

### Features

- UL recognition, file # E517074
- 5000 W peak pulse power capability with a 10/1000  $\mu$ s waveform
- Low leakage
- Uni and Bidirectional unit
- Excellent clamping capability
- Very fast response time
- Meets MSL level 1

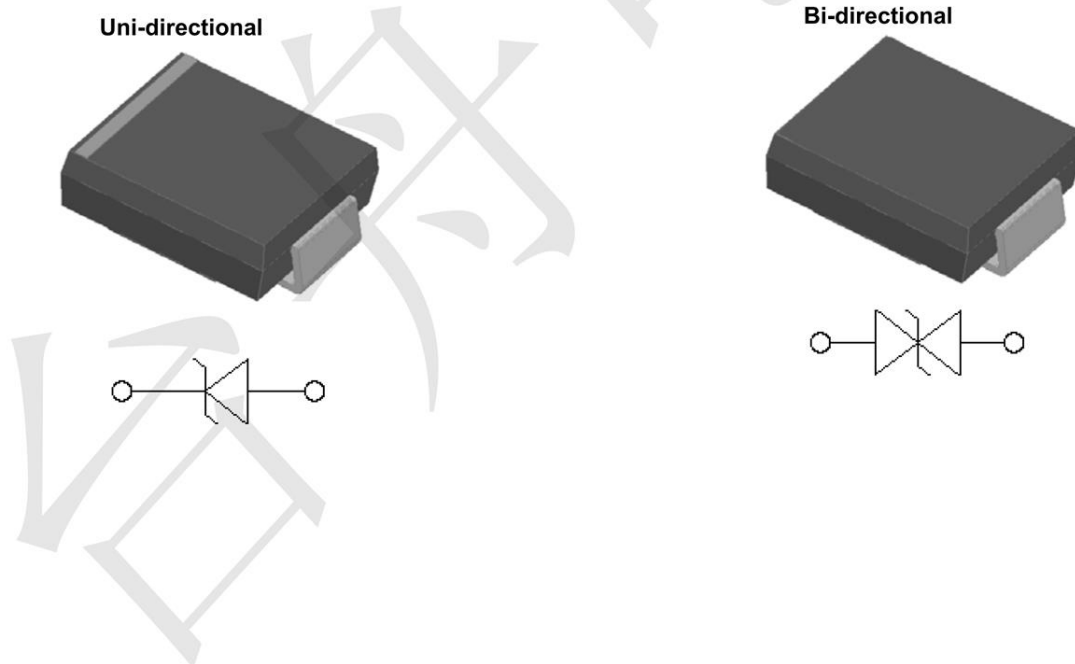
### Mechanical Characteristics

- **Package:** DO-214AB (SMC)  
Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** For uni-directional types the band denotes cathode end, no marking on bi-directional types

### Applications

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, telecommunication.

### Dimensions and Pin Configuration



### Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ unless otherwise specified)

| PARAMETER   | SYMBOL         | UNIT             | Max            |
|---|----------------|------------------|----------------|
| Peak power dissipation, with a 10/1000 $\mu\text{s}$ waveform <sup>(1)</sup> <sup>(2)</sup> | $P_{PPM}$      | W                | 5000           |
| Peak pulse current, with a 10/1000 $\mu\text{s}$ waveform <sup>(1)</sup>                    | $I_{PPM}$      | A                | See Next Table |
| Power dissipation, on infinite heat sink at $T_L=75^\circ\text{C}$ <sup>(2)</sup>           | $P_D$          | W                | 6.5            |
| Peak forward surge current, 8.3 ms single half sine-wave unidirectional only <sup>(3)</sup> | $I_{FSM}$      | A                | 300            |
| Operating junction and storage temperature range  | $T_J, T_{STG}$ | $^\circ\text{C}$ | -55 to +150    |

### Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise specified)

| PARAMETER  | SYMBOL   | UNIT | VALUE   |
|--|----------|------|---------|
| Maximum instantaneous forward voltage at 100A for unidirectional only <sup>(4)</sup> | $V_{FM}$ | V    | 3.5/5.0 |

### Thermal Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise specified)

| PARAMETER                   | SYMBOL                 | UNIT                      | Conditions          | VALUE |
|-----------------------------|------------------------|---------------------------|---------------------|-------|
| Thermal Resistance(Typical) | $R_{\theta J-A}^{(5)}$ | $^\circ\text{C}/\text{W}$ | junction to ambient | 75    |
|                             | $R_{\theta J-L}^{(5)}$ | $^\circ\text{C}/\text{W}$ | junction to lead    | 15    |
|                             | $R_{\theta J-C}^{(5)}$ | $^\circ\text{C}/\text{W}$ | junction to case    | 13    |

