

## Silicon Avalanche Diodes

### 1000W Surface Mount Transient Voltage Suppressor

#### RoHS 1KSMBJ Series



The 1KSMBJ range of surface mount protectors utilizes the proven glass passivated technology used in many Littelfuse product portfolios. Rated at 1000 watts (10 x 1000  $\mu$ s double exponential waveform), the 1KSMBJ bridges the gap left by traditional types rated at 600 watts and 1500 watts, suiting many applications where both power handling and size are paramount. The extremely fast turn-on time (less than one pico second), coupled with the low clamping factor and low on-state impedance, make this range ideal for the protection of today's circuits. Our specially selected range of voltages has been chosen to fulfill optimum protection for use in automotive and telecom applications.

#### FEATURES

- RoHS Compliant
- Available in breakdown voltages from 6.8v. to 160v; specially designed for automotive applications
- Response time:  $1 \times 10^{-12}$  secs (theoretical)
- Glass passivated junction
- Offers high-surge rating in compact package: bridges the gap between 600W and 1.5KW
- Forward surge rating:  
100A 8.3ms single half sine wave
- 100% tested
- Operating temperature: -55°C to +150°C

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

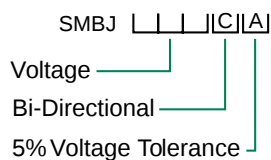
**Agency File Numbers:** E128662



#### Mechanical Specifications:

|                            |                                                                                      |
|----------------------------|--------------------------------------------------------------------------------------|
| <b>Weight:</b>             | 0.093 grammes (approx)                                                               |
| <b>Case:</b>               | DO-214AA Outline moulded plastic over glass passivated junction. UL 94 V-0 rated     |
| <b>Terminals:</b>          | Solderable to MIL-STD-750 Method 2026                                                |
| <b>Solderable Leads:</b>   | 23°C for 10 seconds                                                                  |
| <b>Marking:</b>            | Cathode band, device code logo                                                       |
| <b>Standard Packaging:</b> | Supplied on reels of 3000 pieces. Tape width 12mm. Follows requirements of EIA 481-1 |

#### ORDERING INFORMATION



Tape and reeled (3000 pcs)

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#### ELECTRICAL SPECIFICATION @ Tamb 25°C

