

## Features

- 600W Peak Pulse Power Dissipation
- Voltage Range 6.8V - 400V
- Constructed with Glass Passivated Die
- Uni- and Bidirectional Versions Available
- Excellent Clamping Capability
- Fast Response Time
- **Lead Free Finish, RoHS Compliant (Note 1)**

## Mechanical Data

- Case: DO-15
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Leads: Plated Leads, Solderable per MIL-STD-202, Method 208 <sup>Ⓔ3</sup>
- Marking: Unidirectional - Type Number and Cathode Band
- Marking: Bidirectional - Type Number Only
- Ordering Information: See Page 4
- Weight: 0.4 grams (approximate)

## Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Peak Power Dissipation, $t_p = 1.0$ ms (Non repetitive current pulse, derated above $T_A = 25^\circ\text{C}$ )	$P_{pk}$	600	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave, Superimposed on Rated Load Duty Cycle = 4 pulses per minute maximum	$I_{FSM}$	100	A
Forward Voltage @ $I_F = 35\text{A}$ 300 $\mu\text{s}$ Square Wave Pulse, Unidirectional Only	$V_F$	$V_{BR} \leq 200\text{V}$ 3.5 $V_{BR} > 200\text{V}$ 5.0	V

## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Steady State Power Dissipation at $T_L = 75^\circ\text{C}$ Lead Lengths 9.5 mm (Mounted on Copper Land Area of 40mm)	$P_D$	5.0	W
Typical Thermal Resistance, Junction to Case	$R_{\theta JC}$	20	$^\circ\text{C/W}$
Typical Thermal Resistance, Junction to Lead	$R_{\theta JL}$	15	$^\circ\text{C/W}$
Typical Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	75	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +175	$^\circ\text{C}$

Notes: 1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see EU Directive 2002/95/EC Annex Notes.