■ **Electrical Characteristics** (TA=25°C unless otherwise noted)

| Part Number (Uni) | Part Number (Bi) | Breakdown Voltage $V_{BR}@I_T$ |         |                  | Maximum Reverse Leakage $I_R$ @ $V_{RWM}$ ( $\mu A$ ) | Working Peak Reverse Voltage $V_{RWM}$ (V) | Maximum Reverse Surge Current $I_{PP}^{(2)}$ (A) | Maximum Clamping Voltage $V_C$ @ $I_{PP}$ (V) |
|-------------------|------------------|--------------------------------|---------|------------------|---|--|--|---|
|                   |                  | Min(V)                         | Max (V) | $I_T^{(1)}$ (mA) |   |  |  |   |
| 5.0SMDJ11A        | 5.0SMDJ11CA      | 12.2                           | 13.5    | 1.0              | 800.0   | 11.0                                       | 274.7  | 18.2  |
| 5.0SMDJ12A        | 5.0SMDJ12CA      | 13.3                           | 14.7    | 1.0              | 800.0   | 12.0                                       | 251.3  | 19.9  |
| 5.0SMDJ13A        | 5.0SMDJ13CA      | 14.4                           | 15.9    | 1.0              | 500.0   | 13.0                                       | 232.6  | 21.5  |
| 5.0SMDJ14A        | 5.0SMDJ14CA      | 15.6                           | 17.2    | 1.0              | 200.0   | 14.0                                       | 215.5  | 23.2  |
| 5.0SMDJ15A        | 5.0SMDJ15CA      | 16.7                           | 18.5    | 1.0              | 100.0   | 15.0                                       | 204.9  | 24.4  |
| 5.0SMDJ16A        | 5.0SMDJ16CA      | 17.8                           | 19.7    | 1.0              | 50.0  | 16.0                                       | 192.3  | 26  |
| 5.0SMDJ17A        | 5.0SMDJ17CA      | 18.9                           | 20.9    | 1.0              | 20.0  | 17.0                                       | 181.2  | 27.6  |
| 5.0SMDJ18A        | 5.0SMDJ18CA      | 20.0                           | 22.1    | 1.0              | 10.0  | 18.0                                       | 171.2  | 29.2  |
| 5.0SMDJ19A        | 5.0SMDJ19CA      | 21.1                           | 23.3    | 1.0              | 10.0  | 19.0                                       | 162.3  | 30.8  |
| 5.0SMDJ20A        | 5.0SMDJ20CA      | 22.2                           | 24.5    | 1.0              | 5.0   | 20.0                                       | 154.3  | 32.4  |
| 5.0SMDJ22A        | 5.0SMDJ22CA      | 24.4                           | 26.9    | 1.0              | 5.0   | 22.0                                       | 140.8  | 35.5  |
| 5.0SMDJ24A        | 5.0SMDJ24CA      | 26.7                           | 29.5    | 1.0              | 5.0   | 24.0                                       | 128.5  | 38.9  |
| 5.0SMDJ26A        | 5.0SMDJ26CA      | 28.9                           | 31.9    | 1.0              | 5.0   | 26.0                                       | 118.8  | 42.1  |
| 5.0SMDJ28A        | 5.0SMDJ28CA      | 31.1                           | 34.4    | 1.0              | 5.0   | 28.0                                       | 110.1  | 45.4  |
| 5.0SMDJ30A        | 5.0SMDJ30CA      | 33.3                           | 36.8    | 1.0              | 5.0   | 30.0                                       | 103.3  | 48.4  |
| 5.0SMDJ33A        | 5.0SMDJ33CA      | 36.7                           | 40.6    | 1.0              | 5.0   | 33.0                                       | 93.8   | 53.3  |
| 5.0SMDJ36A        | 5.0SMDJ36CA      | 40.0                           | 44.2    | 1.0              | 5.0   | 36.0                                       | 86.1   | 58.1  |
| 5.0SMDJ40A        | 5.0SMDJ40CA      | 44.4                           | 49.1    | 1.0              | 5.0   | 40.0                                       | 77.5   | 64.5  |
| 5.0SMDJ43A        | 5.0SMDJ43CA      | 47.8                           | 52.8    | 1.0              | 5.0   | 43.0                                       | 72.0   | 69.4  |
| 5.0SMDJ45A        | 5.0SMDJ45CA      | 50.0                           | 55.3    | 1.0              | 5.0   | 45.0                                       | 68.8   | 72.7  |
| 5.0SMDJ48A        | 5.0SMDJ48CA      | 53.3                           | 58.9    | 1.0              | 5.0   | 48.0                                       | 64.6   | 77.4  |
| 5.0SMDJ51A        | 5.0SMDJ51CA      | 56.7                           | 62.7    | 1.0              | 5.0   | 51.0                                       | 60.7   | 82.4  |
| 5.0SMDJ54A        | 5.0SMDJ54CA      | 60.0                           | 66.3    | 1.0              | 5.0   | 54.0                                       | 57.4   | 87.1  |
| 5.0SMDJ58A        | 5.0SMDJ58CA      | 64.4                           | 71.2    | 1.0              | 5.0   | 58.0                                       | 53.4   | 93.6  |
| 5.0SMDJ60A        | 5.0SMDJ60CA      | 66.7                           | 73.7    | 1.0              | 5.0   | 60.0                                       | 51.7   | 96.8  |
| 5.0SMDJ64A        | 5.0SMDJ64CA      | 71.1                           | 78.6    | 1.0              | 5.0   | 64.0                                       | 48.5   | 103   |
| 5.0SMDJ70A        | 5.0SMDJ70CA      | 77.8                           | 86.0    | 1.0              | 5.0   | 70.0                                       | 44.2   | 113   |
| 5.0SMDJ75A        | 5.0SMDJ75CA      | 83.3                           | 92.1    | 1.0              | 5.0   | 75.0                                       | 41.3   | 121   |
| 5.0SMDJ78A        | 5.0SMDJ78CA      | 86.7                           | 95.8    | 1.0              | 5.0   | 78.0                                       | 39.7   | 126   |
| 5.0SMDJ80A        | 5.0SMDJ80CA      | 88.96                          | 97.6    | 1.0              | 5.0   | 80.0                                       | 38.6   | 129.6   |

