

P6KE Series

Axial Leaded — 600W

HF RoHS



DO-15

Additional Information



Resources



Accessories



Samples

Maximum Ratings and Characteristics ($T_A=25^\circ\text{C}$)

| Rating | Symbol | Value |
|---|-----------------|---|
| Peak pulse power dissipation at 10/1000 μs waveform(Note1, Note2, Fig.1) | P_{PPM} | 600W |
| Peak pulse current of at 10/1000 μs waveform (Note 1, Fig.3) | I_{PPM} | See Table(A) |
| Steady state power dissipation at $T_L=75^\circ\text{C}$ (Fig.5) | $P_{M(AV)}$ | 5.0W |
| Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only | V_F | 3.5V/5.0V |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note3, Fig.6) | I_{FSM} | 100A |
| Operating junction and Storage Temperature Ranges | T_J, T_{STG} | -55°C to $+150^\circ\text{C}$ |
| Typical thermal resistance junction to lead | $R_{\theta JL}$ | 20°C/W |
| Typical thermal resistance junction to ambient | $R_{\theta JA}$ | 75°C/W |

Notes:

1. Non-repetitive current pulse, per Fig.3 and derating above $T_A=25^\circ\text{C}$ per Fig.2.
2. 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minutes maximum.
3. $V_F<3.5\text{V}$ for single die parts and $V_F<5.0\text{V}$ for stacked-die parts.

Description

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

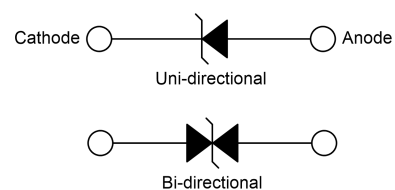
Features

- Halogen free and RoHS compliant
- Low incremental surge resistance
- Excellent clamping capability
- 600W peak pulse power capability at 10/1000 μs waveform, repetition rate (duty cycle): 0.01%
- Fast response time
- Typical I_R less than $1\mu\text{A}$ above 12V devices
- High Temperature soldering guaranteed: $265^\circ\text{C}/10$ seconds/.375" ,(9.5mm) lead length, 5lbs (2.3kg) tension
- Plastic package has underwriters laboratory flammability 94V-0
- Meet MSL level1, per J-STD-020
- IEC-61000-4-2 ESD 30kV(Air), 30kV (Contact)
- Unit Weight: 0.42g

Applications

TVS components are ideal for the protection of I/O Interfaces, VCC bus and other vulnerable circuits used in telecom, computer, Industrial and consumer electronic applications.

Functional Diagram



P6KE Series

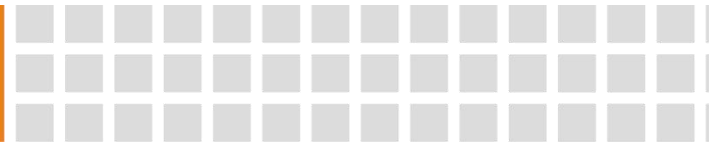
Axial Leaded — 600W

Electrical Characteristics (T_A=25°C)

