

## Surface Mount Transient Voltage Suppressor Rectifiers

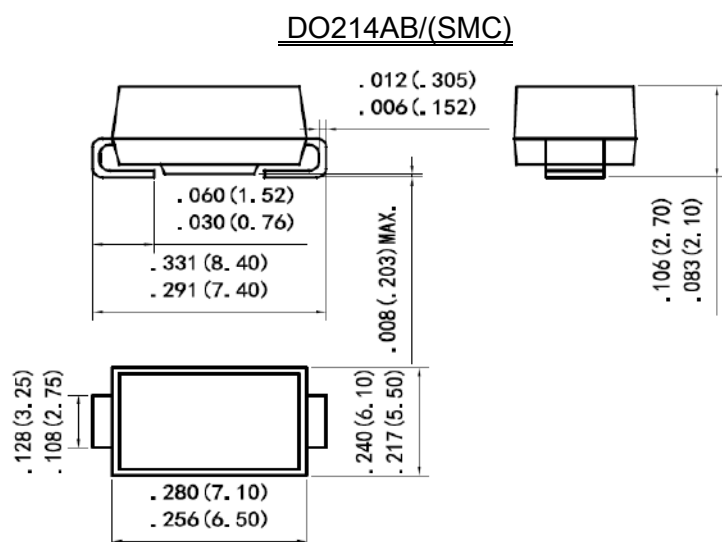
### Reverse Voltage 5.0 ~ 440 V 3000 Watt Peak Pulse Power

#### Features

- Glass passivated chip
- 3000 W peak pulse power capability with a 10/1000 us waveform, repetitive rate (duty cycle):0.01 %
- Excellent clamping capability
- Low reverse leakage
- Very fast response time
- Lead and body according with RoHS standard

#### Mechanical Data

- Case: DO-214AB/(SMC) Molded plastic
- Lead: Solderable per MIL-STD-750, method 2026
- Epoxy: UL 94V-0 rate flame retardant
- System: Accreditation through IATF16949 System
- High reliability grade (AEC Q101 qualified)
- Mounting position: Any



Unit: inch (mm)

Maximum Ratings & Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter                                                                                  | Symbols                           | Value          | Unit |
|--------------------------------------------------------------------------------------------|-----------------------------------|----------------|------|
| Peak power dissipation with a 10/1000 us waveform <sup>(1)</sup>                           | P <sub>PP</sub>                   | 3000           | W    |
| Peak pulse current with a 10/1000 us waveform <sup>(1)</sup>                               | I <sub>PP</sub>                   | See Next Table | A    |
| Power dissipation on infinite heatsink at TL = 75 °C                                       | P <sub>D</sub>                    | 6.5            | W    |
| Peak forward surge current, 8.3 ms single half sinewave unidirectional only <sup>(2)</sup> | I <sub>FSM</sub>                  | 300            | A    |
| Maximum instantaneous forward voltage at 100 A for unidirectional only <sup>(3)</sup>      | V <sub>F</sub>                    | 3.5/6.5        | V    |
| Operating junction and storage temperature range                                           | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150    | °C   |

Note:

- 1)Non-repetitive current pulse per Fig.5 and derated above TA= 25 °C per Fig.1 ;
- 2)Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum ;
- 3)VF<3.5V for devices of VBR<200V and VF<6.5V for devices of VBR>201V.

