

**SURFACE MOUNT GPP**  
**TRANSIENT VOLTAGE SUPPRESSOR**  
**1500 WATT PEAK POWER 5.0 WATTS STEADY STATE**

**FEATURES**

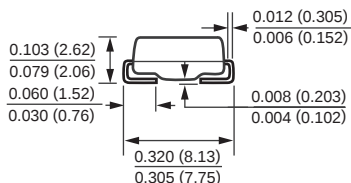
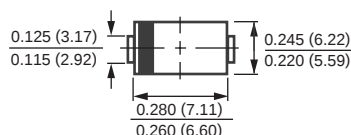
- \* Plastic package has underwriters laboratory
- \* Glass passivated chip construction
- \* 1500 watt surge capability at 1ms
- \* Excellent clamping capability
- \* Low zener impedance
- \* Fast response time

**MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS**

Ratings at 25 °C ambient temperature unless otherwise specified.



**DO-214AB**



Dimensions in inches and (millimeters)

**DEVICES FOR BIPOLAR APPLICATIONS**

For Bidirectional use C or CA suffix for types 1.5FMCJ6.8 thru 1.5FMCJ400

Electrical characteristics apply in both direction

**MAXIMUM RATINGS** (At  $T_A = 25^\circ\text{C}$  unless otherwise noted)

| RATINGS                                                                                                            | SYMBOL   | VALUE        | UNITS            |
|--------------------------------------------------------------------------------------------------------------------|----------|--------------|------------------|
| Peak Power Dissipation with a 10/1000uS ( Note 1,2, Fig.1 )                                                        | PPPM     | Minimum 1500 | Watts            |
| Peak Pulse Current with a 10/1000uS Waveform<br>( Note 1, Fig.3 )                                                  | IPPM     | SEE TABLE 1  | Amps             |
| Steady State Power Dissipation at $T_L = 75^\circ\text{C}$ ( Note 2 )                                              | PM(AV)   | 5.0          | Watts            |
| Peak Forward Surge Current, 8.3ms single half sine wave-<br>superimposed on rated load( JEDEC METHOD )( Note 2,3 ) | IFSM     | 100          | Amps             |
| Maximum Instantaneous Forward Voltage at 50A for unidirectional only<br>( Note 3,4 )                               | VF       | SEE NOTES 4  | Volts            |
| Operating and Storage Temperature Range                                                                            | TJ, TSTG | -65 to +175  | $^\circ\text{C}$ |

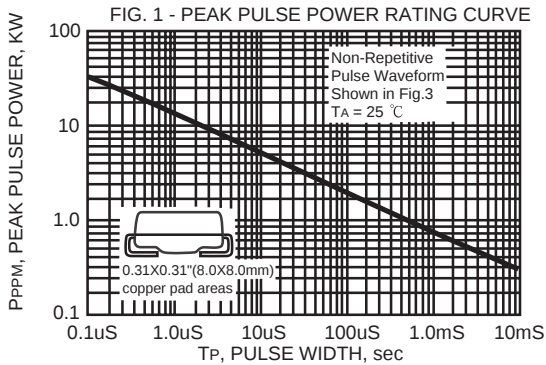
NOTES : 1. Non-repetitive current pulse, per Fig.3 and derated above  $T_A = 25^\circ\text{C}$  per Fig.2.

2. Mounted on 0.31 X 0.31" (8.0 X 8.0mm) copper pads to each terminal.

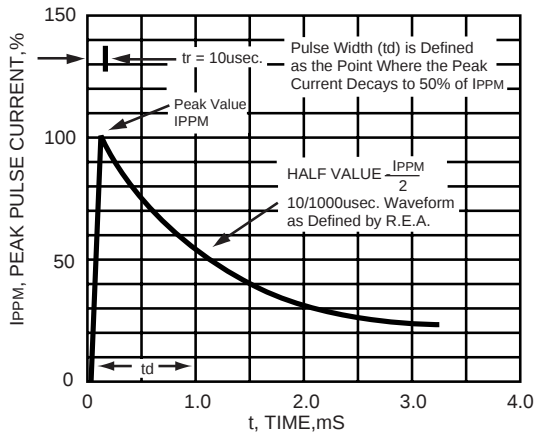
3. Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.

4.  $V_F = 3.5\text{V}$  on 1.5FMCJ6.8 thru 1.5FMCJ90 devices and  $V_F = 5.0\text{V}$  on 1.5FMCJ100 thru 1.5FMCJ400 devices.