| Part Number | | Reverse Stand-Off Voltage | Breakdown Voltage @I _T | | Test Current | Maximum Clamping Voltage @I _{PP} | Peak Pulse Current | Reverse Leakage @V _R |
|-------------|-----------|---------------------------|-----------------------------------|-------------------------|---------------------|---|---------------------|---------------------------------|
| Uni. | Bi. | V _R (V) | V _{B Min.} (V) | V _{B Max.} (V) | I _T (mA) | V _C (V) | I _{PP} (A) | I _R (μA) |
| P6KE6.8A | P6KE6.8CA | 5.80 | 6.45 | 7.14 | 10 | 10.5 | 58.1 | 1000 |
| P6KE7.5A | P6KE7.5CA | 6.40 | 7.13 | 7.88 | 10 | 11.3 | 54.0 | 500 |
| P6KE8.2A | P6KE8.2CA | 7.02 | 7.79 | 8.61 | 10 | 12.1 | 50.4 | 200 |
| P6KE9.1A | P6KE9.1CA | 7.78 | 8.65 | 9.55 | 1 | 13.4 | 45.5 | 50 |
| P6KE10A | P6KE10CA | 8.55 | 9.50 | 10.50 | 1 | 14.5 | 42.1 | 10 |
| P6KE11A | P6KE11CA | 9.40 | 10.50 | 11.60 | 1 | 15.6 | 39.1 | 5 |
| P6KE12A | P6KE12CA | 10.20 | 11.40 | 12.60 | 1 | 16.7 | 36.5 | 5 |
| P6KE13A | P6KE13CA | 11.10 | 12.40 | 13.70 | 1 | 18.2 | 33.5 | 1 |
| P6KE15A | P6KE15CA | 12.80 | 14.30 | 15.80 | 1 | 21.2 | 28.8 | 1 |
| P6KE16A | P6KE16CA | 13.60 | 15.20 | 16.80 | 1 | 22.5 | 27.1 | 1 |
| P6KE18A | P6KE18CA | 15.30 | 17.10 | 18.90 | 1 | 25.2 | 24.2 | 1 |
| P6KE20A | P6KE20CA | 17.10 | 19.00 | 21.00 | 1 | 27.7 | 22.0 | 1 |
| P6KE22A | P6KE22CA | 18.80 | 20.90 | 23.10 | 1 | 30.6 | 19.9 | 1 |
| P6KE24A | P6KE24CA | 20.50 | 22.80 | 25.20 | 1 | 33.2 | 18.4 | 1 |
| P6KE27A | P6KE27CA | 23.10 | 25.70 | 28.40 | 1 | 37.5 | 16.3 | 1 |
| P6KE30A | P6KE30CA | 25.60 | 28.50 | 31.50 | 1 | 41.4 | 14.7 | 1 |
| P6KE33A | P6KE33CA | 28.20 | 31.40 | 34.70 | 1 | 45.7 | 13.3 | 1 |
| P6KE36A | P6KE36CA | 30.80 | 34.20 | 37.80 | 1 | 49.9 | 12.2 | 1 |
| P6KE39A | P6KE39CA | 33.30 | 37.10 | 41.00 | 1 | 53.9 | 11.3 | 1 |
| P6KE43A | P6KE43CA | 36.80 | 40.90 | 45.20 | 1 | 59.3 | 10.3 | 1 |
| P6KE47A | P6KE47CA | 40.20 | 44.70 | 49.40 | 1 | 64.8 | 9.4 | 1 |
| P6KE51A | P6KE51CA | 43.60 | 48.50 | 53.60 | 1 | 70.1 | 8.7 | 1 |
| P6KE56A | P6KE56CA | 47.80 | 53.20 | 58.80 | 1 | 77.0 | 7.9 | 1 |
| P6KE62A | P6KE62CA | 53.00 | 58.90 | 65.10 | 1 | 85.0 | 7.2 | 1 |
| P6KE68A | P6KE68CA | 58.10 | 64.60 | 71.40 | 1 | 92.0 | 6.6 | 1 |

