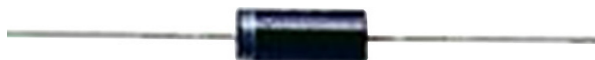


TVS Diode P6KE Series



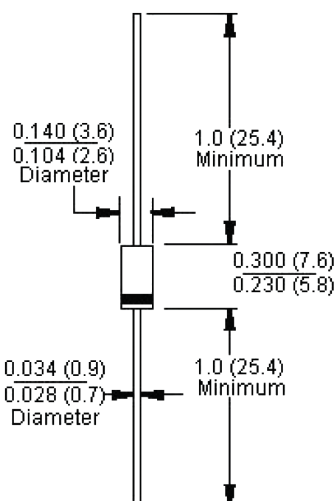
RoHS
Compliant



Features:

- Plastic package
- Exceeds environmental standards of MIL-STD-19500
- 600W surge capability at 10 x 1000 μ s waveform, duty cycle: 0.01%
- Excellent clamping capability
- Low zener impedance
- Fast response time: typically less than 1.0ps from 0 volts to VBR for unidirectional and 5.0ns for bidirectional
- Typical I_r less than 1 μ A above 10V
- High temperature soldering guaranteed: 260°C/10 seconds/0.375 Inch (9.5mm) lead length/5lbs. (2.3kg) tension

DO-15



Dimensions : Inches (Millimetres)

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 : 0.42g

Max. Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified
Single phase, half wave, 60Hz, resistive or inductive load
For capacitive load, derate current by 20%

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TVS Diode P6KE Series



| Type Number | Symbol | Value | Units |
|---|----------------|-------------|------------------|
| Peak Power Dissipation at $T_A = 25^\circ\text{C}$, $T_P = 1\text{ms}$ (Note 1) | PPK | Min. 600 | W |
| Steady State Power Dissipation at $T_L = 75^\circ\text{C}$ Lead Lengths 0.375 Inch 9.5mm (Note 2) | P_D | 5 | |
| Peak Forward Surge Current, 8.3ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method) (Note 3) | I_{FSM} | 100 | A |
| Max. Instantaneous Forward Voltage at 50A for Unidirectional Only (Note 4) | V_F | 3.5 / 5 | V |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +175 | $^\circ\text{C}$ |

Notes:

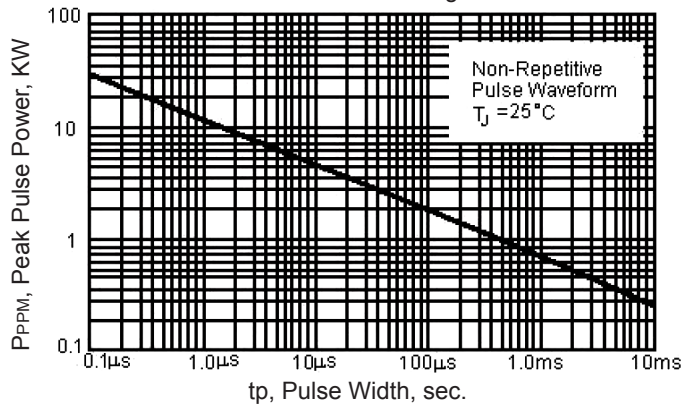
1. Non-repetitive current pulse and derated above $T_A = 25^\circ\text{C}$
2. Mounted on copper pad area of 1.6" x 1.6" (40mm x 40mm) per
3. 8.3ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minutes max.
4. $V_F = 3.5\text{V}$ for devices of $V_{BR} \leq 200\text{V}$ and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

Devices for bipolar applications

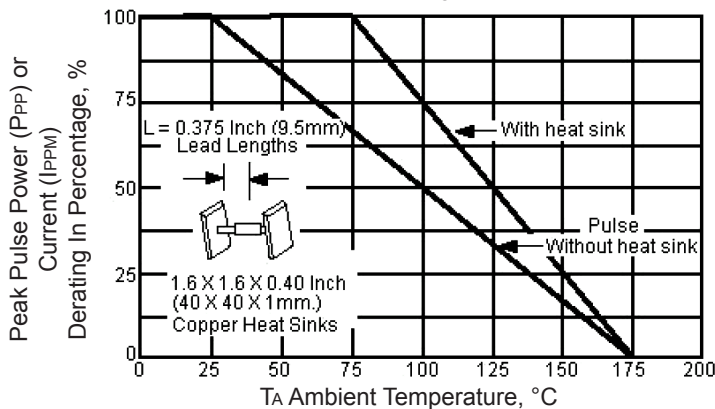
1. For bidirectional use C or CA suffix for types P6KE6.8 through types P6KE400
2. Electrical characteristics apply in both directions

