



**THE DATASHEET OF  
SMB10J12A R5G**



## 1000W Surface Mount Transient Voltage Suppressor

### FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated junction
- Excellent clamping capability
- Fast response time: typically less than 1.0ps
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21



**DO-214AA (SMB)**

### MECHANICAL DATA

**Case:** DO-214AA (SMB)

Molding compound: UL flammability classification rating 94V-0

Moisture sensitivity level: level 1, per J-STD-020

Part no. with suffix "H" means AEC-Q101 qualified

Packing code with suffix "G" means green compound (halogen-free)

**Terminal:** Matte tin plated leads, solderable per JESD22-B102

Meet JESD 201 class 2 whisker test

**Weight:** 0.11 g (approximately)

| MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T <sub>A</sub> =25°C unless otherwise noted) |                                      |              |      |
|--|--------------------------------------|--------------|------|
| PARAMETER  | SYMBOL                               | VALUE        | UNIT |
| Peak power dissipation at T <sub>A</sub> =25°C, tp=1ms (Note 1)                              | P <sub>PK</sub>                      | 1000         | W    |
| Steady state power dissipation   | P <sub>D</sub>                       | 5            | W    |
| Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load          | I <sub>FSM</sub>                     | 100          | A    |
| Maximum instantaneous forward voltage at 50 A for unidirectional only                        | V <sub>F</sub>                       | 3.5          | V    |
| Typical thermal resistance   | R <sub>θJL</sub><br>R <sub>θJA</sub> | 20<br>100    | °C/W |
| Operating junction temperature range   | T <sub>J</sub>                       | - 55 to +175 | °C   |
| Storage temperature range  | T <sub>STG</sub>                     | - 55 to +175 | °C   |

Note 1: Non-repetitive current pulse per fig. 3 and derated above T<sub>A</sub>=25°C per fig. 2

Devices for bipolar applications

1. For bidirectional use CA suffix

| ORDERING INFORMATION |                 |              |                         |         |                          |
|----------------------|-----------------|--------------|-------------------------|---------|--------------------------|
| PART NO.             | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX (*) | PACKAGE | PACKING                  |
| SMB10J30A            | H               | R5           | G                       | SMB     | 850 / 7" Plastic reel    |
|                      |                 | R4           |                         | SMB     | 3,000 / 13" Paper reel   |
|                      |                 | M4           |                         | SMB     | 3,000 / 13" Plastic reel |

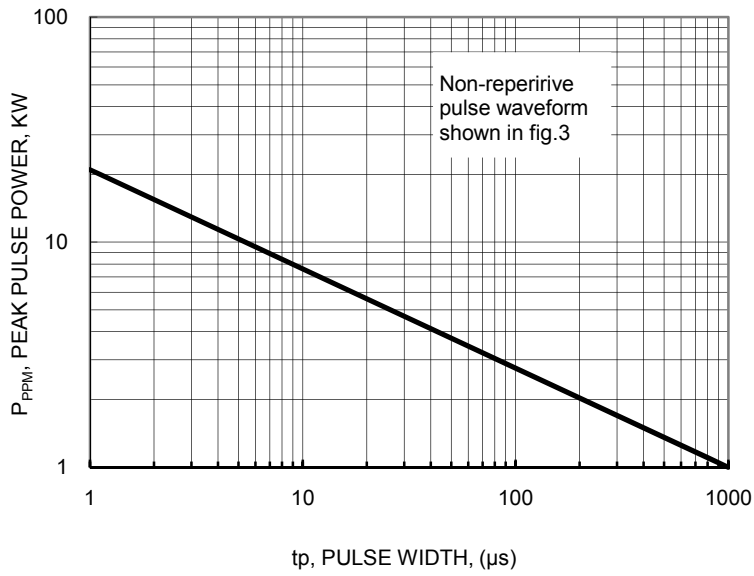
\*: Optional available

| EXAMPLE       |           |                 |              |                     |                                      |
|---------------|-----------|-----------------|--------------|---------------------|--------------------------------------|
| EXAMPLE P/N   | PART NO.  | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION                          |
| SMB10J30AHR5G | SMB10J30A | H               | R5           | G                   | AEC-Q101 qualified<br>Green compound |

**RATINGS AND CHARACTERISTICS CURVES**

( $T_A=25^\circ\text{C}$  unless otherwise noted)

