



# 1N6267 - 1N6303A

# TRANSIENT VOLTAGE SUPPRESSOR

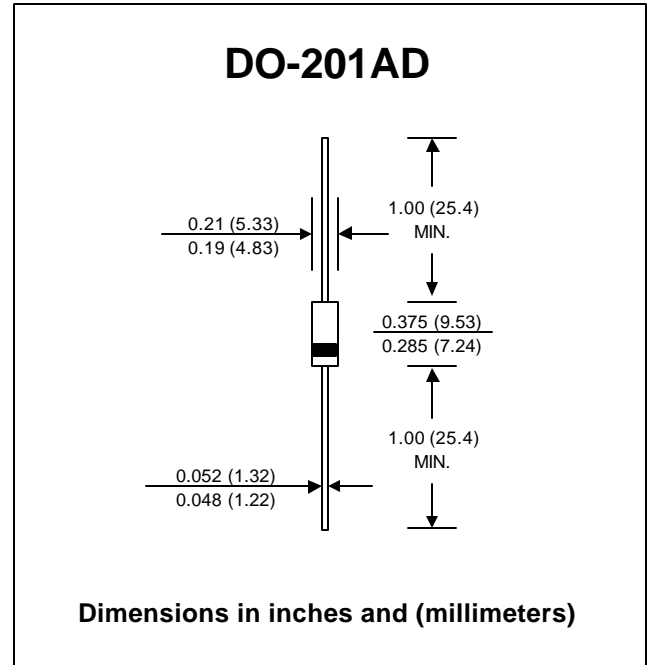
**V<sub>BR</sub> : 6.8 - 200 Volts**  
**P<sub>PK</sub> : 1500 Watts**

### FEATURES :

- \* 1500W surge capability at 1ms
- \* Excellent clamping capability
- \* Low zener impedance
- \* Fast response time : typically less than 1.0 ps from 0 volt to V<sub>BR(min.)</sub>
- \* Typical I<sub>R</sub> less than 1µA above 10V

### MECHANICAL DATA

- \* Case : DO-201AD Molded plastic
- \* Epoxy : UL94V-O rate flame retardant
- \* Lead : Axial lead solderable per MIL-STD-202, method 208 guaranteed
- \* Polarity : Color band denotes cathode end except Bipolar.
- \* Mounting position : Any
- \* Weight : 1.21 grams



### DEVICES FOR BIPOLAR APPLICATIONS

For bi-directional use C or CA Suffix  
Electrical characteristics apply in both directions

### MAXIMUM RATINGS

Rating at 25 °C ambient temperature unless otherwise specified.

| Rating   | Symbol                            | Value         | Unit  |
|--|-----------------------------------|---------------|-------|
| Peak Power Dissipation at Ta = 25 °C, Tp=1ms (Note1)   | P <sub>PK</sub>                   | 1500          | Watts |
| Steady State Power Dissipation at TL = 75 °C<br>Lead Lengths 0.375", (9.5mm) (Note 2)                      | P <sub>D</sub>                    | 5.0           | Watts |
| Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method) (Note 3) | I <sub>FSM</sub>                  | 200           | Amps. |
| Operating and Storage Temperature Range  | T <sub>J</sub> , T <sub>STG</sub> | - 65 to + 175 | °C    |

### Note :

- (1) Non-repetitive Current pulse, per Fig. 5 and derated above Ta = 25 °C per Fig. 1
- (2) Mounted on Copper Lead area of 1.57 in<sup>2</sup> (40mm<sup>2</sup>).
- (3) 8.3 ms single half sine-wave, duty cycle = 4 pulses per minutes maximum.



