

Silicon Avalanche Diodes

600 Watt Axial Transient Voltage Suppressors

P6KE Series

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Protect sensitive electronics against voltage transients induced by inductive load switching and lightning. Ideal for the protection of I/O interfaces, Vcc bus, and other integrated circuits.

FEATURES

- Breakdown voltage range 6.8 to 440 Volts
- Uni-directional and Bi-directional
- Glass passivated junction
- Excellent clamping capability
- 100% surge tested
- UL recognised

MAXIMUM RATING

- Peak Pulse Power (Ppk): 600 Watts (10 x 1000µs)@25°C (see diagram on page 3 for wave form)
- 1.5 watt steady state
- Response time: 1×10^{-12} seconds (theoretical)
- Forward surge rating: 100 Amps, 8.3ms half sine wave, (uni-directional devices only)
- Operating & storage temperature: -55°C to +150°C

MECHANICAL CHARACTERISTICS

- Case: DO-15, Molded plastic over glass passivated junction
- Terminals: Axial leads, solderable per MIL-STD-202" Method 208
- Solderable leads = 230°C for 10 seconds (1.59mm from case)
- Marking: cathode band, (positive terminal, uni-directional devices only), device code, logo
- Weight: 1.2 grammes (approx)

Agency Approvals: Recognized under the Components Program of Underwriters Laboratories.

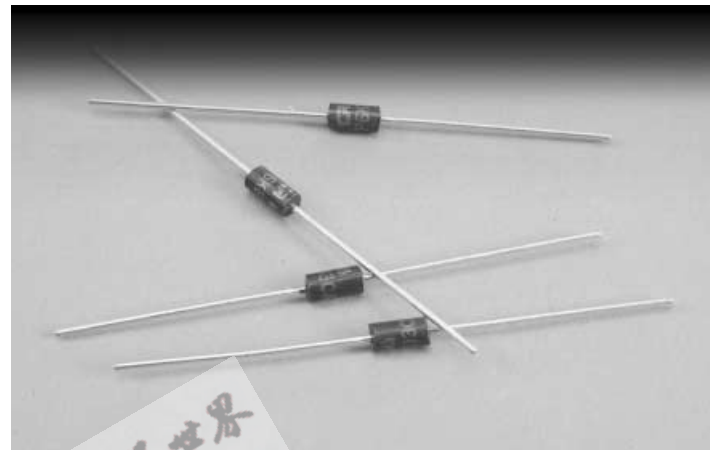
Agency File Number: E128662

ORDERING INFORMATION



B = Bulk (1000 pcs)

T = Tape and reeled (5000 pcs)



All dimensions in mm

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Figure 1 - Capacitance vs. Stand-off Voltage



Figure 2 - Peak Pulse Power vs. Pulse Time

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ELECTRICAL SPECIFICATION @ Tamb 25°C

