

MDE Semiconductor, Inc.

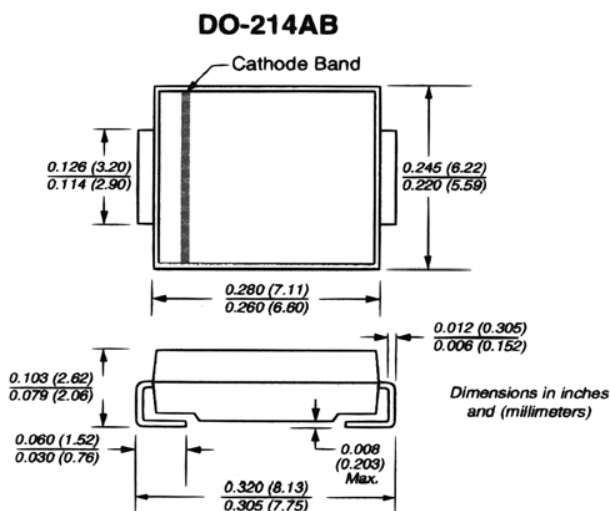
78-150 Calle Tampico, Unit 210, La Quinta, CA. U.S.A. 92253 Tel: 760-564-8656 • Fax: 760-564-2414

SMDJ SERIES

SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR VOLTAGE-5.0 TO 170 Volts 3000 Watt Peak Pulse Power

FEATURES

- For surface mounted applications in order to optimize board space
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Low inductance
- Excellent clamping capability
- Repetition rate (duty cycle):0.01%
- Fast response time: typically less than 1.0 ps from 0 volts to BV for unidirectional types
- Typical IR less than 1µA above 10V
- High temperature soldering: 250°C/10 seconds at terminals
- Plastic package has Underwriters Laboratory Flammability Classification 94 V-O



MECHANICAL DATA

Case: JEDEC DO214AB. Molded plastic over glass passivated junction
 Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
 Polarity: Color band denoted positive end (cathode) except Bidirectional
 Standard Packaging: 12mm tape (EIA STD RS-481)
 Weight: 0.007 ounces, 0.021 grams)

DEVICES FOR BIPOLAR APPLICATIONS

For Bidirectional use C or CA Suffix for types SMDJ5.0 thru types SMDJ170 (e.g. SMDJ5.0C, SMDJ170CA)
 Electrical characteristics apply in both directions.

MAXIMUM RATINGS AND CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

| RATING | SYMBOL | VALUE | UNITS |
|--|-----------------------------------|--------------|-------|
| Peak Pulse Power Dissipation on 10/1000 µs waveform (NOTE 1, 2, Fig.1) | P _{ppm} | Minimum 3000 | Watts |
| Peak Pulse Current of on 10/1000 µs waveform (Note 1, Fig 3) | I _{ppm} | SEE TABLE 1 | Amps |
| Peak Forward Surge Current, 8.3ms Single Half Sine-wave Superimposed on Rated Load, (JEDEC Method)(Note2, 3) | I _{FSM} | 100 | Amps |
| Operating and Storage Temperature Range | T _j , T _{stg} | -55 +150 | °C |

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 0.8x0.8" (20x20mm) per Fig.5.
3. 8.3ms single half sine-wave, or equivalent square wave, Duty cycle=4 pulses per minutes maximum.

