

|   |                |
|---|----------------|
|  | <b>E480232</b> |
|---|----------------|

**Features**

- Low Inductance
- Built in Strain Relief
- For Surface Mount Application in Order to Optimize Board Space
- High Temperature Soldering: 260°C/10 Seconds at Terminals
- Typical  $I_D$ : less than 1uA above 10V
- Low Profile Package
- Repetition Rate( duty cycle): 0.01%
- Glass Passivated Junction
- Excellent Clamping Capability
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant (Note1) ("P" Suffix Designates Compliant. See Ordering Information)

**Mechanical Data**

- 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
- Terminals: Solderable Per MIL-STD-750, Method 2026

**Maximum Ratings**

- Operating Junction Temperature Range: -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Typical Thermal Resistance: 23°C/W Junction to Ambient

|  |  |               |                            |
|--|--|---------------|----------------------------|
| Peak Pulse Power Surge Current on 10/1000µs Waveform | $I_{PPM}$  | See the Table | Note 2                     |
| Peak Pulse Power Dissipation on 10/1000µs Waveform   | $P_{PPM}$  | 5000W(Min)    | Note 2,3                   |
| Power Dissipation on infinite heat sink              | $P_D$  | 6.5W          | $T_L = 75^\circ\text{C}$ . |
| Fast response time                                   | typically less than 1.0ps from 0 Volts to BV Min |               |                            |

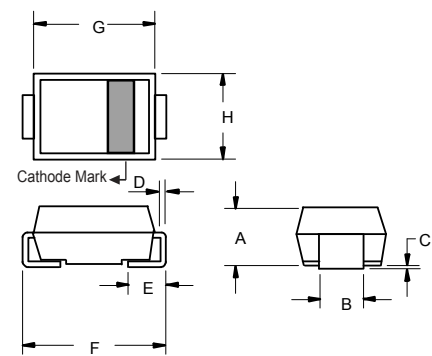
- Note:**
1. High Temperature Solder Exemption Applied, see EU Directive Annex 7a.
  2. Non-repetitive current pulse and derated above  $T_A=25^\circ\text{C}$
  3. Mounted on 8.0mm<sup>2</sup> copper pads to each terminal.

Pin Configuration:



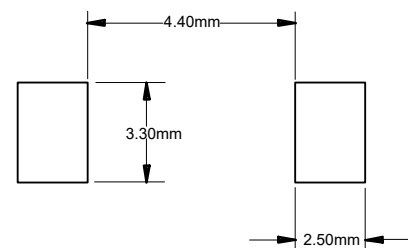
**5000 Watt TVS  
11 to 400 Volts**

**SMC (DO-214AB)  
(LEAD FRAME)**



| DIM | INCHES |       | MM    |       | NOTE |
|-----|--------|-------|-------|-------|------|
|     | MIN    | MAX   | MIN   | MAX   |      |
| A   | 0.079  | 0.103 | 2.00  | 2.62  |      |
| B   | 0.108  | 0.128 | 2.75  | 3.25  |      |
| C   | 0.002  | 0.008 | 0.051 | 0.203 |      |
| D   | 0.006  | 0.012 | 0.152 | 0.305 |      |
| E   | 0.030  | 0.060 | 0.76  | 1.52  |      |
| F   | 0.305  | 0.320 | 7.75  | 8.13  |      |
| G   | 0.260  | 0.280 | 6.60  | 7.11  |      |
| H   | 0.220  | 0.245 | 5.59  | 6.22  |      |

