

| | |
|---|----------------|
|  | E480232 |
|---|----------------|

Features

- For Surface Mount Applications in Order to Optimize Board Space
- Low Inductance
- Excellent Clamping Capability
- Fast Response Time: Typical Less Than 1ps From 0V to V_{BR} min
- Available in Both Unidirectional and Bidirectional Construction and Suffix "C" Designates Bidirectional Type
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant (Note1) ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Mechanical Data

- Polarity: Color Band Denotes Positive end(cathode) Except Bi-directional Types
- Maximum Soldering Temperature: 260°C for 10 Seconds
- Terminals: Solderable Per MIL-STD-750, Method 2026

Maximum Ratings

- Operating Junction Temperature Range: -65°C to +150°C
- Storage Temperature Range: -65°C to +150°C
- Thermal Resistance : 20°C/W Junction to Lead
- Thermal Resistance : 25°C/W Junction to Case

Electrical Characteristics @ 25°C Unless Otherwise Specified

| | | | |
|--|----------|---------------|--------|
| Peak Pulse Power Surge Current on 10/1000µs Waveform | I_{PP} | See the Table | Note 2 |
| Peak Pulse Power Dissipation | P_{PP} | 600W | Note 2 |

NOTES:

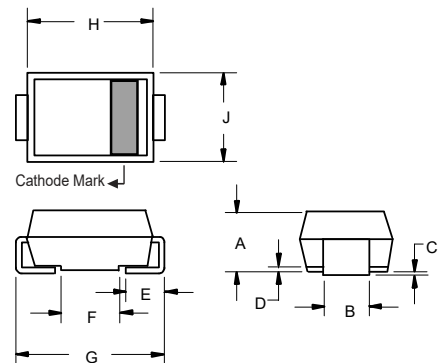
1. High Temperature Solder Exemption Applied, see EU Directive Annex 7a.
2. Non-repetitive current pulse, per Fig.3 and derated above $T_A=25^\circ\text{C}$ per Fig.4

Pin Configuration:



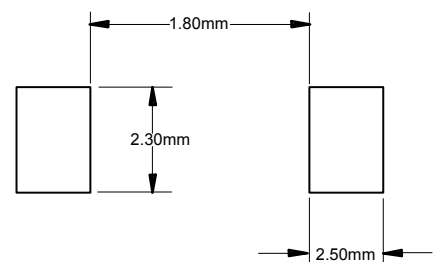
**600 Watt TVS
5.0 to 440 Volts**

**SMB (DO-214AA)
(LEAD FRAME)**



| DIM | INCHES | | MM | | NOTE |
|-----|--------|-------|------|------|------|
| | MIN | MAX | MIN | MAX | |
| A | 0.079 | 0.103 | 2.00 | 2.62 | |
| B | 0.075 | 0.087 | 1.91 | 2.21 | |
| C | 0.002 | 0.008 | 0.05 | 0.20 | |
| D | 0.006 | 0.012 | 0.15 | 0.31 | |
| E | 0.030 | 0.060 | 0.76 | 1.52 | |
| F | 0.065 | 0.091 | 1.65 | 2.32 | |
| G | 0.200 | 0.220 | 5.08 | 5.59 | |
| H | 0.160 | 0.191 | 4.06 | 4.85 | |
| J | 0.130 | 0.155 | 3.30 | 3.94 | |