Certificate Number: Q10561

Certificate Number: 517276

## ELECTRICAL CHARACTERISTICS

Rating at = 25 °C ambient temperature unless otherwise specified

| TYPE    | Breakdown Voltage @ It<br>( Note 1 ) |      | Working Peak<br>Reverse<br>Voltage | Maximum<br>Reverse Leakage<br>@ VRWM | Maximum<br>Reverse<br>Current | Maximum<br>Clamping<br>Voltage @ IRSM | Maximum<br>Temperature<br>Co-efficient<br>of VBR |       |
|---------|--------------------------------------|------|------------------------------------|--------------------------------------|-------------------------------|---------------------------------------|--|-------|
|         | VBR (V)                              |      |                                    |                                      |                               |                                       |  | VRWM  |
|         | Axial Lead                           | Min. | Max.                               | (mA)                                 | (V)                           | (µA)                                  | (A)  | (V)   |
| 1N6267  | 6.12                                 | 7.48 | 10                                 | 5.50                                 | 1000                          | 139                                   | 10.8   | 0.057 |
| 1N6267A | 6.45                                 | 7.14 | 10                                 | 5.80                                 | 1000                          | 143                                   | 10.5   | 0.057 |
| 1N6268  | 6.75                                 | 8.25 | 10                                 | 6.05                                 | 500                           | 128                                   | 11.7   | 0.061 |
| 1N6268A | 7.13                                 | 7.88 | 10                                 | 6.40                                 | 500                           | 132                                   | 11.3   | 0.061 |
| 1N6269  | 7.38                                 | 9.02 | 10                                 | 6.63                                 | 200                           | 120                                   | 12.5   | 0.065 |
| 1N6269A | 7.79                                 | 8.61 | 10                                 | 7.02                                 | 200                           | 124                                   | 12.1   | 0.065 |
| 1N6270  | 8.19                                 | 10.0 | 1.0                                | 7.37                                 | 50                            | 109                                   | 13.8   | 0.068 |
| 1N6270A | 8.65                                 | 9.55 | 1.0                                | 7.78                                 | 50                            | 112                                   | 13.4   | 0.068 |
| 1N6271  | 9.00                                 | 11.0 | 1.0                                | 8.10                                 | 10                            | 100                                   | 15.0   | 0.073 |
| 1N6271A | 9.50                                 | 10.5 | 1.0                                | 8.55                                 | 10                            | 103                                   | 14.5   | 0.073 |
| 1N6272  | 9.90                                 | 12.1 | 1.0                                | 8.92                                 | 5.0                           | 93.0                                  | 16.2   | 0.075 |
| 1N6272A | 10.5                                 | 11.6 | 1.0                                | 9.40                                 | 5.0                           | 96.0                                  | 15.6   | 0.075 |
| 1N6273  | 10.8                                 | 13.2 | 1.0                                | 9.72                                 | 5.0                           | 87.0                                  | 17.3   | 0.078 |
| 1N6273A | 11.4                                 | 12.6 | 1.0                                | 10.2                                 | 5.0                           | 90.0                                  | 16.7   | 0.078 |
| 1N6274  | 11.7                                 | 14.3 | 1.0                                | 10.5                                 | 5.0                           | 79.0                                  | 19.0   | 0.081 |
| 1N6274A | 12.4                                 | 13.7 | 1.0                                | 11.1                                 | 5.0                           | 82.0                                  | 18.2   | 0.081 |
| 1N6275  | 13.5                                 | 16.5 | 1.0                                | 12.1                                 | 5.0                           | 68.0                                  | 22.0   | 0.084 |
| 1N6275A | 14.3                                 | 15.8 | 1.0                                | 12.8                                 | 5.0                           | 71.0                                  | 21.2   | 0.084 |
| 1N6276  | 14.4                                 | 17.6 | 1.0                                | 12.9                                 | 5.0                           | 64.0                                  | 23.5   | 0.086 |
| 1N6276A | 15.2                                 | 16.8 | 1.0                                | 13.6                                 | 5.0                           | 67.0                                  | 22.5   | 0.086 |
| 1N6277  | 16.2                                 | 19.8 | 1.0                                | 14.5                                 | 5.0                           | 56.5                                  | 26.5   | 0.088 |