**Electrical Characteristics** (TA=25°C unless otherwise noted)

| Part Number<br>(Uni) | Part Number<br>(Bi) | Breakdown Voltage $V_{BR}@I_T$ |         |                  | Maximum Reverse Leakage $I_R$<br>@ $V_{RWM}$ ( $\mu A$ ) | Working Peak Reverse Voltage<br>$V_{RWM}$ (V) | Maximum Reverse Surge Current $I_{PP}^{(2)}$<br>(A) | Maximum Clamping Voltage $V_c$<br>@ $I_{PP}$ (V) |
|----------------------|---------------------|--------------------------------|---------|------------------|--|---|---|--|
|                      |                     | Min(V)                         | Max (V) | $I_T^{(1)}$ (mA) |  |   |   |  |
| 5.0SMDJ85A           | 5.0SMDJ85CA         | 94.4                           | 104.0   | 1.0              | 5.0  | 85.0  | 36.5  | 137  |
| 5.0SMDJ90A           | 5.0SMDJ90CA         | 100.0                          | 111.0   | 1.0              | 5.0  | 90.0  | 34.2  | 146  |
| 5.0SMDJ100A          | 5.0SMDJ100CA        | 111.0                          | 123.0   | 1.0              | 5.0  | 100.0   | 30.9  | 162  |
| 5.0SMDJ110A          | 5.0SMDJ110CA        | 122.0                          | 135.0   | 1.0              | 5.0  | 110.0   | 28.2  | 177  |
| 5.0SMDJ120A          | 5.0SMDJ120CA        | 133.0                          | 147.0   | 1.0              | 5.0  | 120.0   | 25.9  | 193  |
| 5.0SMDJ130A          | 5.0SMDJ130CA        | 144.0                          | 159.0   | 1.0              | 5.0  | 130.0   | 23.9  | 209  |
| 5.0SMDJ140A          | 5.0SMDJ140CA        | 155.0                          | 171.0   | 1.0              | 5.0  | 140.0   | 22.0  | 226.8  |
| 5.0SMDJ150A          | 5.0SMDJ150CA        | 167.0                          | 185.0   | 1.0              | 5.0  | 150.0   | 20.6  | 243  |
| 5.0SMDJ160A          | 5.0SMDJ160CA        | 178.0                          | 197.0   | 1.0              | 5.0  | 160.0   | 19.3  | 259  |
| 5.0SMDJ170A          | 5.0SMDJ170CA        | 189.0                          | 209.0   | 1.0              | 5.0  | 170.0   | 18.2  | 275  |
| 5.0SMDJ180A          | 5.0SMDJ180CA        | 200.2                          | 220.0   | 1.0              | 5.0  | 180.0   | 17.1  | 291.6  |
| 5.0SMDJ190A          | 5.0SMDJ190CA        | 211.0                          | 232.0   | 1.0              | 5.0  | 190.0   | 16.2  | 307.8  |
| 5.0SMDJ200A          | 5.0SMDJ200CA        | 224.0                          | 247.0   | 1.0              | 5.0  | 200.0   | 15.4  | 324  |
| 5.0SMDJ220A          | 5.0SMDJ220CA        | 246.0                          | 272.0   | 1.0              | 5.0  | 220.0   | 14.0  | 356  |
| 5.0SMDJ250A          | 5.0SMDJ250CA        | 279.0                          | 309.0   | 1.0              | 5.0  | 250.0   | 12.3  | 405  |
| 5.0SMDJ300A          | 5.0SMDJ300CA        | 335.0                          | 371.0   | 1.0              | 5.0  | 300.0   | 10.3  | 486  |
| 5.0SMDJ350A          | 5.0SMDJ350CA        | 391.0                          | 432.0   | 1.0              | 5.0  | 350.0   | 8.8   | 567  |
| 5.0SMDJ400A          | 5.0SMDJ400CA        | 447.0                          | 494.0   | 1.0              | 5.0  | 400.0   | 7.7   | 648  |
| 5.0SMDJ440A          | 5.0SMDJ440CA        | 492.0                          | 543.0   | 1.0              | 5.0  | 440.0   | 7.0   | 713  |