Suggested Solder Pad Layout



Electrical Characteristics @ 25°C Unless Otherwise Specified

| MCC PART NUMBER | REVERSE STAND-OFF VOLTAGE V_{WM} | BREAKDOWN VOLTAGE $V_{(BR)} @ I_T$ (VOLTS) | | | MAXIMUM CLAMPING VOLTAGE @ I_{PP} | PEAK PULSE CURRENT I_{PP} | MAXIMUM REVERSE LEAKAGE @ V_{WM} I_D | MARKING CODE |
|--------------------|---|--|--------|------------|---|-----------------------------------|--|-----------------|
| | VOLTS | MIN | MAX | I_T (mA) | VOLTS | (AMPS) | (μ A) | |
| SMBJP6KE6.8A | 5.80 | 6.45 | 7.14 | 10 | 10.5 | 58.1 | 1000 | 6V8A |
| SMBJP6KE7.5A | 6.40 | 7.13 | 7.88 | 10 | 11.3 | 54.0 | 500 | 7V5A |
| SMBJP6KE8.2A | 7.02 | 7.79 | 8.61 | 10 | 12.1 | 50.4 | 200 | 8V2A |
| SMBJP6KE9.1A | 7.78 | 8.65 | 9.55 | 1 | 13.4 | 45.5 | 50 | 9V1A |
| SMBJP6KE10A | 8.55 | 9.50 | 10.50 | 1 | 14.5 | 42.1 | 10 | 10A |
| SMBJP6KE11A | 9.40 | 10.50 | 11.60 | 1 | 15.6 | 39.1 | 5 | 11A |
| SMBJP6KE12A | 10.20 | 11.40 | 12.60 | 1 | 16.7 | 36.5 | 5 | 12A |
| SMBJP6KE13A | 11.10 | 12.40 | 13.70 | 1 | 18.2 | 33.5 | 1 | 13A |
| SMBJP6KE15A | 12.80 | 14.30 | 15.80 | 1 | 21.2 | 28.8 | 1 | 15A |
| SMBJP6KE16A | 13.60 | 15.20 | 16.80 | 1 | 22.5 | 27.1 | 1 | 16A |
| SMBJP6KE18A | 15.30 | 17.10 | 18.90 | 1 | 25.5 | 24.2 | 1 | 18A |
| SMBJP6KE20A | 17.10 | 19.00 | 21.00 | 1 | 27.7 | 22.0 | 1 | 20A |
| SMBJP6KE22A | 18.80 | 20.90 | 23.10 | 1 | 30.6 | 19.9 | 1 | 22A |
| SMBJP6KE24A | 20.50 | 22.80 | 25.20 | 1 | 33.2 | 18.4 | 1 | 24A |
| SMBJP6KE27A | 23.10 | 25.70 | 28.40 | 1 | 37.5 | 16.3 | 1 | 27A |
| SMBJP6KE30A | 25.60 | 28.50 | 31.50 | 1 | 41.4 | 14.7 | 1 | 30A |
| SMBJP6KE33A | 28.20 | 31.40 | 34.70 | 1 | 45.7 | 13.3 | 1 | 33A |
| SMBJP6KE36A | 30.80 | 34.20 | 37.80 | 1 | 49.9 | 12.2 | 1 | 36A |
| SMBJP6KE39A | 33.30 | 37.10 | 41.00 | 1 | 53.9 | 11.3 | 1 | 39A |
| SMBJP6KE43A | 36.80 | 40.90 | 45.20 | 1 | 59.3 | 10.3 | 1 | 43A |
| SMBJP6KE47A | 40.20 | 44.70 | 49.40 | 1 | 64.8 | 9.4 | 1 | 47A |
