# APSMBJ SERIES

## SURFACE-MOUNT UNIDIRECTIONAL AND BIDIRECTIONAL TRANSIENT VOLTAGE SUPPRESSORS

## REVERSE VOLTAGE - 6.8 to 82 Volts POWER DISSIPATION 600 Watts

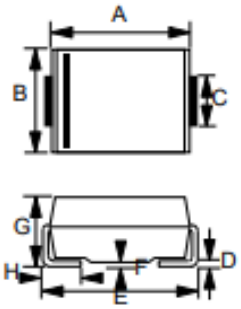
### FEATURES

- For surface-mounted applications
- Reliable low cost construction utilizing molded plastic technique
- Typical IR less than 1μA above 10V
- Fast response time: typically less than 1.0ns for Unidirection, less than 5.0ns for Bidirection, form 0 Volts to BV min
- RoHS compliant
- AEC-Q101 qualified
- PPAP capable
- Automotive grade
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

### MECHANICAL DATA

- Package: Molded plastic
- Package Material: Molding compound, UL Flammability classification 94V-0, (No Br. Sb. Cl.) "Halogen-free"
- Polarity: Cathode band denotes unidirectional device; none cathode band denotes bidirectional device
- Moisture Sensitivity: Max Soldering Temperature +260°C for 30 secs as per JEDECJ-STD-020
- Terminals Finish: Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.003 ounces, 0.093 gram (Approximate)

### SMB




| SMB | | |
|---|---|---|
| DIM. | MIN. | MAX. |
| A | 4.06 | 4.57 |
| B | 3.30 | 3.94 |
| C | 1.96 | 2.21 |
| D | 0.15 | 0.31 |
| E | 5.21 | 5.59 |
| F | 0.05 | 0.20 |
| G | 2.01 | 2.50 |
| H | 0.76 | 1.52 |
| All Dimensions in millimeter | | |

### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at +25°C ambient temperature unless otherwise specified.

### ABSOLUTE RATINGS

| PARAMETER | SYMBOL | VALUE | UNIT |
|---|---|---|---|
| Peak Power Dissipation at $T_A$ = +25°C, $t_P$ = 1ms (Note 4) | $P_{PK}$ | 600 | W |
| Peak Forward Surge Current 8.3ms Single Half Sine Wave @$T_J$ = +25°C (Note 5) | $I_{FSM}$ | 90 | A |
| Steady State Power Dissipation with PCB | $P_{M(AV)}$ | 1.5 | W |
| Maximum Instantaneous Forward Voltage at 16A (Notes 5, 6) | $V_F$ | 2.5 | V |
| Operating Temperature Range | $T_J$ | -55 to +175 | °C |
| Storage Temperature Range | $T_{STG}$ | -55 to +175 | °C |

**Notes:**

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. Non-repetitive current pulse, per fig. 5 and derated above $T_J$ = +25°C, per fig.1.
5. Only for unidirectional units.
6. VF max = 2.0V at IF = 16A 300μs square wave pulse.