| Part Number | Device Code | Reverse Stand Off Voltage<br>V <sub>R</sub> | Breakdown Voltage<br>V <sub>BR</sub> (Volts) @ I <sub>T</sub> |      |                     | Maximum Reverse Leakage<br>I <sub>R</sub> @ V <sub>R</sub> | Maximum Clamping Voltage<br>V <sub>C</sub> @ I <sub>PP</sub> | Maximum Peak Pulse Current<br>I <sub>PP</sub> |
|-------------|-------------|---------------------------------------------|---------------------------------------------------------------|------|---------------------|------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------|
|             |             | (Volts)                                     | MIN                                                           | MAX  | I <sub>T</sub> (mA) | (μA)                                                       | (Volts)                                                      | (A)                                           |
| 1KSMBJ 6.8  | N10A        | 5.50                                        | 6.12                                                          | 7.46 | 10.0                | 1000.0 (4)                                                 | 10.8                                                         | 92.5                                          |
| 1KSMBJ 6.8A | N10B        | 5.80                                        | 6.45                                                          | 7.14 | 10.0                | 1000.0 (4)                                                 | 10.5                                                         | 95.0                                          |
| 1KSMBJ 7.5  | N10C        | 6.05                                        | 6.75                                                          | 8.25 | 10.0                | 500.0 (4)                                                  | 11.7                                                         | 85.0                                          |
| 1KSMBJ 7.5A | N10D        | 6.40                                        | 7.13                                                          | 7.88 | 10.0                | 500.0 (4)                                                  | 11.3                                                         | 88.3                                          |
| 1KSMBJ 8.2  | N10E        | 6.63                                        | 7.38                                                          | 9.02 | 10.0                | 200.0 (4)                                                  | 12.5                                                         | 80.0                                          |
| 1KSMBJ 8.2A | N10F        | 7.02                                        | 7.79                                                          | 8.61 | 10.0                | 200.0 (4)                                                  | 12.1                                                         | 83.3                                          |
| 1KSMBJ 9.1  | N10G        | 7.37                                        | 8.19                                                          | 10.0 | 1.0                 | 50.0 (4)                                                   | 13.8                                                         | 73.3                                          |
| 1KSMBJ 9.1A | N10H        | 7.78                                        | 8.65                                                          | 9.55 | 1.0                 | 50.0 (4)                                                   | 13.4                                                         | 75.0                                          |
| 1KSMBJ 10   | N10I        | 8.10                                        | 9.00                                                          | 11.0 | 1.0                 | 10.0 (4)                                                   | 15.0                                                         | 66.7                                          |
| 1KSMBJ 10A  | N10J        | 8.55                                        | 9.50                                                          | 10.5 | 1.0                 | 10.0 (4)                                                   | 14.5                                                         | 68.3                                          |
| 1KSMBJ 11   | N10K        | 8.92                                        | 9.90                                                          | 12.1 | 1.0                 | 5.0 (4)                                                    | 16.2                                                         | 61.7                                          |
| 1KSMBJ 11A  | N10L        | 9.40                                        | 10.5                                                          | 11.6 | 1.0                 | 5.0 (4)                                                    | 15.6                                                         | 63.3                                          |
| 1KSMBJ 12   | N10M        | 9.72                                        | 10.80                                                         | 13.2 | 1.0                 | 5.0 (4)                                                    | 17.3                                                         | 58.3                                          |
| 1KSMBJ 12A  | N10N        | 10.2                                        | 11.4                                                          | 12.6 | 1.0                 | 5.0                                                        | 16.7                                                         | 60.0                                          |
| 1KSMBJ 13   | N10O        | 10.5                                        | 11.7                                                          | 14.3 | 1.0                 | 5.0                                                        | 19.0                                                         | 53.3                                          |
| 1KSMBJ 13A  | N10P        | 11.1                                        | 12.4                                                          | 13.7 | 1.0                 | 5.0                                                        | 18.2                                                         | 55.0                                          |
| 1KSMBJ 15   | N10Q        | 12.1                                        | 13.5                                                          | 16.5 | 1.0                 | 5.0                                                        | 22.0                                                         | 45.0                                          |
| 1KSMBJ 15A  | N10R        | 12.8                                        | 14.3                                                          | 15.8 | 1.0                 | 5.0                                                        | 21.2                                                         | 46.7                                          |
| 1KSMBJ 16   | N10S        | 12.9                                        | 14.4                                                          | 17.6 | 1.0                 | 5.0                                                        | 23.5                                                         | 43.3                                          |
| 1KSMBJ 16A  | N10T        | 13.6                                        | 15.2                                                          | 16.8 | 1.0                 | 5.0                                                        | 22.5                                                         | 45.0                                          |
| 1KSMBJ 18   | N10U        | 14.5                                        | 16.2                                                          | 19.8 | 1.0                 | 5.0                                                        | 26.5                                                         | 38.0                                          |
| 1KSMBJ 18A  | N10V        | 15.3                                        | 17.1                                                          | 18.9 | 1.0                 | 5.0                                                        | 25.2                                                         | 40.0                                          |
| 1KSMBJ 20   | N10W        | 16.2                                        | 18.0                                                          | 22.0 | 1.0                 | 5.0                                                        | 29.1                                                         | 35.0                                          |
| 1KSMBJ 20A  | N10X        | 17.1                                        | 19.0                                                          | 21.0 | 1.0                 | 5.0                                                        | 27.7                                                         | 36.7                                          |
| 1KSMBJ 22   | N10Y        | 17.8                                        | 19.8                                                          | 24.2 | 1.0                 | 5.0                                                        | 31.9                                                         | 31.7                                          |
| 1KSMBJ 22A  | N10Z        | 18.8                                        | 20.9                                                          | 23.1 | 1.0                 | 5.0                                                        | 30.6                                                         | 33.3                                          |
| 1KSMBJ 24   | O10A        | 19.4                                        | 21.6                                                          | 26.4 | 1.0                 | 5.0                                                        | 34.7                                                         | 28.3                                          |
| 1KSMBJ 24A  | O10B        | 20.5                                        | 22.8                                                          | 25.2 | 1.0                 | 5.0                                                        | 33.2                                                         | 30.0                                          |
| 1KSMBJ 27   | O10C        | 21.8                                        | 24.3                                                          | 29.7 | 1.0                 | 5.0                                                        | 39.1                                                         | 25.5                                          |
| 1KSMBJ 27A  | O10D        | 23.1                                        | 25.7                                                          | 28.4 | 1.0                 | 5.0                                                        | 37.5                                                         | 26.7                                          |
| 1KSMBJ 30   | O10E        | 24.3                                        | 27.0                                                          | 33.0 | 1.0                 | 5.0                                                        | 43.5                                                         | 22.9                                          |
| 1KSMBJ 30A  | O10F        | 25.6                                        | 28.5                                                          | 31.5 | 1.0                 | 5.0                                                        | 41.4                                                         | 24.0                                          |
| 1KSMBJ 33   | O10G        | 26.8                                        | 29.7                                                          | 36.3 | 1.0                 | 5.0                                                        | 47.7                                                         | 21.0                                          |
| 1KSMBJ 33A  | O10H        | 28.2                                        | 31.4                                                          | 34.7 | 1.0                 | 5.0                                                        | 45.7                                                         | 22.0                                          |
| 1KSMBJ 36   | O10I        | 29.1                                        | 32.4                                                          | 39.6 | 1.0                 | 5.0                                                        | 52.0                                                         | 19.2                                          |
| 1KSMBJ 36A  | O10J        | 30.8                                        | 34.2                                                          | 37.8 | 1.0                 | 5.0                                                        | 49.9                                                         | 20.0                                          |