| 1N6277A | 17.1                                 | 18.9 | 1.0                                | 15.3                                 | 5.0                           | 59.5                                  | 25.2   | 0.088 |
| 1N6278  | 18.0                                 | 22.0 | 1.0                                | 16.2                                 | 5.0                           | 51.5                                  | 29.1   | 0.090 |
| 1N6278A | 19.0                                 | 21.0 | 1.0                                | 17.1                                 | 5.0                           | 54.0                                  | 27.7   | 0.090 |
| 1N6279  | 19.8                                 | 24.2 | 1.0                                | 17.8                                 | 5.0                           | 47.0                                  | 31.9   | 0.092 |
| 1N6279A | 20.9                                 | 23.1 | 1.0                                | 18.8                                 | 5.0                           | 49.0                                  | 30.6   | 0.092 |
| 1N6280  | 21.6                                 | 26.4 | 1.0                                | 19.4                                 | 5.0                           | 43.0                                  | 34.7   | 0.094 |
| 1N6280A | 22.8                                 | 25.2 | 1.0                                | 20.5                                 | 5.0                           | 45.0                                  | 33.2   | 0.094 |
| 1N6281  | 24.3                                 | 29.7 | 1.0                                | 21.8                                 | 5.0                           | 38.5                                  | 39.1   | 0.096 |
| 1N6281A | 25.7                                 | 28.4 | 1.0                                | 23.1                                 | 5.0                           | 40.0                                  | 37.5   | 0.096 |
| 1N6282  | 27.0                                 | 33.0 | 1.0                                | 24.3                                 | 5.0                           | 34.5                                  | 43.5   | 0.097 |
| 1N6282A | 28.5                                 | 31.5 | 1.0                                | 25.6                                 | 5.0                           | 36.0                                  | 41.4   | 0.097 |
| 1N6283  | 29.7                                 | 36.3 | 1.0                                | 26.8                                 | 5.0                           | 31.5                                  | 47.7   | 0.098 |
| 1N6283A | 31.4                                 | 34.7 | 1.0                                | 28.2                                 | 5.0                           | 33.0                                  | 45.7   | 0.098 |
| 1N6284  | 32.4                                 | 39.6 | 1.0                                | 29.1                                 | 5.0                           | 29.0                                  | 52.0   | 0.099 |
| 1N6284A | 34.2                                 | 37.8 | 1.0                                | 30.8                                 | 5.0                           | 30.0                                  | 49.9   | 0.099 |
| 1N6285  | 35.1                                 | 42.9 | 1.0                                | 31.6                                 | 5.0                           | 26.5                                  | 56.4   | 0.100 |
| 1N6285A | 37.1                                 | 41.0 | 1.0                                | 33.3                                 | 5.0                           | 28.0                                  | 53.9   | 0.100 |
| 1N6286  | 38.7                                 | 47.3 | 1.0                                | 34.8                                 | 5.0                           | 24.0                                  | 61.9   | 0.101 |
| 1N6286A | 40.9                                 | 45.2 | 1.0                                | 36.8                                 | 5.0                           | 25.3                                  | 59.3   | 0.101 |
| 1N6287  | 42.3                                 | 51.7 | 1.0                                | 38.1                                 | 5.0                           | 22.2                                  | 67.8   | 0.101 |
| 1N6287A | 44.7                                 | 49.4 | 1.0                                | 40.2                                 | 5.0                           | 23.2                                  | 64.8   | 0.101 |
| 1N6288  | 45.9                                 | 56.1 | 1.0                                | 41.3                                 | 5.0                           | 20.4                                  | 73.5   | 0.102 |
| 1N6288A | 48.5                                 | 53.6 | 1.0                                | 43.6                                 | 5.0                           | 21.4                                  | 70.1   | 0.102 |
| 1N6289  | 50.4                                 | 61.6 | 1.0                                | 45.4                                 | 5.0                           | 18.6                                  | 80.5   | 0.103 |
| 1N6289A | 53.2                                 | 58.8 | 1.0                                | 47.8                                 | 5.0                           | 19.5                                  | 77.0   | 0.103 |
| 1N6290  | 55.8                                 | 68.2 | 1.0                                | 50.2                                 | 5.0                           | 16.9                                  | 89.0   | 0.104 |

