

# 5.0SMLJ11A THRU 5.0SMLJ170CA

## Transient Voltage Suppressor 11 to 170 Volts 5000 Watt

### Features

- Halogen free available upon request by adding suffix "-HF"
- For surface mount application in order to optimize board space
- Low profile package
- Lead Free Finish/Rohs Compliant (Note1) ("P" Suffix designates Compliant. See ordering information)
- Glass passivated junction
- Excellent clamping capability
- Repetition Rate( duty cycle): 0.01%
- Fast response time: typical less than 1ps from 0V to BV min
- Typical I<sub>D</sub> less than 1uA above 10V
- High temperature soldering: 260°C/10 seconds at terminals
- Low Inductance
- Built in strain relief
- UL Recognized File # E331408

### Mechanical Data

- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Terminals: solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes positive end( cathode) except Bi-directional types.
- Standard packaging: 16mm tape per ( EIA 481).
- Weight: 0.007 ounce, 0.21 gram

### Maximum Ratings @ 25°C Unless Otherwise Specified

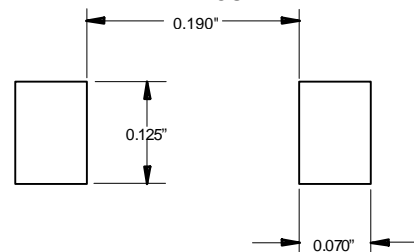
|                                                                 |                                   |                 |       |
|-----------------------------------------------------------------|-----------------------------------|-----------------|-------|
| Peak Pulse Current on 10/1000us waveform(Note2)                 | I <sub>PPM</sub>                  | See page 2,3    | Amps  |
| Peak Pulse Power Dissipation on 10/1000us waveform(Note2,3)     | P <sub>PPM</sub>                  | Minimum 5000    | Watts |
| Power Dissipation on infinite heat sink at T <sub>L</sub> =75°C | P <sub>D</sub>                    | 6.5             | Watts |
| Peak forward surge current (JEDEC Method) (Note 3,4)            | I <sub>FSM</sub>                  | 300.0           | Amps  |
| Operation And Storage Temperature Range                         | T <sub>J</sub> , T <sub>STG</sub> | -55°C to +175°C |       |

### DO-214AB (SMCJ) (LEAD FRAME)



| DIM | INCHES |      | MM    |       | NOTE |
|-----|--------|------|-------|-------|------|
|     | MIN    | MAX  | MIN   | MAX   |      |
| A   | .079   | .103 | 2.00  | 2.62  |      |
| B   | .115   | .121 | 2.92  | 3.07  |      |
| C   | .002   | .008 | 0.051 | 0.203 |      |
| D   | .006   | .012 | 0.152 | 0.305 |      |
| E   | .030   | .050 | 0.76  | 1.27  |      |
| F   | .305   | .320 | 7.75  | 8.13  |      |
| G   | .260   | .280 | 6.60  | 7.11  |      |
| H   | .220   | .245 | 5.59  | 6.22  |      |

### SUGGESTED SOLDER PAD LAYOUT



- Note:
1. High Temperature Solder Exemptions Applied, see EU Directive Annex 7.
  2. Non-repetitive current pulse and derated above TA=25°C
  3. Mounted on 8.0mm<sup>2</sup> copper pads to each terminal.
  4. 8.3ms, single half sine-wave or equivalent square wave, duty cycle=4 pulses per. Minutes maximum.