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| Part Number | | Reverse Stand-Off Voltage | Breakdown Voltage @ I_T | | Test Current | Maximum Clamping Voltage @ I_{PP} | Peak Pulse Current | Reverse Leakage @ V_R |
|-------------|-----------|---------------------------|---------------------------|------------------|--------------|-------------------------------------|--------------------|-------------------------|
| Uni. | Bi. | V_R (V) | $V_{B Min.}$ (V) | $V_{B Max.}$ (V) | I_T (mA) | V_C (V) | I_{PP} (A) | I_R (μ A) |
| P6KE75A | P6KE75CA | 64.10 | 71.30 | 78.80 | 1 | 103.0 | 5.9 | 1 |
| P6KE82A | P6KE82CA | 70.10 | 77.90 | 86.10 | 1 | 113.0 | 5.4 | 1 |
| P6KE91A | P6KE91CA | 77.80 | 86.50 | 95.50 | 1 | 125.0 | 4.9 | 1 |
| P6KE100A | P6KE100CA | 85.50 | 95.00 | 105.00 | 1 | 137.0 | 4.5 | 1 |
| P6KE110A | P6KE110CA | 94.00 | 105.00 | 116.00 | 1 | 152.0 | 4.0 | 1 |
| P6KE120A | P6KE120CA | 102.00 | 114.00 | 126.00 | 1 | 165.0 | 3.7 | 1 |
| P6KE130A | P6KE130CA | 111.00 | 124.00 | 137.00 | 1 | 179.0 | 3.4 | 1 |
| P6KE150A | P6KE150CA | 128.00 | 143.00 | 158.00 | 1 | 207.0 | 2.9 | 1 |
| P6KE160A | P6KE160CA | 136.00 | 152.00 | 168.00 | 1 | 219.0 | 2.8 | 1 |
| P6KE170A | P6KE170CA | 145.00 | 162.00 | 179.00 | 1 | 234.0 | 2.6 | 1 |
| P6KE180A | P6KE180CA | 154.00 | 171.00 | 189.00 | 1 | 246.0 | 2.5 | 1 |
| P6KE200A | P6KE200CA | 171.00 | 190.00 | 210.00 | 1 | 274.0 | 2.2 | 1 |
| P6KE220A | P6KE220CA | 185.00 | 209.00 | 231.00 | 1 | 328.0 | 1.9 | 1 |
| P6KE250A | P6KE250CA | 214.00 | 237.00 | 263.00 | 1 | 344.0 | 1.8 | 1 |
| P6KE300A | P6KE300CA | 256.00 | 285.00 | 315.00 | 1 | 414.0 | 1.5 | 1 |
| P6KE350A | P6KE350CA | 300.00 | 332.00 | 368.00 | 1 | 482.0 | 1.3 | 1 |
| P6KE400A | P6KE400CA | 342.00 | 380.00 | 420.00 | 1 | 548.0 | 1.1 | 1 |
| P6KE440A | P6KE440CA | 376.00 | 418.00 | 462.00 | 1 | 602.0 | 1.0 | 1 |
| P6KE480A | P6KE480CA | 408.00 | 456.00 | 504.00 | 1 | 658.0 | 0.9 | 1 |
| P6KE510A | P6KE510CA | 434.00 | 485.00 | 535.00 | 1 | 698.0 | 0.9 | 1 |
| P6KE530A | P6KE530CA | 450.00 | 503.50 | 556.50 | 1 | 725.0 | 0.8 | 1 |
| P6KE540A | P6KE540CA | 459.00 | 513.00 | 567.00 | 1 | 740.0 | 0.8 | 1 |
| P6KE550A | P6KE550CA | 467.00 | 522.50 | 577.50 | 1 | 760.0 | 0.8 | 1 |
| P6KE600A | P6KE600CA | 510.00 | 575.20 | 628.40 | 1 | 828.0 | 0.75 | 1 |

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Ratings and Characteristic Curves ($T_A=25^\circ\text{C}$)