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Type Number (Note 2)	Type Number (Note 2)	Reverse Standoff Voltage	Breakdown Voltage V <sub>BR</sub> @ I <sub>T</sub>		Test Current	Max Reverse Leakage (Note 3) @ V <sub>R</sub>	Max Clamping Voltage @ I <sub>pp</sub>	Max Peak Pulse Current
			V <sub>RWM</sub> (V)	Min (V)				
P6KE6V8A	P6KE6V8CA	5.80	6.45	7.14	10	1000	10.5	57.0
P6KE7V5A	P6KE7V5CA	6.40	7.13	7.88	10	500	11.3	53.0
P6KE8V2A	P6KE8V2CA	7.02	7.79	8.61	10	200	12.1	50.0
P6KE9V1A	P6KE9V1CA	7.78	8.65	9.55	1.0	50	13.4	45.0
P6KE10A	P6KE10CA	8.55	9.50	10.50	1.0	10	14.5	41.0
P6KE11A	P6KE11CA	9.40	10.50	11.60	1.0	5.0	15.6	38.0
P6KE12A	P6KE12CA	10.20	11.40	12.60	1.0	5.0	16.7	36.0
P6KE13A	P6KE13CA	11.10	12.40	13.70	1.0	5.0	18.2	33.0
P6KE15A	P6KE15CA	12.80	14.30	15.80	1.0	5.0	21.2	28.0
P6KE16A	P6KE16CA	13.60	15.20	16.80	1.0	5.0	22.5	27.0
P6KE18A	P6KE18CA	15.30	17.10	18.90	1.0	5.0	25.2	24.0
P6KE20A	P6KE20CA	17.10	19.00	21.00	1.0	5.0	27.7	22.0
P6KE22A	P6KE22CA	18.80	20.90	23.10	1.0	5.0	30.6	20.0
P6KE24A	P6KE24CA	20.50	22.80	25.20	1.0	5.0	33.2	18.0
P6KE27A	P6KE27CA	23.10	25.70	28.40	1.0	5.0	37.5	16.0
P6KE30A	P6KE30CA	25.60	28.50	31.50	1.0	5.0	41.4	14.40
P6KE33A	P6KE33CA	28.20	31.40	34.70	1.0	5.0	45.7	13.20
P6KE36A	P6KE36CA	30.80	34.20	37.80	1.0	5.0	49.9	12.00
P6KE39A	P6KE39CA	33.30	37.10	41.00	1.0	5.0	53.9	11.20
P6KE43A	P6KE43CA	36.80	40.90	45.20	1.0	5.0	59.3	10.10
P6KE47A	P6KE47CA	40.20	44.70	49.40	1.0	5.0	64.8	9.30
P6KE51A	P6KE51CA	43.60	48.50	53.60	1.0	5.0	70.1	8.60
P6KE56A	P6KE56CA	47.80	53.20	58.80	1.0	5.0	77.0	7.80
P6KE62A	P6KE62CA	53.00	58.90	65.10	1.0	5.0	85.0	7.10
P6KE68A	P6KE68CA	58.10	64.60	71.40	1.0	5.0	92.0	6.50
P6KE75A	P6KE75CA	64.10	71.30	78.80	1.0	5.0	103.0	5.80
P6KE82A	P6KE82CA	70.10	77.90	86.10	1.0	5.0	113.0	5.30
P6KE91A	P6KE91CA	77.80	86.50	95.50	1.0	5.0	125.0	4.80
P6KE100A	P6KE100CA	85.50	95.00	105.00	1.0	5.0	137.0	4.40
P6KE110A	P6KE110CA	94.00	105.00	116.00	1.0	5.0	152.0	4.00
P6KE120A	P6KE120CA	102.00	114.00	126.00	1.0	5.0	165.0	3.60
P6KE130A	P6KE130CA	111.00	124.00	137.00	1.0	5.0	179.0	3.30
P6KE150A	P6KE150CA	128.00	143.00	158.00	1.0	5.0	207.0	2.90
P6KE160A	P6KE160CA	136.00	152.00	168.00	1.0	5.0	219.0	2.70
P6KE170A	P6KE170CA	145.00	162.00	179.00	1.0	5.0	234.0	2.60
P6KE180A	P6KE180CA	154.00	171.00	189.00	1.0	5.0	246.0	2.40
P6KE200A	P6KE200CA	171.00	190.00	210.00	1.0	5.0	274.0	2.20
P6KE220A	P6KE220CA	185.00	209.00	231.00	1.0	5.0	328.0	1.83
P6KE250A	P6KE250CA	214.00	237.00	263.00	1.0	5.0	344.0	1.75
P6KE300A	P6KE300CA	256.00	285.00	315.00	1.0	5.0	414.0	1.45
P6KE350A	P6KE350CA	300.00	332.00	368.00	1.0	5.0	482.0	1.25
P6KE400A	P6KE400CA	342.00	380.00	420.00	1.0	5.0	548.0	1.10

Notes: 2. Suffix 'C' denotes bidirectional device.  
3. For bidirectional devices having V<sub>R</sub> of 10 volts and under, the I<sub>R</sub> limit is doubled.