# 5.0SMLJ11A~ 5.0SMLJ170A

| PART NUMBER  | REVERSE<br>STAND- OFF<br>VOLTAGE<br>$V_{RWM}(V)$ | BREAKDOWN<br>VOLTAGE<br>$V_{BR}(V)$<br>MIN.@IT | BREAKDOWN<br>VOLTAGE<br>$V_{BR}(V)$<br>MAX.@IT | TEST<br>CURRENT<br>$I_T$ (mA) | MAXIMUM<br>CLAMPING<br>VOLTAGE<br>@Ipp | PEAK PULSE<br>CURRENT<br>Ipp (A) | REVERSE<br>LEAKAGE<br>@ $V_{RWM}$ | DEVICE<br>MARKING<br>CODE |
|--------------|--------------------------------------------------|------------------------------------------------|------------------------------------------------|-------------------------------|----------------------------------------|----------------------------------|-----------------------------------|---------------------------|
|              |                                                  |                                                |                                                |                               | $V_C(V)$                               |                                  | $I_D(\mu A)$                      |                           |
| 5.0SMLJ 11A  | 11                                               | 12.2                                           | 13.5                                           | 10                            | 18.2                                   | 275                              | 800                               | 5PEN                      |
| 5.0SMLJ 12A  | 12                                               | 13.3                                           | 14.7                                           | 10                            | 19.9                                   | 252                              | 800                               | 5PEP                      |
| 5.0SMLJ 13A  | 13                                               | 14.4                                           | 15.9                                           | 10                            | 21.5                                   | 233                              | 500                               | 5PEQ                      |
| 5.0SMLJ 14A  | 14                                               | 15.6                                           | 17.2                                           | 10                            | 23.2                                   | 216                              | 200                               | 5PER                      |
| 5.0SMLJ 15A  | 15                                               | 16.7                                           | 18.5                                           | 1                             | 24.4                                   | 205                              | 100                               | 5PES                      |
| 5.0SMLJ 16A  | 16                                               | 17.8                                           | 19.7                                           | 1                             | 26                                     | 193                              | 50                                | 5PET                      |
| 5.0SMLJ 17A  | 17                                               | 18.9                                           | 20.9                                           | 1                             | 27.6                                   | 181                              | 20                                | 5PEU                      |
| 5.0SMLJ 18A  | 18                                               | 20                                             | 22.1                                           | 1                             | 29.2                                   | 172                              | 10                                | 5PEV                      |
| 5.0SMLJ 20A  | 20                                               | 22.2                                           | 24.5                                           | 1                             | 32.4                                   | 155                              | 5                                 | 5PEW                      |
| 5.0SMLJ 22A  | 22                                               | 24.4                                           | 26.9                                           | 1                             | 35.5                                   | 141                              | 5                                 | 5PEX                      |
| 5.0SMLJ 24A  | 24                                               | 26.7                                           | 29.5                                           | 1                             | 38.9                                   | 129                              | 5                                 | 5PEZ                      |
| 5.0SMLJ 26A  | 26                                               | 28.9                                           | 31.9                                           | 1                             | 42.1                                   | 119                              | 5                                 | 5PFE                      |
| 5.0SMLJ 28A  | 28                                               | 31.1                                           | 34.4                                           | 1                             | 45.4                                   | 110                              | 5                                 | 5PFG                      |
| 5.0SMLJ 30A  | 30                                               | 33.3                                           | 36.8                                           | 1                             | 48.4                                   | 103                              | 5                                 | 5PFK                      |
| 5.0SMLJ 33A  | 33                                               | 36.7                                           | 40.6                                           | 1                             | 53.3                                   | 93.9                             | 5                                 | 5PFM                      |
| 5.0SMLJ 36A  | 36                                               | 40                                             | 44.2                                           | 1                             | 58.1                                   | 86.1                             | 5                                 | 5PFP                      |
| 5.0SMLJ 40A  | 40                                               | 44.4                                           | 49.1                                           | 1                             | 64.5                                   | 77.6                             | 5                                 | 5PFR                      |