| Part Number (Uni) | Part Number (Bi) | Reverse Stand off Voltage V_R (Volts) | Breakdown Voltage V_{BR} (Volts) @ I_T | | | Maximum Reverse Leakage I_R @ V_R (μ A) | Maximum Clamping Voltage V_C @ I_{PP} (Volts) | Maximum Peak Pulse Current I_{PP} (A) | Max Voltage Temperature Variation of V_{BR} (mV/°C) |
|-------------------|------------------|---|--|-------|------|--|---|---|---|
| | | | MIN | MAX | (mA) | | | | |
| PP6KE6.8* | PP6KE6.8C* | 5.50 | 6.12 | 7.48 | 10.0 | 1000.0 | 10.8 | 56.0 | 0.057 |
| P6KE6.8A* | P6KE6.8CA* | 5.80 | 6.45 | 7.14 | 10.0 | 1000.0 | 10.5 | 57.0 | 0.057 |
| P6KE7.5* | P6KE7.5C* | 6.05 | 6.75 | 8.25 | 10.0 | 500.0 | 11.7 | 51.0 | 0.061 |
| P6KE7.5A* | P6KE7.5CA* | 6.40 | 7.13 | 7.88 | 10.0 | 500.0 | 11.3 | 53.0 | 0.061 |
| P6KE8.2 | P6KE8.2C | 6.63 | 7.38 | 9.02 | 10.0 | 200.0 | 12.5 | 48.0 | 0.065 |
| P6KE8.2A | P6KE8.2CA | 7.02 | 7.79 | 8.61 | 10.0 | 200.0 | 12.1 | 50.0 | 0.065 |
| P6KE9.1 | P6KE9.1C | 7.37 | 8.19 | 10.00 | 1.0 | 50.0 | 13.8 | 44.0 | 0.068 |
| P6KE9.1A | P6KE9.1CA | 7.78 | 8.65 | 9.55 | 1.0 | 50.0 | 13.4 | 45.0 | 0.068 |
| P6KE10 | P6KE10C | 8.10 | 9.00 | 11.00 | 1.0 | 10.0 | 15.0 | 40.0 | 0.073 |
| P6KE10A | P6KE10CA | 8.55 | 9.50 | 10.50 | 1.0 | 10.0 | 14.5 | 41.0 | 0.073 |
| P6KE11 | P6KE11C | 8.92 | 9.90 | 12.10 | 1.0 | 5.0 | 16.2 | 37.0 | 0.075 |
| P6KE11A | P6KE11CA | 9.40 | 10.50 | 11.60 | 1.0 | 5.0 | 15.6 | 38.0 | 0.075 |
| P6KE12* | P6KE12C* | 9.72 | 10.80 | 13.20 | 1.0 | 5.0 | 17.3 | 35.0 | 0.078 |
| P6KE12A* | P6KE12CA* | 10.20 | 11.40 | 12.60 | 1.0 | 5.0 | 16.7 | 36.0 | 0.078 |
| P6KE13 | P6KE13C | 10.50 | 11.70 | 14.30 | 1.0 | 5.0 | 19.0 | 32.0 | 0.081 |
| P6KE13A | P6KE13CA | 11.10 | 12.40 | 13.70 | 1.0 | 5.0 | 18.2 | 33.0 | 0.081 |
| P6KE15 | P6KE15C* | 12.10 | 13.50 | 16.50 | 1.0 | 5.0 | 22.0 | 27.0 | 0.084 |
| P6KE15A | P6KE15CA* | 12.80 | 14.30 | 15.80 | 1.0 | 5.0 | 21.2 | 28.0 | 0.084 |
| P6KE16 | P6KE16C | 12.90 | 14.40 | 17.60 | 1.0 | 5.0 | 23.5 | 26.0 | 0.086 |
| P6KE16A | P6KE16CA | 13.60 | 15.20 | 16.80 | 1.0 | 5.0 | 22.5 | 27.0 | 0.086 |
| P6KE18* | P6KE18C* | 14.50 | 16.20 | 19.80 | 1.0 | 5.0 | 26.5 | 23.0 | 0.088 |
| P6KE18A* | P6KE18CA* | 15.30 | 17.10 | 18.90 | 1.0 | 5.0 | 25.2 | 24.0 | 0.088 |
| P6KE20 | P6KE20C* | 16.20 | 18.00 | 22.00 | 1.0 | 5.0 | 29.1 | 21.0 | 0.090 |
| P6KE20A | P6KE20CA* | 17.10 | 19.00 | 21.00 | 1.0 | 5.0 | 27.7 | 22.0 | 0.090 |
| P6KE22 | P6KE22C | 17.80 | 19.80 | 24.20 | 1.0 | 5.0 | 31.9 | 19.0 | 0.092 |
| P6KE22A | P6KE22CA | 18.80 | 20.90 | 23.10 | 1.0 | 5.0 | 30.6 | 20.0 | 0.092 |
| P6KE24 | P6KE24C | 19.40 | 21.60 | 26.40 | 1.0 | 5.0 | 34.7 | 17.0 | 0.094 |
| P6KE24A | P6KE24CA | 20.50 | 22.80 | 25.20 | 1.0 | 5.0 | 33.2 | 18.0 | 0.094 |
| P6KE27* | P6KE27C | 21.80 | 24.30 | 29.70 | 1.0 | 5.0 | 39.1 | 15.0 | 0.096 |
| P6KE27A* | P6KE27CA | 23.10 | 25.70 | 28.40 | 1.0 | 5.0 | 37.5 | 16.0 | 0.096 |
| P6KE30* | P6KE30C* | 24.30 | 27.00 | 33.00 | 1.0 | 5.0 | 43.5 | 14.0 | 0.097 |
| P6KE30A* | P6KE30CA* | 25.60 | 28.50 | 31.50 | 1.0 | 5.0 | 41.4 | 14.4 | 0.097 |

Suffix 'C' denotes Bi-directional device. Suffix 'A' denotes 5% tolerance device, no suffix denotes a 10% tolerance device.

1. For Bi-directional devices having V_R of 10 volts and below, the I_R limit is doubled.

2. $V_F = 3.5$ Volts max. for devices of $V_R < 100V$, and $V_F = 5.0$ Volts max for devices of $V_R > 100V$. $I_F = 50A$, 300 μ S square wave.

* Preferred voltages.