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RATING AND CHARACTERISTIC CURVES SMDJ SERIES

Figure 1
PEAK PULSE POWER VS PULSE TIME

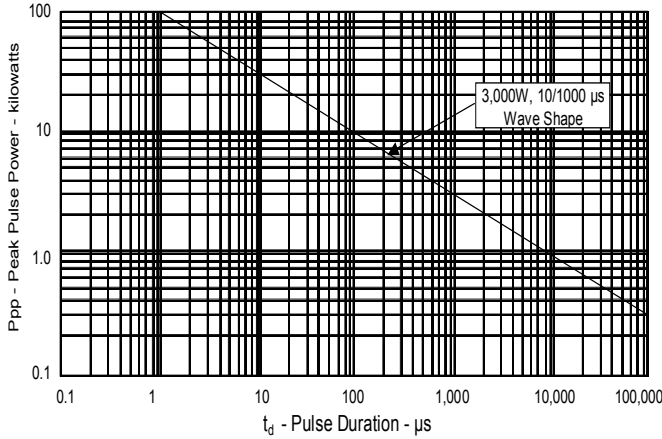


Fig. 2 – Pulse Derating Curve

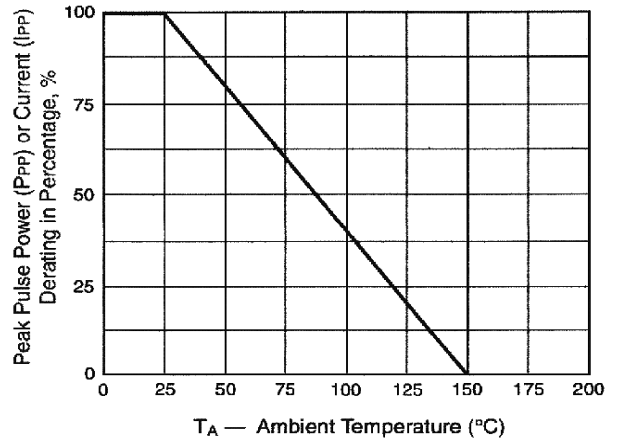


Fig. 3 – Pulse Waveform

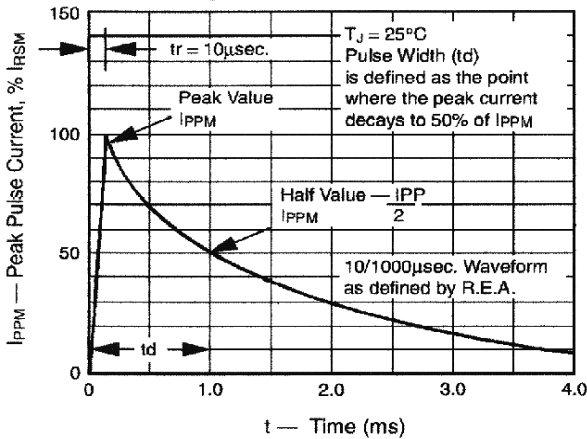


Fig. 4 – Typical Junction Capacitance

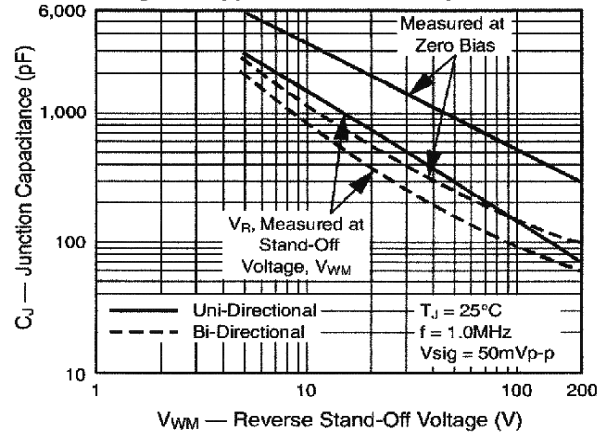


Fig. 5 – Typical Transient Thermal Impedance

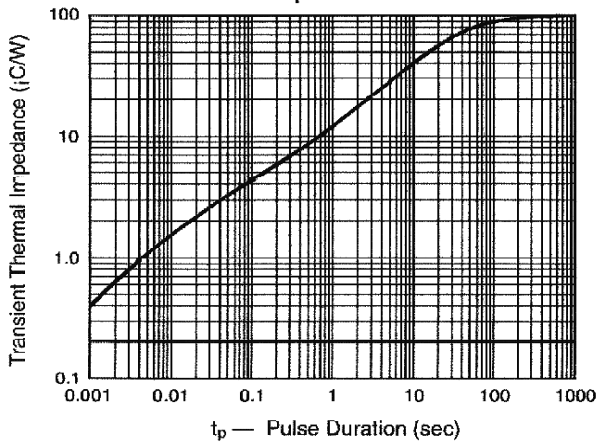
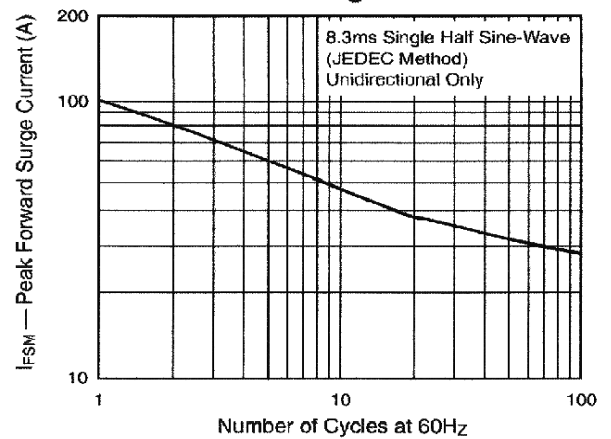