| 5.0SMLJ 43A  | 43                                               | 47.8                                           | 52.8                                           | 1                             | 69.4                                   | 72.1                             | 5                                 | 5PFT                      |
| 5.0SMLJ 45A  | 45                                               | 50                                             | 55.3                                           | 1                             | 72.7                                   | 68.8                             | 5                                 | 5PFV                      |
| 5.0SMLJ 48A  | 48                                               | 53.3                                           | 58.9                                           | 1                             | 77.4                                   | 64.7                             | 5                                 | 5PFX                      |
| 5.0SMLJ 51A  | 51                                               | 56.7                                           | 62.7                                           | 1                             | 82.4                                   | 60.7                             | 5                                 | 5PFZ                      |
| 5.0SMLJ 54A  | 54                                               | 60                                             | 66.3                                           | 1                             | 87.1                                   | 57.5                             | 5                                 | 5RGE                      |
| 5.0SMLJ 58A  | 58                                               | 64.4                                           | 71.2                                           | 1                             | 93.6                                   | 53.5                             | 5                                 | 5PGG                      |
| 5.0SMLJ 60A  | 60                                               | 66.7                                           | 73.7                                           | 1                             | 96.8                                   | 51.7                             | 5                                 | 5PGK                      |
| 5.0SMLJ 64A  | 64                                               | 71.1                                           | 78.6                                           | 1                             | 103                                    | 48.6                             | 5                                 | 5PGM                      |
| 5.0SMLJ 70A  | 70                                               | 77.8                                           | 86                                             | 1                             | 113                                    | 44.3                             | 5                                 | 5PGP                      |
| 5.0SMLJ 75A  | 75                                               | 83.3                                           | 92.1                                           | 1                             | 121                                    | 41.4                             | 5                                 | 5PGR                      |
| 5.0SMLJ 78A  | 78                                               | 86.7                                           | 95.8                                           | 1                             | 126                                    | 39.7                             | 5                                 | 5PGT                      |
| 5.0SMLJ 85A  | 85                                               | 94.4                                           | 104                                            | 1                             | 137                                    | 36.5                             | 5                                 | 5PGV                      |
| 5.0SMLJ 90A  | 90                                               | 100                                            | 111                                            | 1                             | 146                                    | 34.3                             | 5                                 | 5PGX                      |
| 5.0SMLJ 100A | 100                                              | 111                                            | 123                                            | 1                             | 162                                    | 30.9                             | 5                                 | 5PGZ                      |
| 5.0SMLJ 110A | 110                                              | 122                                            | 135                                            | 1                             | 177                                    | 28.3                             | 5                                 | 5PHE                      |
| 5.0SMLJ 120A | 120                                              | 133                                            | 147                                            | 1                             | 193                                    | 26                               | 5                                 | 5PHG                      |
| 5.0SMLJ 130A | 130                                              | 144                                            | 159                                            | 1                             | 209                                    | 24                               | 5                                 | 5PHK                      |
| 5.0SMLJ 150A | 150                                              | 167                                            | 185                                            | 1                             | 243                                    | 20.6                             | 5                                 | 5PHM                      |
| 5.0SMLJ 160A | 160                                              | 178                                            | 197                                            | 1                             | 259                                    | 19.3                             | 5                                 | 5PHP                      |
| 5.0SMLJ 170A | 170                                              | 189                                            | 209                                            | 1                             | 275                                    | 18.2                             | 5                                 | 5PHR                      |