#### Notes:

1. All testing is performed at Tamb = 25°C (+/- 3°C)
2. Bv is measured using a pulse of 20 milliseconds or less
3. I<sub>R</sub> is doubled for Bi-directional devices only with V<sub>R</sub> equal or less than 10 volts
4. Peak Pulse Current is quoted @ 10/1000 μsec
5. All parameters are stated as tested on a FET Tester Model 3400
6. Devices are uni-directional. V<sub>f</sub> is not specified.

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| Part Number | Device Code | Reverse Stand Off Voltage<br>V <sub>R</sub> | Breakdown Voltage<br>V <sub>BR</sub> (Volts) @ I <sub>T</sub> |       |                     | Maximum Reverse Leakage<br>I <sub>R</sub> @ V <sub>R</sub> | Maximum Clamping Voltage<br>V <sub>C</sub> @ I <sub>PP</sub> | Maximum Peak Pulse Current<br>I <sub>PP</sub> |
|-------------|-------------|---------------------------------------------|---------------------------------------------------------------|-------|---------------------|------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------|
|             |             | (Volts)                                     | MIN                                                           | MAX   | I <sub>T</sub> (mA) | (μA)                                                       | (Volts)                                                      | (A)                                           |
| 1KSMBJ 39   | O10K        | 31.6                                        | 35.1                                                          | 42.9  | 1.0                 | 5.0                                                        | 56.4                                                         | 17.5                                          |
| 1KSMBJ 39A  | O10L        | 33.3                                        | 37.1                                                          | 41.0  | 1.0                 | 5.0                                                        | 53.9                                                         | 18.7                                          |
| 1KSMBJ 43   | O10M        | 34.8                                        | 38.7                                                          | 47.3  | 1.0                 | 5.0                                                        | 61.9                                                         | 16.0                                          |
| 1KSMBJ 43A  | O10N        | 36.8                                        | 40.9                                                          | 45.2  | 1.0                 | 5.0                                                        | 59.3                                                         | 16.8                                          |
| 1KSMBJ 47   | O10O        | 38.1                                        | 42.3                                                          | 51.7  | 1.0                 | 5.0                                                        | 67.8                                                         | 14.8                                          |
| 1KSMBJ 47A  | O10P        | 40.2                                        | 44.7                                                          | 49.4  | 1.0                 | 5.0                                                        | 64.8                                                         | 15.5                                          |
| 1KSMBJ 51   | O10Q        | 41.3                                        | 45.9                                                          | 56.1  | 1.0                 | 5.0                                                        | 73.5                                                         | 13.7                                          |
| 1KSMBJ 51A  | O10R        | 43.6                                        | 48.5                                                          | 53.6  | 1.0                 | 5.0                                                        | 70.1                                                         | 14.3                                          |
| 1KSMBJ 56   | O10S        | 45.4                                        | 50.4                                                          | 61.6  | 1.0                 | 5.0                                                        | 80.5                                                         | 12.3                                          |
| 1KSMBJ 56A  | O10T        | 47.8                                        | 53.2                                                          | 58.8  | 1.0                 | 5.0                                                        | 77.0                                                         | 13.0                                          |
| 1KSMBJ 62   | O10U        | 50.2                                        | 55.8                                                          | 68.2  | 1.0                 | 5.0                                                        | 89.0                                                         | 11.3                                          |
| 1KSMBJ 62A  | O10V        | 53.0                                        | 58.9                                                          | 65.1  | 1.0                 | 5.0                                                        | 85.0                                                         | 11.8                                          |
| 1KSMBJ 68   | O10W        | 55.1                                        | 61.2                                                          | 74.8  | 1.0                 | 5.0                                                        | 98.0                                                         | 10.2                                          |
| 1KSMBJ 68A  | O10X        | 58.1                                        | 64.6                                                          | 71.4  | 1.0                 | 5.0                                                        | 92.0                                                         | 10.8                                          |
| 1KSMBJ 75   | O10Y        | 60.7                                        | 67.5                                                          | 82.5  | 1.0                 | 5.0                                                        | 108.0                                                        | 9.2                                           |
| 1KSMBJ 75A  | O10Z        | 64.1                                        | 71.3                                                          | 78.8  | 1.0                 | 5.0                                                        | 103.0                                                        | 9.7                                           |
| 1KSMBJ 82   | P10A        | 66.4                                        | 73.8                                                          | 90.2  | 1.0                 | 5.0                                                        | 118.0                                                        | 8.5                                           |
| 1KSMBJ 82A  | P10B        | 70.1                                        | 77.9                                                          | 86.1  | 1.0                 | 5.0                                                        | 113.0                                                        | 8.8                                           |
| 1KSMBJ 91   | P10C        | 73.7                                        | 81.9                                                          | 100.0 | 1.0                 | 5.0                                                        | 131.0                                                        | 7.5                                           |
| 1KSMBJ 91A  | P10D        | 77.8                                        | 86.5                                                          | 95.5  | 1.0                 | 5.0                                                        | 125.0                                                        | 8.0                                           |
| 1KSMBJ 100  | P10E        | 81.0                                        | 90.0                                                          | 110.0 | 1.0                 | 5.0                                                        | 144.0                                                        | 7.0                                           |
| 1KSMBJ 100A | P10F        | 85.5                                        | 95.0                                                          | 105.0 | 1.0                 | 5.0                                                        | 137.0                                                        | 7.3                                           |
| 1KSMBJ 110  | P10G        | 89.2                                        | 99.0                                                          | 121.0 | 1.0                 | 5.0                                                        | 158.0                                                        | 6.3                                           |
| 1KSMBJ 110A | P10H        | 94.0                                        | 105.0                                                         | 116.0 | 1.0                 | 5.0                                                        | 152.0                                                        | 6.6                                           |
| 1KSMBJ 120  | P10I        | 97.2                                        | 108.0                                                         | 132.0 | 1.0                 | 5.0                                                        | 173.0                                                        | 5.8                                           |
| 1KSMBJ 120A | P10J        | 102.0                                       | 114.0                                                         | 126.0 | 1.0                 | 5.0                                                        | 165.0                                                        | 6.1                                           |
| 1KSMBJ 130  | P10K        | 105.0                                       | 117.0                                                         | 143.0 | 1.0                 | 5.0                                                        | 187.0                                                        | 5.3                                           |
| 1KSMBJ 130A | P10L        | 111.0                                       | 124.0                                                         | 137.0 | 1.0                 | 5.0                                                        | 179.0                                                        | 5.6                                           |
| 1KSMBJ 150  | P10M        | 121.0                                       | 135.0                                                         | 165.0 | 1.0                 | 5.0                                                        | 215.0                                                        | 4.7                                           |
| 1KSMBJ 150A | P10N        | 128.0                                       | 143.0                                                         | 158.0 | 1.0                 | 5.0                                                        | 207.0                                                        | 4.8                                           |
| 1KSMBJ 160  | P10O        | 130.0                                       | 144.0                                                         | 176.0 | 1.0                 | 5.0                                                        | 230.0                                                        | 4.3                                           |
| 1KSMBJ 160A | P10P        | 136.0                                       | 152.0                                                         | 168.0 | 1.0                 | 5.0                                                        | 219.0                                                        | 4.6                                           |