| SMBJP6KE51A | 43.60 | 48.50 | 53.60 | 1 | 70.1 | 8.7 | 1 | 51A |
| SMBJP6KE56A | 47.80 | 53.20 | 58.80 | 1 | 77.0 | 7.9 | 1 | 56A |
| SMBJP6KE62A | 53.00 | 58.90 | 65.10 | 1 | 85.0 | 7.2 | 1 | 62A |
| SMBJP6KE68A | 58.10 | 64.60 | 71.40 | 1 | 92.0 | 6.6 | 1 | 68A |
| SMBJP6KE75A | 64.10 | 71.30 | 78.80 | 1 | 103.0 | 5.9 | 1 | 75A |
| SMBJP6KE82A | 70.10 | 77.90 | 86.10 | 1 | 113.0 | 5.4 | 1 | 82A |
| SMBJP6KE91A | 77.80 | 86.50 | 95.50 | 1 | 125.0 | 4.9 | 1 | 91A |
| SMBJP6KE100A | 85.50 | 95.00 | 105.00 | 1 | 137.0 | 4.5 | 1 | 100A |
| SMBJP6KE110A | 94.00 | 105.00 | 116.00 | 1 | 152.0 | 4.0 | 1 | 110A |
| SMBJP6KE120A | 102.00 | 114.00 | 126.00 | 1 | 165.0 | 3.7 | 1 | 120A |
| SMBJP6KE130A | 111.00 | 124.00 | 137.00 | 1 | 179.0 | 3.4 | 1 | 130A |
| SMBJP6KE150A | 128.00 | 143.00 | 158.00 | 1 | 207.0 | 2.9 | 1 | 150A |
| SMBJP6KE160A | 136.00 | 152.00 | 168.00 | 1 | 219.0 | 2.8 | 1 | 160A |
| SMBJP6KE170A | 145.00 | 162.00 | 179.00 | 1 | 234.0 | 2.6 | 1 | 170A |
| SMBJP6KE180A | 154.00 | 171.00 | 189.00 | 1 | 246.0 | 2.5 | 1 | 180A |
| SMBJP6KE200A | 171.00 | 190.00 | 210.00 | 1 | 274.0 | 2.2 | 1 | 200A |
| SMBJP6KE220A | 185.00 | 209.00 | 231.00 | 1 | 328.0 | 1.9 | 1 | 220A |
| SMBJP6KE250A | 214.00 | 237.00 | 263.00 | 1 | 344.0 | 1.9 | 1 | 250A |
| SMBJP6KE300A | 256.00 | 285.00 | 315.00 | 1 | 414.0 | 1.5 | 1 | 300A |
| SMBJP6KE350A | 300.00 | 332.00 | 368.00 | 1 | 482.0 | 1.3 | 1 | 350A |
| SMBJP6KE400A | 342.00 | 380.00 | 420.00 | 1 | 548.0 | 1.1 | 1 | 400A |
| SMBJP6KE440A | 376.00 | 418.00 | 462.00 | 1 | 602.0 | 1.0 | 1 | 440A |
| SMBJP6KE480A | 408.00 | 456.00 | 504.00 | 1 | 658.0 | 0.9 | 1 | 480A |
| SMBJP6KE510A | 434.00 | 485.00 | 535.00 | 1 | 698.0 | 0.9 | 1 | 510A |
| SMBJP6KE530A | 477.00 | 503.50 | 556.50 | 1 | 725.0 | 0.8 | 1 | 530A |
| SMBJP6KE540A | 459.00 | 513.00 | 567.00 | 1 | 740.0 | 0.8 | 1 | 540A |
| SMBJP6KE550A | 495.00 | 522.50 | 577.50 | 1 | 760.0 | 0.8 | 1 | 550A |