| Part Number |            | Device Marking Code |     | Reverse Stand-off Voltage | Breakdown Voltage $V_{BR} @ I_T$ |         | Test Current | Max. Clamping Voltage @ $I_{PP}$ | Max. Peak Pulse Current | Max. Reverse Leakage @ $V_{RWM}$ |
|-------------|------------|---------------------|-----|---------------------------|----------------------------------|---------|--------------|----------------------------------|-------------------------|----------------------------------|
| UNI-POLAR   | BI-POLAR   | UNI                 | BI  | $V_{RWM}(V)$              | Min.(V)                          | Max.(V) | $I_T(mA)$    | $V_{C MAX.}(V)$                  | $I_{PP}(A)$             | $I_R(\mu A)$                     |
| TSMDJ5.0A   | TSMDJ5.0CA | RDE                 | DDE | 5.0                       | 6.40                             | 7.00    | 10           | 9.2                              | 326.1                   | 800                              |
| TSMDJ6.0A   | TSMDJ6.0CA | RDG                 | DDG | 6.0                       | 6.67                             | 7.37    | 10           | 10.3                             | 291.3                   | 800                              |
| TSMDJ6.5A   | TSMDJ6.5CA | RDK                 | DDK | 6.5                       | 7.22                             | 7.98    | 10           | 11.2                             | 267.9                   | 500                              |
| TSMDJ7.0A   | TSMDJ7.0CA | PDM                 | DDM | 7.0                       | 7.78                             | 8.60    | 10           | 12.0                             | 250.0                   | 200                              |
| TSMDJ7.5A   | TSMDJ7.5CA | PDP                 | DDP | 7.5                       | 8.33                             | 9.21    | 1            | 12.9                             | 232.6                   | 100                              |
| TSMDJ8.0A   | TSMDJ8.0CA | PDR                 | DDR | 8.0                       | 8.89                             | 9.83    | 1            | 13.6                             | 220.6                   | 50                               |
| TSMDJ8.5A   | TSMDJ8.5CA | PDT                 | DDT | 8.5                       | 9.44                             | 10.40   | 1            | 14.4                             | 208.3                   | 20                               |
| TSMDJ9.0A   | TSMDJ9.0CA | PDV                 | DDV | 9.0                       | 10.00                            | 11.10   | 1            | 15.4                             | 194.8                   | 10                               |
| TSMDJ10A    | TSMDJ10CA  | PDX                 | DDX | 10.0                      | 11.10                            | 12.30   | 1            | 17.0                             | 176.5                   | 5                                |
| TSMDJ11A    | TSMDJ11CA  | PDZ                 | DDZ | 11.0                      | 12.20                            | 13.50   | 1            | 18.2                             | 164.8                   | 1                                |
| TSMDJ12A    | TSMDJ12CA  | PEE                 | DEE | 12.0                      | 13.30                            | 14.70   | 1            | 19.9                             | 150.8                   | 1                                |
| TSMDJ13A    | TSMDJ13CA  | PEG                 | DEG | 13.0                      | 14.40                            | 15.90   | 1            | 21.5                             | 139.5                   | 1                                |
| TSMDJ14A    | TSMDJ14CA  | PEK                 | DEK | 14.0                      | 15.60                            | 17.20   | 1            | 23.2                             | 129.3                   | 1                                |
| TSMDJ15A    | TSMDJ15CA  | PEM                 | DEM | 15.0                      | 16.70                            | 18.50   | 1            | 24.4                             | 123.0                   | 1                                |
| TSMDJ16A    | TSMDJ16CA  | PEP                 | DEP | 16.0                      | 17.80                            | 19.70   | 1            | 26.0                             | 115.4                   | 1                                |
| TSMDJ17A    | TSMDJ17CA  | PER                 | DER | 17.0                      | 18.90                            | 20.90   | 1            | 27.6                             | 108.7                   | 1                                |
| TSMDJ18A    | TSMDJ18CA  | PET                 | DET | 18.0                      | 20.00                            | 22.10   | 1            | 29.2                             | 102.7                   | 1                                |
