

# P6KE200B

## 600 Watt Peak Power Transient Voltage Suppressors

### Unidirectional

The P6KE200B is designed to protect voltage sensitive components from high voltage, high energy transients. They have excellent clamping capability, high surge capability, low Zener impedance and fast response time. These devices are ON Semiconductor's exclusive, cost-effective, highly reliable SURMETIC™ axial leaded package and is ideally-suited for use in communication systems, numerical controls, process controls, medical equipment, business machines, power supplies and many other industrial/consumer applications.

#### Features

- Working Peak Reverse Voltage Range - 171 V
- Peak Power - 600 W @ 1.0 ms
- ESD Rating of Class 3 (>16 KV) per Human Body Model
- Maximum Clamp Voltage @ Peak Pulse Current
- Low Leakage < 5.0  $\mu$ A above 171 V
- Maximum Temperature Coefficient Specified
- UL 497B for Isolated Loop Circuit Protection
- Response Time is Typically < 1.0 ns
- These are Pb-Free Devices\*

#### Mechanical Characteristics:

**CASE:** Void-Free, Transfer-Molded, Thermosetting Plastic

**FINISH:** All External Surfaces are Corrosion Resistant and Leads are Readily Solderable

#### MAXIMUM LEAD TEMPERATURE FOR SOLDERING:

230°C, 1/16" from the Case for 10 Seconds

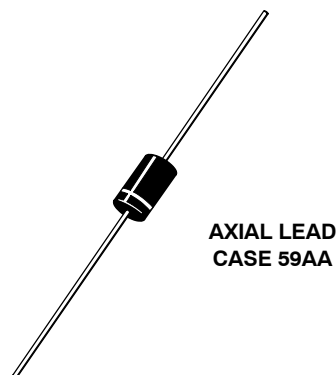
**POLARITY:** Cathode Indicated by Polarity Band

**MOUNTING POSITION:** Any



ON Semiconductor®

<http://onsemi.com>



#### MARKING DIAGRAM



A = Assembly Location  
P6KE200B = Device Code  
YY = Year  
WW = Work Week  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

#### ORDERING INFORMATION

Device	Package	Shipping†
P6KE200B	Axial Lead**	1000 Units/Box
P6KE200BG	Axial Lead**	1000 Units/Box
P6KE200BRL	Axial Lead**	5000 / Tape & Reel
P6KE200BRLG	Axial Lead**	5000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

\*\*These packages are inherently Pb-Free.

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

# P6KE200B

## MAXIMUM RATINGS

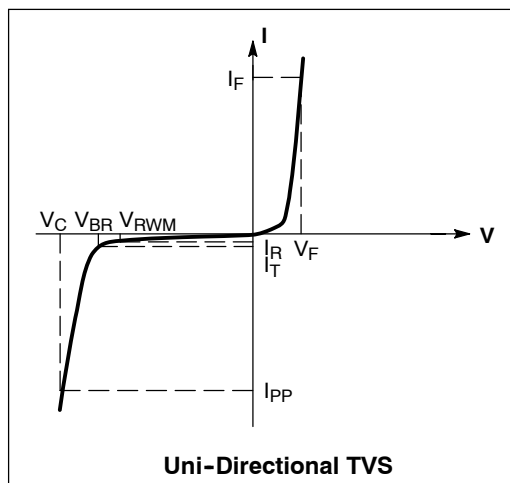
Rating	Symbol	Value	Unit
Peak Power Dissipation (Note 1) @ $T_L \leq 25^\circ\text{C}$	$P_{PK}$	600	W
Steady State Power Dissipation @ $T_L \leq 75^\circ\text{C}$ , Lead Length = 3/8", Derated above $T_L = 75^\circ\text{C}$	$P_D$	5.0 50	W mW/ $^\circ\text{C}$
Thermal Resistance Junction-to-Lead	$R_{\theta JL}$	15	$^\circ\text{C}/\text{W}$
Forward Surge Current (Note 2) @ $T_A = 25^\circ\text{C}$	$I_{FSM}$	100	A
Operating and Storage Temperature Range	$T_J, T_{stg}$	- 55 to +150	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. Nonrepetitive current pulse per Figure 3 and derated above  $T_A = 25^\circ\text{C}$  per Figure 2.
2. 1/2 sine wave (or equivalent square wave), PW = 8.3 ms, duty cycle = 4 pulses per minute maximum.

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted, $V_F = 3.5\text{ V Max.}$ @ $I_F$ (Note 3) = 50 A)

Symbol	Parameter
$I_{PP}$	Maximum Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$V_{RWM}$	Working Peak Reverse Voltage
$I_R$	Maximum Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_T$	Test Current
$\Theta V_{BR}$	Maximum Temperature Coefficient of $V_{BR}$
$I_F$	Forward Current
$V_F$	Forward Voltage @ $I_F$



## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted, $V_F = 3.5\text{ V Max.}$ @ $I_F$ (Note 3) = 50 A)

Device	Device Marking	$V_{RWM}$ (Note 4) V	$I_R$ @ $V_{RWM}$ $\mu\text{A}$	Breakdown Voltage			$V_C$ @ $I_{PP}$ (Note 6)		$\Theta V_{BR}$ %/ $^\circ\text{C}$	
				$V_{BR}$ (Note 5) (Volts)			$V_C$ V	$I_{PP}$ A		
				Min	Nom	Max				mA
P6KE200B	P6KE200B	171	5	190	200	210	1	274	2.2	0.108

3. 1/2 sine wave (or equivalent square wave), PW = 8.3 ms, duty cycle = 4 pulses per minute maximum.
4. A transient suppressor is normally selected according to the maximum working peak reverse voltage ( $V_{RWM}$ ), which should be equal to or greater than the DC or continuous peak operating voltage level.
5.  $V_{BR}$  measured at pulse test current  $I_T$  at an ambient temperature of  $25^\circ\text{C}$ .
6. Surge current waveform per Figure 3 and derate per Figures 1 and 2.

