

**Surface Mount Transient Voltage Suppressor Rectifiers**

**Reverse Voltage:5.0V~220V**

**1500 Watt Peak Pulse Power**

**FEATURES**

- ◆Glass passivated chip
- ◆1500 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: DO214AA/(SMB) Molded plastic
- ◆Lead: Solderable per MIL-STD-750, method 2026
- ◆Epoxy: UL 94V-0 rate flame retardant
- ◆Polarity: Color band denotes cathode end except Bipolar
- ◆Mounting position: Any

**Maximum Ratings & Characteristics**

**Ratings at 25°C ambient temperature unless otherwise specified.**

| Parameter                                                                                  | Symbol                            | Value          | Unit |
|--------------------------------------------------------------------------------------------|-----------------------------------|----------------|------|
| Peak power dissipation with a 10/1000 us waveform <sup>(1)</sup>                           | P <sub>PP</sub>                   | 1500           | 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 T <sub>L</sub> = 75°C                            | P <sub>D</sub>                    | 5.0            | W    |
| Peak forward surge current, 8.3 ms single half sinewave unidirectional only <sup>(2)</sup> | I <sub>FSM</sub>                  | 100            | A    |
| Maximum instantaneous forward voltage at 50 A for unidirectional only <sup>(3)</sup>       | V <sub>F</sub>                    | 3.5/6.5        | V    |
| Operating Junction Temperature and Storage Temperature Range                               | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150    | °C   |

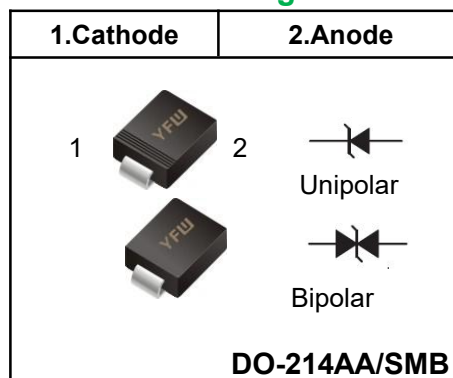
**Note:**

1)Non-repetitive current pulse per Fig.5 and derated above T<sub>A</sub>= 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)V<sub>F</sub><3.5V for devices of V<sub>BR</sub><200V and V<sub>F</sub><6.5V for devices of V<sub>BR</sub>>201V.