Fig. 6 – Maximum Non-Repetitive Peak Forward Surge Current



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3000 Watt Surface Mount TVS

| UNI-DIRECTIONAL PART NUMBER | DEVICE MARKING CODE UNI-POLAR | DEVICE MARKING CODE BI-POLAR | REVERSE STANDOFF VOLTAGE VRWM (V) | BREAKDOWN VOLTAGE VBR (V) MIN. @ IT | BREAKDOWN VOLTAGE VBR (V) MAX. @ IT | TEST CURRENT (It) mA | MAXIMUM CLAMPING VOLTAGE @Ipp Vc (V) | PEAK PULSE CURRENT Ipp (A) | REVERSE LEAKAGE @ VRWM IR (µA) |
|-----------------------------|-------------------------------|------------------------------|-----------------------------------|-------------------------------------|-------------------------------------|----------------------|--------------------------------------|----------------------------|--------------------------------|
| SMDJ5.0 | RDD | DDD | 5.00 | 6.40 | 7.30 | 10 | 9.6 | 312.5 | 800 |
| SMDJ5.0A | RDE | DDE | 5.00 | 6.40 | 7.00 | 10 | 9.2 | 326.1 | 800 |
| SMDJ6.0 | RDF | DDF | 6.00 | 6.67 | 8.15 | 10 | 11.4 | 263.2 | 800 |
| SMDJ6.0A | RDG | DDG | 6.00 | 6.67 | 7.37 | 10 | 10.3 | 291.3 | 800 |
| SMDJ6.5 | RDH | DDH | 6.50 | 7.22 | 8.82 | 10 | 12.3 | 243.9 | 500 |
| SMDJ6.5A | RDK | DDK | 6.50 | 7.22 | 7.98 | 10 | 11.2 | 267.9 | 500 |
| SMDJ7.0 | PDL | DDL | 7.00 | 7.78 | 9.51 | 10 | 13.3 | 225.6 | 200 |
| SMDJ7.0A | PDM | DDM | 7.00 | 7.78 | 8.60 | 10 | 12.0 | 250.0 | 200 |
| SMDJ7.5 | PDN | DDN | 7.50 | 8.33 | 10.20 | 1 | 14.3 | 209.8 | 100 |
| SMDJ7.5A | PDP | DDP | 7.50 | 8.33 | 9.21 | 1 | 12.9 | 232.6 | 100 |
| SMDJ8.0 | PDQ | DDQ | 8.00 | 8.89 | 10.90 | 1 | 15.0 | 200.0 | 50 |
| SMDJ8.0A | PDR | DDR | 8.00 | 8.89 | 9.83 | 1 | 13.6 | 220.6 | 50 |
| SMDJ8.5 | PDS | DDS | 8.50 | 9.44 | 11.50 | 1 | 15.9 | 188.7 | 20 |
| SMDJ8.5A | PDT | DDT | 8.50 | 9.44 | 10.40 | 1 | 14.4 | 208.3 | 20 |
| SMDJ9.0 | PDU | DDU | 9.00 | 10.00 | 12.20 | 1 | 16.9 | 177.5 | 10 |
| SMDJ9.0A | PDV | DDV | 9.00 | 10.00 | 11.10 | 1 | 15.4 | 194.8 | 10 |
| SMDJ10 | PDW | DDW | 10.00 | 11.10 | 13.60 | 1 | 18.8 | 159.6 | 5 |
| SMDJ10A | PDX | DDX | 10.00 | 11.10 | 12.30 | 1 | 17.0 | 176.5 | 5 |
