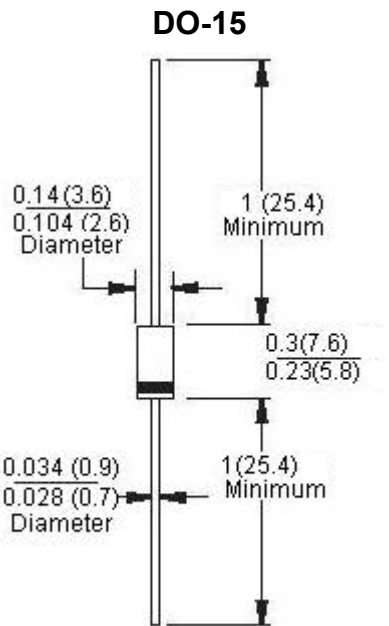




Dimensions : Inches (Millimetres)

### Features:

- Plastic package
- Exceeds environmental standards of MIL-STD-19500
- 600 W surge capability at  $10 \times 1,000 \mu\text{s}$  waveform, duty cycle: 0.01%
- Excellent clamping capability
- Low zener impedance
- Fast response time: typically less than 1.0 ps from 0 V to VBR for unidirectional and 5 ns for bidirectional
- Typical  $I_R$  less than  $1 \mu\text{A}$  above 10 V
- High temperature soldering guaranteed:  $260^\circ\text{C} / 10$  seconds / 0.375 Inched (9.5 mm) lead length/5lbs. (2.3 kg) tension

### Mechanical Data

Case : Molded plastic  
Lead : Pure tin plated lead free, solderable per MIL-STD-202, Method 208  
Polarity : Color band denotes cathode except bipolar  
Weight : 0.42 g

### Maximum Ratings and Electrical Characteristics

Rating at  $25^\circ\text{C}$  ambient temperature unless otherwise specified.  
Single phase, half wave, 60 Hz, resistive or inductive load.  
For capacitive load, derate current by 20%

| Type Number                                                                                                   | Symbol         | Value       | Units            |
|---------------------------------------------------------------------------------------------------------------|----------------|-------------|------------------|
| Peak Power Dissipation at $T_A = 25^\circ\text{C}$ , $T_p = 1\text{ms}$ (Note 1)                              | $P_{PK}$       | Minimum 600 | Watts            |
| Steady State Power Dissipation at $T_L = 75^\circ\text{C}$<br>Lead Lengths 0.375 Inch 9.5 mm (Note 2)         | $P_D$          | 5           |                  |
| Peak Forward Surge Current, 8.3ms Single Half Sine-wave<br>Superimposed on Rated Load (JEDEC method) (Note 3) | $I_{FSM}$      | 100         | Amps             |
| Maximum Instantaneous Forward Voltage at 50.0A for<br>Unidirectional Only (Note 4)                            | $V_F$          | 3.5 / 5     | Volts            |
| Operating and Storage Temperature Range                                                                       | $T_J, T_{STG}$ | -55 to +175 | $^\circ\text{C}$ |

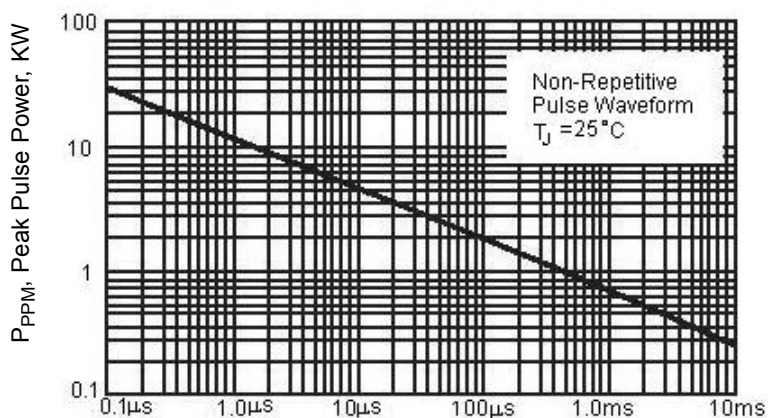
- Notes:
1. Non-repetitive current pulse and derated above  $T_A = 25^\circ\text{C}$
  2. Mounted on copper pad area of  $1.6 \times 1.6$  inches ( $40 \times 40$  mm) per
  3. 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minutes maximum
  4.  $V_F = 3.5$  V for devices of  $V_{BR} \leq 200$  V and  $V_F = 5$  V maximum for devices of  $V_{BR} > 200$  V