**Suggested Solder Pad Layout**



| MCC Part Number | Reverse Stand-Off Voltage | Breakdown Voltage $V_{BR}(V)$ |      | Test Current | Max. Clamping Voltage @ $I_{PP}$ | Peak Pulse Current | Reverse Leakage Current@ $V_{RWM}$ | Marking Code |
|-----------------|---------------------------|-------------------------------|------|--------------|----------------------------------|--------------------|------------------------------------|--------------|
|                 |                           | Min                           | Max  |              |                                  |                    |                                    |              |
| Uni-directional | $V_{RWM}(V)$              |                               |      | $I_T(mA)$    | $V_C(V)$                         | $I_{PP}(A)$        | $I_D(\mu A)$                       |              |
| 5.0SMLJ11A      | 11                        | 12.2                          | 13.5 | 10           | 18.2                             | 275                | 800                                | 5PEN         |
| 5.0SMLJ12A      | 12                        | 13.3                          | 14.7 | 10           | 19.9                             | 252                | 800                                | 5PEP         |
| 5.0SMLJ13A      | 13                        | 14.4                          | 15.9 | 10           | 21.5                             | 233                | 500                                | 5PEQ         |
| 5.0SMLJ14A      | 14                        | 15.6                          | 17.2 | 10           | 23.2                             | 216                | 200                                | 5PER         |
| 5.0SMLJ15A      | 15                        | 16.7                          | 18.5 | 1            | 24.4                             | 205                | 100                                | 5PES         |
| 5.0SMLJ16A      | 16                        | 17.8                          | 19.7 | 1            | 26                               | 193                | 50                                 | 5PET         |
| 5.0SMLJ17A      | 17                        | 18.9                          | 20.9 | 1            | 27.6                             | 181                | 20                                 | 5PEU         |
| 5.0SMLJ18A      | 18                        | 20                            | 22.1 | 1            | 29.2                             | 172                | 10                                 | 5PEV         |
| 5.0SMLJ20A      | 20                        | 22.2                          | 24.5 | 1            | 32.4                             | 155                | 5                                  | 5PEW         |
| 5.0SMLJ22A      | 22                        | 24.4                          | 26.9 | 1            | 35.5                             | 141                | 5                                  | 5PEX         |
| 5.0SMLJ24A      | 24                        | 26.7                          | 29.5 | 1            | 38.9                             | 129                | 5                                  | 5PEZ         |
| 5.0SMLJ26A      | 26                        | 28.9                          | 31.9 | 1            | 42.1                             | 119                | 5                                  | 5PFE         |
| 5.0SMLJ28A      | 28                        | 31.1                          | 34.4 | 1            | 45.4                             | 110                | 5                                  | 5PFG         |
| 5.0SMLJ30A      | 30                        | 33.3                          | 36.8 | 1            | 48.4                             | 103                | 5                                  | 5PFK         |
| 5.0SMLJ33A      | 33                        | 36.7                          | 40.6 | 1            | 53.3                             | 93.9               | 5                                  | 5PFM         |
| 5.0SMLJ36A      | 36                        | 40                            | 44.2 | 1            | 58.1                             | 86.1               | 5                                  | 5PFP         |
| 5.0SMLJ40A      | 40                        | 44.4                          | 49.1 | 1            | 64.5                             | 77.6               | 5                                  | 5PFR         |
| 5.0SMLJ43A      | 43                        | 47.8                          | 52.8 | 1            | 69.4                             | 72.1               | 5                                  | 5PFT         |
| 5.0SMLJ45A      | 45                        | 50                            | 55.3 | 1            | 72.7                             | 68.8               | 5                                  | 5PFV         |
| 5.0SMLJ48A      | 48                        | 53.3                          | 58.9 | 1            | 77.4                             | 64.7               | 5                                  | 5PFX         |