| SMDJ11 | PDY | DDY | 11.00 | 12.20 | 14.90 | 1 | 20.1 | 149.3 | 5 |
| SMDJ11A | PDZ | DDZ | 11.00 | 12.20 | 13.50 | 1 | 18.2 | 164.8 | 5 |
| SMDJ12 | PED | DED | 12.00 | 13.30 | 16.30 | 1 | 22.0 | 136.4 | 5 |
| SMDJ12A | PEE | DEE | 12.00 | 13.30 | 14.70 | 1 | 19.9 | 150.8 | 5 |
| SMDJ13 | PEF | DEF | 13.00 | 14.40 | 17.60 | 1 | 23.8 | 126.1 | 5 |
| SMDJ13A | PEG | DEG | 13.00 | 14.40 | 15.90 | 1 | 21.5 | 139.5 | 5 |
| SMDJ14 | PEH | DEH | 14.00 | 15.60 | 19.10 | 1 | 25.8 | 116.3 | 5 |
| SMDJ14A | PEK | DEK | 14.00 | 15.60 | 17.20 | 1 | 23.2 | 129.3 | 5 |
| SMDJ15 | PEL | DEL | 15.00 | 16.70 | 20.40 | 1 | 26.9 | 111.5 | 5 |
| SMDJ15A | PEM | DEM | 15.00 | 16.70 | 18.50 | 1 | 24.4 | 123.0 | 5 |
| SMDJ16 | PEN | DEN | 16.00 | 17.80 | 21.80 | 1 | 28.8 | 104.2 | 5 |
| SMDJ16A | PEP | DEP | 16.00 | 17.80 | 19.70 | 1 | 26.0 | 115.4 | 5 |
| SMDJ17 | PEQ | DEQ | 17.00 | 18.90 | 23.10 | 1 | 30.5 | 98.4 | 5 |
| SMDJ17A | PER | DER | 17.00 | 18.90 | 20.90 | 1 | 27.6 | 108.7 | 5 |
| SMDJ18 | PES | DES | 18.00 | 20.00 | 24.40 | 1 | 32.2 | 93.2 | 5 |
| SMDJ18A | PET | DET | 18.00 | 20.00 | 22.10 | 1 | 29.2 | 102.7 | 5 |
| SMDJ20 | PEU | DEU | 20.00 | 22.20 | 27.10 | 1 | 35.8 | 83.8 | 5 |
| SMDJ20A | PEV | DEV | 20.00 | 22.20 | 24.50 | 1 | 32.4 | 92.6 | 5 |
| SMDJ22 | PEW | DEW | 22.00 | 24.40 | 29.80 | 1 | 39.4 | 76.1 | 5 |
| SMDJ22A | PEX | DEX | 22.00 | 24.40 | 26.90 | 1 | 35.5 | 84.5 | 5 |
| SMDJ24 | PEY | DEY | 24.00 | 26.70 | 32.60 | 1 | 43.0 | 69.8 | 5 |
| SMDJ24A | PEZ | DEZ | 24.00 | 26.70 | 29.50 | 1 | 38.9 | 77.1 | 5 |
| SMDJ26 | PFD | DFD | 26.00 | 28.90 | 35.30 | 1 | 46.6 | 64.4 | 5 |
| SMDJ26A | PFE | DFE | 26.00 | 28.90 | 31.90 | 1 | 42.1 | 71.3 | 5 |
| SMDJ28 | PFF | DFF | 28.00 | 31.10 | 38.00 | 1 | 50.1 | 59.5 | 5 |
| SMDJ28A | PFG | DFG | 28.00 | 31.10 | 34.40 | 1 | 45.4 | 66.1 | 5 |
| SMDJ30 | PFH | DFH | 30.00 | 33.30 | 40.70 | 1 | 53.5 | 56.1 | 5 |
| SMDJ30A | PFK | DFK | 30.00 | 33.30 | 36.80 | 1 | 48.4 | 62.0 | 5 |
| SMDJ33 | PFL | DFL | 33.00 | 36.70 | 44.90 | 1 | 59.0 | 50.8 | 5 |
| SMDJ33A | PFM | DFM | 33.00 | 36.70 | 40.60 | 1 | 53.3 | 56.3 | 5 |