## ELECTRICAL CHARACTERISTICS

| Device Unidirectional | Device Bidirectional | Device Marking Code | | Reverse Standoff Voltage | Breakdown Voltage VBR Volts | | | Max. Clamping Voltage @IPP | Max. Peak Pulse Current | Max. Reverse Leakage @ VR |
|---|---|---|---|---|---|---|---|---|---|---|
| | | (UNI) | (BI) | VR (V) | Min. | Max. | @It (mA) | VC (V) | IPP (A) | IR (μA) |
| APSMBJ6.8A | APSMBJ6.8CA | A6V8A | A6V8C | 5.8 | 6.45 | 7.13 | 10 | 10.5 | 57.1 | 1000 |
| APSMBJ7.5A | APSMBJ7.5CA | A7V5A | A7V5C | 6.4 | 7.13 | 7.88 | 10 | 11.3 | 53.1 | 500 |
| APSMBJ8.2A | APSMBJ8.2CA | A8V2A | A8V2C | 7.0 | 7.79 | 8.61 | 10 | 12.1 | 49.6 | 200 |
| APSMBJ9.1A | APSMBJ9.1CA | A9V1A | A9V1C | 7.8 | 8.65 | 9.56 | 1.0 | 13.4 | 44.8 | 50 |
| APSMBJ10A | APSMBJ10CA | A10A | A10C | 8.6 | 9.50 | 10.50 | 1.0 | 14.5 | 41.4 | 10 |
| APSMBJ11A | APSMBJ11CA | A11A | A11C | 9.4 | 10.5 | 11.6 | 1.0 | 15.6 | 38.5 | 5.0 |
| APSMBJ12A | APSMBJ12CA | A12A | A12C | 10.2 | 11.4 | 12.6 | 1.0 | 16.7 | 35.9 | 0.5 |
| APSMBJ13A | APSMBJ13CA | A13A | A13C | 11.1 | 12.4 | 13.7 | 1.0 | 18.2 | 33.0 | 0.5 |
| APSMBJ15A | APSMBJ15CA | A15A | A15C | 12.8 | 14.3 | 15.8 | 1.0 | 21.2 | 28.3 | 0.5 |
| APSMBJ16A | APSMBJ16CA | A16A | A16C | 13.6 | 15.2 | 16.8 | 1.0 | 22.5 | 26.7 | 0.5 |
| APSMBJ18A | APSMBJ18CA | A18A | A18C | 15.3 | 17.1 | 18.9 | 1.0 | 25.2 | 23.8 | 0.5 |
| APSMBJ20A | APSMBJ20CA | A20A | A20C | 17.1 | 19.0 | 21.0 | 1.0 | 27.7 | 21.7 | 0.5 |
| APSMBJ22A | APSMBJ22CA | A22A | A22C | 18.8 | 20.9 | 23.1 | 1.0 | 30.6 | 19.6 | 0.5 |
| APSMBJ24A | APSMBJ24CA | A24A | A24C | 20.5 | 22.8 | 25.2 | 1.0 | 33.2 | 18.1 | 0.5 |
| APSMBJ27A | APSMBJ27CA | A27A | A27C | 23.1 | 25.7 | 28.4 | 1.0 | 37.5 | 16.0 | 0.5 |
| APSMBJ30A | APSMBJ30CA | A30A | A30C | 25.6 | 28.5 | 31.5 | 1.0 | 41.4 | 14.5 | 0.5 |
| APSMBJ33A | APSMBJ33CA | A33A | A33C | 28.2 | 31.4 | 34.7 | 1.0 | 45.7 | 13.1 | 0.5 |
| APSMBJ33A | APSMBJ33CAC | A33A | A33CC | 28.2 | 31.4 | 34.7 | 1.0 | 45.7 | 13.1 | 0.5 |
| APSMBJ36A | APSMBJ36CA | A36A | A36C | 30.8 | 34.2 | 37.8 | 1.0 | 49.9 | 12.0 | 0.5 |
| APSMBJ39A | APSMBJ39CA | A39A | A39C | 33.3 | 37.1 | 41.0 | 1.0 | 53.9 | 11.1 | 0.5 |
| APSMBJ43A | APSMBJ43CA | A43A | A43C | 36.8 | 40.9 | 45.2 | 1.0 | 59.3 | 10.1 | 0.5 |
| APSMBJ47A | APSMBJ47CA | A47A | A47C | 40.2 | 44.7 | 49.4 | 1.0 | 64.8 | 9.3 | 0.5 |
| APSMBJ51A | APSMBJ51CA | A51A | A51C | 43.6 | 48.5 | 53.6 | 1.0 | 70.1 | 8.6 | 0.5 |
| APSMBJ56A | APSMBJ56CA | A56A | A56C | 47.8 | 53.2 | 58.8 | 1.0 | 77.0 | 7.8 | 0.5 |
| APSMBJ62A | APSMBJ62CA | A62A | A62C | 53.0 | 58.9 | 65.1 | 1.0 | 85.0 | 7.1 | 0.5 |
| APSMBJ68A | APSMBJ68CA | A68A | A68C | 58.1 | 64.6 | 71.4 | 1.0 | 92.0 | 6.5 | 0.5 |
| APSMBJ75A | APSMBJ75CA | A75A | A75C | 64.7 | 71.3 | 78.8 | 1.0 | 103.0 | 5.8 | 0.5 |
| APSMBJ82A | APSMBJ82CA | A82A | A82C | 70.1 | 77.9 | 86.1 | 1.0 | 113.0 | 5.3 | 0.5 |

**Notes:**

7. Suffix 'A' denotes 5% tolerance device.
8. Add suffix 'C' or 'CA' after part number to specify Bidirectional devices.
9. The IR limit is double for Bidirectional devices.
10. APSMBJ33CA for special customer used.