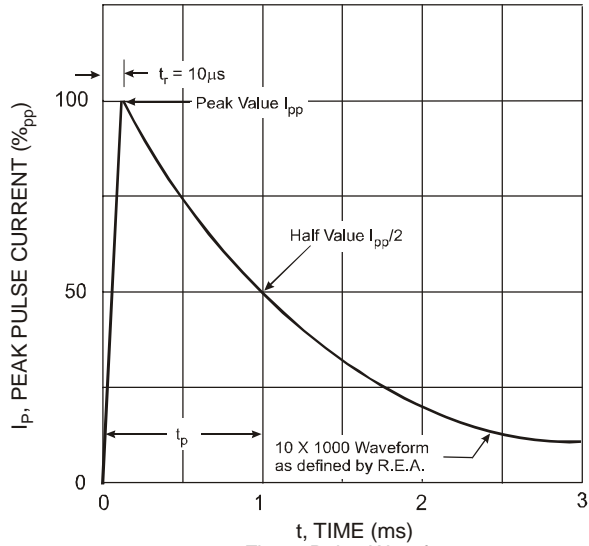


Fig. 1 Pulse Waveform

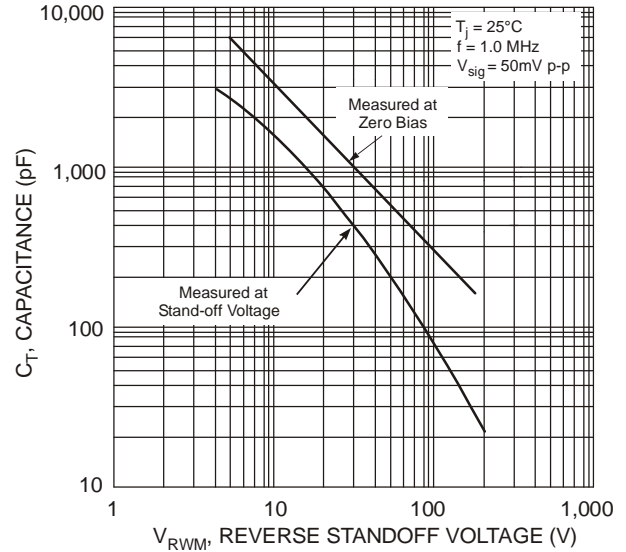


Fig. 2 Typical Total Capacitance

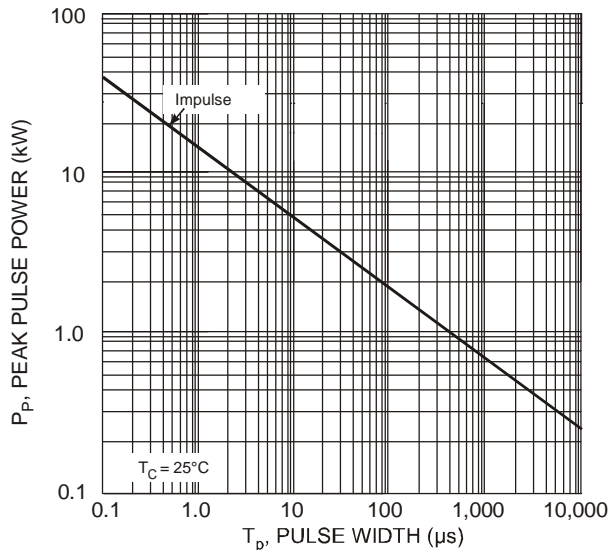


Fig. 3 Pulse Rating Curve

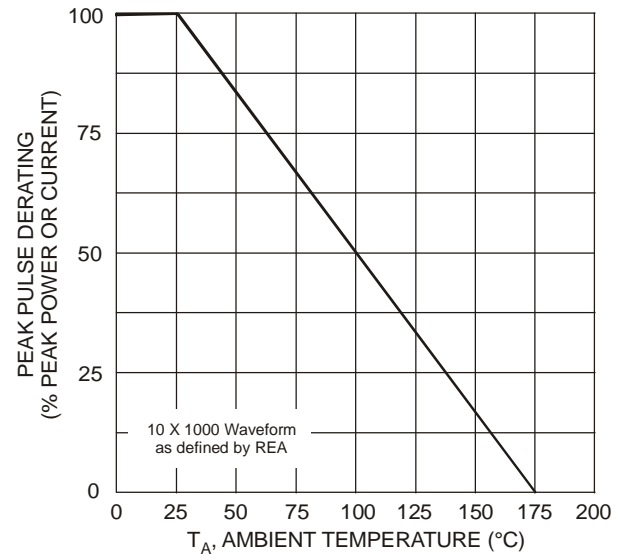


Fig. 4 Pulse Derating Curve

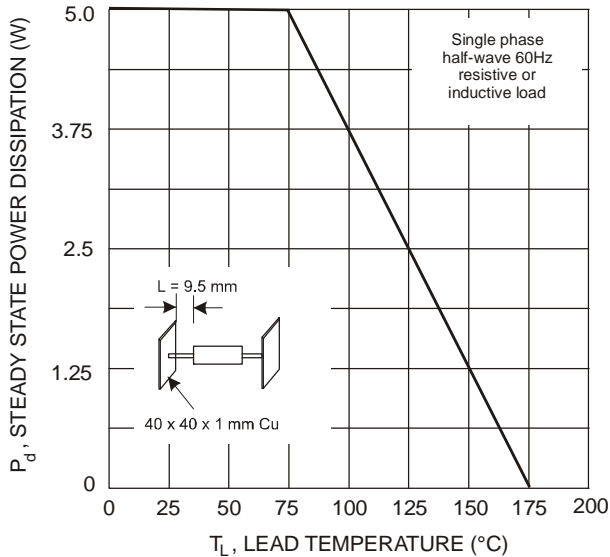


Fig. 5, Steady State Power Derating

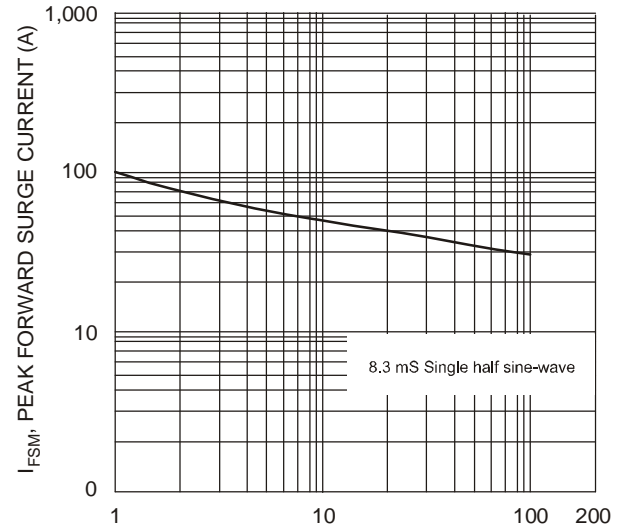


Fig. 6 Peak Forward Surge Current vs. Number of Cycles at 60Hz

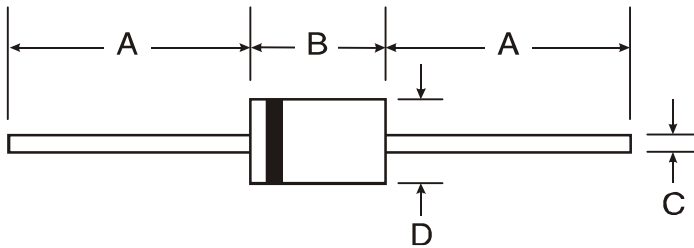
**Ordering Information** (Note 4)

Part Number (Type Number)-B*	Case DO-15	Packaging 500/Bulk
(Type Number)-T*	DO-15	4K/Tape & Reel, 13-inch

\* Add "-B" or "-T" to the appropriate type number in Table 1 for Bulk or Tape & Reel, respectively. Example: 6.40V VRWM = P6KE7V5A-B for Bulk, P6KE7V5A-T for Tape & Reel.

Notes: 4. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02008.pdf>.

**Package Outline Dimensions**



DO-15		
Dim	Min	Max
A	25.40	—
B	5.50	7.62
C	0.686	0.889
D	2.60	3.60
All Dimensions in mm		

**IMPORTANT NOTICE**

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

**LIFE SUPPORT**

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

- A. Life support devices or systems are devices or systems which:
  - 1. are intended to implant into the body, or
  - 2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.
- B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

Copyright © 2009, Diodes Incorporated

[www.diodes.com](http://www.diodes.com)