For bi-directional type having V_{WM} of 10 volts and less, the I_R limit is double.
The available parts are "A" type only, the parts without A (V_{BR} is $\pm 10\%$) is not available.

Electrical Characteristics @ 25°C Unless Otherwise Specified

| MCC PART NUMBER | REVERSE STAND-OFF VOLTAGE V_{WM} | BREAKDOWN VOLTAGE $V_{(BR)} @ I_T$ (VOLTS) | | | MAXIMUM CLAMPING VOLTAGE @ I_{PP} | PEAK PULSE CURRENT I_{PP} | MAXIMUM REVERSE LEAKAGE @ V_{WM} I_D | MARKING CODE |
|-----------------|------------------------------------|--|--------|------------|-------------------------------------|-----------------------------|--|--------------|
| | VOLTS | MIN | MAX | I_T (mA) | VOLTS | (AMPS) | (μ A) | |
| SMBJP6KE6.8CA | 5.80 | 6.45 | 7.14 | 10 | 10.5 | 58.1 | 1000 | 6V8C |
| SMBJP6KE7.5CA | 6.40 | 7.13 | 7.88 | 10 | 11.3 | 54.0 | 500 | 7V5C |
| SMBJP6KE8.2CA | 7.02 | 7.79 | 8.61 | 10 | 12.1 | 50.4 | 200 | 8V2C |
| SMBJP6KE9.1CA | 7.78 | 8.65 | 9.55 | 1 | 13.4 | 45.5 | 50 | 9V1C |
| SMBJP6KE10CA | 8.55 | 9.50 | 10.50 | 1 | 14.5 | 42.1 | 10 | 10C |
| SMBJP6KE11CA | 9.40 | 10.50 | 11.60 | 1 | 15.6 | 39.1 | 5 | 11C |
| SMBJP6KE12CA | 10.20 | 11.40 | 12.60 | 1 | 16.7 | 36.5 | 5 | 12C |
| SMBJP6KE13CA | 11.10 | 12.40 | 13.70 | 1 | 18.2 | 33.5 | 5 | 13C |
| SMBJP6KE15CA | 12.80 | 14.30 | 15.80 | 1 | 21.2 | 28.8 | 5 | 15C |
| SMBJP6KE16CA | 13.60 | 15.20 | 16.80 | 1 | 22.5 | 27.1 | 5 | 16C |
| SMBJP6KE18CA | 15.30 | 17.10 | 18.90 | 1 | 25.5 | 24.2 | 5 | 18C |
| SMBJP6KE20CA | 17.10 | 19.00 | 21.00 | 1 | 27.7 | 22.0 | 5 | 20C |
| SMBJP6KE22CA | 18.80 | 20.90 | 23.10 | 1 | 30.6 | 19.9 | 5 | 22C |
| SMBJP6KE24CA | 20.50 | 22.80 | 25.20 | 1 | 33.2 | 18.4 | 5 | 24C |
| SMBJP6KE27CA | 23.10 | 25.70 | 28.40 | 1 | 37.5 | 16.3 | 5 | 27C |
| SMBJP6KE30CA | 25.60 | 28.50 | 31.50 | 1 | 41.4 | 14.7 | 5 | 30C |
| SMBJP6KE33CA | 28.20 | 31.40 | 34.70 | 1 | 45.7 | 13.3 | 5 | 33C |
| SMBJP6KE36CA | 30.80 | 34.20 | 37.80 | 1 | 49.9 | 12.2 | 5 | 36C |
| SMBJP6KE39CA | 33.30 | 37.10 | 41.00 | 1 | 53.9 | 11.3 | 5 | 39C |
| SMBJP6KE43CA | 36.80 | 40.90 | 45.20 | 1 | 59.3 | 10.3 | 5 | 43C |