**Pinning**



| Part Number |              | Device Marking Code |     | Reverse Stand-off Voltage | Breakdown Voltage VBR @ IT |         | Test Current | Max. Clamping Voltage @ IPP | Max. Peak Pulse Current | Max. Reverse Leakage @ VRWM |
|-------------|--------------|---------------------|-----|---------------------------|----------------------------|---------|--------------|-----------------------------|-------------------------|-----------------------------|
| UNI-POLAR   | BI-POLAR     | UNI                 | BI  | VRWM(V)                   | Min.(V)                    | Max.(V) | IT(mA)       | VCMAX.(V)                   | IPP(A)                  | IR(uA)                      |
| 1.5SMBJ5.0A | 1.5SMBJ5.0CA | GDE                 | BDE | 5                         | 6.4                        | 7       | 10           | 9.2                         | 163                     | 800                         |
| 1.5SMBJ6.0A | 1.5SMBJ6.0CA | GDG                 | BDG | 6                         | 6.67                       | 7.37    | 10           | 10.3                        | 145.7                   | 800                         |
| 1.5SMBJ6.5A | 1.5SMBJ6.5CA | GDK                 | BDK | 6.5                       | 7.22                       | 7.98    | 10           | 11.2                        | 134                     | 500                         |
| 1.5SMBJ7.0A | 1.5SMBJ7.0CA | GDM                 | BDM | 7                         | 7.78                       | 8.6     | 10           | 12                          | 125                     | 200                         |
| 1.5SMBJ7.5A | 1.5SMBJ7.5CA | GDP                 | BDP | 7.5                       | 8.33                       | 9.21    | 1            | 12.9                        | 116.3                   | 100                         |
| 1.5SMBJ8.0A | 1.5SMBJ8.0CA | GDR                 | BDR | 8                         | 8.89                       | 9.83    | 1            | 13.6                        | 110.3                   | 50                          |
| 1.5SMBJ8.5A | 1.5SMBJ8.5CA | GDT                 | BDT | 8.5                       | 9.44                       | 10.4    | 1            | 14.4                        | 104.2                   | 20                          |
| 1.5SMBJ9.0A | 1.5SMBJ9.0CA | GDV                 | BDV | 9                         | 10                         | 11.1    | 1            | 15.4                        | 97.4                    | 10                          |
| 1.5SMBJ10A  | 1.5SMBJ10CA  | GDX                 | BDX | 10                        | 11.1                       | 12.3    | 1            | 17                          | 88.3                    | 5                           |
| 1.5SMBJ11A  | 1.5SMBJ11CA  | GDZ                 | BDZ | 11                        | 12.2                       | 13.5    | 1            | 18.2                        | 82.5                    | 1                           |
| 1.5SMBJ12A  | 1.5SMBJ12CA  | GEE                 | BEE | 12                        | 13.3                       | 14.7    | 1            | 19.9                        | 75.4                    | 1                           |
| 1.5SMBJ13A  | 1.5SMBJ13CA  | GEG                 | BEG | 13                        | 14.4                       | 15.9    | 1            | 21.5                        | 69.8                    | 1                           |
| 1.5SMBJ14A  | 1.5SMBJ14CA  | GEK                 | BEK | 14                        | 15.6                       | 17.2    | 1            | 23.2                        | 64.7                    | 1                           |
| 1.5SMBJ15A  | 1.5SMBJ15CA  | GEM                 | BEM | 15                        | 16.7                       | 18.5    | 1            | 24.4                        | 61.5                    | 1                           |
| 1.5SMBJ16A  | 1.5SMBJ16CA  | GEP                 | BEP | 16                        | 17.8                       | 19.7    | 1            | 26                          | 57.7                    | 1                           |
| 1.5SMBJ17A  | 1.5SMBJ17CA  | GER                 | BER | 17                        | 18.9                       | 20.9    | 1            | 27.6                        | 54.4                    | 1                           |
| 1.5SMBJ18A  | 1.5SMBJ18CA  | GET                 | BET | 18                        | 20                         | 22.1    | 1            | 29.2                        | 51.4                    | 1                           |
| 1.5SMBJ20A  | 1.5SMBJ20CA  | GEV                 | BEV | 20                        | 22.2                       | 24.5    | 1            | 32.4                        | 46.3                    | 1                           |
| 1.5SMBJ22A  | 1.5SMBJ22CA  | GEX                 | BEX | 22                        | 24.4                       | 26.9    | 1            | 35.5                        | 42.3                    | 1                           |
| 1.5SMBJ24A  | 1.5SMBJ24CA  | GEZ                 | BEZ | 24                        | 26.7                       | 29.5    | 1            | 38.9                        | 38.6                    | 1                           |
| 1.5SMBJ26A  | 1.5SMBJ26CA  | GFE                 | BFE | 26                        | 28.9                       | 31.9    | 1            | 42.1                        | 35.7                    | 1                           |
| 1.5SMBJ28A  | 1.5SMBJ28CA  | GFG                 | BFG | 28                        | 31.1                       | 34.4    | 1            | 45.4                        | 33.1                    | 1                           |
| 1.5SMBJ30A  | 1.5SMBJ30CA  | GFK                 | BFK | 30                        | 33.5                       | 36.8    | 1            | 48.4                        | 31                      | 1                           |
| 1.5SMBJ33A  | 1.5SMBJ33CA  | GFM                 | BFM | 33                        | 36.7                       | 40.6    | 1            | 53.3                        | 28.2                    | 1                           |