| 5.0SMLJ51A      | 51                        | 56.7                          | 62.7 | 1            | 82.4                             | 60.7               | 5                                  | 5PFZ         |
| 5.0SMLJ54A      | 54                        | 60                            | 66.3 | 1            | 87.1                             | 57.5               | 5                                  | 5RGE         |
| 5.0SMLJ58A      | 58                        | 64.4                          | 71.2 | 1            | 93.6                             | 53.5               | 5                                  | 5PGG         |
| 5.0SMLJ60A      | 60                        | 66.7                          | 73.7 | 1            | 96.8                             | 51.7               | 5                                  | 5PGK         |
| 5.0SMLJ64A      | 64                        | 71.1                          | 78.6 | 1            | 103                              | 48.6               | 5                                  | 5PGM         |
| 5.0SMLJ70A      | 70                        | 77.8                          | 86   | 1            | 113                              | 44.3               | 5                                  | 5PGP         |
| 5.0SMLJ75A      | 75                        | 83.3                          | 92.1 | 1            | 121                              | 41.4               | 5                                  | 5PGR         |
| 5.0SMLJ78A      | 78                        | 86.7                          | 95.8 | 1            | 126                              | 39.7               | 5                                  | 5PGT         |
| 5.0SMLJ85A      | 85                        | 94.4                          | 104  | 1            | 137                              | 36.5               | 5                                  | 5PGV         |
| 5.0SMLJ90A      | 90                        | 100                           | 111  | 1            | 146                              | 34.3               | 5                                  | 5PGX         |
| 5.0SMLJ100A     | 100                       | 111                           | 123  | 1            | 162                              | 30.9               | 5                                  | 5PGZ         |
| 5.0SMLJ110A     | 110                       | 122                           | 135  | 1            | 177                              | 28.3               | 5                                  | 5PHE         |
| 5.0SMLJ120A     | 120                       | 133                           | 147  | 1            | 193                              | 26                 | 5                                  | 5PHG         |
| 5.0SMLJ130A     | 130                       | 144                           | 159  | 1            | 209                              | 24                 | 5                                  | 5PHK         |
| 5.0SMLJ150A     | 150                       | 167                           | 185  | 1            | 243                              | 20.6               | 5                                  | 5PHM         |
| 5.0SMLJ160A     | 160                       | 178                           | 197  | 1            | 259                              | 19.3               | 5                                  | 5PHP         |
| 5.0SMLJ170A     | 170                       | 189                           | 209  | 1            | 275                              | 18.2               | 5                                  | 5PHR         |
| 5.0SMLJ180A     | 180                       | 200                           | 220  | 1            | 292                              | 17.1               | 5                                  | 5PHT         |
| 5.0SMLJ190A     | 190                       | 211                           | 258  | 1            | 308                              | 16.2               | 5                                  | 5PHV         |
| 5.0SMLJ200A     | 200                       | 224                           | 247  | 1            | 324                              | 15.4               | 5                                  | 5PHW         |
| 5.0SMLJ220A     | 220                       | 246                           | 272  | 1            | 356                              | 14.0               | 5                                  | 5PHX         |
| 5.0SMLJ250A     | 250                       | 279                           | 309  | 1            | 405                              | 12.3               | 5                                  | 5PHZ         |
| 5.0SMLJ300A     | 300                       | 335                           | 371  | 1            | 486                              | 10.3               | 5                                  | 5PJE         |
| 5.0SMLJ350A     | 350                       | 391                           | 432  | 1            | 567                              | 8.8                | 5                                  | 5PJG         |
| 5.0SMLJ400A     | 400                       | 447                           | 494  | 1            | 648                              | 7.7                | 5                                  | 5PJK         |