| TSMDJ20A    | TSMDJ20CA  | PEV                 | DEV | 20.0                      | 22.20                            | 24.50   | 1            | 32.4                             | 92.6                    | 1                                |
| TSMDJ22A    | TSMDJ22CA  | PEX                 | DEX | 22.0                      | 24.40                            | 26.90   | 1            | 35.5                             | 84.5                    | 1                                |
| TSMDJ24A    | TSMDJ24CA  | PEZ                 | DEZ | 24.0                      | 26.70                            | 29.50   | 1            | 38.9                             | 77.1                    | 1                                |
| TSMDJ26A    | TSMDJ26CA  | PFE                 | DFE | 26.0                      | 28.90                            | 31.90   | 1            | 42.1                             | 71.3                    | 1                                |
| TSMDJ28A    | TSMDJ28CA  | PFG                 | DFG | 28.0                      | 31.10                            | 34.40   | 1            | 45.4                             | 66.1                    | 1                                |
| TSMDJ30A    | TSMDJ30CA  | PFK                 | DFK | 30.0                      | 33.50                            | 36.80   | 1            | 48.4                             | 62.0                    | 1                                |
| TSMDJ33A    | TSMDJ33CA  | PFM                 | DFM | 33.0                      | 36.70                            | 40.60   | 1            | 53.3                             | 56.3                    | 1                                |
| TSMDJ36A    | TSMDJ36CA  | PFP                 | DFP | 36.0                      | 40.00                            | 44.20   | 1            | 58.1                             | 51.6                    | 1                                |
| TSMDJ40A    | TSMDJ40CA  | PFR                 | DFR | 40.0                      | 44.40                            | 49.10   | 1            | 64.5                             | 46.5                    | 1                                |
| TSMDJ43A    | TSMDJ43CA  | PFT                 | DFT | 43.0                      | 47.80                            | 52.80   | 1            | 69.4                             | 43.2                    | 1                                |
| TSMDJ45A    | TSMDJ45CA  | PFV                 | DFV | 45.0                      | 50.00                            | 55.30   | 1            | 72.7                             | 41.3                    | 1                                |
| TSMDJ48A    | TSMDJ48CA  | PFX                 | DFX | 48.0                      | 53.30                            | 58.90   | 1            | 77.4                             | 38.8                    | 1                                |
| TSMDJ51A    | TSMDJ51CA  | PFZ                 | DFZ | 51.0                      | 56.70                            | 62.70   | 1            | 82.4                             | 36.4                    | 1                                |
| TSMDJ54A    | TSMDJ54CA  | PGE                 | DGE | 54.0                      | 60.00                            | 66.30   | 1            | 87.1                             | 34.4                    | 1                                |
| TSMDJ58A    | TSMDJ58CA  | PGG                 | DGG | 58.0                      | 64.40                            | 71.20   | 1            | 93.6                             | 32.1                    | 1                                |
| TSMDJ60A    | TSMDJ60CA  | PGK                 | DGK | 60.0                      | 66.70                            | 73.70   | 1            | 96.8                             | 31.0                    | 1                                |
| TSMDJ64A    | TSMDJ64CA  | PGM                 | DGM | 64.0                      | 71.10                            | 78.60   | 1            | 103.0                            | 29.1                    | 1                                |
| TSMDJ70A    | TSMDJ70CA  | PGP                 | DGP | 70.0                      | 77.80                            | 86.00   | 1            | 113.0                            | 26.5                    | 1                                |
| TSMDJ75A    | TSMDJ75CA  | PGR                 | DGR | 75.0                      | 83.30                            | 92.10   | 1            | 121.0                            | 24.8                    | 1                                |