### Characteristics(Typical)

FIG1: Peak Pulse Power Rating Curve

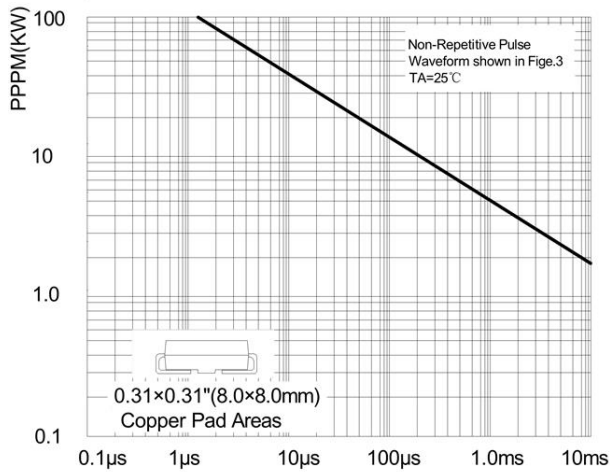


FIG2: Pulse Power or Current vs. Initial Junction Temperature

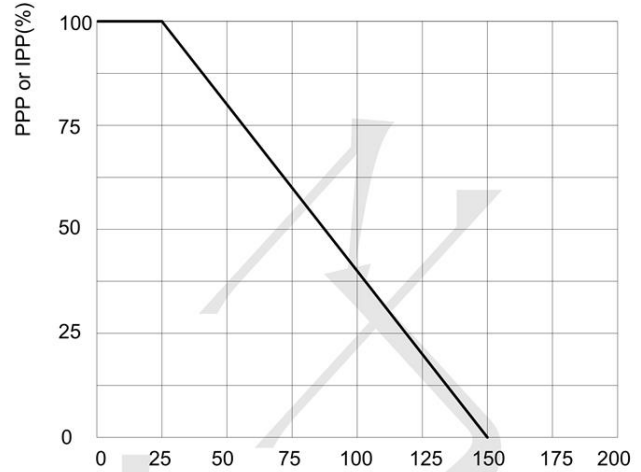


FIG3: Pulse Waveform

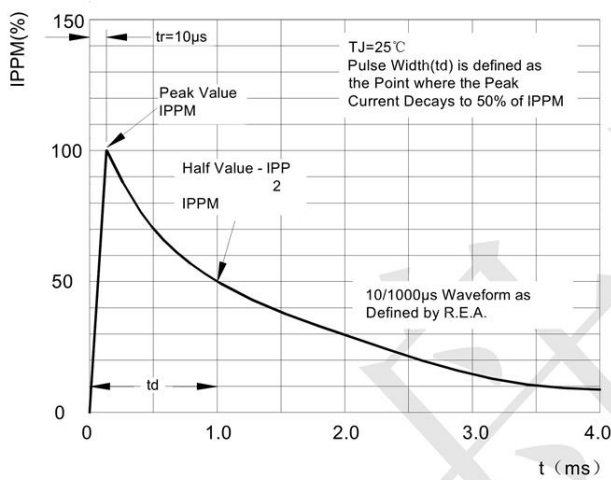


FIG4: Typical Transient Thermal Impedance

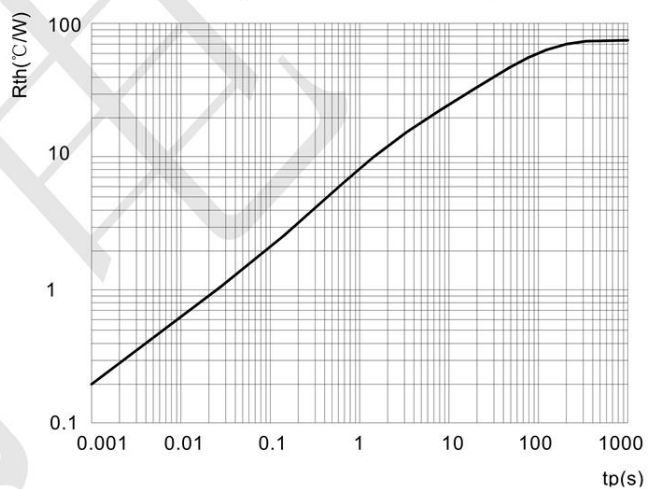


FIG5: Maximum Non-Repetitive Surge Current

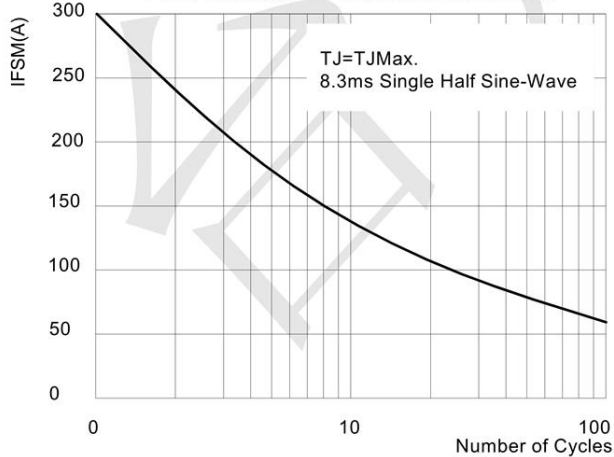
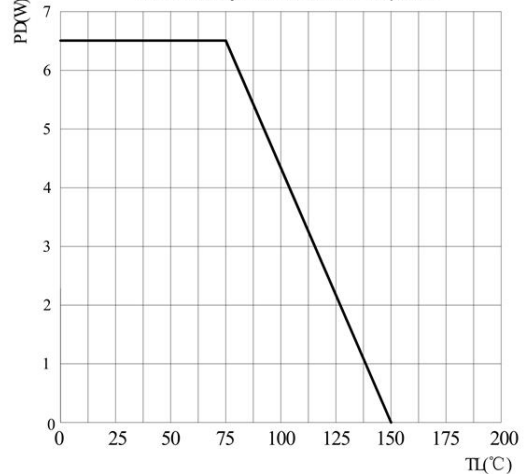
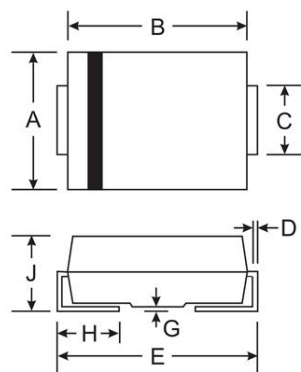


FIG6: Steady State Power Dissipation



**Outline Drawing -SMC/DO-214AB**



| SMC/DO-214AB         |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 5.59 | 6.22 |
| B                    | 6.60 | 7.11 |
| C                    | 2.75 | 3.18 |
| D                    | 0.15 | 0.31 |
| E                    | 7.75 | 8.13 |
| G                    | 0.10 | 0.20 |
| H                    | 0.76 | 1.52 |
| J                    | 2.00 | 2.62 |
| All Dimensions in mm |      |      |

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