## ELECTRICAL CHARACTERISTICS

Rating at = 25 °C ambient temperature unless otherwise specified

| TYPE    | Breakdown Voltage @ $I_t$<br>( Note 1 ) |      |       | Working Peak<br>Reverse<br>Voltage | Maximum<br>Reverse Leakage<br>@ $V_{RWM}$ | Maximum<br>Reverse<br>Current | Maximum<br>Clamping<br>Voltage @ $I_{RSM}$ | Maximum<br>Temperature<br>Co-efficient<br>of $V_{BR}$<br>(% / °C) |
|---------|---|------|-------|------------------------------------|---|-------------------------------|--|---|
|         | $V_{BR}$ (V)                            |      | $I_t$ |                                    |   |                               |  |   |
|         | Min.                                    | Max. | (mA)  | (V)                                | ( $\mu$ A)                                | (A)                           | (V)  |   |
| 1N6290A | 58.9                                    | 65.1 | 1.0   | 53.0                               | 5.0                                       | 17.7                          | 85.0                                       | 0.104   |
| 1N6291  | 61.2                                    | 74.8 | 1.0   | 55.1                               | 5.0                                       | 15.3                          | 98.0                                       | 0.104   |
| 1N6291A | 64.6                                    | 71.4 | 1.0   | 58.1                               | 5.0                                       | 16.3                          | 92.0                                       | 0.104   |
| 1N6292  | 67.5                                    | 82.5 | 1.0   | 60.7                               | 5.0                                       | 13.9                          | 108  | 0.105   |
| 1N6292A | 71.3                                    | 78.8 | 1.0   | 64.1                               | 5.0                                       | 14.6                          | 103  | 0.105   |
| 1N6293  | 73.8                                    | 90.2 | 1.0   | 66.4                               | 5.0                                       | 12.7                          | 118  | 0.105   |
| 1N6293A | 77.9                                    | 86.1 | 1.0   | 70.1                               | 5.0                                       | 13.3                          | 113  | 0.105   |
| 1N6294  | 81.9                                    | 100  | 1.0   | 73.7                               | 5.0                                       | 11.4                          | 131  | 0.106   |
| 1N6294A | 86.5                                    | 95.5 | 1.0   | 77.8                               | 5.0                                       | 12.0                          | 125  | 0.106   |
| 1N6295  | 90.0                                    | 110  | 1.0   | 81.0                               | 5.0                                       | 10.4                          | 144  | 0.106   |
| 1N6295A | 95.0                                    | 105  | 1.0   | 85.5                               | 5.0                                       | 11.0                          | 137  | 0.106   |
| 1N6296  | 99.0                                    | 121  | 1.0   | 89.2                               | 5.0                                       | 9.5                           | 158  | 0.107   |
| 1N6296A | 105                                     | 116  | 1.0   | 94.0                               | 5.0                                       | 9.9                           | 152  | 0.107   |
| 1N6297  | 108                                     | 132  | 1.0   | 97.2                               | 5.0                                       | 8.7                           | 173  | 0.107   |
| 1N6297A | 114                                     | 126  | 1.0   | 102                                | 5.0                                       | 9.1                           | 165  | 0.107   |
| 1N6298  | 117                                     | 143  | 1.0   | 105                                | 5.0                                       | 8.0                           | 187  | 0.107   |
| 1N6298A | 124                                     | 137  | 1.0   | 111                                | 5.0                                       | 8.4                           | 179  | 0.107   |
| 1N6299  | 135                                     | 165  | 1.0   | 121                                | 5.0                                       | 7.0                           | 215  | 0.108   |
| 1N6299A | 143                                     | 158  | 1.0   | 128                                | 5.0                                       | 7.2                           | 207  | 0.108   |
| 1N6300  | 144                                     | 176  | 1.0   | 130                                | 5.0                                       | 6.5                           | 230  | 0.108   |
| 1N6300A | 152                                     | 168  | 1.0   | 136                                | 5.0                                       | 6.8                           | 219  | 0.108   |
| 1N6301  | 153                                     | 187  | 1.0   | 138                                | 5.0                                       | 6.2                           | 244  | 0.108   |
| 1N6301A | 162                                     | 179  | 1.0   | 145                                | 5.0                                       | 6.4                           | 234  | 0.108   |
| 1N6302  | 162                                     | 198  | 1.0   | 146                                | 5.0                                       | 5.8                           | 258  | 0.108   |
| 1N6302A | 171                                     | 189  | 1.0   | 154                                | 5.0                                       | 6.1                           | 246  | 0.108   |
| 1N6303  | 180                                     | 220  | 1.0   | 162                                | 5.0                                       | 5.2                           | 287  | 0.108   |
| 1N6303A | 190                                     | 210  | 1.0   | 171                                | 5.0                                       | 5.5                           | 274  | 0.108   |

**Note:**

- ( 1 )  $V_{BR}$  measured after  $I_t$  applied for 300  $\mu$ s..  $I_t$  = square wave pulse or equivalent.
- ( 2 )  $V_F = 3.5 V_{max}$ .,  $I_F = 100$  Ambs. ( 6.8 Volts thru 91 Volts )  
 $V_F = 5.0 V_{max}$ .,  $I_F = 100$  Amps. ( 100 Volts thru 200 Volts ) per 1/2 square or equivalent sine wave.  
 PW = 8.3 ms, duty cycle = 4 pulses per minute maximum.

