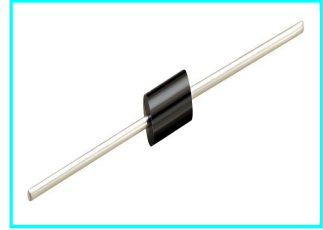


Description

The P6KE series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.



Features

- ◆ 600W peak pulsepower capability at 10 x 1000 μ s waveform, repetition rate (duty cycle): 0.01%
- ◆ Glass Passivated chip junction
- ◆ For surface mounted applications to optimize board space
- ◆ Low profile package
- ◆ Built-in strain relief
- ◆ Low incremental surge resistance
- ◆ Excellent clamping capability
- ◆ Plastic package has UL flammability classification 94V-0
- ◆ Fast response time: typically less than 1.0ps from 0 Volts to BV min
- ◆ Typical IR less than 5 μ A above 22V
- ◆ High temperature soldering: 260°C/40 seconds at terminals
- ◆ IEC-61000-4-2 ESD 15KV(Air),8KV(Contact)
- ◆ ESD protection of data lines in accordance with IEC 61000-4-2(IEC801-2)
- ◆ EFT protection of data lines in accordance with IEC61000-4-4(IEC801-4)

Applications

TVS devices are ideal for the protection of I/O Interfaces, VCC bus and other vulnerable circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

Maximum Ratings and Electrical Characteristics

(TA=25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Peak Pulse Power Dissipation at TA=25°C by 10x1000µs waveform (Fig.2)(Note 1) (Note 2) | P _{PPM} | 600 | W |
| Power Dissipation on infinite heat sink at TA=50°C | P _D | 6.5 | W |
| Peak Forward Surge Current, 8.3ms Single Half Sine Wave Unidirectional only(Note 3) | I _{FSM} | 300 | A |
| Maximum Instantaneous Forward Voltage at 100A for Unidirectional only | V _F | 3.5V/5.0 | V |
| Operating Junction and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |
| Typical Thermal Resistance Junction to Lead | R _{uJL} | 15 | °C/W |
| Typical Thermal Resistance Junction to Ambient | R _{uJA} | 75 | °C/W |

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above TA=25°C per Fig. 2.
2. Mounted on copper pad area of 0.31x0.31" (8.0 x 8.0mm) to each terminal.
3. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

Electrical Characteristics

| PART NUMBER | | REVERSE STAND-OFF VOLTAGE | BREAKDOWN VOLTAGE VBR(V)MAX@I T | TEST CURRENT | REVERSE LEAKAGE @VRWM | PEAK PULSE CURRENT | MAXIMUM CLAMPING VOLTAGE @Ipp | |
|-------------|-----------|---------------------------------|--|-----------------|-----------------------------|-----------------------|--|-----------|
| BI- POLAR | UNI-POLAR | VRWM (V) | VBR MIN(V) | VBR MAX(V) | IT (mA) | IR (μA) | Ipp (A) | Vc (v) |
| P6KE6.8CA | P6KE6.8A | 5.80 | 6.45 | 7.14 | 10 | 1000 | 57.14 | 10.5 |
| P6KE7.5CA | P6KE7.5A | 6.40 | 7.13 | 7.88 | 10 | 500 | 53.10 | 11.3 |
| P6KE8.2CA | P6KE8.2A | 7.02 | 7.79 | 8.61 | 10 | 200 | 49.59 | 12.1 |
| P6KE9.1CA | P6KE9.1A | 7.78 | 8.65 | 9.50 | 1 | 50 | 44.78 | 13.4 |
| P6KE10CA | P6KE10A | 8.55 | 9.50 | 10.50 | 1 | 10 | 41.38 | 14.5 |
| P6KE11CA | P6KE11A | 9.40 | 10.50 | 11.60 | 1 | 1 | 38.46 | 15.6 |
| P6KE12CA | P6KE12A | 10.20 | 11.40 | 12.60 | 1 | 1 | 35.93 | 16.7 |
| P6KE13CA | P6KE13A | 11.10 | 12.40 | 13.70 | 1 | 1 | 32.97 | 18.2 |
| P6KE15CA | P6KE15A | 12.80 | 14.30 | 15.80 | 1 | 1 | 28.30 | 21.2 |
| P6KE16CA | P6KE16A | 13.60 | 15.20 | 16.80 | 1 | 1 | 26.67 | 22.5 |
| P6KE18CA | P6KE18A | 15.30 | 17.10 | 18.90 | 1 | 1 | 23.81 | 25.2 |
| P6KE20CA | P6KE20A | 17.10 | 19.00 | 21.00 | 1 | 1 | 21.66 | 27.7 |
| P6KE22CA | P6KE22A | 18.80 | 20.90 | 23.10 | 1 | 1 | 19.61 | 30.6 |
| P6KE24CA | P6KE24A | 20.50 | 22.80 | 25.20 | 1 | 1 | 18.07 | 33.2 |
| P6KE27CA | P6KE27A | 23.10 | 25.70 | 28.40 | 1 | 1 | 16.00 | 37.5 |
| P6KE30CA | P6KE30A | 25.60 | 28.50 | 31.50 | 1 | 1 | 14.49 | 41.4 |
| P6KE33CA | P6KE33A | 28.20 | 31.40 | 34.70 | 1 | 1 | 13.13 | 45.7 |
| P6KE36CA | P6KE36A | 30.80 | 34.20 | 37.80 | 1 | 1 | 12.02 | 49.9 |
| P6KE39CA | P6KE39A | 33.30 | 37.10 | 41.00 | 1 | 1 | 11.13 | 53.9 |
| P6KE43CA | P6KE43A | 36.80 | 40.90 | 45.20 | 1 | 1 | 10.12 | 59.3 |
| P6KE47CA | P6KE47A | 40.20 | 44.70 | 49.40 | 1 | 1 | 9.26 | 64.8 |
| P6KE51CA | P6KE51A | 43.60 | 48.5 | 53.60 | 1 | 1 | 8.56 | 70.1 |
| P6KE56CA | P6KE56A | 47.80 | 53.20 | 58.80 | 1 | 1 | 7.79 | 77.0 |
| P6KE62CA | P6KE62A | 53.00 | 58.90 | 65.10 | 1 | 1 | 7.06 | 85.0 |