| TSMDJ78A    | TSMDJ78CA  | PGT                 | DGT | 78.0                      | 86.70                            | 95.80   | 1            | 126.0                            | 23.8                    | 1                                |
| TSMDJ85A    | TSMDJ85CA  | PGV                 | DGV | 85.0                      | 94.4                             | 104.0   | 1            | 137.0                            | 21.9                    | 1                                |
| TSMDJ90A    | TSMDJ90CA  | PGX                 | DGX | 90.0                      | 100.0                            | 111.0   | 1            | 146.0                            | 20.5                    | 1                                |
| TSMDJ100A   | TSMDJ100CA | PGZ                 | DGZ | 100.0                     | 111.0                            | 123.0   | 1            | 162.0                            | 18.5                    | 1                                |
| TSMDJ110A   | TSMDJ110CA | PHE                 | DHE | 110.0                     | 122.0                            | 135.0   | 1            | 177.0                            | 16.9                    | 1                                |
| TSMDJ120A   | TSMDJ120CA | PHG                 | DHG | 120.0                     | 133.0                            | 147.0   | 1            | 193.0                            | 15.5                    | 1                                |
| TSMDJ130A   | TSMDJ130CA | PHK                 | DHK | 130.0                     | 144.0                            | 159.0   | 1            | 209.0                            | 14.4                    | 1                                |
| TSMDJ150A   | TSMDJ150CA | PHM                 | DHM | 150.0                     | 167.0                            | 185.0   | 1            | 243.0                            | 12.3                    | 1                                |
| TSMDJ160A   | TSMDJ160CA | PHP                 | DHP | 160.0                     | 178.0                            | 197.0   | 1            | 259.0                            | 11.6                    | 1                                |
| TSMDJ170A   | TSMDJ170CA | PHR                 | DHR | 170.0                     | 189.0                            | 209.0   | 1            | 275.0                            | 10.9                    | 1                                |
| TSMDJ180A   | TSMDJ180CA | PHT                 | DHT | 180.0                     | 201.0                            | 222.0   | 1            | 292.0                            | 10.3                    | 1                                |
| TSMDJ190A   | TSMDJ190CA | PHV                 | DHV | 190.0                     | 209.0                            | 243.0   | 1            | 308.0                            | 9.7                     | 1                                |
| TSMDJ200A   | TSMDJ200CA | PHX                 | DHX | 200.0                     | 224.0                            | 247.0   | 1            | 324.0                            | 9.3                     | 1                                |
| TSMDJ210A   | TSMDJ210CA | PHZ                 | DHZ | 210.0                     | 231.0                            | 268.0   | 1            | 340.0                            | 8.8                     | 1                                |
| TSMDJ220A   | TSMDJ220CA | PIE                 | DIE | 220.0                     | 246.0                            | 272.0   | 1            | 356.0                            | 8.4                     | 1                                |
| TSMDJ250A   | TSMDJ250CA | PIG                 | DIG | 250.0                     | 279.0                            | 309.0   | 1            | 405.0                            | 7.4                     | 1                                |
| TSMDJ300A   | TSMDJ300CA | PIK                 | DIK | 300.0                     | 335.0                            | 371.0   | 1            | 486.0                            | 6.2                     | 1                                |
| TSMDJ350A   | TSMDJ350CA | PIM                 | DIM | 350.0                     | 391.0                            | 432.0   | 1            | 567.0                            | 5.3                     | 1                                |
| TSMDJ400A   | TSMDJ400CA | PIP                 | DIP | 400.0                     | 447.0                            | 494.0   | 1            | 648.0                            | 4.6                     | 1                                |
| TSMDJ440A   | TSMDJ440CA | PIR                 | DIR | 440.0                     | 492.0                            | 543.0   | 1            | 713.0                            | 4.2                     | 1                                |