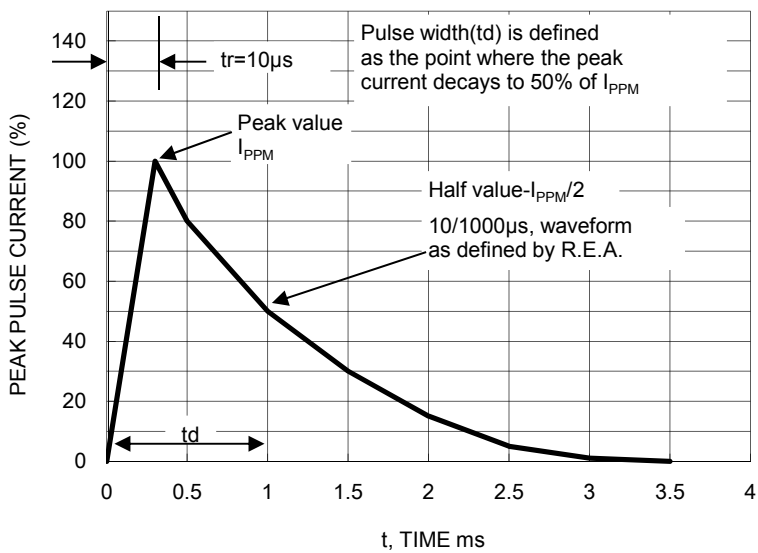
**FIG. 1 PEAK PULSE POWER RATING CURVE**



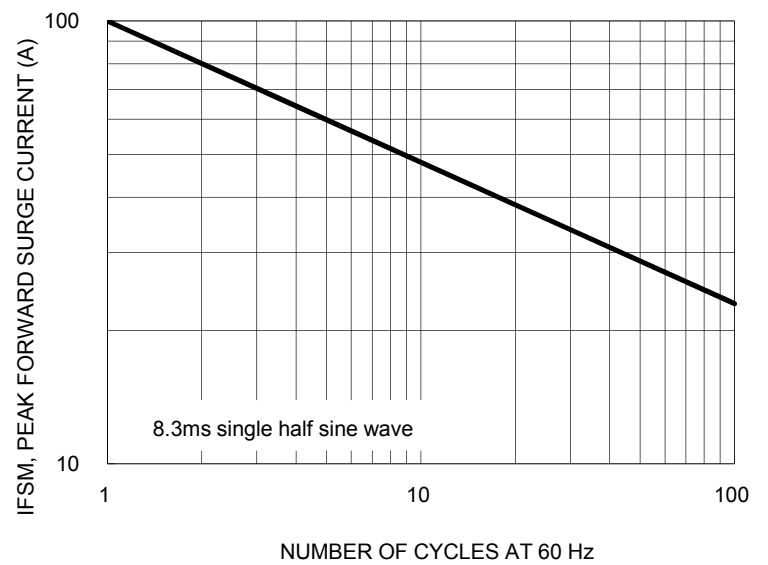
**FIG. 2 PULSE DERATING CURVE**



**FIG. 3 CLAMPING POWER PULSE WAVEFORM**



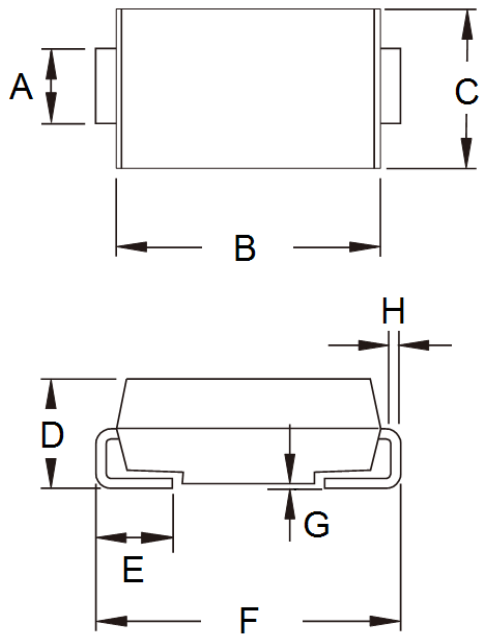
**FIG. 4 MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL ONLY**