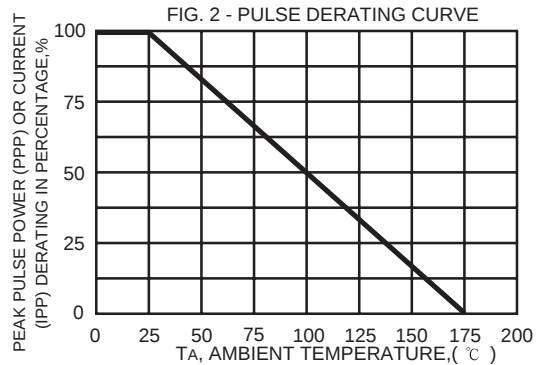
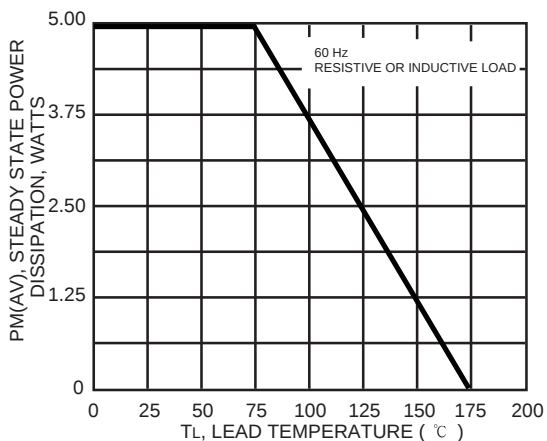
# RATING AND CHARACTERISTIC CURVES ( 1.5FMCJ6.8 THRU 1.5FMCJ400CA )