Electrical Characteristics

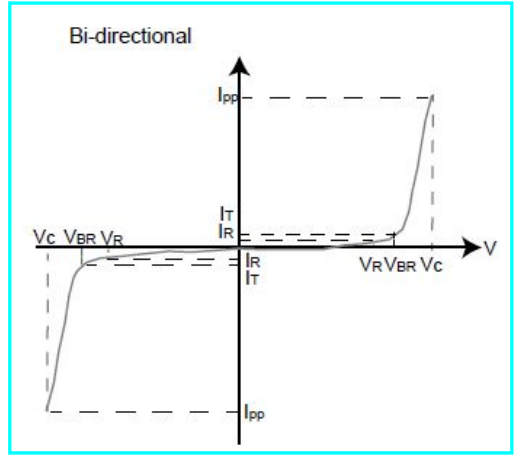
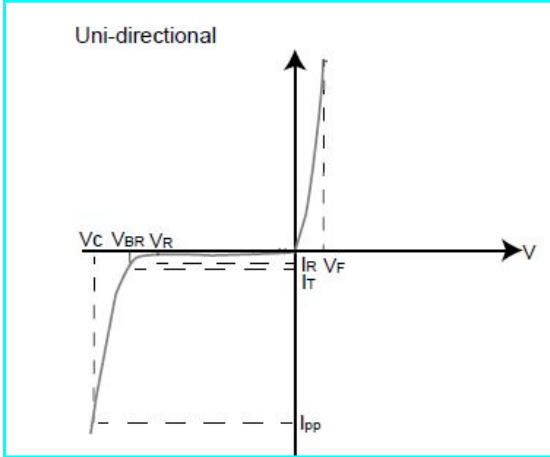
| PART NUMBER | | VOLTAGE STAND-OFF REVERSE | N VOLTAGE BREAKDOWN | VBR(V)MAX. @IT | CURRENT TEST | LEAKAGE REVERSE | PEAK @VRWM PULSE CURRENT | MAXIMUM CURRENT | VOLTAGE CLAMPING | @Ipp |
|-------------|-----------|---------------------------------|------------------------|-------------------|-----------------|--------------------|-----------------------------------|--------------------|---------------------|------|
| BI-POLAR | UNI-POLAR | VRWM (V) | VBR MIN(V) | VBR MAX(V) | IT (mA) | IR (μ A) | Ipp (A) | Vc (v) | | |
| P6KE68CA | P6KE68A | 58.10 | 64.60 | 71.40 | 1 | 1 | 6.52 | 92.0 | | |
| P6KE75CA | P6KE75A | 64.10 | 71.30 | 78.80 | 1 | 1 | 5.83 | 103.0 | | |
| P6KE82CA | P6KE82A | 70.10 | 77.90 | 86.10 | 1 | 1 | 5.31 | 113.0 | | |
| P6KE91CA | P6KE91A | 77.80 | 86.50 | 95.50 | 1 | 1 | 4.80 | 125.0 | | |
| P6KE100CA | P6KE100A | 84.00 | 95.00 | 105.00 | 1 | 1 | 4.38 | 137.0 | | |
| P6KE110CA | P6KE110A | 94.00 | 105.00 | 116.00 | 1 | 1 | 3.95 | 152.0 | | |
| P6KE120CA | P6KE120A | 102.00 | 114.00 | 126.00 | 1 | 1 | 3.95 | 152.0 | | |
| P6KE130CA | P6KE130A | 111.00 | 124.00 | 137.00 | 1 | 1 | 3.35 | 179.0 | | |
| P6KE150CA | P6KE150A | 128.00 | 143.00 | 158.00 | 1 | 1 | 2.90 | 207.0 | | |
| P6KE160CA | P6KE160A | 136.00 | 152.00 | 168.00 | 1 | 1 | 2.74 | 219.0 | | |
| P6KE170CA | P6KE170A | 145.00 | 162.00 | 179.00 | 1 | 1 | 2.56 | 234.0 | | |
| P6KE180CA | P6KE180A | 154.00 | 171.00 | 189.00 | 1 | 1 | 2.44 | 246.0 | | |
| P6KE200CA | P6KE200A | 171.00 | 190.00 | 210.00 | 1 | 1 | 2.19 | 274.0 | | |
| P6KE220CA | P6KE220A | 185.00 | 209.00 | 231.00 | 1 | 1 | 1.83 | 328.0 | | |
| P6KE300CA | P6KE300A | 256.00 | 285.00 | 315.00 | 1 | 1 | 1.45 | 414.0 | | |
| P6KE350CA | P6KE350A | 300.00 | 332.00 | 368.00 | 1 | 1 | 1.24 | 482.0 | | |
| P6KE400CA | P6KE400A | 342.00 | 380.00 | 420.00 | 1 | 1 | 1.09 | 548.0 | | |
| P6KE440CA | P6KE440A | 376.00 | 418.00 | 462.00 | 1 | 1 | 1.00 | 602.0 | | |
| P6KE480CA | P6KE480A | 408.00 | 456.00 | 504.00 | 1 | 1 | 0.91 | 658.0 | | |
| P6KE520CA | P6KE520A | 442.00 | 494.00 | 546.00 | 1 | 1 | 0.86 | 710.0 | | |
| P6KE530CA | P6KE530A | 450.00 | 503.50 | 556.5 | 1 | 1 | 0.83 | 725.0 | | |
| P6KE540CA | P6KE540A | 459.00 | 513.00 | 567.00 | 1 | 1 | 0.81 | 740.0 | | |
| P6KE550CA | P6KE550A | 467.00 | 522.5 | 577.50 | 1 | 1 | 0.79 | 760.0 | | |