| MCC Part Number | Reverse Stand-Off Voltage | Breakdown Voltage $V_{BR}(V)$ |      | Test Current | Max. Clamping Voltage @ $I_{PP}$ | Peak Pulse Current | Reverse Leakage Current@ $V_{RWM}$ | Marking Code |
|-----------------|---------------------------|-------------------------------|------|--------------|----------------------------------|--------------------|------------------------------------|--------------|
|                 |                           | Min                           | Max  |              |                                  |                    |                                    |              |
| Bi-directional  | $V_{RWM}(V)$              |                               |      | $I_T(mA)$    | $V_C(V)$                         | $I_{PP}(A)$        | $I_D(\mu A)$                       |              |
| 5.0SMLJ11CA     | 11                        | 12.2                          | 13.5 | 10           | 18.2                             | 275                | 800                                | 5BEN         |
| 5.0SMLJ12CA     | 12                        | 13.3                          | 14.7 | 10           | 19.9                             | 252                | 800                                | 5BEP         |
| 5.0SMLJ13CA     | 13                        | 14.4                          | 15.9 | 10           | 21.5                             | 233                | 500                                | 5BEQ         |
| 5.0SMLJ14CA     | 14                        | 15.6                          | 17.2 | 10           | 23.2                             | 216                | 200                                | 5BER         |
| 5.0SMLJ15CA     | 15                        | 16.7                          | 18.5 | 1            | 24.4                             | 205                | 100                                | 5BES         |
| 5.0SMLJ16CA     | 16                        | 17.8                          | 19.7 | 1            | 26                               | 193                | 50                                 | 5BET         |
| 5.0SMLJ17CA     | 17                        | 18.9                          | 20.9 | 1            | 27.6                             | 181                | 20                                 | 5BEU         |
| 5.0SMLJ18CA     | 18                        | 20                            | 22.1 | 1            | 29.2                             | 172                | 10                                 | 5BEV         |
| 5.0SMLJ20CA     | 20                        | 22.2                          | 24.5 | 1            | 32.4                             | 155                | 5                                  | 5BEW         |
| 5.0SMLJ22CA     | 22                        | 24.4                          | 26.9 | 1            | 35.5                             | 141                | 5                                  | 5BEX         |
| 5.0SMLJ24CA     | 24                        | 26.7                          | 29.5 | 1            | 38.9                             | 129                | 5                                  | 5BEZ         |
| 5.0SMLJ26CA     | 26                        | 28.9                          | 31.9 | 1            | 42.1                             | 119                | 5                                  | 5BFE         |
| 5.0SMLJ28CA     | 28                        | 31.1                          | 34.4 | 1            | 45.4                             | 110                | 5                                  | 5BFG         |
| 5.0SMLJ30CA     | 30                        | 33.3                          | 36.8 | 1            | 48.4                             | 103                | 5                                  | 5BFK         |
| 5.0SMLJ33CA     | 33                        | 36.7                          | 40.6 | 1            | 53.3                             | 93.9               | 5                                  | 5BFM         |
| 5.0SMLJ36CA     | 36                        | 40                            | 44.2 | 1            | 58.1                             | 86.1               | 5                                  | 5BFP         |
| 5.0SMLJ40CA     | 40                        | 44.4                          | 49.1 | 1            | 64.5                             | 77.6               | 5                                  | 5BFR         |
| 5.0SMLJ43CA     | 43                        | 47.8                          | 52.8 | 1            | 69.4                             | 72.1               | 5                                  | 5BFT         |
| 5.0SMLJ45CA     | 45                        | 50                            | 55.3 | 1            | 72.7                             | 68.8               | 5                                  | 5BFV         |
| 5.0SMLJ48CA     | 48                        | 53.3                          | 58.9 | 1            | 77.4                             | 64.7               | 5                                  | 5BFX         |
| 5.0SMLJ51CA     | 51                        | 56.7                          | 62.7 | 1            | 82.4                             | 60.7               | 5                                  | 5BFZ         |
| 5.0SMLJ54CA     | 54                        | 60                            | 66.3 | 1            | 87.1                             | 57.5               | 5                                  | 5BGE         |
| 5.0SMLJ58CA     | 58                        | 64.4                          | 71.2 | 1            | 93.6                             | 53.5               | 5                                  | 5BGG         |
| 5.0SMLJ60CA     | 60                        | 66.7                          | 73.7 | 1            | 96.8                             | 51.7               | 5                                  | 5BGK         |
| 5.0SMLJ64CA     | 64                        | 71.1                          | 78.6 | 1            | 103                              | 48.6               | 5                                  | 5BGM         |
| 5.0SMLJ70CA     | 70                        | 77.8                          | 86   | 1            | 113                              | 44.3               | 5                                  | 5BGP         |
| 5.0SMLJ75CA     | 75                        | 83.3                          | 92.1 | 1            | 121                              | 41.4               | 5                                  | 5BGR         |
| 5.0SMLJ78CA     | 78                        | 86.7                          | 95.8 | 1            | 126                              | 39.7               | 5                                  | 5BGT         |
| 5.0SMLJ85CA     | 85                        | 94.4                          | 104  | 1            | 137                              | 36.5               | 5                                  | 5BGV         |
| 5.0SMLJ90CA     | 90                        | 100                           | 111  | 1            | 146                              | 34.3               | 5                                  | 5BGX         |
| 5.0SMLJ100CA    | 100                       | 111                           | 123  | 1            | 162                              | 30.9               | 5                                  | 5BGZ         |
| 5.0SMLJ110CA    | 110                       | 122                           | 135  | 1            | 177                              | 28.3               | 5                                  | 5BHE         |
| 5.0SMLJ120CA    | 120                       | 133                           | 147  | 1            | 193                              | 26                 | 5                                  | 5BHG         |
| 5.0SMLJ130CA    | 130                       | 144                           | 159  | 1            | 209                              | 24                 | 5                                  | 5BHK         |
| 5.0SMLJ150CA    | 150                       | 167                           | 185  | 1            | 243                              | 20.6               | 5                                  | 5BHM         |
| 5.0SMLJ160CA    | 160                       | 178                           | 197  | 1            | 259                              | 19.3               | 5                                  | 5BHP         |
| 5.0SMLJ170CA    | 170                       | 189                           | 209  | 1            | 275                              | 18.2               | 5                                  | 5BHR         |