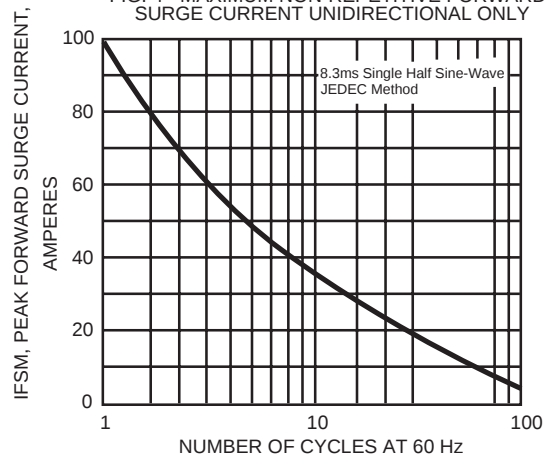
**FIG. 3 - PULSE WAVEFORM**



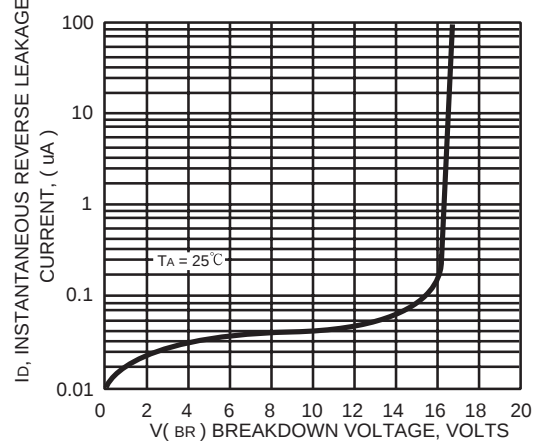
**FIG. 5 - STEADY STATE POWER DERATING CURVE**



**FIG. 4 - MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL ONLY**



**FIG. 6 - TYPICAL REVERSE LEAKAGE CHARACTERISTICS**



# TRANSIENT VOLTAGE SUPPRESSORS

1500W SERIES TVS DIODES / DO-214AB ( CASE 4 ) 1500W

| TYPE        | Breakdown Voltage |      |             | Reverse Stand off Voltage<br>VWM<br>(Volts) | Maximum Reverse Leakage at VWM<br>ID(μA) | Maximum Peak Pulse Current<br>IPPM<br>(Amps) | Maximum Clamping Voltage at IPPM<br>VC (Volts) |
|-------------|-------------------|------|-------------|---------------------------------------------|------------------------------------------|----------------------------------------------|------------------------------------------------|
|             | VBR<br>(Volts)    |      | @IT<br>(mA) |                                             |                                          |                                              |                                                |
|             | MIN.              | MAX. |             |                                             |                                          |                                              |                                                |
| 1.5FMCJ6.8  | 6.12              | 7.48 | 10          | 5.50                                        | 1000                                     | 145                                          | 10.8                                           |
| 1.5FMCJ6.8A | 6.45              | 7.14 | 10          | 5.80                                        | 1000                                     | 150                                          | 10.5                                           |
| 1.5FMCJ7.5  | 6.75              | 8.25 | 10          | 6.05                                        | 500                                      | 134                                          | 11.7                                           |
| 1.5FMCJ7.5A | 7.13              | 7.88 | 10          | 6.40                                        | 500                                      | 139                                          | 11.3                                           |
| 1.5FMCJ8.2  | 7.38              | 9.02 | 10          | 6.63                                        | 200                                      | 126                                          | 12.5                                           |
| 1.5FMCJ8.2A | 7.79              | 8.61 | 10          | 7.02                                        | 200                                      | 130                                          | 12.1                                           |
| 1.5FMCJ9.1  | 8.19              | 10.0 | 1.0         | 7.37                                        | 50                                       | 114                                          | 13.8                                           |
| 1.5FMCJ9.1A | 8.69              | 9.55 | 1.0         | 7.78                                        | 50                                       | 117                                          | 13.4                                           |
| 1.5FMCJ10   | 9.00              | 11.0 | 1.0         | 8.10                                        | 10                                       | 105                                          | 15.0                                           |
| 1.5FMCJ10A  | 9.50              | 10.5 | 1.0         | 8.55                                        | 10                                       | 108                                          | 14.5                                           |
| 1.5FMCJ11   | 9.90              | 12.1 | 1.0         | 8.92                                        | 5.0                                      | 97                                           | 16.2                                           |
| 1.5FMCJ11A  | 10.5              | 11.6 | 1.0         | 9.40                                        | 5.0                                      | 100                                          | 15.6                                           |
| 1.5FMCJ12   | 10.8              | 13.2 | 1.0         | 9.72                                        | 5.0                                      | 91                                           | 17.3                                           |
| 1.5FMCJ12A  | 11.4              | 12.6 | 1.0         | 10.2                                        | 5.0                                      | 94                                           | 16.7                                           |
| 1.5FMCJ13   | 11.7              | 14.3 | 1.0         | 10.5                                        | 5.0                                      | 82                                           | 19.0                                           |
| 1.5FMCJ13A  | 12.4              | 13.7 | 1.0         | 11.1                                        | 5.0                                      | 86                                           | 18.2                                           |
| 1.5FMCJ15   | 13.5              | 16.5 | 1.0         | 12.1                                        | 5.0                                      | 71                                           | 22.0                                           |
| 1.5FMCJ15A  | 14.3              | 15.8 | 1.0         | 12.8                                        | 5.0                                      | 74                                           | 21.2                                           |
| 1.5FMCJ16   | 14.4              | 17.6 | 1.0         | 12.9                                        | 5.0                                      | 67                                           | 23.5                                           |
| 1.5FMCJ16A  | 15.2              | 16.8 | 1.0         | 13.6                                        | 5.0                                      | 70                                           | 22.5                                           |