Notes:

For bidirectional type having VRWM of 20 volts and less, the IR limit is double.

For parts without A (VBR is \pm 10% and VC is 5% higher than A parts

I-V Curve Characteristics



Ratings and Characteristic Curves (TA=25°C unless otherwise noted)

Figure 1 - Peak Pulse Power Rating Curve

Figure 2 - Pulse Derating Curve

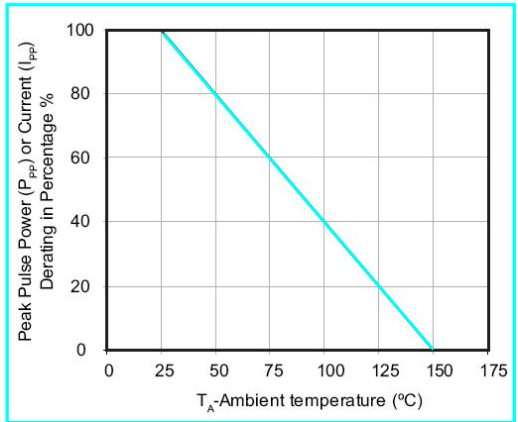
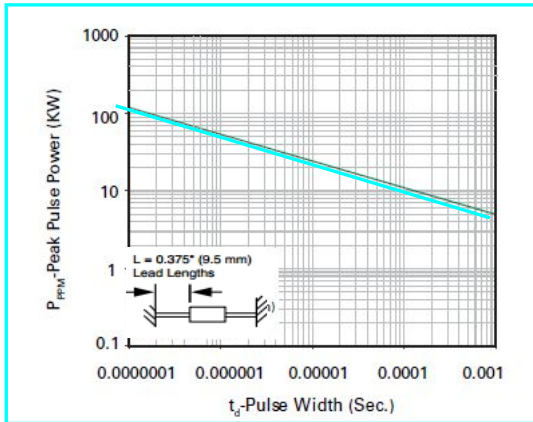