| SMBJP6KE47CA | 40.20 | 44.70 | 49.40 | 1 | 64.8 | 9.4 | 5 | 47C |
| SMBJP6KE51CA | 43.60 | 48.50 | 53.60 | 1 | 70.1 | 8.7 | 5 | 51C |
| SMBJP6KE56CA | 47.80 | 53.20 | 58.80 | 1 | 77.0 | 7.9 | 5 | 56C |
| SMBJP6KE62CA | 53.00 | 58.90 | 65.10 | 1 | 85.0 | 7.2 | 5 | 62C |
| SMBJP6KE68CA | 58.10 | 64.60 | 71.40 | 1 | 92.0 | 6.6 | 5 | 68C |
| SMBJP6KE75CA | 64.10 | 71.30 | 78.80 | 1 | 103.0 | 5.9 | 5 | 75C |
| SMBJP6KE82CA | 70.10 | 77.90 | 86.10 | 1 | 113.0 | 5.4 | 5 | 82C |
| SMBJP6KE91CA | 77.80 | 86.50 | 95.50 | 1 | 125.0 | 4.9 | 5 | 91C |
| SMBJP6KE100CA | 85.50 | 95.00 | 105.00 | 1 | 137.0 | 4.5 | 5 | 100C |
| SMBJP6KE110CA | 94.00 | 105.00 | 116.00 | 1 | 152.0 | 4.0 | 5 | 110C |
| SMBJP6KE120CA | 102.00 | 114.00 | 126.00 | 1 | 165.0 | 3.7 | 5 | 120C |
| SMBJP6KE130CA | 111.00 | 124.00 | 137.00 | 1 | 179.0 | 3.4 | 5 | 130C |
| SMBJP6KE150CA | 128.00 | 143.00 | 158.00 | 1 | 207.0 | 2.9 | 5 | 150C |
| SMBJP6KE160CA | 136.00 | 152.00 | 168.00 | 1 | 219.0 | 2.8 | 5 | 160C |
| SMBJP6KE170CA | 145.00 | 162.00 | 179.00 | 1 | 234.0 | 2.6 | 5 | 170C |
| SMBJP6KE180CA | 154.00 | 171.00 | 189.00 | 1 | 246.0 | 2.5 | 5 | 180C |
| SMBJP6KE200CA | 171.00 | 190.00 | 210.00 | 1 | 274.0 | 2.2 | 5 | 200C |
| SMBJP6KE220CA | 185.00 | 209.00 | 231.00 | 1 | 328.0 | 1.9 | 5 | 220C |
| SMBJP6KE250CA | 214.00 | 237.00 | 263.00 | 1 | 344.0 | 1.9 | 5 | 250C |
| SMBJP6KE300CA | 256.00 | 285.00 | 315.00 | 1 | 414.0 | 1.5 | 5 | 300C |
| SMBJP6KE350CA | 300.00 | 332.00 | 368.00 | 1 | 482.0 | 1.3 | 5 | 350C |
| SMBJP6KE400CA | 342.00 | 380.00 | 420.00 | 1 | 548.0 | 1.1 | 5 | 400C |
| SMBJP6KE440CA | 376.00 | 418.00 | 462.00 | 1 | 602.0 | 1.0 | 5 | 440C |
| SMBJP6KE480CA | 408.00 | 456.00 | 504.00 | 1 | 658.0 | 0.9 | 5 | 480C |
| SMBJP6KE510CA | 434.00 | 485.00 | 535.00 | 1 | 698.0 | 0.9 | 5 | 510C |
| SMBJP6KE530CA | 477.00 | 503.50 | 556.50 | 1 | 725.0 | 0.8 | 5 | 530C |
| SMBJP6KE540CA | 459.00 | 513.00 | 567.00 | 1 | 740.0 | 0.8 | 5 | 540C |
| SMBJP6KE550CA | 495.00 | 522.50 | 577.50 | 1 | 760.0 | 0.8 | 5 | 550C |