| 1.5SMBJ36A  | 1.5SMBJ36CA  | GFP                 | BFP | 36                        | 40                         | 44.2    | 1            | 58.1                        | 25.9                    | 1                           |
| 1.5SMBJ40A  | 1.5SMBJ40CA  | GFR                 | BFR | 40                        | 44.4                       | 49.1    | 1            | 64.5                        | 23.3                    | 1                           |
| 1.5SMBJ43A  | 1.5SMBJ43CA  | GFT                 | BFT | 43                        | 47.8                       | 52.8    | 1            | 69.4                        | 21.7                    | 1                           |
| 1.5SMBJ45A  | 1.5SMBJ45CA  | GFV                 | BFV | 45                        | 50                         | 55.3    | 1            | 72.7                        | 20.6                    | 1                           |
| 1.5SMBJ48A  | 1.5SMBJ48CA  | GFX                 | BFX | 48                        | 53.3                       | 58.9    | 1            | 77.4                        | 19.4                    | 1                           |
| 1.5SMBJ51A  | 1.5SMBJ51CA  | GFZ                 | BFZ | 51                        | 56.7                       | 62.7    | 1            | 82.4                        | 18.2                    | 1                           |
| 1.5SMBJ54A  | 1.5SMBJ54CA  | GGE                 | BGE | 54                        | 60                         | 66.3    | 1            | 87.1                        | 17.3                    | 1                           |
| 1.5SMBJ58A  | 1.5SMBJ58CA  | GGG                 | BGG | 58                        | 64.4                       | 71.2    | 1            | 93.6                        | 16.1                    | 1                           |
| 1.5SMBJ60A  | 1.5SMBJ60CA  | GGK                 | BGK | 60                        | 66.7                       | 73.7    | 1            | 96.8                        | 15.5                    | 1                           |
| 1.5SMBJ64A  | 1.5SMBJ64CA  | GGM                 | BGM | 64                        | 71.1                       | 78.6    | 1            | 103                         | 14.6                    | 1                           |
| 1.5SMBJ70A  | 1.5SMBJ70CA  | GGP                 | BGP | 70                        | 77.8                       | 86      | 1            | 113                         | 13.3                    | 1                           |
| 1.5SMBJ75A  | 1.5SMBJ75CA  | GGR                 | BGR | 75                        | 83.3                       | 92.1    | 1            | 121                         | 12.4                    | 1                           |
| 1.5SMBJ78A  | 1.5SMBJ78CA  | GGT                 | BGT | 78                        | 86.7                       | 95.8    | 1            | 126                         | 11.9                    | 1                           |
| 1.5SMBJ85A  | 1.5SMBJ85CA  | GGV                 | BGV | 85                        | 94.4                       | 104     | 1            | 137                         | 11                      | 1                           |
| 1.5SMBJ90A  | 1.5SMBJ90CA  | GGX                 | BGX | 90                        | 100                        | 111     | 1            | 146                         | 10.3                    | 1                           |
| 1.5SMBJ100A | 1.5SMBJ100CA | GGZ                 | BGZ | 100                       | 111                        | 123     | 1            | 162                         | 9.3                     | 1                           |
| 1.5SMBJ110A | 1.5SMBJ110CA | GHE                 | BHE | 110                       | 122                        | 135     | 1            | 177                         | 8.5                     | 1                           |
| 1.5SMBJ120A | 1.5SMBJ120CA | GHG                 | BHG | 120                       | 133                        | 147     | 1            | 193                         | 7.8                     | 1                           |
| 1.5SMBJ130A | 1.5SMBJ130CA | GHK                 | BHK | 130                       | 144                        | 159     | 1            | 209                         | 7.2                     | 1                           |
| 1.5SMBJ150A | 1.5SMBJ150CA | GHM                 | BHM | 150                       | 167                        | 185     | 1            | 243                         | 6.2                     | 1                           |
| 1.5SMBJ160A | 1.5SMBJ160CA | GHP                 | BHP | 160                       | 178                        | 197     | 1            | 259                         | 5.8                     | 1                           |
| 1.5SMBJ170A | 1.5SMBJ170CA | GHR                 | BHR | 170                       | 189                        | 209     | 1            | 275                         | 5.5                     | 1                           |
| 1.5SMBJ180A | 1.5SMBJ180CA | GHT                 | BHT | 180                       | 201                        | 222     | 1            | 292                         | 5.1                     | 1                           |
| 1.5SMBJ190A |              | GHU                 |     | 190                       | 209                        | 243     | 1            | 308                         | 4.8                     | 1                           |
| 1.5SMBJ200A |              | GHV                 |     | 200                       | 224                        | 247     | 1            | 324                         | 4.6                     | 1                           |
| 1.5SMBJ210A |              | GHW                 |     | 210                       | 231                        | 268     | 1            | 340                         | 4.4                     | 1                           |
| 1.5SMBJ220A |              | GHX                 |     | 220                       | 246                        | 272     | 1            | 356                         | 4.2                     | 1                           |