| 1.5FMCJ18   | 16.2              | 19.8 | 1.0         | 14.5                                        | 5.0                                      | 59                                           | 26.5                                           |
| 1.5FMCJ18A  | 17.1              | 18.9 | 1.0         | 15.3                                        | 5.0                                      | 60                                           | 25.2                                           |
| 1.5FMCJ20   | 18.0              | 22.0 | 1.0         | 16.2                                        | 5.0                                      | 54                                           | 29.1                                           |
| 1.5FMCJ20A  | 19.0              | 21.0 | 1.0         | 17.1                                        | 5.0                                      | 56                                           | 27.7                                           |
| 1.5FMCJ22   | 19.8              | 24.2 | 1.0         | 17.8                                        | 5.0                                      | 49                                           | 31.9                                           |
| 1.5FMCJ22A  | 20.9              | 23.1 | 1.0         | 18.8                                        | 5.0                                      | 51                                           | 30.6                                           |
| 1.5FMCJ24   | 21.6              | 26.4 | 1.0         | 19.4                                        | 5.0                                      | 45                                           | 34.7                                           |
| 1.5FMCJ24A  | 22.8              | 25.2 | 1.0         | 20.5                                        | 5.0                                      | 47                                           | 33.2                                           |
| 1.5FMCJ27   | 24.3              | 29.7 | 1.0         | 21.8                                        | 5.0                                      | 40                                           | 39.1                                           |
| 1.5FMCJ27A  | 25.7              | 28.4 | 1.0         | 23.1                                        | 5.0                                      | 42                                           | 37.5                                           |
| 1.5FMCJ30   | 27.0              | 33.0 | 1.0         | 24.3                                        | 5.0                                      | 36                                           | 43.5                                           |
| 1.5FMCJ30A  | 28.5              | 31.5 | 1.0         | 25.6                                        | 5.0                                      | 38                                           | 41.4                                           |
| 1.5FMCJ33   | 29.7              | 36.3 | 1.0         | 26.8                                        | 5.0                                      | 33                                           | 47.7                                           |
| 1.5FMCJ33A  | 31.4              | 34.7 | 1.0         | 28.2                                        | 5.0                                      | 34                                           | 45.7                                           |
| 1.5FMCJ36   | 32.4              | 39.6 | 1.0         | 29.1                                        | 5.0                                      | 30                                           | 52.0                                           |
| 1.5FMCJ36A  | 34.2              | 37.8 | 1.0         | 30.8                                        | 5.0                                      | 31                                           | 49.9                                           |
| 1.5FMCJ39   | 35.1              | 42.9 | 1.0         | 31.6                                        | 5.0                                      | 27                                           | 56.4                                           |
| 1.5FMCJ39A  | 37.1              | 41.0 | 1.0         | 33.3                                        | 5.0                                      | 29                                           | 53.9                                           |
| 1.5FMCJ43   | 38.7              | 47.3 | 1.0         | 34.8                                        | 5.0                                      | 25                                           | 61.9                                           |
| 1.5FMCJ43A  | 40.9              | 45.2 | 1.0         | 36.8                                        | 5.0                                      | 26                                           | 59.3                                           |
| 1.5FMCJ47   | 42.3              | 51.7 | 1.0         | 38.1                                        | 5.0                                      | 23                                           | 67.8                                           |
| 1.5FMCJ47A  | 44.7              | 49.4 | 1.0         | 40.2                                        | 5.0                                      | 24                                           | 64.8                                           |
| 1.5FMCJ51   | 45.9              | 56.1 | 1.0         | 41.3                                        | 5.0                                      | 21                                           | 73.5                                           |
| 1.5FMCJ51A  | 48.5              | 53.6 | 1.0         | 43.6                                        | 5.0                                      | 22                                           | 70.1                                           |
| 1.5FMCJ56   | 50.4              | 61.6 | 1.0         | 45.4                                        | 5.0                                      | 19                                           | 80.5                                           |
| 1.5FMCJ56A  | 53.2              | 58.8 | 1.0         | 47.8                                        | 5.0                                      | 20                                           | 77.0                                           |