For bi-directional type having V_{WM} of 10 volts and less, the I_R limit is double.
The available parts are "A" type only, the parts without A (V_{BR} is $\pm 10\%$) is not available.

Curve Characteristics

Fig. 1 - Peak Pulse Power Rating Curve

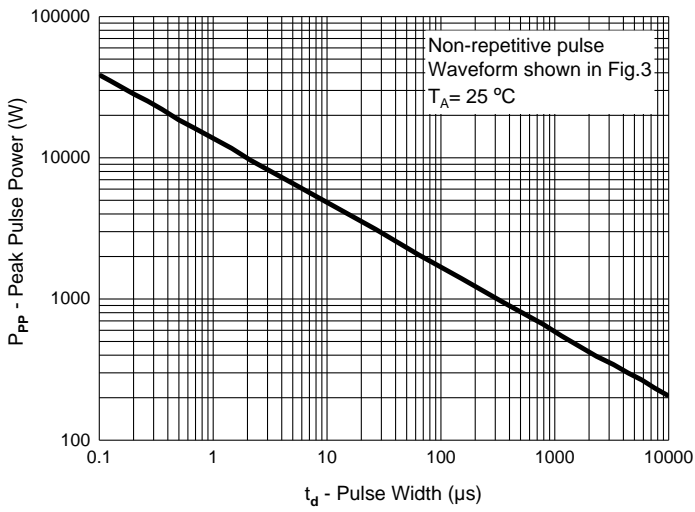


Fig. 2 - Typical Junction Capacitance

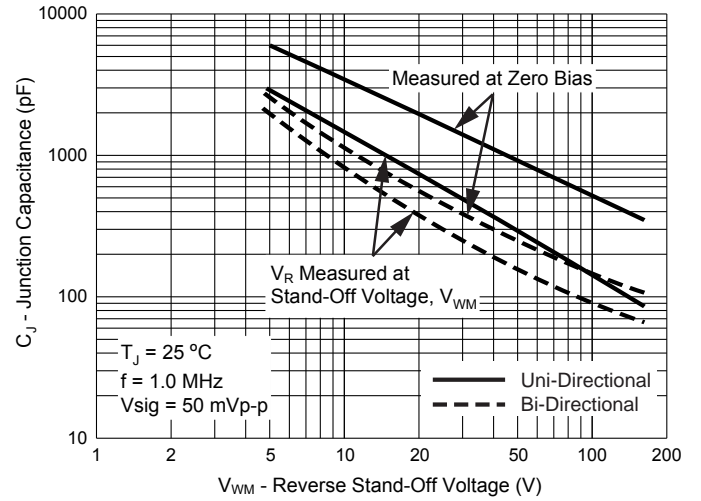


Fig. 3 - Pulse Waveform

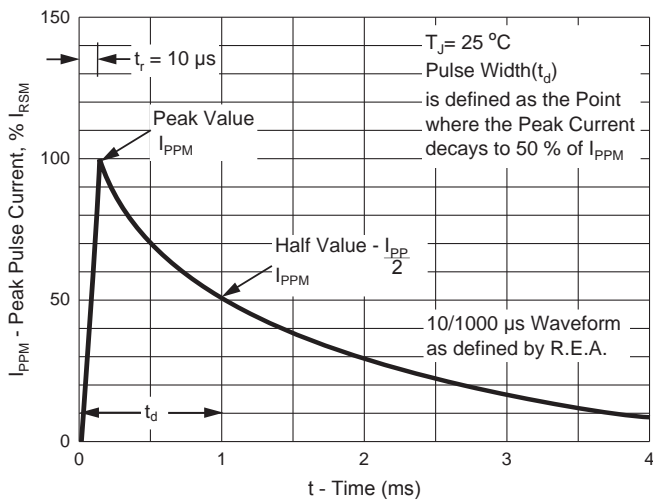
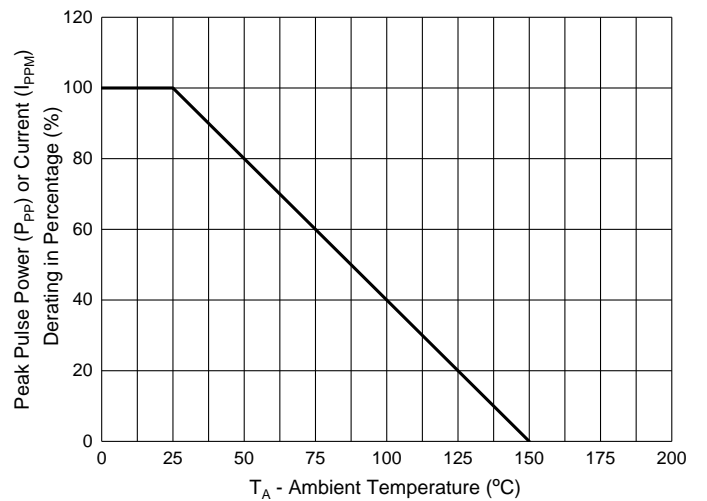


Fig. 4 - Pulse Derating Curve



Ordering Information

| Device | Packing |
|----------------|----------------------|
| Part Number-TP | Tape&Reel:3Kpcs/Reel |

Note : Adding "-HF" Suffix For Halogen Free, eg. Part Number-TP-HF

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