Devices for bipolar applications

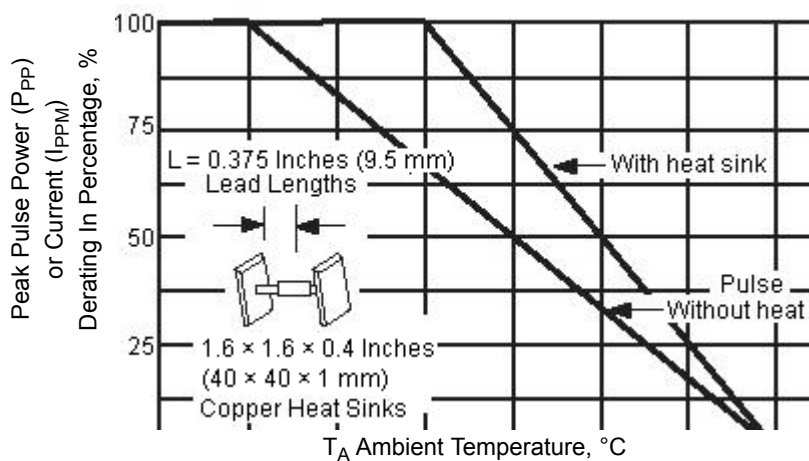
1. For bidirectional use C or CA suffix for types P6KE6.8 through types P6KE400
2. Electrical characteristics apply in both directions