Figure 3 - Pulse Waveform

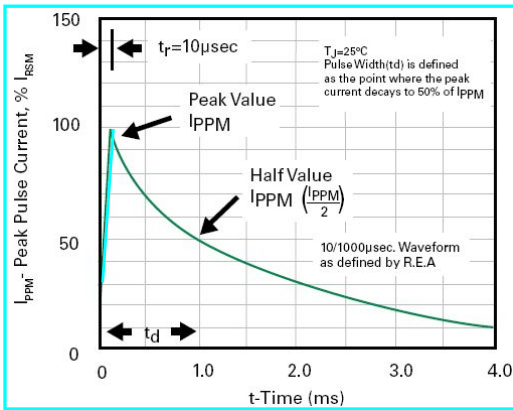
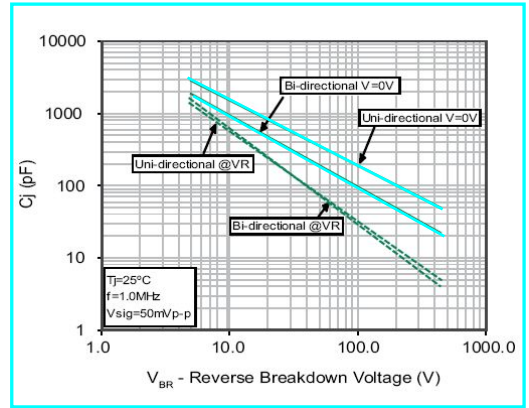


Figure 4 - Typical Junction Capacitance



Ratings and Characteristic Curves (TA=25°C unless otherwise noted)

Figure 5 - Steady State Power Dissipation Derating Curve

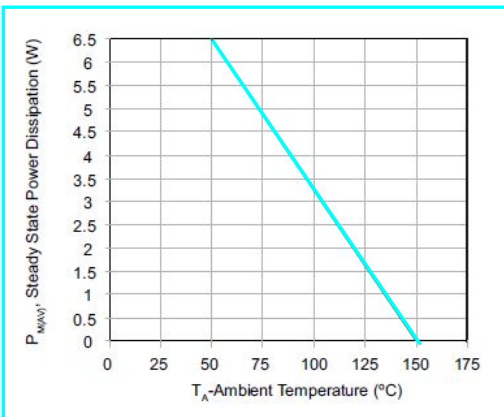
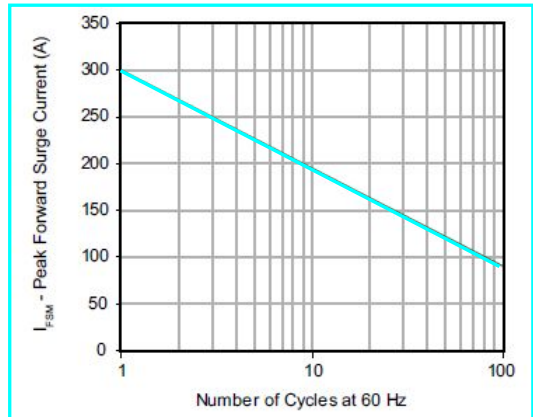


Figure 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



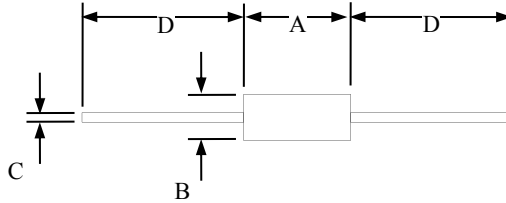
Part Numbering System

P6KE XXX C A

(1) (2) (3) (4)

- (1) SERIES.
- (2) V_R VOLTAGE.
- (3) BI-DIRECTIONAL.
- (4) 5% VOLTAGE TOLERANCE.


Product Dimensions



DO-15

| Dimension | Inches | | Millimeters | | NOTE |
|-----------|--------|-------|-------------|------|--------|
| | MIN | MAX | MIN | MAX | |
| A | 0.230 | 0.300 | 5.80 | 7.60 | |
| B | 0.104 | 0.140 | 2.60 | 3.60 | ϕ |
| C | 0.026 | 0.034 | 0.70 | 0.90 | ϕ |
| D | 1.000 | | 25.40 | | |

Summary of Packing Options

| Package Type | Description | Packing Quantity | Industry Standard |
|--|----------------------------|------------------|-------------------|
| DO-15  | Embossed Carrier Reel Pack | 2000PCS | EIA-481-D |

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[MPLAD30KP43CAE3](#) [SMAJ43A-TP](#) [D5V0F6U8LP33-7](#) [TVS5501V10MUT5G](#) [5.0SMLJ24CA-TP](#) [SMAJ110CA-TP](#) [MPLAD15KP75CAE3](#)
[MMAD1103e3/TR13](#) [DFLT40AQ-7](#)