Ratings and Characteristic Curves

Peak Pulse Power Rating Curve



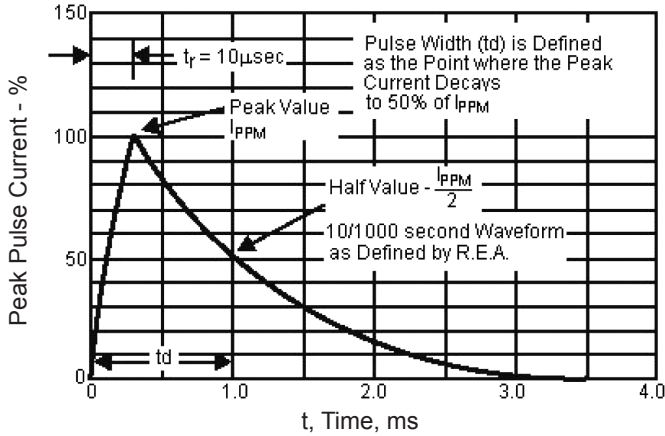
Pulse Derating Curve



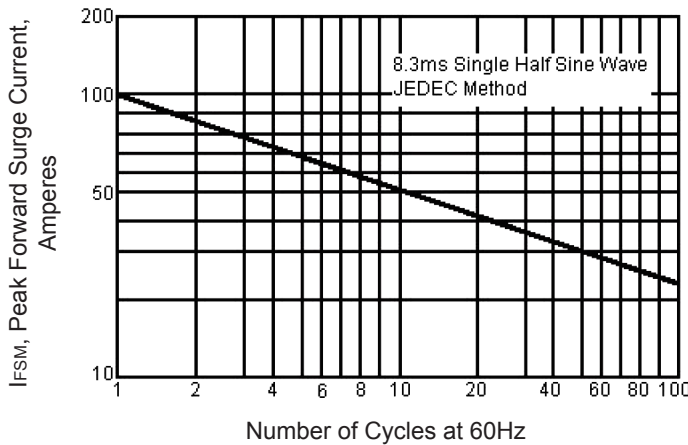
TVS Diode P6KE Series



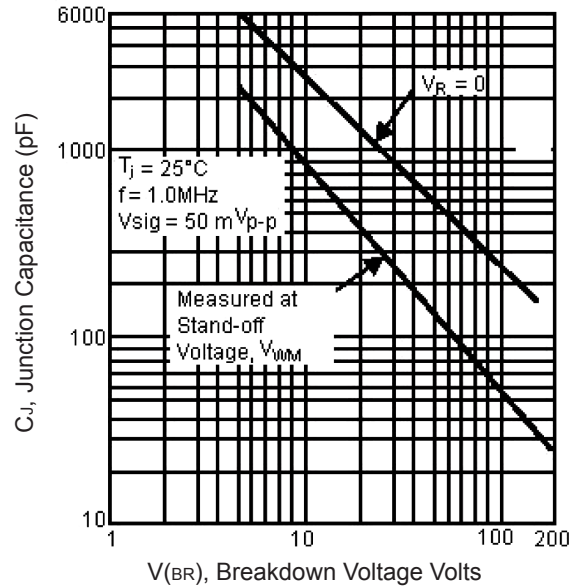
Clamping Power Pulse Waveform



Max. Non-Repetitive Forward Surge Current Unidirectional Only



Typical Junction Capacitance (Unidirectional)



Electrical Characteristics (Ta = 25°C unless otherwise noted)

| Part Number | | Nominal Voltage (V) | Breakdown Voltage | | Test Current at I _T (mA) | Stand-Off Voltage V _{WM} (V) | Max. Reverse Leakage at V _{WM} I _D (μA) | Max Peak Pulse Current I _{RSM} (Note 2) (A) | Max Clamping Voltage at I _{PPM} V _C (V) | Max. Temperature Coefficient of V _{BR} (%/°C) | |
|----------------|---------------|---------------------|------------------------------|------|-------------------------------------|---------------------------------------|---|--|---|--|-------|
| | | | V _{BR} (V) (Note 1) | | | | | | | | |
| Unidirectional | Bidirectional | | Min. | Max. | | | | | | | |
| P6KE100A | P6KE100CA | 100 | 95 | 105 | 1 | 85.5 | 5 | 4.5 | 137 | 0.106 | |
| P6KE10A | P6KE10CA | 10 | 9.5 | 10.5 | | 8.55 | | 10 | 43 | 14.5 | 0.073 |
| P6KE110A | P6KE110CA | 110 | 105 | 116 | | 94 | 5 | 4.1 | 152 | 0.107 | |
| P6KE120A | P6KE120CA | 120 | 114 | 126 | | 102 | | 3.8 | 165 | | |
| P6KE12A | P6KE12CA | 12 | 11.4 | 12.6 | | 10.2 | | 37 | 16.7 | | 0.078 |
| P6KE13A | P6KE13CA | 13 | 12.4 | 13.7 | | 11.1 | | 34 | 18.2 | | 0.081 |