**Curve Characteristics**

Fig. 1 - Peak Pulse Power Rating Curve

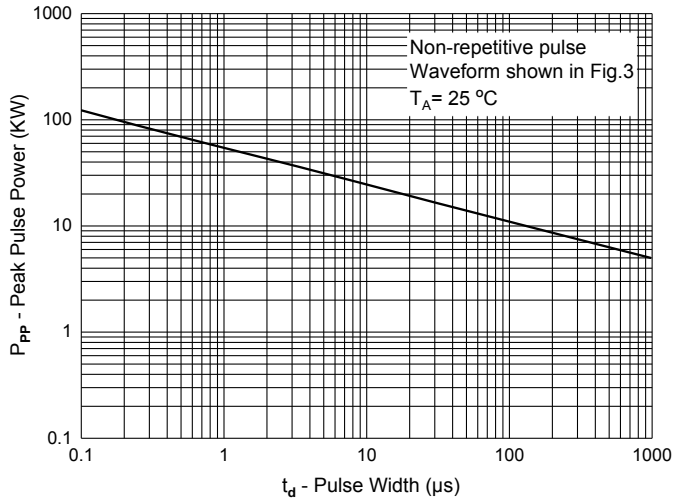


Fig. 2 - Typical Junction Capacitance

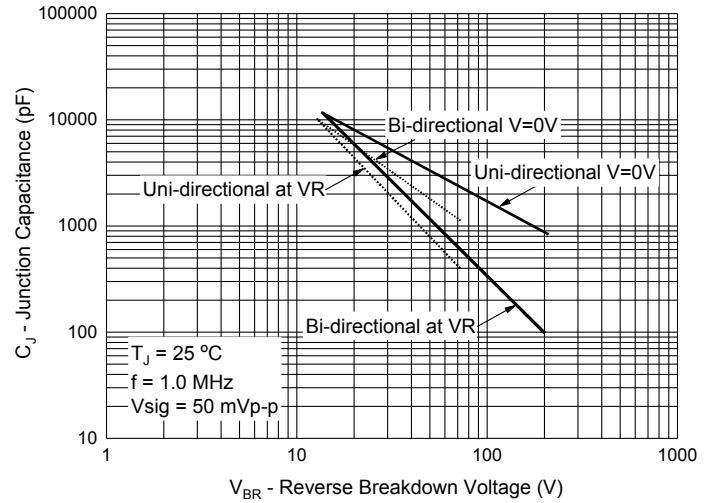
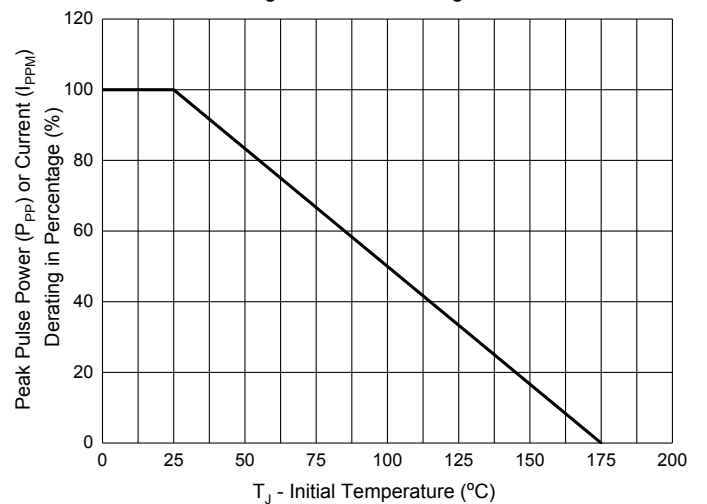


Fig. 3 - Pulse Waveform



Fig. 4 - Pulse Derating Curve



## 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 сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
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- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- 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 оптимального решения, техническое обоснование при выборе компонента;
- 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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