## Ratings and Characteristic Curves

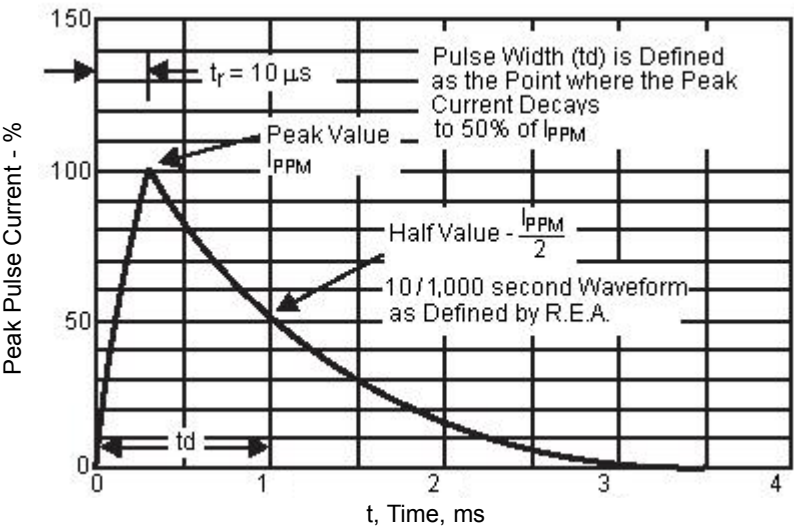
Peak Pulse Power Rating Curve



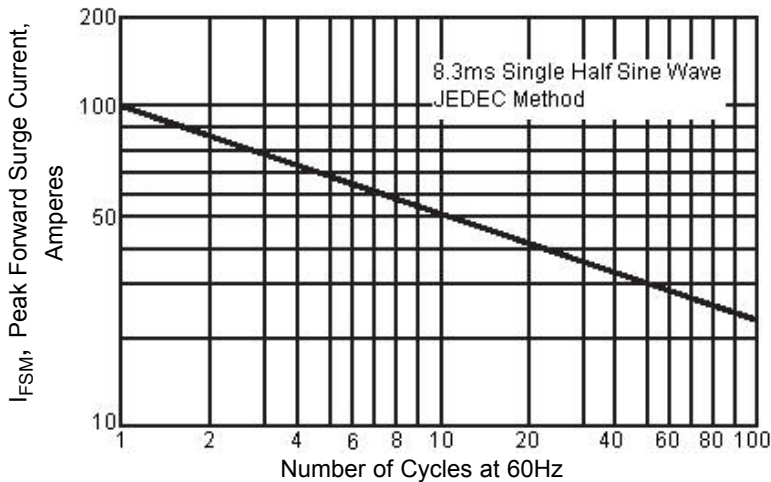
Pulse Derating Curve



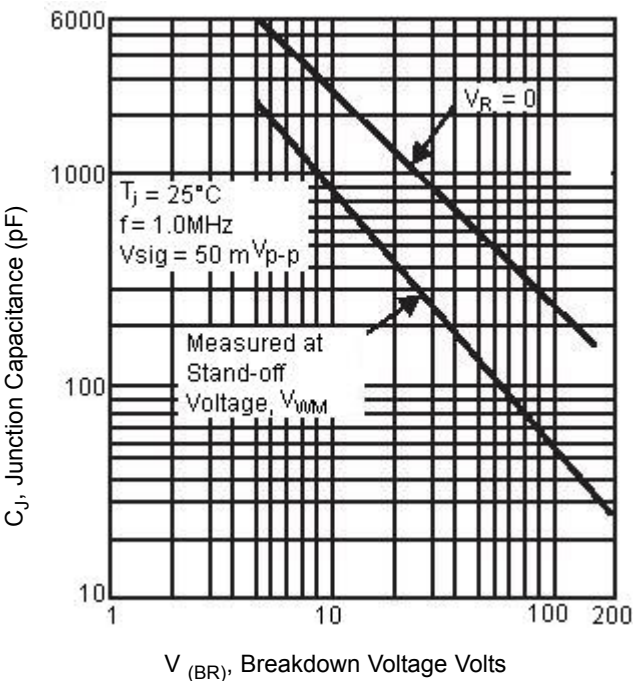
Clamping Power Pulse Waveform



Maximum Non-Repetitive Forward Surge Current Unidirectional Only



Typical Junction Capacitance (Unidirectional)



## Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Nominal Voltage (Volts) | Breakdown Voltage                |         | Test Current at I <sub>T</sub> (mA) | Stand-Off Voltage V <sub>WM</sub> (Volts) | Maximum Reverse Leakage at V <sub>WM</sub> I <sub>D</sub> (μA) | Maximum Peak Pulse Current I <sub>RSM</sub> (Note 2) (Amps) | Maximum Clamping Voltage at I <sub>PPM</sub> V <sub>C</sub> (Volts) | Maximum Temperature Coefficient of V <sub>BR</sub> (% / °C) |
|-------------------------|----------------------------------|---------|-------------------------------------|-------------------------------------------|----------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------|
|                         | V <sub>BR</sub> (Volts) (Note 1) |         |                                     |                                           |                                                                |                                                             |                                                                     |                                                             |
|                         | Minimum                          | Maximum |                                     |                                           |                                                                |                                                             |                                                                     |                                                             |
| 100                     | 95                               | 105     | 1                                   | 85.5                                      | 5                                                              | 4.5                                                         | 137                                                                 | 0.106                                                       |
| 10                      | 9.5                              | 10.5    |                                     | 8.55                                      | 10                                                             | 43                                                          | 14.5                                                                | 0.073                                                       |
| 110                     | 105                              | 116     |                                     | 94                                        | 5                                                              | 4.1                                                         | 152                                                                 | 0.107                                                       |
| 120                     | 114                              | 126     |                                     | 102                                       |                                                                | 3.8                                                         | 165                                                                 |                                                             |
| 12                      | 11.4                             | 12.6    |                                     | 10.2                                      |                                                                | 37                                                          | 16.7                                                                | 0.078                                                       |
| 13                      | 12.4                             | 13.7    |                                     | 11.1                                      |                                                                | 34                                                          | 18.2                                                                | 0.081                                                       |
| 150                     | 143                              | 158     |                                     | 128                                       |                                                                | 3                                                           | 207                                                                 | 0.108                                                       |
| 15                      | 14.3                             | 15.8    |                                     | 12.8                                      |                                                                | 29                                                          | 21.2                                                                | 0.084                                                       |
| 160                     | 152                              | 168     |                                     | 136                                       |                                                                | 2.8                                                         | 219                                                                 | 0.108                                                       |
| 16                      | 15.2                             | 16.8    |                                     | 13.6                                      |                                                                | 28                                                          | 22.5                                                                | 0.086                                                       |
| 180                     | 171                              | 189     |                                     | 154                                       |                                                                | 2.5                                                         | 246                                                                 | 0.108                                                       |
| 18                      | 17.1                             | 18.9    |                                     | 15.3                                      |                                                                | 25                                                          | 25.2                                                                | 0.088                                                       |
| 200                     | 190                              | 210     |                                     | 171                                       |                                                                | 2.2                                                         | 274                                                                 | 0.108                                                       |
| 20                      | 19                               | 21      |                                     | 17.1                                      |                                                                | 22                                                          | 27.7                                                                | 0.09                                                        |
| 22                      | 20.9                             | 23.1    |                                     | 18.8                                      |                                                                | 20                                                          | 30.6                                                                | 0.092                                                       |
| 24                      | 22.8                             | 25.2    |                                     | 20.5                                      |                                                                | 19                                                          | 33.2                                                                | 0.094                                                       |
| 27                      | 25.7                             | 28.4    |                                     | 23.1                                      |                                                                | 16.8                                                        | 37.5                                                                | 0.096                                                       |
| 300                     | 285                              | 315     |                                     | 256                                       |                                                                | 1.5                                                         | 414                                                                 | 0.11                                                        |
| 30                      | 28.5                             | 31.5    |                                     | 25.6                                      |                                                                | 15                                                          | 41.4                                                                | 0.097                                                       |
| 33                      | 31.4                             | 34.7    |                                     | 28.2                                      |                                                                | 13.8                                                        | 45.7                                                                | 0.098                                                       |
| 36                      | 34.2                             | 37.8    |                                     | 30.8                                      |                                                                | 12.6                                                        | 49.9                                                                | 0.099                                                       |
| 39                      | 37.1                             | 41      |                                     | 33.3                                      |                                                                | 11.6                                                        | 53.9                                                                | 0.1                                                         |
| 400                     | 380                              | 420     |                                     | 342                                       |                                                                | 1.1                                                         | 548                                                                 | 0.11                                                        |
| 440                     | 418                              | 462     |                                     | 376                                       |                                                                | 1.04                                                        | 600                                                                 |                                                             |
| 47                      | 44.7                             | 49.4    |                                     | 40.2                                      |                                                                | 9.7                                                         | 64.8                                                                | 0.101                                                       |
| 62                      | 58.9                             | 65.1    |                                     | 53                                        |                                                                | 7.4                                                         | 85                                                                  | 0.104                                                       |
| 68                      | 64.6                             | 71.4    |                                     | 58.1                                      |                                                                | 6.8                                                         | 92                                                                  |                                                             |
| 7.5                     | 7.13                             | 7.88    | 10                                  | 6.4                                       | 500                                                            | 55                                                          | 11.3                                                                | 0.061                                                       |

## Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Nominal Voltage (Volts) | Breakdown Voltage                |         | Test Current at I <sub>T</sub> (mA) | Stand-Off Voltage V <sub>WM</sub> (Volts) | Maximum Reverse Leakage at V <sub>WM</sub> I <sub>D</sub> (μA) | Maximum Peak Pulse Current I <sub>RSM</sub> (Note 2) (Amps) | Maximum Clamping Voltage at I <sub>PPM</sub> V <sub>C</sub> (Volts) | Maximum Temperature Coefficient of V <sub>BR</sub> (% / °C) |
|-------------------------|----------------------------------|---------|-------------------------------------|-------------------------------------------|----------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------|
|                         | V <sub>BR</sub> (Volts) (Note 1) |         |                                     |                                           |                                                                |                                                             |                                                                     |                                                             |
|                         | Minimum                          | Maximum |                                     |                                           |                                                                |                                                             |                                                                     |                                                             |
| 8.2                     | 7.79                             | 8.61    | 1                                   | 7.02                                      | 200                                                            | 52                                                          | 12.1                                                                | 0.064                                                       |
| 9.1                     | 8.65                             | 9.55    |                                     | 7.78                                      | 50                                                             | 47                                                          | 13.4                                                                | 0.068                                                       |
| 91                      | 86.5                             | 95.5    |                                     | 77.8                                      | 5                                                              | 5                                                           | 125                                                                 | 0.106                                                       |