#### Notes:

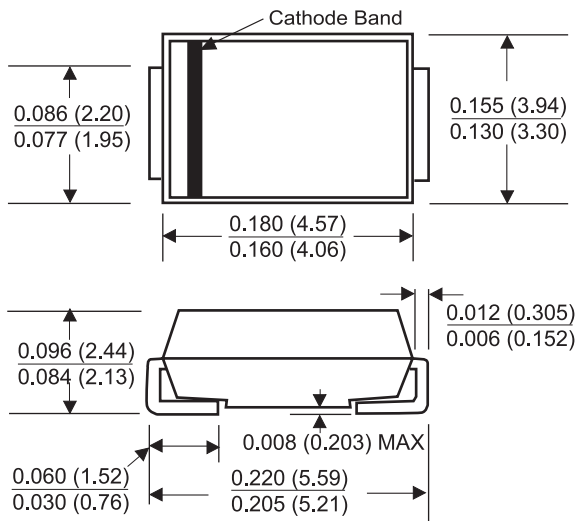
1. All testing is performed at Tamb = 25°C (+/- 3°C)
2. Bv is measured using a pulse of 20 milliseconds or less
3. I<sub>R</sub> is doubled for Bi-directional devices only with V<sub>R</sub> equal or less than 10 volts
4. Peak Pulse Current is quoted @ 10/1000 μsec
5. All parameters are stated as tested on a FET Tester Model 3400
6. V<sub>f</sub>, for uni-directional devices, is measured using a 300 microsecond square wave pulse @ I<sub>T</sub> = 50A

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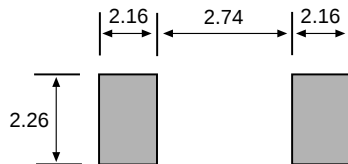
### 1000W Surface Mount Transient Voltage Suppressor

#### RoHS 1KSMBJ Series

DO-214AA (SMB J-Bend)



Dimensions in inches and (millimeters)



Solder Pads

All dimensions in mm