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|-----------------------------|-------------------------------|------------------------------|-----------------------------------|-------------------------------------|-------------------------------------|----------------------|--------------------------------------|----------------------------|--------------------------------|
| SMDJ36 | PFN | DFN | 36.00 | 40.00 | 48.90 | 1 | 64.3 | 46.7 | 5 |
| SMDJ36A | PFP | DFP | 36.00 | 40.00 | 44.20 | 1 | 58.1 | 51.6 | 5 |
| SMDJ40 | PFQ | DFQ | 40.00 | 44.40 | 54.30 | 1 | 71.4 | 42.0 | 5 |
| SMDJ40A | PFR | DFR | 40.00 | 44.40 | 49.10 | 1 | 64.5 | 46.5 | 5 |
| SMDJ43 | PFS | DFR | 43.00 | 47.80 | 58.40 | 1 | 76.7 | 39.1 | 5 |
| SMDJ43A | PFT | DFT | 43.00 | 47.80 | 52.80 | 1 | 69.4 | 43.2 | 5 |
| SMDJ45 | PFU | DFU | 45.00 | 50.00 | 61.10 | 1 | 80.3 | 37.4 | 5 |
| SMDJ45A | PFV | DFV | 45.00 | 50.00 | 55.30 | 1 | 72.7 | 41.3 | 5 |
| SMDJ48 | PFW | DFW | 48.00 | 53.30 | 65.20 | 1 | 85.5 | 35.1 | 5 |
| SMDJ48A | PFX | DFX | 48.00 | 53.30 | 58.90 | 1 | 77.4 | 38.8 | 5 |
| SMDJ51 | PFY | DFY | 51.00 | 56.70 | 69.30 | 1 | 91.1 | 32.9 | 5 |
| SMDJ51A | PFZ | DFZ | 51.00 | 56.70 | 62.70 | 1 | 82.4 | 36.4 | 5 |
| SMDJ54A | PGD | DGD | 54.00 | 60.00 | 73.30 | 1 | 96.3 | 31.2 | 5 |
| SMDJ54A | PGE | DGE | 54.00 | 60.00 | 66.30 | 1 | 87.1 | 34.4 | 5 |
| SMDJ58 | PGF | DGF | 58.00 | 64.40 | 78.70 | 1 | 103.0 | 29.1 | 5 |
| SMDJ58A | PGG | DGG | 58.00 | 64.40 | 71.20 | 1 | 93.6 | 32.1 | 5 |
| SMDJ60 | PGH | DGH | 60.00 | 66.70 | 81.50 | 1 | 107.0 | 28.0 | 5 |
| SMDJ60A | PGK | DGK | 60.00 | 66.70 | 73.70 | 1 | 96.8 | 31.0 | 5 |
| SMDJ64 | PGL | DGL | 64.00 | 71.10 | 86.90 | 1 | 114.0 | 26.3 | 5 |
| SMDJ64A | PGM | DGM | 64.00 | 71.10 | 78.60 | 1 | 103.0 | 29.1 | 5 |