## RATING AND CHARACTERISTIC CURVES
## APSMBJ SERIES

FIG.1 - PULSE DERATING CURVE

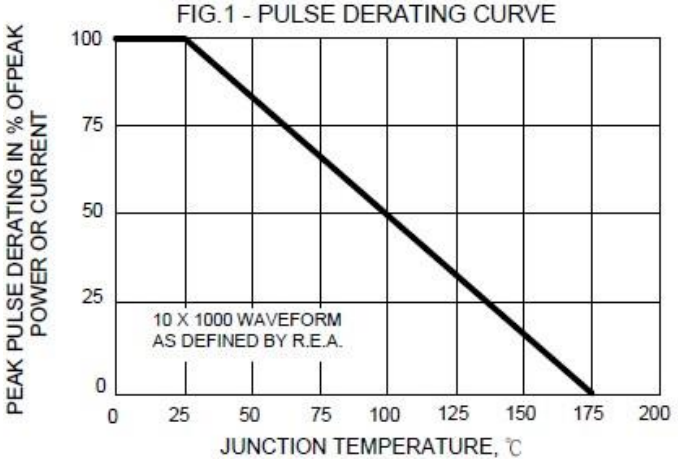



FIG.2 - MAXIMUM NON-REPETITIVE SURGE CURRENT

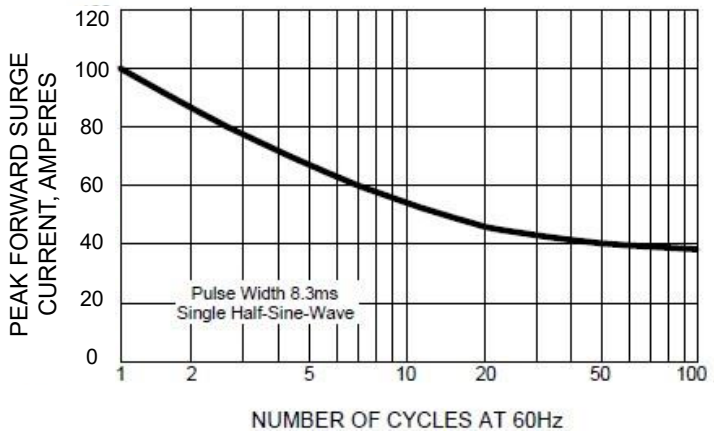



FIG.3 - PULSE WAVEFORM

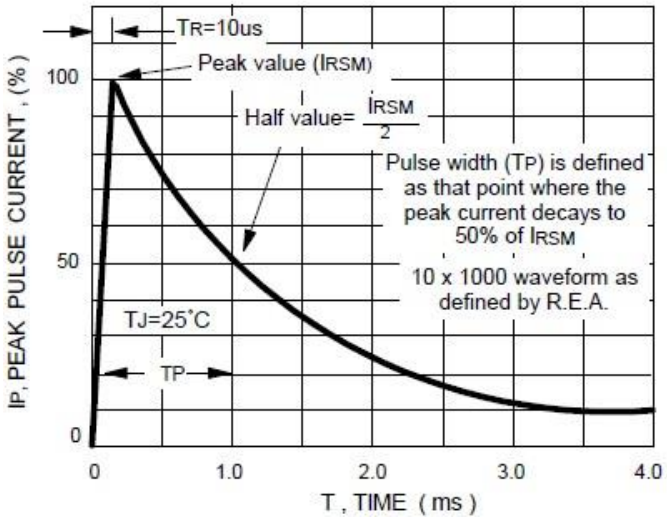



FIG.4 - TYPICAL JUNCTION CAPACITANCE

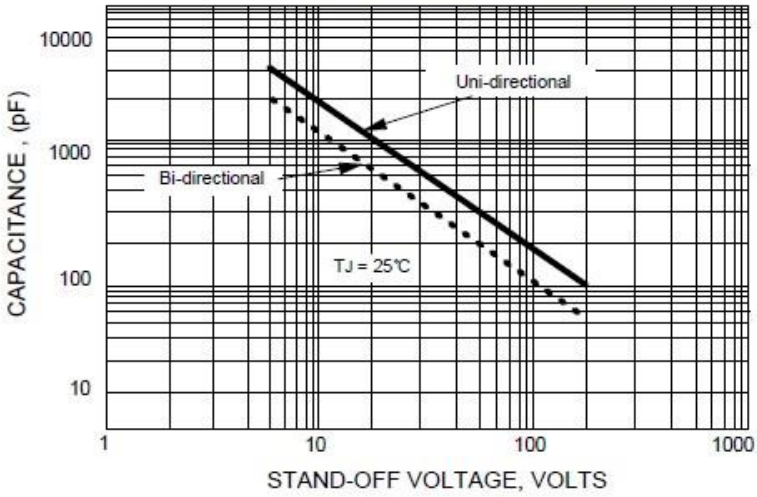



FIG.5 - PULSE RATING CURVE

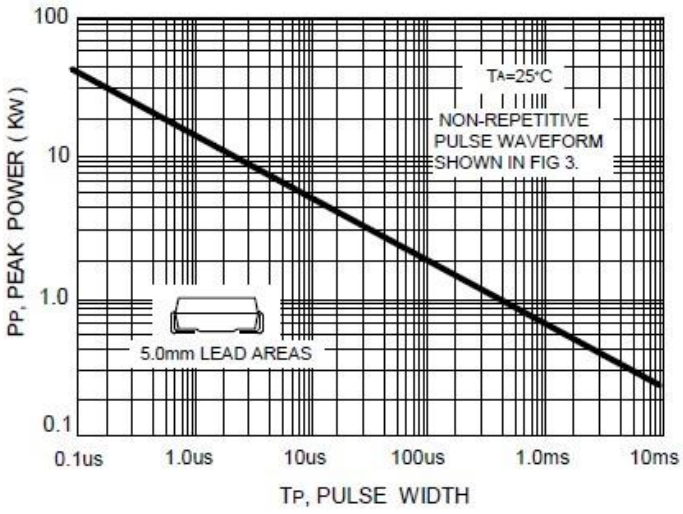
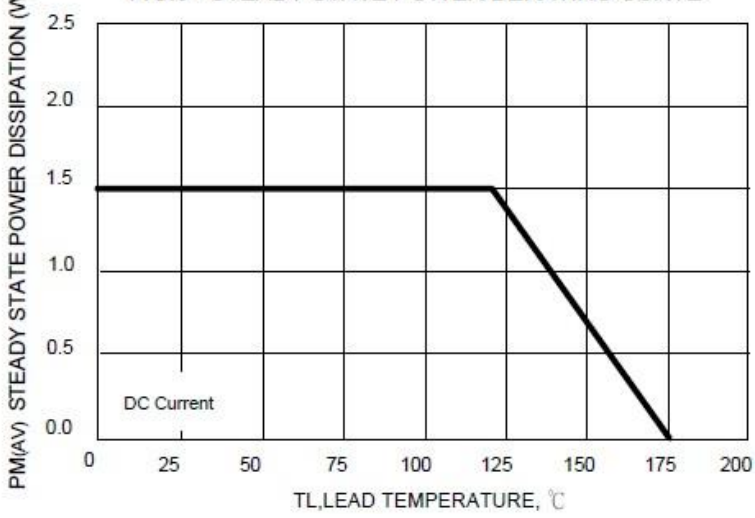



FIG.6 - STEADY STATE POWER DERATING CURVE



## Ordering Information :

| Part Number | Package | Packing | |
|---|---|---|---|