### Notes:

1.  $V_{BR}$  measured after  $I_T$  applied for 300  $\mu\text{s}$ ,  $I_T$  = square wave pulse or equivalent
2. Surge current waveform per Figure 3 and derate
3. For bipolar types having  $V_{WM}$  of 10 volts and under, the  $I_D$  limit is doubled
4. All terms and symbols are consistent with ANSI/IEEE C62.35

## Part Number Table

|                             |           |
|-----------------------------|-----------|
| DIODE, TVS, 100 V, 600 W    | P6KE100A  |
| DIODE, TVS, 100 V, 600 W    | P6KE100CA |
| DIODE, TVS, 10 V, 600 W     | P6KE10A   |
| DIODE, TVS, 10 V, 600 W     | P6KE10CA  |
| DIODE, TVS, 110 V, 600 W    | P6KE110A  |
| DIODE, TVS, 110 V, 600 W    | P6KE110CA |
| DIODE, TVS, 120 V, 600 W    | P6KE120A  |
| DIODE, TVS, 120 V, 600 W    | P6KE120CA |
| DIODE, TVS, 12 V, 600 W     | P6KE12A   |
| DIODE, TVS, 12 V, 600 W     | P6KE12CA  |
| DIODE, TVS, 13 V, 600 W     | P6KE13A   |
| DIODE, TVS, 13 V, 600 W     | P6KE13CA  |
| DIODE, TVS, 150 V 5%, 600 W | P6KE150A  |
| DIODE, TVS, 150 V, 600 W    | P6KE150CA |
| DIODE, TVS, 15 V, 600 W     | P6KE15A   |
| DIODE, TVS, 15 V, 600 W     | P6KE15CA  |
| DIODE, TVS, 160 V 5%, 600 W | P6KE160A  |
| DIODE, TVS, 160 V, 600 W    | P6KE160CA |
| DIODE, TVS, 16 V, 600 W     | P6KE16A   |
| DIODE, TVS, 16 V, 600 W     | P6KE16CA  |

## Part Number Table

|                          |           |
|--------------------------|-----------|
| DIODE, TVS, 180 V, 600 W | P6KE180A  |
| DIODE, TVS, 180 V, 600 W | P6KE180CA |
| DIODE, TVS, 18 V, 600 W  | P6KE18A   |
| DIODE, TVS, 18 V, 600 W  | P6KE18CA  |
| DIODE, TVS, 200 V, 600 W | P6KE200A  |
| DIODE, TVS, 200V, 600 W  | P6KE200CA |
| DIODE, TVS, 20 V, 600 W  | P6KE20A   |
| DIODE, TVS, 20 V, 600 W  | P6KE20CA  |
| DIODE, TVS, 22 V, 600 W  | P6KE22A   |
| DIODE, TVS, 22 V, 600 W  | P6KE22CA  |
| DIODE, TVS, 24 V, 600 W  | P6KE24A   |
| DIODE, TVS, 24 V, 600 W  | P6KE24CA  |
| DIODE, TVS, 27 V, 600 W  | P6KE27A   |
| DIODE, TVS, 27 V, 600 W  | P6KE27CA  |
| DIODE, TVS, 300 V, 600 W | P6KE300A  |
| DIODE, TVS, 300 V, 600 W | P6KE300CA |
| DIODE, TVS, 30 V, 600 W  | P6KE30A   |
| DIODE, TVS, 30 V, 600 W  | P6KE30CA  |
| DIODE, TVS, 33 V, 600 W  | P6KE33A   |
| DIODE, TVS, 33 V, 600 W  | P6KE33CA  |
| DIODE, TVS, 36 V, 600 W  | P6KE36A   |
| DIODE, TVS, 36 V, 600 W  | P6KE36CA  |
| DIODE, TVS, 39 V, 600 W  | P6KE39A   |
| DIODE, TVS, 39 V, 600 W  | P6KE39CA  |
| DIODE, TVS, 400 V, 600 W | P6KE400A  |
| DIODE, TVS, 400 V, 600 W | P6KE400CA |
| DIODE, TVS, 440 V, 600 W | P6KE440A  |
| DIODE, TVS, 440 V, 600 W | P6KE440CA |
| DIODE, TVS, 47 V, 600 W  | P6KE47A   |
| DIODE, TVS, 47 V, 600 W  | P6KE47CA  |
| DIODE, TVS, 62 V, 600 W  | P6KE62A   |
| DIODE, TVS, 62 V, 600 W  | P6KE62CA  |
| DIODE, TVS, 68 V, 600 W  | P6KE68A   |
| DIODE, TVS, 68 V, 600 W  | P6KE68CA  |
| DIODE, TVS, 7.5 V, 600 W | P6KE7.5A  |