# 5.0SMLJ11CA~5.0SMLJ170CA

| PART NUMBER   | REVERSE STAND- OFF VOLTAGE $V_{RWM}(V)$ | BREAKDOWN VOLTAGE $V_{BR}(V)$ MIN.@IT | BREAKDOWN VOLTAGE $V_{BR}(V)$ MAX.@IT | TEST CURRENT $I_T$ (mA) | MAXIMUM CLAMPING VOLTAGE @Ipp | PEAK PULSE CURRENT Ipp (A) | REVERSE LEAKAGE @ $V_{RWM}$ | DEVICE MARKING CODE |
|---------------|-----------------------------------------|---------------------------------------|---------------------------------------|-------------------------|-------------------------------|----------------------------|-----------------------------|---------------------|
|               |                                         |                                       |                                       |                         | $V_C(V)$                      |                            | $I_D(\mu A)$                |                     |
| 5.0SMLJ 11CA  | 11                                      | 12.2                                  | 13.5                                  | 10                      | 18.2                          | 275                        | 800                         | 5BEN                |
| 5.0SMLJ 12CA  | 12                                      | 13.3                                  | 14.7                                  | 10                      | 19.9                          | 252                        | 800                         | 5BEP                |
| 5.0SMLJ 13CA  | 13                                      | 14.4                                  | 15.9                                  | 10                      | 21.5                          | 233                        | 500                         | 5BEQ                |
| 5.0SMLJ 14CA  | 14                                      | 15.6                                  | 17.2                                  | 10                      | 23.2                          | 216                        | 200                         | 5BER                |
| 5.0SMLJ 15CA  | 15                                      | 16.7                                  | 18.5                                  | 1                       | 24.4                          | 205                        | 100                         | 5BES                |
| 5.0SMLJ 16CA  | 16                                      | 17.8                                  | 19.7                                  | 1                       | 26                            | 193                        | 50                          | 5BET                |
| 5.0SMLJ 17CA  | 17                                      | 18.9                                  | 20.9                                  | 1                       | 27.6                          | 181                        | 20                          | 5BEU                |
| 5.0SMLJ 18CA  | 18                                      | 20                                    | 22.1                                  | 1                       | 29.2                          | 172                        | 10                          | 5BEV                |
| 5.0SMLJ 20CA  | 20                                      | 22.2                                  | 24.5                                  | 1                       | 32.4                          | 155                        | 5                           | 5BEW                |
| 5.0SMLJ 22CA  | 22                                      | 24.4                                  | 26.9                                  | 1                       | 35.5                          | 141                        | 5                           | 5BEX                |
| 5.0SMLJ 24CA  | 24                                      | 26.7                                  | 29.5                                  | 1                       | 38.9                          | 129                        | 5                           | 5BEZ                |
| 5.0SMLJ 26CA  | 26                                      | 28.9                                  | 31.9                                  | 1                       | 42.1                          | 119                        | 5                           | 5BFE                |
| 5.0SMLJ 28CA  | 28                                      | 31.1                                  | 34.4                                  | 1                       | 45.4                          | 110                        | 5                           | 5BFG                |
| 5.0SMLJ 30CA  | 30                                      | 33.3                                  | 36.8                                  | 1                       | 48.4                          | 103                        | 5                           | 5BFK                |
| 5.0SMLJ 33CA  | 33                                      | 36.7                                  | 40.6                                  | 1                       | 53.3                          | 93.9                       | 5                           | 5BFM                |
| 5.0SMLJ 36CA  | 36                                      | 40                                    | 44.2                                  | 1                       | 58.1                          | 86.1                       | 5                           | 5BFP                |
| 5.0SMLJ 40CA  | 40                                      | 44.4                                  | 49.1                                  | 1                       | 64.5                          | 77.6                       | 5                           | 5BFR                |
| 5.0SMLJ 43CA  | 43                                      | 47.8                                  | 52.8                                  | 1                       | 69.4                          | 72.1                       | 5                           | 5BFT                |
| 5.0SMLJ 45CA  | 45                                      | 50                                    | 55.3                                  | 1                       | 72.7                          | 68.8                       | 5                           | 5BFV                |
| 5.0SMLJ 48CA  | 48                                      | 53.3                                  | 58.9                                  | 1                       | 77.4                          | 64.7                       | 5                           | 5BFX                |
| 5.0SMLJ 51CA  | 51                                      | 56.7                                  | 62.7                                  | 1                       | 82.4                          | 60.7                       | 5                           | 5BFZ                |
| 5.0SMLJ 54CA  | 54                                      | 60                                    | 66.3                                  | 1                       | 87.1                          | 57.5                       | 5                           | 5BGE                |
| 5.0SMLJ 58CA  | 58                                      | 64.4                                  | 71.2                                  | 1                       | 93.6                          | 53.5                       | 5                           | 5BGG                |
| 5.0SMLJ 60CA  | 60                                      | 66.7                                  | 73.7                                  | 1                       | 96.8                          | 51.7                       | 5                           | 5BGK                |
| 5.0SMLJ 64CA  | 64                                      | 71.1                                  | 78.6                                  | 1                       | 103                           | 48.6                       | 5                           | 5BGM                |
| 5.0SMLJ 70CA  | 70                                      | 77.8                                  | 86                                    | 1                       | 113                           | 44.3                       | 5                           | 5BGP                |
| 5.0SMLJ 75CA  | 75                                      | 83.3                                  | 92.1                                  | 1                       | 121                           | 41.4                       | 5                           | 5BGR                |
| 5.0SMLJ 78CA  | 78                                      | 86.7                                  | 95.8                                  | 1                       | 126                           | 39.7                       | 5                           | 5BGT                |
| 5.0SMLJ 85CA  | 85                                      | 94.4                                  | 104                                   | 1                       | 137                           | 36.5                       | 5                           | 5BGV                |
| 5.0SMLJ 90CA  | 90                                      | 100                                   | 111                                   | 1                       | 146                           | 34.3                       | 5                           | 5BGX                |
| 5.0SMLJ 100CA | 100                                     | 111                                   | 123                                   | 1                       | 162                           | 30.9                       | 5                           | 5BGZ                |
| 5.0SMLJ 110CA | 110                                     | 122                                   | 135                                   | 1                       | 177                           | 28.3                       | 5                           | 5BHE                |
| 5.0SMLJ 120CA | 120                                     | 133                                   | 147                                   | 1                       | 193                           | 26                         | 5                           | 5BHG                |
| 5.0SMLJ 130CA | 130                                     | 144                                   | 159                                   | 1                       | 209                           | 24                         | 5                           | 5BHK                |
| 5.0SMLJ 150CA | 150                                     | 167                                   | 185                                   | 1                       | 243                           | 20.6                       | 5                           | 5BHM                |
| 5.0SMLJ 160CA | 160                                     | 178                                   | 197                                   | 1                       | 259                           | 19.3                       | 5                           | 5BHP                |
| 5.0SMLJ 170CA | 170                                     | 189                                   | 209                                   | 1                       | 275                           | 18.2                       | 5                           | 5BHR                |

For Bidirectional type having  $V_{rwm}$  of 20 volts and less, the  $I_r$  limit is double.