| Device     |             | Device Marking Code |     | Breakdown Voltage $V_{BR}$ (V) |      | Test Current $I_T$ (mA) | Stand-Off Voltage $V_{WM}$ (V) | Maximum Reverse Leakage @ $V_{WM}$ $I_R$ ( $\mu$ A) | Maximum Peak Pulse Current $I_{PPM}$ (A) | Maximum Clamping Voltage @ $I_{PPM}$ $V_C$ (V) |
|------------|-------------|---------------------|-----|--------------------------------|------|-------------------------|--------------------------------|---|--|--|
| UNI        | BI          | UNI                 | BI  | Min                            | Max  |                         |                                |   |  |  |
| SMB10J9.0A | SMB10J9.0CA | 1KV                 | KVC | 10.0                           | 11.1 | 1                       | 9                              | 10  | 64.9                                     | 15.4   |
| SMB10J10A  | SMB10J10CA  | 1KX                 | KXC | 11.1                           | 12.3 | 1                       | 10                             | 8   | 58.8                                     | 17.0   |
| SMB10J11A  | SMB10J11CA  | 1KZ                 | KZC | 12.2                           | 13.5 | 1                       | 11                             | 5   | 54.9                                     | 18.2   |
| SMB10J12A  | SMB10J12CA  | 1LE                 | LEC | 13.3                           | 14.7 | 1                       | 12                             | 5   | 50.3                                     | 19.9   |
| SMB10J13A  | SMB10J13CA  | 1LG                 | LGC | 14.4                           | 15.9 | 1                       | 13                             | 5   | 46.5                                     | 21.5   |
| SMB10J14A  | SMB10J14CA  | 1LK                 | LKC | 15.6                           | 17.2 | 1                       | 14                             | 5   | 43.1                                     | 23.2   |
| SMB10J15A  | SMB10J15CA  | 1LM                 | LMC | 16.7                           | 18.5 | 1                       | 15                             | 1   | 41.0                                     | 24.4   |
| SMB10J16A  | SMB10J16CA  | 1LP                 | LPC | 17.8                           | 19.7 | 1                       | 16                             | 1   | 38.5                                     | 26.0   |
| SMB10J17A  | SMB10J17CA  | 1LR                 | LRC | 18.9                           | 20.9 | 1                       | 17                             | 1   | 36.2                                     | 27.6   |
| SMB10J18A  | SMB10J18CA  | 1LT                 | LTC | 20.0                           | 22.1 | 1                       | 18                             | 1   | 34.2                                     | 29.2   |
| SMB10J20A  | SMB10J20CA  | 1LV                 | LVC | 22.2                           | 24.5 | 1                       | 20                             | 1   | 30.9                                     | 32.4   |
| SMB10J22A  | SMB10J22CA  | 1LX                 | LXC | 24.4                           | 26.9 | 1                       | 22                             | 1   | 28.2                                     | 35.5   |
| SMB10J24A  | SMB10J24CA  | 1LZ                 | LZC | 26.7                           | 29.5 | 1                       | 24                             | 1   | 25.7                                     | 38.9   |
| SMB10J26A  | SMB10J26CA  | 1ME                 | MEC | 28.9                           | 31.9 | 1                       | 26                             | 1   | 23.8                                     | 42.1   |
| SMB10J28A  | SMB10J28CA  | 1MG                 | MGC | 31.1                           | 34.4 | 1                       | 28                             | 1   | 22.0                                     | 45.4   |
| SMB10J30A  | SMB10J30CA  | 1MK                 | MKC | 33.3                           | 36.8 | 1                       | 30                             | 1   | 20.7                                     | 48.4   |
| SMB10J33A  | SMB10J33CA  | 1MM                 | MMC | 36.7                           | 40.6 | 1                       | 33                             | 1   | 18.8                                     | 53.3   |
| SMB10J36A  | SMB10J36CA  | 1MP                 | MPC | 40.0                           | 44.2 | 1                       | 36                             | 1   | 17.2                                     | 58.1   |
| SMB10J40A  | SMB10J40CA  | 1MR                 | MRC | 44.4                           | 49.1 | 1                       | 40                             | 1   | 15.5                                     | 64.5   |

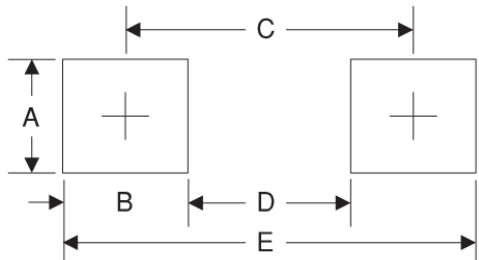
PACKAGE OUTLINE DIMENSIONS

**DO-214AA (SMB)**



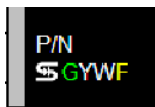
| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min       | Max  | Min         | Max   |
| A    | 1.95      | 2.10 | 0.077       | 0.083 |
| B    | 4.25      | 4.75 | 0.167       | 0.187 |
| C    | 3.48      | 3.73 | 0.137       | 0.147 |
| D    | 1.99      | 2.61 | 0.078       | 0.103 |
| E    | 0.90      | 1.41 | 0.035       | 0.056 |
| F    | 5.10      | 5.30 | 0.201       | 0.209 |
| G    | 0.10      | 0.20 | 0.004       | 0.008 |
| H    | 0.15      | 0.31 | 0.006       | 0.012 |

SUGGESTED PAD LAYOUT



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 2.3       | 0.091       |
| B      | 2.5       | 0.098       |
| C      | 4.3       | 0.169       |
| D      | 1.8       | 0.071       |
| E      | 6.8       | 0.268       |

MARKING DIAGRAM



- P/N = Specific Device Code
- G = Green Compound
- YW = Date Code
- F = Factory Code

Note: Cathode band for uni-directional products only

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