## RATING AND CHARACTERISTIC CURVES ( 1N6267 - 1N6303A )

FIG.1 - PULSE DERATING CURVE

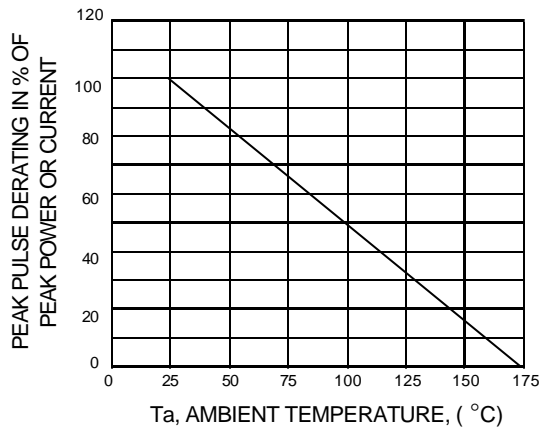


FIG.2 - MAXIMUM NON-REPETITIVE SURGE CURRENT

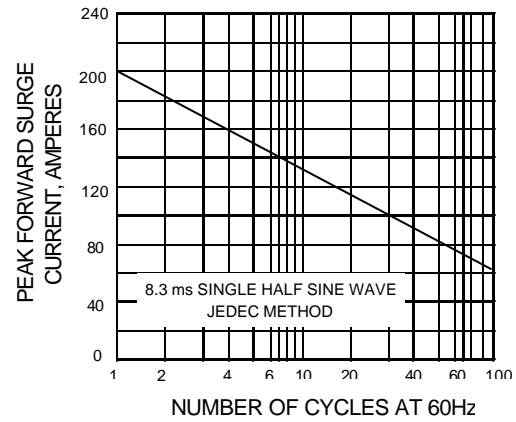


FIG.3 - STEADY STATE POWER DERATING

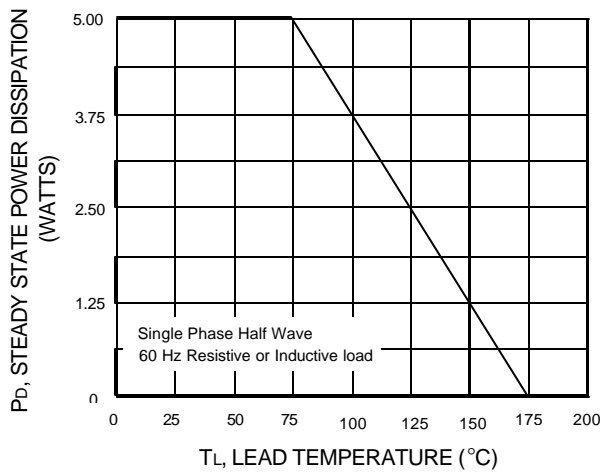


FIG.4 - PULSE RATING CURVE

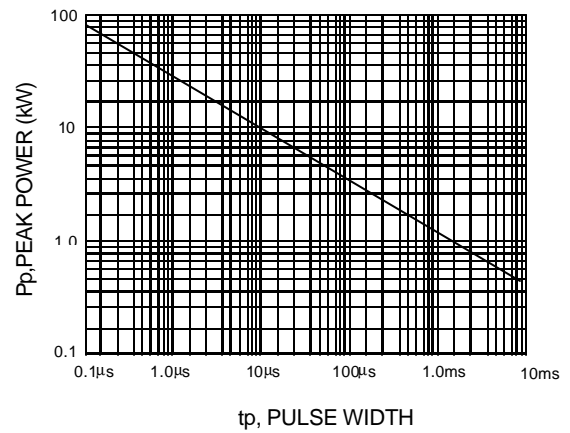


FIG.5 - PULSE WAVEFORM