| SMDJ70 | PGN | DGN | 70.00 | 77.80 | 95.10 | 1 | 125.0 | 24.0 | 5 |
| SMDJ70A | PGP | DGP | 70.00 | 77.80 | 86.00 | 1 | 113.0 | 26.5 | 5 |
| SMDJ75 | PGQ | DGQ | 75.00 | 83.30 | 102.00 | 1 | 134.0 | 22.4 | 5 |
| SMDJ75A | PGR | DGR | 75.00 | 83.30 | 92.10 | 1 | 121.0 | 24.8 | 5 |
| SMDJ78 | PGS | DGS | 78.00 | 86.70 | 106.00 | 1 | 139.0 | 21.6 | 5 |
| SMDJ78A | PGT | DGT | 78.00 | 86.70 | 95.80 | 1 | 126.0 | 23.8 | 5 |
| SMDJ85 | PGU | DGU | 85.00 | 94.40 | 115.00 | 1 | 151.0 | 19.9 | 5 |
| SMDJ85A | PGV | DGV | 85.00 | 94.40 | 104.00 | 1 | 137.0 | 21.9 | 5 |
| SMDJ90 | PGW | DGW | 90.00 | 100.00 | 122.00 | 1 | 160.0 | 18.8 | 5 |
| SMDJ90A | PGX | DGX | 90.00 | 100.00 | 111.00 | 1 | 146.0 | 20.5 | 5 |
| SMDJ100 | PGY | DGY | 100.00 | 111.00 | 136.00 | 1 | 179.0 | 16.8 | 5 |
| SMDJ100A | PGZ | DGZ | 100.00 | 111.00 | 123.00 | 1 | 162.0 | 18.5 | 5 |
| SMDJ110 | PHD | DHD | 110.00 | 122.00 | 149.00 | 1 | 196.0 | 15.3 | 5 |
| SMDJ110A | PHE | DHE | 110.00 | 122.00 | 135.00 | 1 | 177.0 | 16.9 | 5 |
| SMDJ120 | PHF | DHF | 120.00 | 133.00 | 163.00 | 1 | 214.0 | 14.0 | 5 |
| SMDJ120A | PHG | DHG | 120.00 | 133.00 | 147.00 | 1 | 193.0 | 15.5 | 5 |
| SMDJ130 | PHH | DHH | 130.00 | 144.00 | 176.00 | 1 | 230.0 | 13.0 | 5 |
| SMDJ130A | PHK | DHK | 130.00 | 144.00 | 159.00 | 1 | 209.0 | 14.4 | 5 |
| SMDJ150 | PHL | DHL | 150.00 | 167.00 | 204.00 | 1 | 268.0 | 11.2 | 5 |
| SMDJ150A | PHM | DHM | 150.00 | 167.00 | 185.00 | 1 | 243.0 | 12.3 | 5 |
| SMDJ160 | PHN | DHN | 160.00 | 178.00 | 218.00 | 1 | 287.0 | 10.5 | 5 |
| SMDJ160A | PHP | DHP | 160.00 | 178.00 | 197.00 | 1 | 259.0 | 11.6 | 5 |
| SMDJ170 | PHQ | DHQ | 170.00 | 189.00 | 231.00 | 1 | 304.0 | 9.9 | 5 |
| SMDJ170A | PHR | DHR | 170.00 | 189.00 | 209.00 | 1 | 275.0 | 10.9 | 5 |

For Bidirectional type having Vrwm of 10volts and less, the IR limit is double.