# 5.0SMLJ11CA~5.0SMLJ170CA

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

Figure 1 - Peak Pulse Power Rating Curve

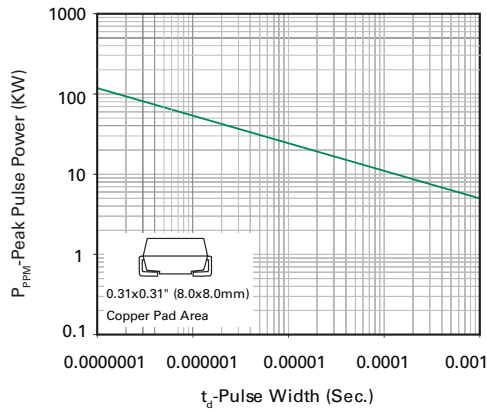


Figure 2 - Peak Pulse Power or Current Derating Curve vs Initial Junction Temperature

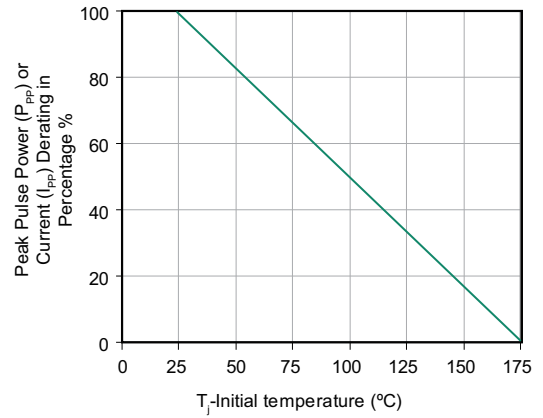


Figure 3 - Pulse Waveform

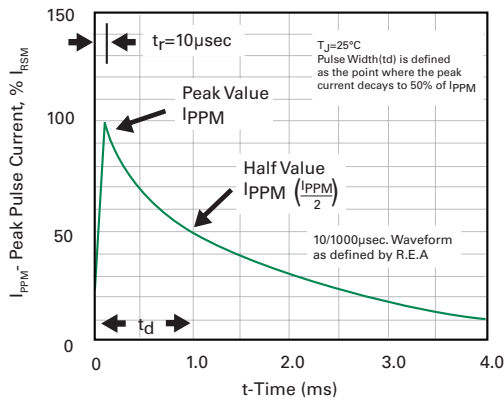


Figure 4 - Typical Junction Capacitance

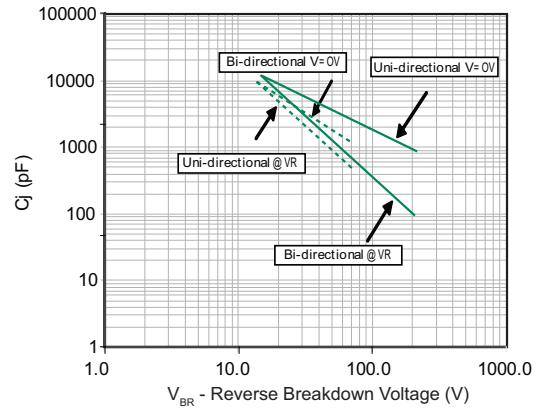


Figure 5 - Steady State Power Derating Curve

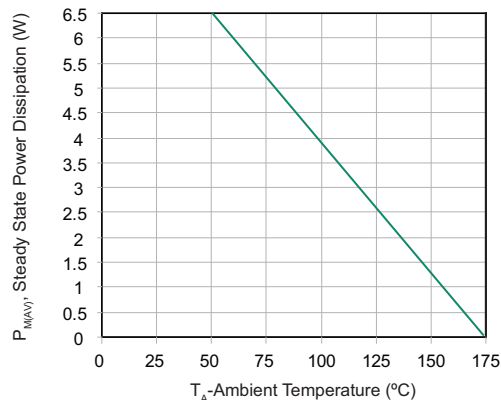
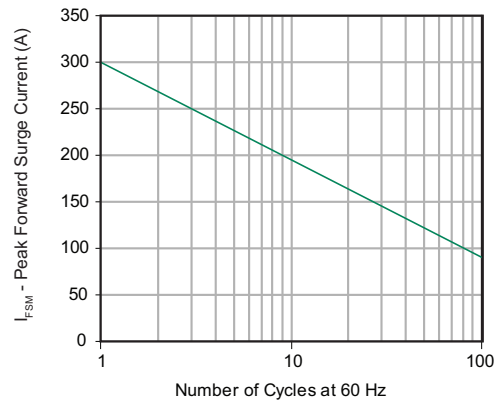


Figure 6 - Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only





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### 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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- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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