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ELECTRICAL SPECIFICATION @ Tamb 25°C

| Part Number (Uni) | Part Number (Bi) | Reverse Stand off Voltage V_R (Volts) | Breakdown Voltage V_{BR} (Volts) @ I_T | | | Maximum Reverse Leakage I_R @ V_R (μA) | Maximum Clamping Voltage V_C @ I_{PP} (Volts) | Maximum Peak Pulse Current I_{PP} (A) | Max Voltage Temperature Variation of V_{BR} (mV/°C) |
|-------------------|------------------|---|--|-------|------|---|---|---|---|
| | | | MIN | MAX | (mA) | | | | |
| P6KE33* | P6KE33C | 26.80 | 29.70 | 36.30 | 1.0 | 5.0 | 47.7 | 12.6 | 0.098 |
| P6KE33A* | P6KE33CA | 28.20 | 31.40 | 34.70 | 1.0 | 5.0 | 45.7 | 13.2 | 0.098 |
| P6KE36* | P6KE36C | 29.10 | 32.40 | 39.60 | 1.0 | 5.0 | 52.0 | 11.6 | 0.099 |
| P6KE36A* | P6KE36CA | 30.80 | 34.20 | 37.80 | 1.0 | 5.0 | 49.9 | 12.0 | 0.099 |
| P6KE39 | P6KE39C | 31.60 | 35.10 | 42.90 | 1.0 | 5.0 | 56.4 | 10.5 | 0.100 |
| P6KE39A | P6KE39CA | 33.30 | 37.10 | 41.00 | 1.0 | 5.0 | 53.9 | 11.2 | 0.100 |
| P6KE43 | P6KE43C | 34.80 | 38.70 | 47.30 | 1.0 | 5.0 | 61.9 | 9.6 | 0.101 |
| P6KE43A | P6KE43CA | 36.80 | 40.90 | 45.20 | 1.0 | 5.0 | 59.3 | 10.1 | 0.101 |
| P6KE47 | P6KE47C | 38.10 | 42.30 | 51.70 | 1.0 | 5.0 | 67.8 | 8.9 | 0.101 |
| P6KE47A | P6KE47CA | 40.20 | 44.70 | 49.40 | 1.0 | 5.0 | 64.8 | 9.3 | 0.101 |
| P6KE51 | P6KE51C* | 41.30 | 45.90 | 56.10 | 1.0 | 5.0 | 73.5 | 8.2 | 0.102 |
| P6KE51A | P6KE51CA* | 43.60 | 48.50 | 53.60 | 1.0 | 5.0 | 70.1 | 8.6 | 0.102 |
| P6KE56 | P6KE56C | 45.4 | 50.4 | 61.6 | 1.0 | 5.0 | 80.5 | 7.40 | 0.103 |
| P6KE56A | P6KE56CA | 47.8 | 53.2 | 58.8 | 1.0 | 5.0 | 77.0 | 7.80 | 0.103 |
| P6KE62 | P6KE62C | 50.2 | 55.8 | 68.2 | 1.0 | 5.0 | 89.0 | 6.80 | 0.104 |
| P6KE62A | P6KE62CA | 53.0 | 58.9 | 65.1 | 1.0 | 5.0 | 85.0 | 7.10 | 0.104 |
| P6KE68 | P6KE68C* | 55.1 | 61.2 | 74.8 | 1.0 | 5.0 | 98.0 | 6.10 | 0.104 |
| P6KE68A | P6KE68CA* | 58.1 | 64.6 | 71.4 | 1.0 | 5.0 | 92.0 | 6.50 | 0.104 |
| P6KE75 | P6KE75C | 60.7 | 67.5 | 82.5 | 1.0 | 5.0 | 108.0 | 5.50 | 0.105 |
| P6KE75A | P6KE75CA | 64.1 | 71.3 | 78.8 | 1.0 | 5.0 | 103.0 | 5.80 | 0.105 |
| P6KE82 | P6KE82C | 66.4 | 73.8 | 90.2 | 1.0 | 5.0 | 118.0 | 5.10 | 0.105 |
| P6KE82A | P6KE82CA | 70.1 | 77.9 | 86.1 | 1.0 | 5.0 | 113.0 | 5.30 | 0.105 |
| P6KE91 | P6KE91C | 73.7 | 81.9 | 100.0 | 1.0 | 5.0 | 131.0 | 4.50 | 0.106 |
| P6KE91A | P6KE91CA | 77.8 | 86.5 | 95.5 | 1.0 | 5.0 | 125.0 | 4.80 | 0.106 |
| P6KE100 | P6KE100C | 81.0 | 90.0 | 110.0 | 1.0 | 5.0 | 144.0 | 4.20 | 0.106 |
| P6KE100A | P6KE100CA | 85.5 | 95.0 | 105.0 | 1.0 | 5.0 | 137.0 | 4.40 | 0.106 |
| P6KE110 | P6KE110C | 89.2 | 99.0 | 121.0 | 1.0 | 5.0 | 158.0 | 3.80 | 0.107 |
| P6KE110A | P6KE110CA | 94.0 | 105.0 | 116.0 | 1.0 | 5.0 | 152.0 | 4.00 | 0.107 |
| P6KE120 | P6KE120C | 97.2 | 108.0 | 132.0 | 1.0 | 5.0 | 173.0 | 3.50 | 0.107 |
| P6KE120A | P6KE120CA | 102.0 | 114.0 | 126.0 | 1.0 | 5.0 | 165.0 | 3.60 | 0.107 |
| P6KE130 | P6KE130C | 105.0 | 117.0 | 143.0 | 1.0 | 5.0 | 187.0 | 3.20 | 0.107 |
| P6KE130A | P6KE130CA | 111.0 | 124.0 | 137.0 | 1.0 | 5.0 | 179.0 | 3.30 | 0.107 |
| P6KE150 | P6KE150C | 121.0 | 135.0 | 165.0 | 1.0 | 5.0 | 215.0 | 2.80 | 0.108 |
| P6KE150A | P6KE150CA | 128.0 | 143.0 | 158.0 | 1.0 | 5.0 | 207.0 | 2.90 | 0.108 |
| P6KE160 | P6KE160C | 130.0 | 144.0 | 176.0 | 1.0 | 5.0 | 230.0 | 2.60 | 0.108 |
| P6KE160A | P6KE160CA | 136.0 | 152.0 | 168.0 | 1.0 | 5.0 | 219.0 | 2.70 | 0.108 |