|                                            |           |
|--------------------------------------------|-----------|
| DIODE, TVS, 7.5 V, 600 W                   | P6KE7.5CA |
| DIODE, TVS, 8.2 V, 600 W                   | P6KE8.2A  |
| DIODE, TVS, 8.2 V, 600 W                   | P6KE8.2CA |
| DIODE, TVS, 9.1 V, 600 W                   | P6KE9.1A  |
| DIODE, TVS, 9.1 V, 600 W                   | P6KE9.1CA |
| DIODE, TVS, 91 V, 600 W                    | P6KE91A   |
| DIODE, TVS, 91 V, 600 W                    | P6KE91CA  |
| TVS - Diode, 41 A, 14.5 V, Unidirectional, | P6KE10A   |
| TVS - Diode, 41A, 14.5 V, Bidirectional,   | P6KE10CA  |
| TVS - Diode, 36 A, 16.7 V, Unidirectional, | P6KE12A   |
| TVS - Diode, 36 A, 16.7 V, Bidirectional,  | P6KE12CA  |
| TVS - Diode, 28 A, 21.2 V, Unidirectional, | P6KE15A   |
| TVS - Diode, 28 A, 21.2 V, Bidirectional,  | P6KE15CA  |
| TVS - Diode, 24 A, 25.2 V, Unidirectional, | P6KE18A   |
| TVS - Diode, 24 A, 25.2 V, Bidirectional,  | P6KE18CA  |
| TVS - Diode, 2.2 A, 274 V, Unidirectional, | P6KE200A  |
| TVS - Diode, 2.2 A, 274 V, Bidirectional,  | P6KE200CA |
| TVS - Diode, 18 A, 33.2 V, Unidirectional, | P6KE24A   |
| TVS - Diode, 18 A, 33.2 V, Bidirectional,  | P6KE24CA  |
| TVS - Diode, 14.4 A, 41.4 V, Unidirectiona | P6KE30A   |
| TVS - Diode, 14.4 A, 41.4 V, Bidirectional | P6KE30CA  |
| TVS - Diode, 13.2 A, 45.7 V, Unidirectiona | P6KE33A   |
| TVS - Diode, 13.2 A, 45.7 V, Bidirectional | P6KE33CA  |
| TVS - Diode, 12 A, 49.9 V, Unidirectional, | P6KE36A   |
| TVS - Diode, 12 A, 49.9 V, Bidirectional,  | P6KE36CA  |
| TVS - Diode, 11.2 A, 53.9 V, Unidirectiona | P6KE39A   |
| TVS - Diode, 11.2 A, 53.9 V, Bidirectional | P6KE39CA  |
| TVS - Diode, 9.3 A, 64.8 V, Unidirectional | P6KE47A   |
| TVS - Diode, 9.3 A, 64.8 V, Bidirectional, | P6KE47CA  |
| TVS - Diode, 7.1 A, 85 V, Unidirectional,  | P6KE62A   |
| TVS - Diode, 7.1 A, 85 V, Bidirectional, D | P6KE62CA  |
| TVS - Diode, 6.5 A, 92 V, Unidirectional,  | P6KE68A   |
| TVS - Diode, 6.5 A, 92 V, Bidirectional, D | P6KE68CA  |

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