHARACTERISTICS CURVES($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Figure 1. Peak Pulse Power Rating Curve

Figure 2. 10/1000 μs Pulse Waveform

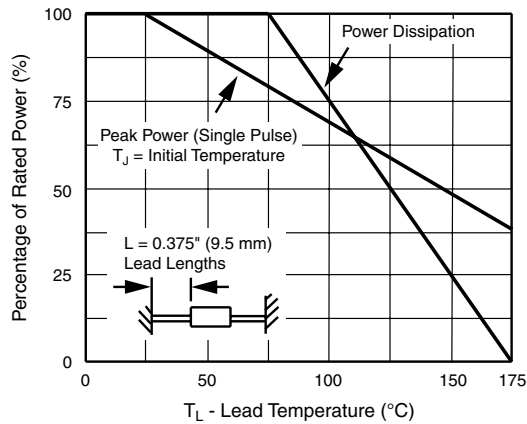


Figure 3. Pulse Derating Curve

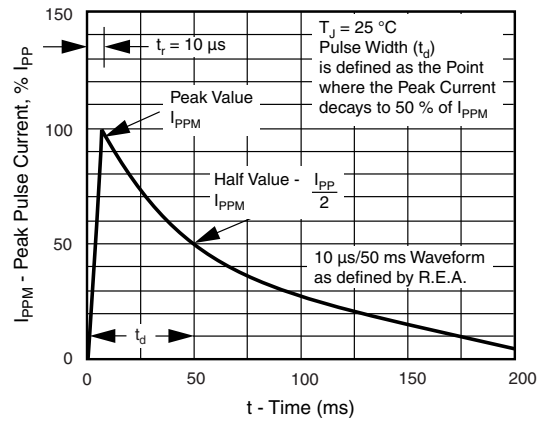
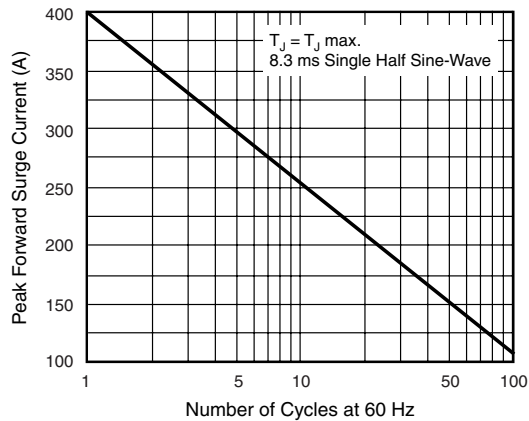
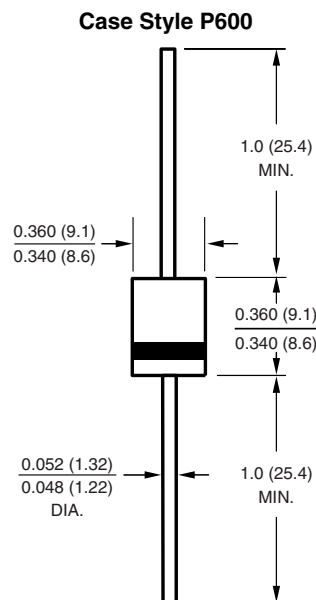

Figure 5. 10 μ s/50 ms Pulse Waveform


Figure 4. Maximum Non-Repetitive Peak Forward Surge Current

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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