Figure 1. Peak Pulse Power Rating Curve

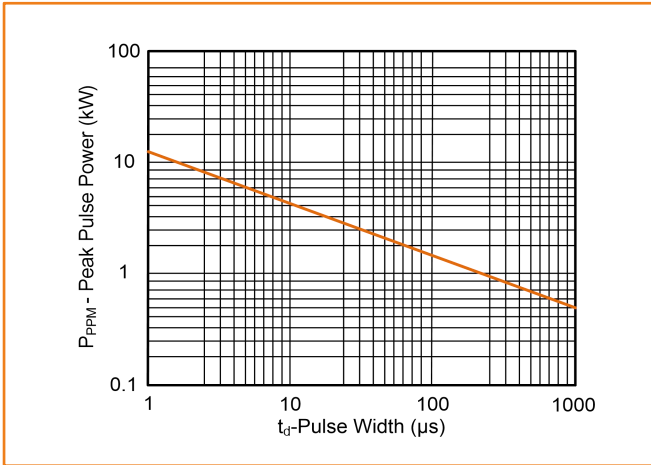


Figure 2. Pulse Derating Curve

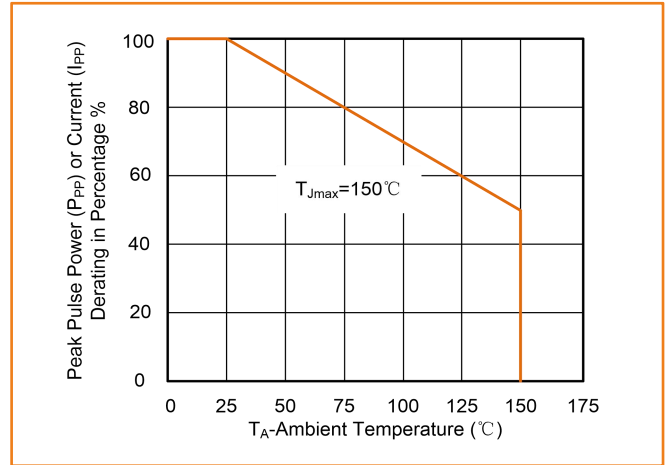


Figure 3. Pulse Waveform



Figure 4. Typical Junction Capacitance

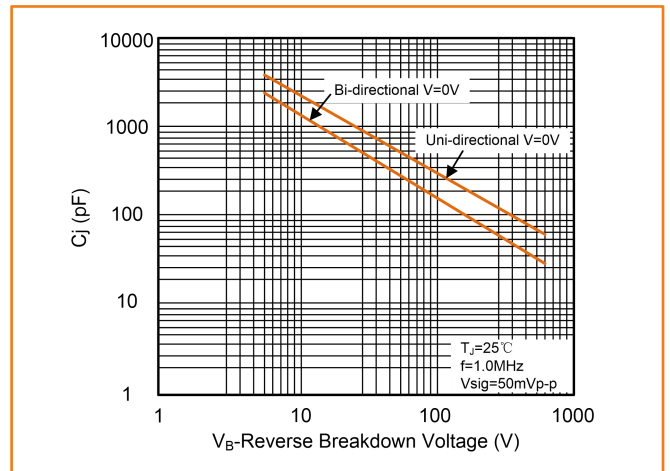


Figure 5. Steady State Power Dissipation Derating Curve

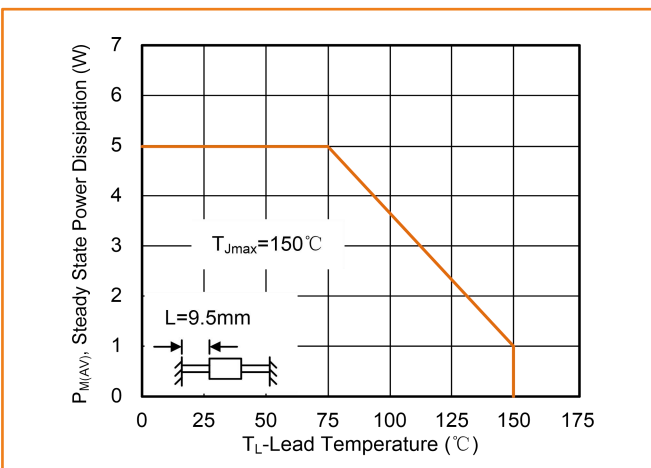
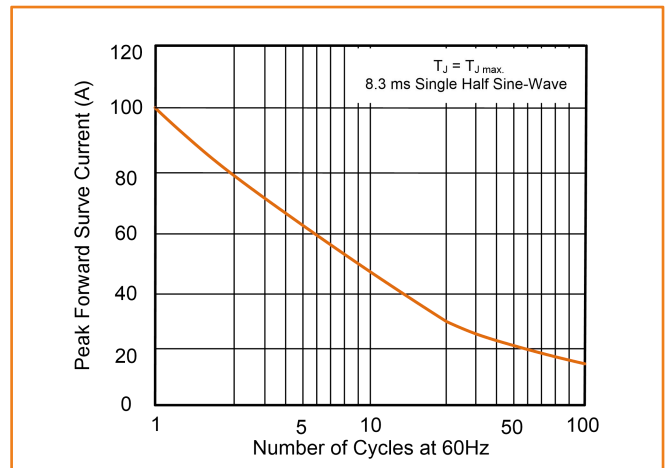


Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



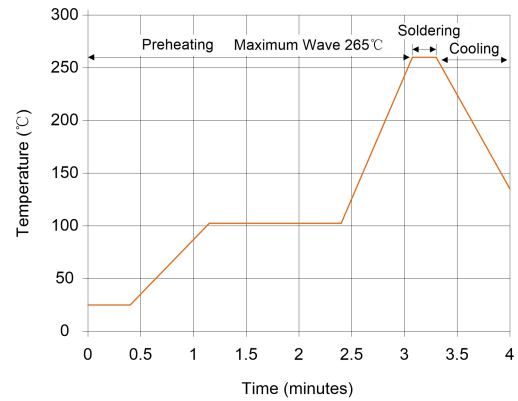
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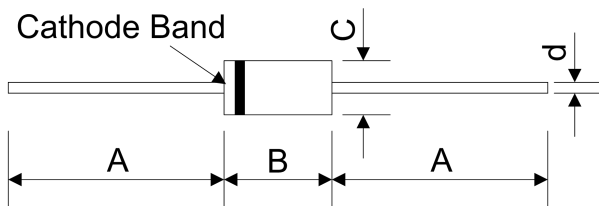
Soldering Parameters

| | |
|--------------------|-------------------|
| Peak Temperature : | 265°C |
| Dipping Time : | 10 seconds (max.) |
| Soldering : | 1 time |

Wave Soldering

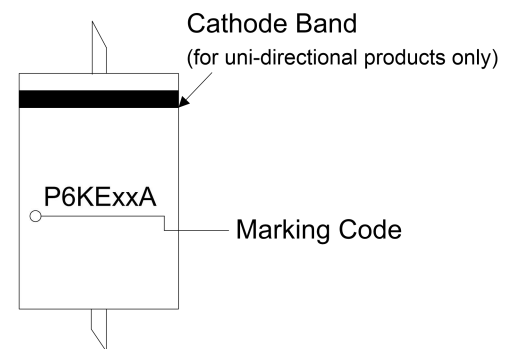
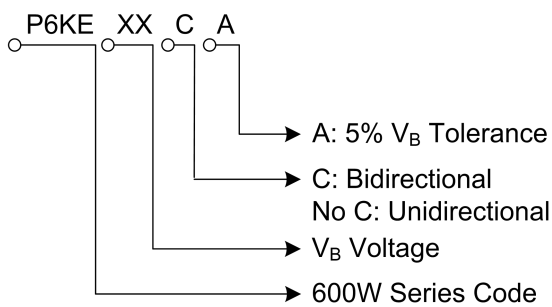


Dimensions (DO-204AL/DO-41)



| Symbol | Millimeters | | Inches | |
|--------|-------------|------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 25.40 | — | 1.000 | — |
| B | 5.80 | 7.60 | 0.230 | 0.300 |
| C | 2.60 | 3.60 | 0.104 | 0.140 |
| d | 0.71 | 0.86 | 0.028 | 0.034 |

Part Number Code and Marking Code



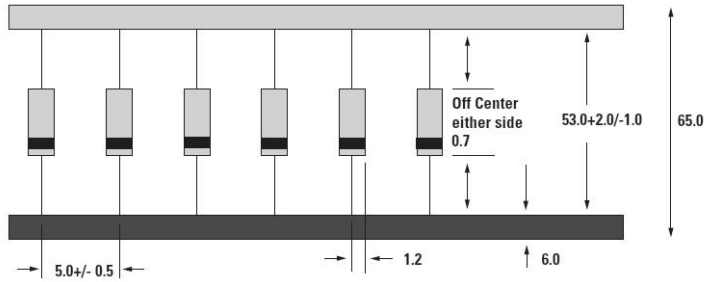
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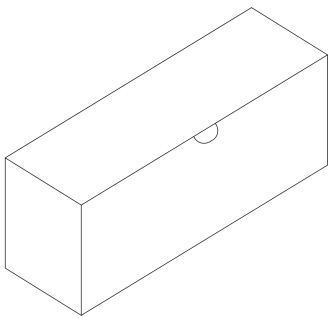


Packaging Specification

Tape (Unit: mm)

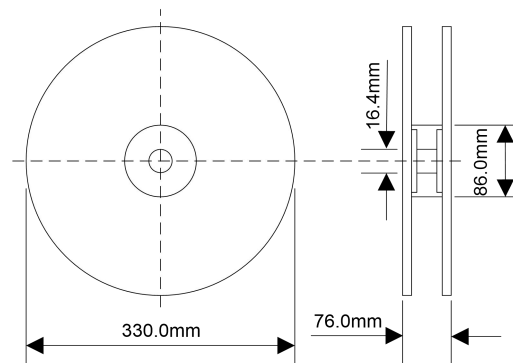


Box



Quantity: 2000pcs/box

Reel



Quantity: 4000pcs/reel

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