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|-------------------|------------------|---|--|-------|------|---|---|---|---|
| | | | MIN | MAX | (mA) | | | | |
| P6KE170 | P6KE170C | 138.0 | 153.0 | 187.0 | 1.0 | 5.0 | 244.0 | 2.50 | 0.108 |
| P6KE170A | P6KE170CA | 145.0 | 162.0 | 179.0 | 1.0 | 5.0 | 234.0 | 2.60 | 0.108 |
| P6KE180 | P6KE180C | 146.0 | 162.0 | 198.0 | 1.0 | 5.0 | 258.0 | 2.30 | 0.108 |
| P6KE180A | P6KE180CA | 154.0 | 171.0 | 189.0 | 1.0 | 5.0 | 246.0 | 2.40 | 0.108 |
| P6KE200 | P6KE200C | 162.0 | 180.0 | 220.0 | 1.0 | 5.0 | 287.0 | 2.10 | 0.108 |
| P6KE200A | P6KE200CA | 171.0 | 190.0 | 210.0 | 1.0 | 5.0 | 274.0 | 2.20 | 0.108 |
| P6KE220 | P6KE220C* | 175.0 | 198.0 | 242.0 | 1.0 | 5.0 | 344.0 | 1.75 | 0.108 |
| P6KE220A | P6KE220CA | 185.0 | 209.0 | 231.0 | 1.0 | 5.0 | 328.0 | 1.83 | 0.108 |
| P6KE250 | P6KE250C | 202.0 | 225.0 | 275.0 | 1.0 | 5.0 | 360.0 | 1.67 | 0.110 |
| P6KE250A | P6KE250CA | 214.0 | 237.0 | 263.0 | 1.0 | 5.0 | 344.0 | 1.75 | 0.110 |
| P6KE300 | P6KE300C | 243.0 | 270.0 | 330.0 | 1.0 | 5.0 | 430.0 | 1.40 | 0.110 |
| P6KE300A | P6KE300CA | 256.0 | 285.0 | 315.0 | 1.0 | 5.0 | 414.0 | 1.45 | 0.110 |
| P6KE350 | P6KE350C | 284.0 | 315.0 | 385.0 | 1.0 | 5.0 | 504.0 | 1.20 | 0.110 |
| P6KE350A | P6KE350CA | 300.0 | 332.0 | 368.0 | 1.0 | 5.0 | 482.0 | 1.25 | 0.110 |
| P6KE400 | P6KE400C | 324.0 | 360.0 | 440.0 | 1.0 | 5.0 | 574.0 | 1.05 | 0.110 |
| P6KE400A | P6KE400CA | 342.0 | 380.0 | 420.0 | 1.0 | 5.0 | 548.0 | 1.10 | 0.110 |
| P6KE440 | P6KE440C | 356.0 | 396.0 | 484.0 | 1.0 | 5.0 | 631.0 | 0.95 | 0.110 |
| P6KE440A | P6KE440CA | 376.0 | 418.0 | 462.0 | 1.0 | 5.0 | 602.0 | 1.00 | 0.110 |

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