# TRANSIENT VOLTAGE SUPPRESSORS

1500W SERIES TVS DIODES / DO-214AB ( CASE 4 ) 1500W

| TYPE        | Breakdown Voltage |      |          | Reverse Stand off Voltage<br>VWM (Volts) | Maximum Reverse Leakage at VWM<br>ID(μA) | Maximum Peak Pulse Current<br>IPPM (Amps) | Maximum Clamping Voltage at IPPM<br>VC (Volts) |
|-------------|-------------------|------|----------|------------------------------------------|------------------------------------------|-------------------------------------------|------------------------------------------------|
|             | VBR (Volts)       |      | @IT (mA) |                                          |                                          |                                           |                                                |
|             | MIN.              | MAX. |          |                                          |                                          |                                           |                                                |
| 1.5FMCJ62   | 55.8              | 68.2 | 1.0      | 50.2                                     | 5.0                                      | 17                                        | 89.0                                           |
| 1.5FMCJ62A  | 58.9              | 65.1 | 1.0      | 53.0                                     | 5.0                                      | 18                                        | 85.0                                           |
| 1.5FMCJ68   | 61.2              | 74.8 | 1.0      | 55.1                                     | 5.0                                      | 16                                        | 98.0                                           |
| 1.5FMCJ68A  | 64.6              | 71.4 | 1.0      | 58.1                                     | 5.0                                      | 17                                        | 92.0                                           |
| 1.5FMCJ75   | 67.5              | 82.5 | 1.0      | 60.7                                     | 5.0                                      | 14                                        | 109                                            |
| 1.5FMCJ75A  | 71.3              | 78.8 | 1.0      | 64.1                                     | 5.0                                      | 15                                        | 104                                            |
| 1.5FMCJ82   | 73.8              | 90.2 | 1.0      | 66.4                                     | 5.0                                      | 13                                        | 118                                            |
| 1.5FMCJ82A  | 77.9              | 86.1 | 1.0      | 70.1                                     | 5.0                                      | 13.9                                      | 113                                            |
| 1.5FMCJ91   | 81.9              | 100  | 1.0      | 73.7                                     | 5.0                                      | 12                                        | 131                                            |
| 1.5FMCJ91A  | 86.5              | 95.5 | 1.0      | 77.8                                     | 5.0                                      | 12.6                                      | 125                                            |
| 1.5FMCJ100  | 90.0              | 110  | 1.0      | 81.0                                     | 5.0                                      | 10.9                                      | 144                                            |
| 1.5FMCJ100A | 95.0              | 105  | 1.0      | 85.5                                     | 5.0                                      | 11.4                                      | 137                                            |
| 1.5FMCJ110  | 99.0              | 121  | 1.0      | 89.2                                     | 5.0                                      | 9.9                                       | 158                                            |
| 1.5FMCJ110A | 105               | 116  | 1.0      | 94.0                                     | 5.0                                      | 10.3                                      | 152                                            |
| 1.5FMCJ120  | 108               | 132  | 1.0      | 97.2                                     | 5.0                                      | 9.1                                       | 173                                            |
| 1.5FMCJ120A | 114               | 126  | 1.0      | 102                                      | 5.0                                      | 9.5                                       | 165                                            |
| 1.5FMCJ130  | 117               | 143  | 1.0      | 105                                      | 5.0                                      | 8.4                                       | 187                                            |
| 1.5FMCJ130A | 124               | 137  | 1.0      | 111                                      | 5.0                                      | 8.7                                       | 179                                            |
| 1.5FMCJ150  | 135               | 165  | 1.0      | 121                                      | 5.0                                      | 7.3                                       | 215                                            |
| 1.5FMCJ150A | 143               | 158  | 1.0      | 128                                      | 5.0                                      | 7.6                                       | 207                                            |
| 1.5FMCJ160  | 144               | 176  | 1.0      | 130                                      | 5.0                                      | 6.8                                       | 230                                            |
| 1.5FMCJ160A | 152               | 168  | 1.0      | 136                                      | 5.0                                      | 7.1                                       | 219                                            |
| 1.5FMCJ170  | 153               | 187  | 1.0      | 138                                      | 5.0                                      | 6.4                                       | 244                                            |
| 1.5FMCJ170A | 162               | 179  | 1.0      | 145                                      | 5.0                                      | 6.7                                       | 234                                            |
| 1.5FMCJ180  | 162               | 198  | 1.0      | 146                                      | 5.0                                      | 6.1                                       | 258                                            |
| 1.5FMCJ180A | 171               | 189  | 1.0      | 154                                      | 5.0                                      | 6.4                                       | 246                                            |
| 1.5FMCJ200  | 180               | 220  | 1.0      | 162                                      | 5.0                                      | 5.4                                       | 287                                            |
| 1.5FMCJ200A | 190               | 210  | 1.0      | 171                                      | 5.0                                      | 5.7                                       | 274                                            |
| 1.5FMCJ220  | 198               | 242  | 1.0      | 175                                      | 5.0                                      | 4.5                                       | 344                                            |
| 1.5FMCJ220A | 209               | 231  | 1.0      | 185                                      | 5.0                                      | 4.8                                       | 328                                            |
| 1.5FMCJ250  | 225               | 275  | 1.0      | 202                                      | 5.0                                      | 4.3                                       | 360                                            |
| 1.5FMCJ250A | 237               | 263  | 1.0      | 214                                      | 5.0                                      | 4.5                                       | 344                                            |
| 1.5FMCJ300  | 270               | 330  | 1.0      | 243                                      | 5.0                                      | 3.6                                       | 430                                            |
| 1.5FMCJ300A | 285               | 315  | 1.0      | 256                                      | 5.0                                      | 3.8                                       | 414                                            |
| 1.5FMCJ350  | 315               | 385  | 1.0      | 284                                      | 5.0                                      | 3.1                                       | 504                                            |
| 1.5FMCJ350A | 332               | 368  | 1.0      | 300                                      | 5.0                                      | 3.2                                       | 482                                            |
| 1.5FMCJ400  | 360               | 440  | 1.0      | 324                                      | 5.0                                      | 2.7                                       | 574                                            |
| 1.5FMCJ400A | 380               | 420  | 1.0      | 342                                      | 5.0                                      | 2.8                                       | 548                                            |

- NOTES :
1. V<sub>BR</sub> measured after I<sub>T</sub> applied for 300ms. I<sub>T</sub> = square pluse or equivalent.
  2. For bidirectional use C or CA suffixs for all types (ex. 1.5FMCJ6.8C,1.5FMCJ400CA) electrical characteristics apply in both directions.
  3. For bidirectional types having V<sub>WM</sub> of 10 volts and less, the I<sub>D</sub> limit is doubled.