TVS Diode

P6KE Series



| Part Number | | Nominal Voltage (V) | Breakdown Voltage | | Test Current at I_T (mA) | Stand-Off Voltage V_{WM} (V) | Max. Reverse Leakage at V_{WM} I_D (μ A) | Max Peak Pulse Current I_{RSM} (Note 2) (A) | Max Clamping Voltage at I_{PPM} V_C (V) | Max. Temperature Coefficient of V_{BR} (%/°C) |
|----------------|---------------|---------------------|-----------------------|------|----------------------------|--------------------------------|---|---|---|---|
| Unidirectional | Bidirectional | | V_{BR} (V) (Note 1) | | | | | | | |
| | | | Min. | Max. | | | | | | |
| P6KE150A | P6KE150CA | 150 | 143 | 158 | 1 | 128 | 5 | 3 | 207 | 0.108 |
| P6KE15A | P6KE15CA | 15 | 14.3 | 15.8 | | 12.8 | | 29 | 21.2 | 0.084 |
| P6KE160A | P6KE160CA | 160 | 152 | 168 | | 136 | | 2.8 | 219 | 0.108 |
| P6KE16A | P6KE16CA | 16 | 15.2 | 16.8 | | 13.6 | | 28 | 22.5 | 0.086 |
| P6KE180A | P6KE180CA | 180 | 171 | 189 | | 154 | | 2.5 | 246 | 0.108 |
| P6KE18A | P6KE18CA | 18 | 17.1 | 18.9 | | 15.3 | | 25 | 25.2 | 0.088 |
| P6KE200A | P6KE200CA | 200 | 190 | 210 | | 171 | | 2.2 | 274 | 0.108 |
| P6KE20A | P6KE20CA | 20 | 19 | 21 | | 17.1 | | 22 | 27.7 | 0.09 |
| P6KE22A | P6KE22CA | 22 | 20.9 | 23.1 | | 18.8 | | 20 | 30.6 | 0.092 |
| P6KE24A | P6KE24CA | 24 | 22.8 | 25.2 | | 20.5 | | 19 | 33.2 | 0.094 |
| P6KE27A | P6KE27CA | 27 | 25.7 | 28.4 | | 23.1 | | 16.8 | 37.5 | 0.096 |
| P6KE300A | P6KE300CA | 300 | 285 | 315 | | 256 | | 1.5 | 414 | 0.11 |
| P6KE30A | P6KE30CA | 30 | 28.5 | 31.5 | | 25.6 | | 15 | 41.4 | 0.097 |
| P6KE33A | P6KE33CA | 33 | 31.4 | 34.7 | | 28.2 | | 13.8 | 45.7 | 0.098 |
| P6KE36A | P6KE36CA | 36 | 34.2 | 37.8 | | 30.8 | | 12.6 | 49.9 | 0.099 |
| P6KE39A | P6KE39CA | 39 | 37.1 | 41 | | 33.3 | | 11.6 | 53.9 | 0.1 |
| P6KE400A | P6KE400CA | 400 | 380 | 420 | | 342 | | 1.1 | 548 | 0.11 |
| P6KE440A | P6KE440CA | 440 | 418 | 462 | | 376 | | 1.04 | 600 | |
| P6KE47A | P6KE47CA | 47 | 44.7 | 49.4 | | 40.2 | | 9.7 | 64.8 | 0.101 |
| P6KE62A | P6KE62CA | 62 | 58.9 | 65.1 | | 53 | | 7.4 | 85 | 0.104 |
| P6KE68A | P6KE68CA | 68 | 64.6 | 71.4 | 58.1 | 6.8 | 92 | | | |
| P6KE7.5A | P6KE7.5CA | 7.5 | 7.13 | 7.88 | 10 | 6.4 | 500 | 55 | 11.3 | 0.061 |
| P6KE8.2A | P6KE8.2CA | 8.2 | 7.79 | 8.61 | 1 | 7.02 | 200 | 52 | 12.1 | 0.064 |
| P6KE9.1A | P6KE9.1CA | 9.1 | 8.65 | 9.55 | | 7.78 | 50 | 47 | 13.4 | 0.068 |
| P6KE91A | P6KE91CA | 91 | 86.5 | 95.5 | | 77.8 | 5 | 5 | 125 | 0.106 |

Notes:

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

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