## Ratings and Characteristics Curves (TA=25°C unless otherwise noted)

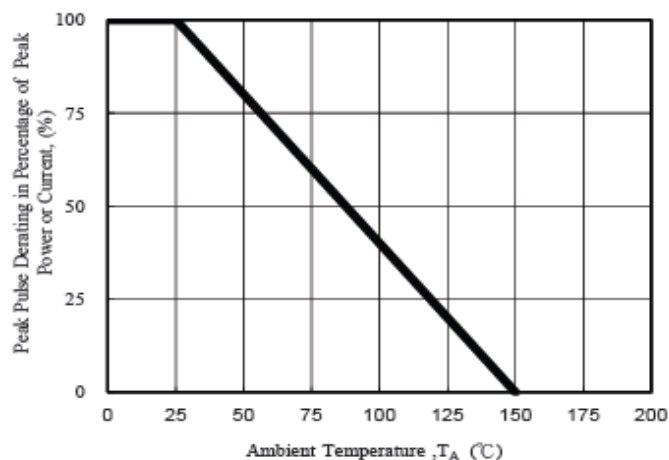


Fig. 1 - Pulse Derating Curve

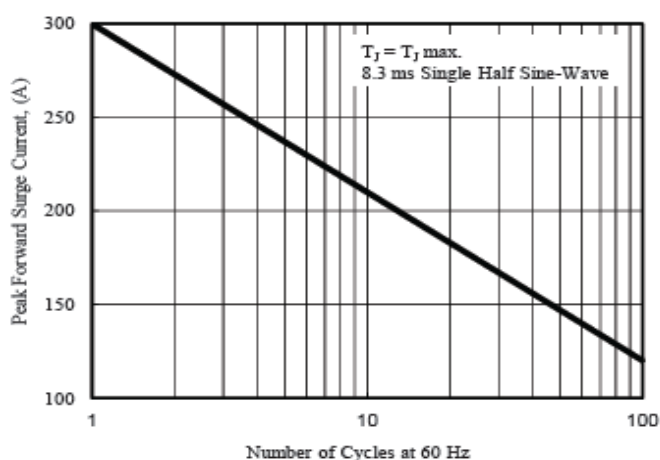


Fig. 2 - Maximum Non-Repetitive Surge Current

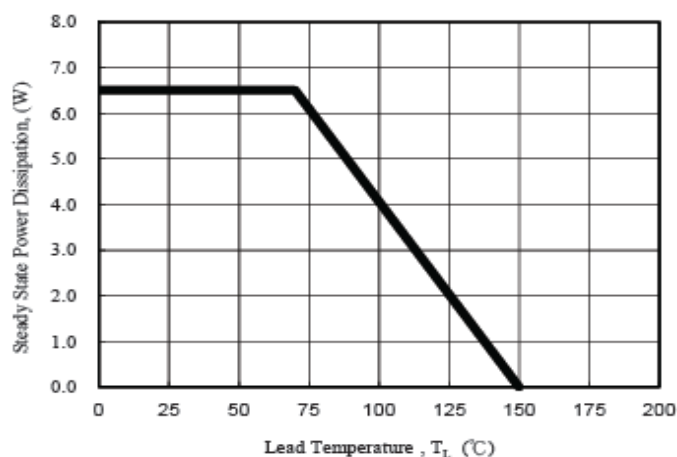


Fig. 3 - Steady State Power Derating Curve

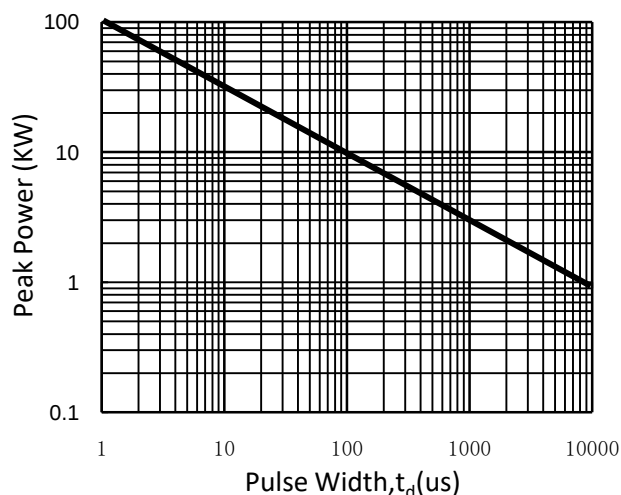


Fig. 4 - Peak Pulse Power Rating Curve

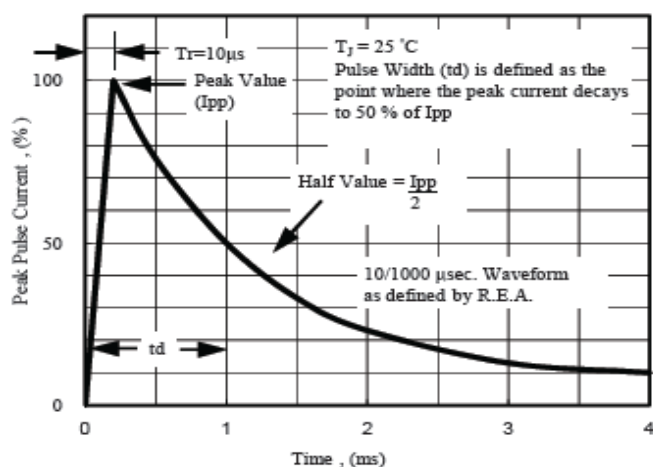


Fig. 5 - Pulse Waveform

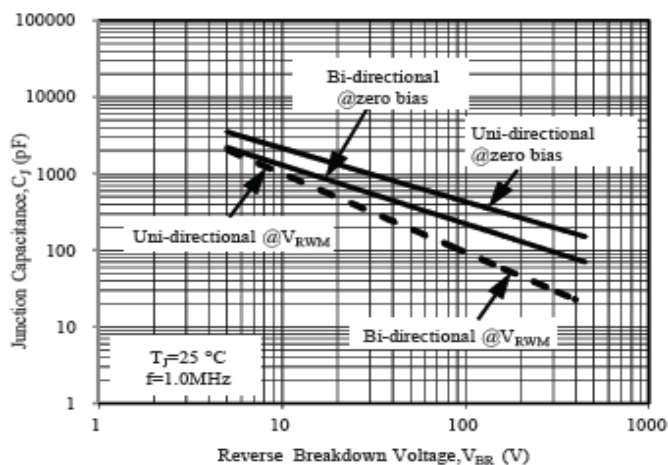


Fig. 6 - Typical Junction Capacitance