| | | Qty. | Carrier |
| APSMBJ SERIES | SMB | 3000pcs | Reel |

## Marking Information :

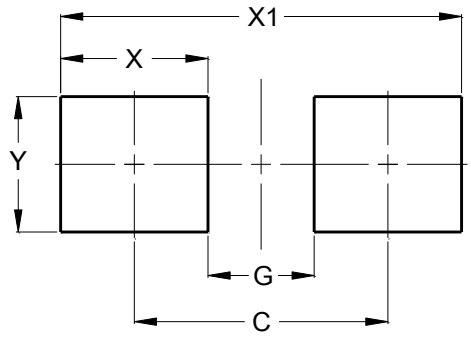

XXXX : Assembly Tracing Code
ZZZ : Product Type Marking Code
Bar Denotes Cathode Side

## Packaging Information :

| DEVICE | QTY./REEL (PCS) | REEL DIA. (INCH) | QTY./BOX (PCS) | QTY./CARTON (PCS) |
|---|---|---|---|---|
| APSMBJXXA<br>APSMBJXXCA | 3000 | 13 | 6k | 36k |

## Suggested Pad Layout :

**SMB**




| Dimensions | Value (in mm) |
|---|---|
| C | 4.30 |
| G | 1.80 |
| X | 2.50 |
| X1 | 6.80 |
| Y | 2.30 |

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