# P6KE200B

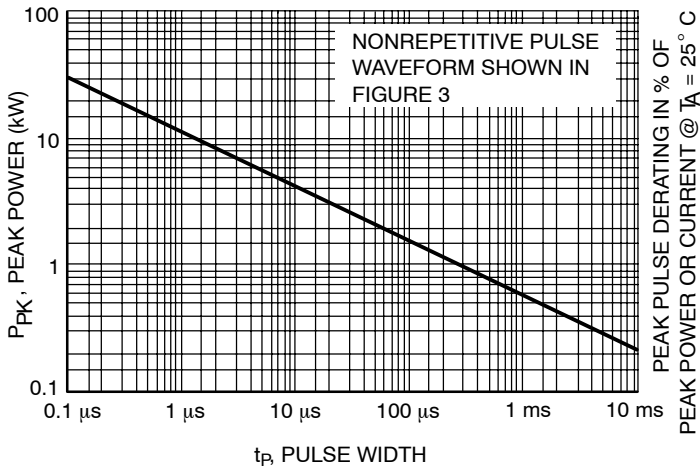


Figure 1. Pulse Rating Curve

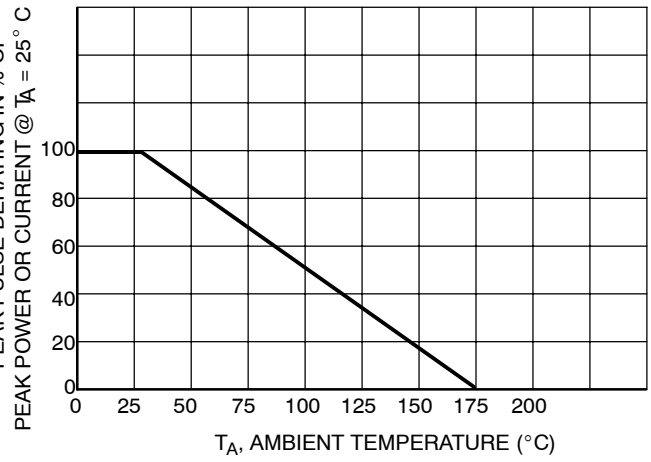


Figure 2. Pulse Derating Curve

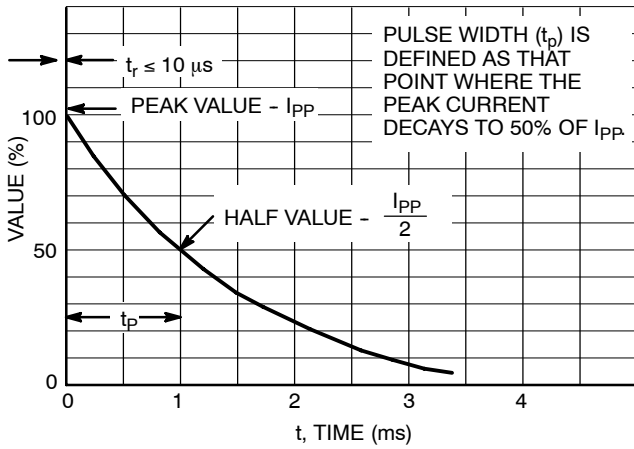


Figure 3. Pulse Waveform

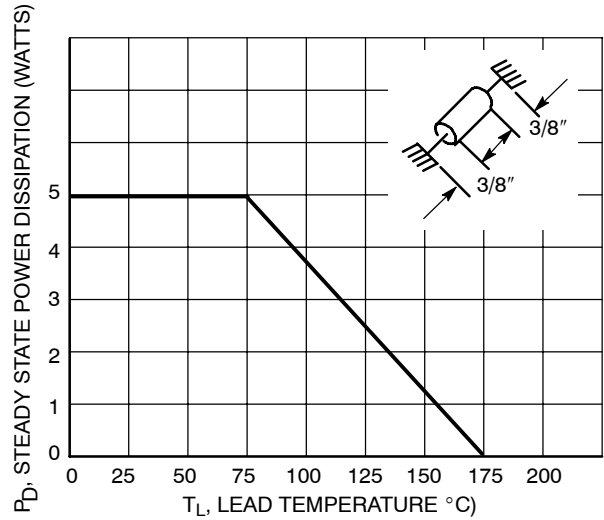
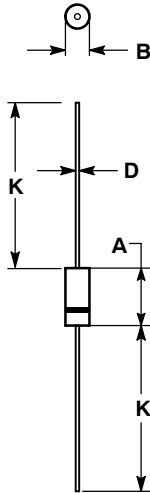


Figure 4. Steady State Power Derating

# P6KE200B

## PACKAGE DIMENSIONS

AXIAL LEAD  
CASE 59AA-01  
(Previously 59-09)  
ISSUE O




### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. ALL RULES AND NOTES ASSOCIATED WITH JEDEC DO-41 OUTLINE SHALL APPLY.
4. POLARITY DENOTED BY CATHODE BAND.
5. LEAD DIAMETER NOT CONTROLLED WITHIN F DIMENSION.
6. REPLACES CASE 59-09.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.228	0.299	5.80	7.60
B	0.102	0.142	2.60	3.60
D	0.028	0.034	0.71	0.86
K	1.000	---	25.44	---

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