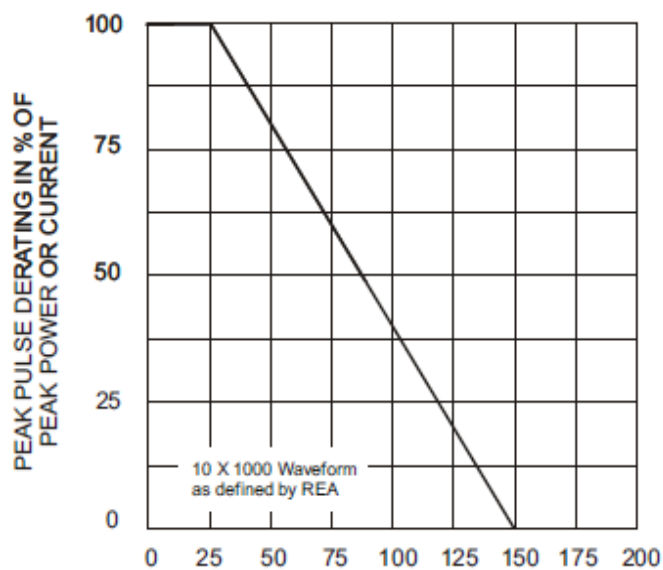


Fig. 1 - Pulse Derating Curve

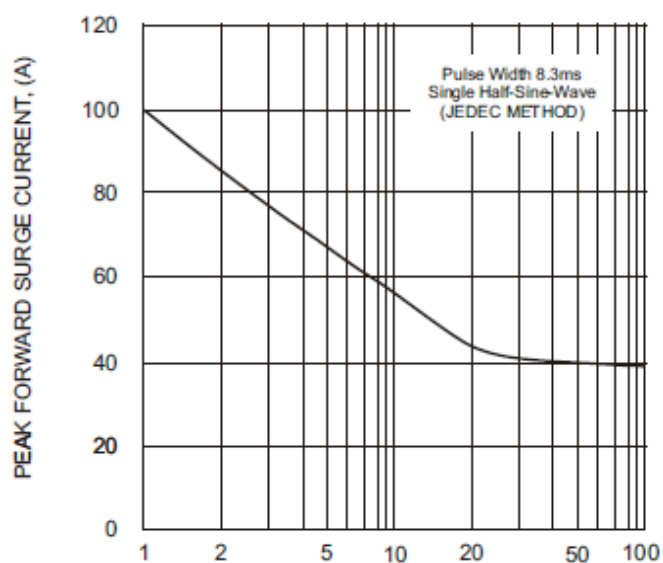


Fig. 2 - Maximum Non-Repetitive Surge Current

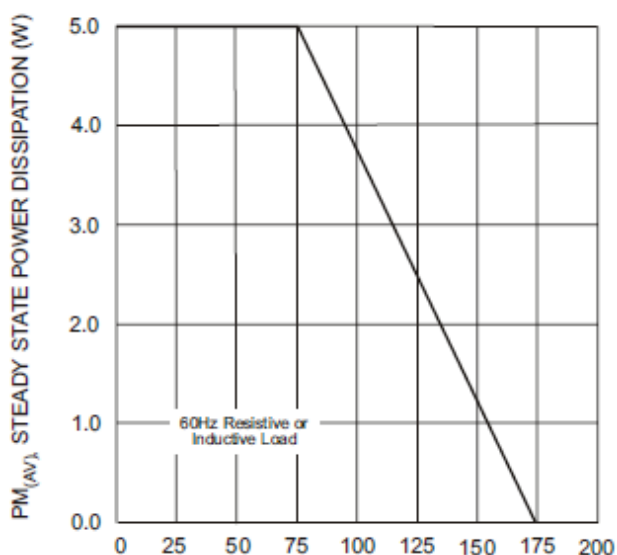


Fig. 3 - Steady State Power Derating Curve

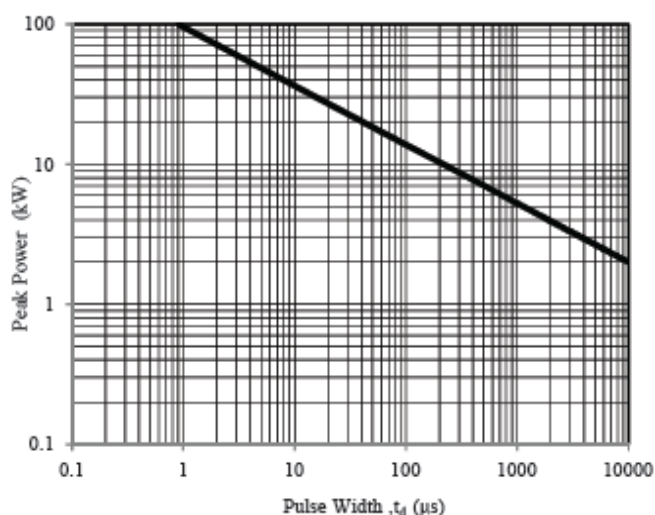


Fig. 4 - Peak Pulse Power Rating Curve

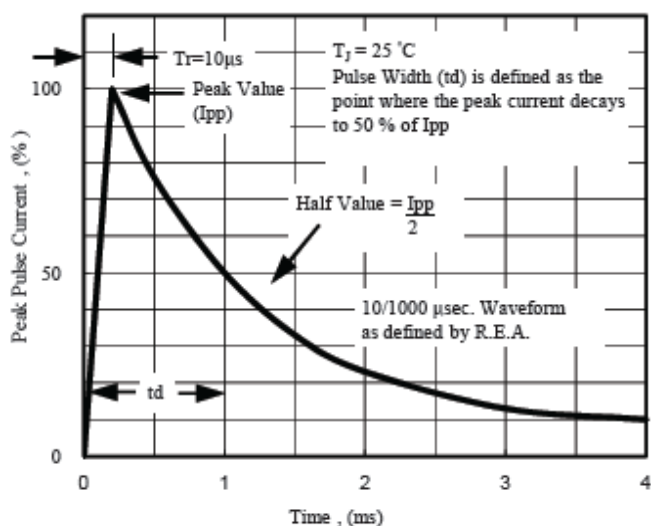


Fig. 5 - Pulse Waveform

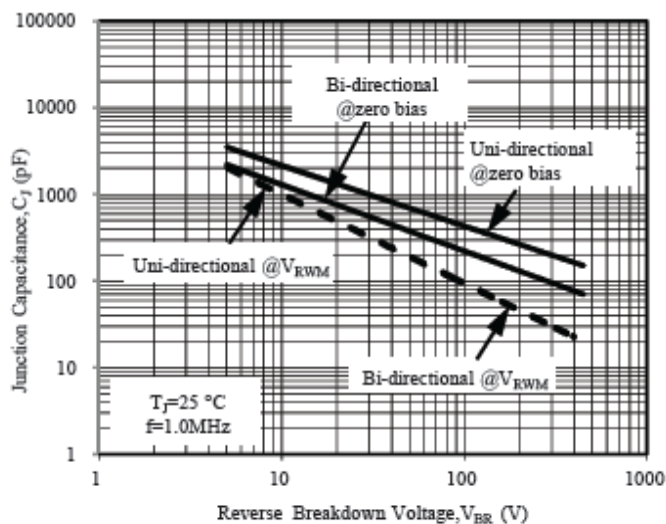
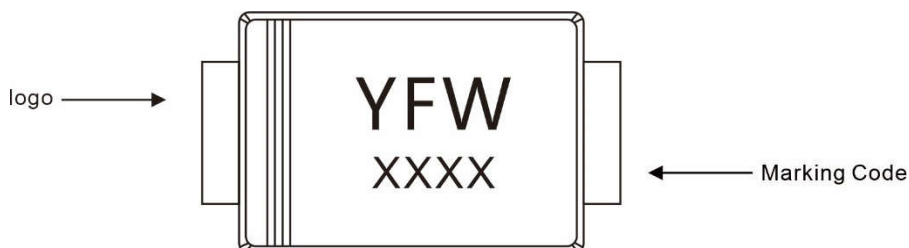


Fig. 6 - Typical Junction Capacitance

## Marking Diagram



## Ordering information

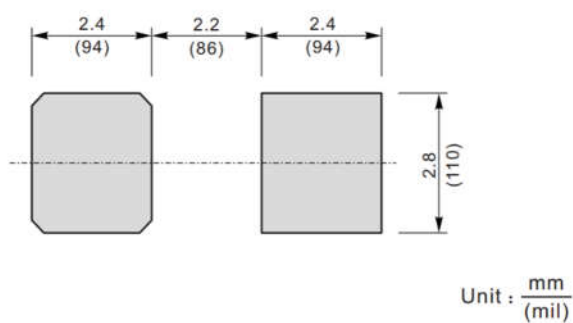
| Package      | Packing Description | Packing Quantity             |
|--------------|---------------------|------------------------------|
| DO-214AA SMB | Tape/Reel, 13"reel  | 3000PCS/Reel 30000PCS/Carton |

## Package Dimensions

### DO-214AA SMB

| Dim.           | Millimeter(mm) |       | mil  |      |
|----------------|----------------|-------|------|------|
|                | Min.           | Max.  | Min. | Max. |
| A              | 2.13           | 2.44  | 84   | 96   |
| E              | 4.06           | 4.70  | 160  | 185  |
| D              | 3.3            | 3.94  | 130  | 155  |
| E <sub>1</sub> | 5.08           | 5.59  | 200  | 220  |
| A <sub>1</sub> | 0.05           | 0.20  | 2.0  | 7.9  |
| L              | 0.8            | 1.5   | 32   | 59   |
| C              | 0.152          | 0.305 | 6    | 12   |
| b              | 1.9            | 2.2   | 75   | 87   |

## The recommended mounting pad size



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