

# 1.5KE6.8C SERIES

# BI-DIRECTIONAL TRANSIENT VOLTAGE SUPPRESSOR

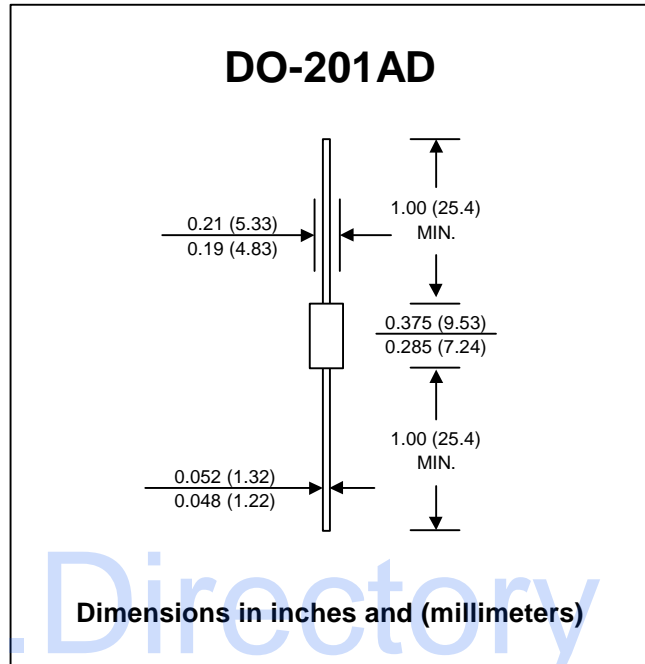
**V<sub>BR</sub> : 6.8 - 440 Volts**  
**PPK : 1500 Watts**

## 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
- \* Mounting position : Any
- \* Weight : 1.21 grams



## DEVICES FOR UNIPOLAR APPLICATIONS

For uni-directional without "C"  
 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>                   | Minimum 1500  | W    |
| Steady State Power Dissipation at TL = 75 °C<br>Lead Lengths 0.375", (9.5mm) (Note 2) | P <sub>D</sub>                    | 5.0           | W    |
| 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. 2 and derated above Ta = 25 °C per Fig. 1
- (2) Mounted on Copper Leaf area of 1.57 in<sup>2</sup> (40mm<sup>2</sup>).

## 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)   |       |
| 1.5KE6.8C  | 6.12                                    | 7.48 | 10                                 | 5.50                                      | 2000                          | 139  | 10.8  | 0.057 |
| 1.5KE6.8CA | 6.45                                    | 7.14 | 10                                 | 5.80                                      | 2000                          | 143  | 10.5  | 0.057 |
| 1.5KE7.5C  | 6.75                                    | 8.25 | 10                                 | 6.05                                      | 1000                          | 128  | 11.7  | 0.061 |
| 1.5KE7.5CA | 7.13                                    | 7.88 | 10                                 | 6.40                                      | 1000                          | 132  | 11.3  | 0.061 |
| 1.5KE8.2C  | 7.38                                    | 9.02 | 10                                 | 6.63                                      | 400                           | 120  | 12.5  | 0.065 |
| 1.5KE8.2CA | 7.79                                    | 8.61 | 10                                 | 7.02                                      | 400                           | 124  | 12.1  | 0.065 |
| 1.5KE9.1C  | 8.19                                    | 10.0 | 1.0                                | 7.37                                      | 100                           | 109  | 13.8  | 0.068 |
| 1.5KE9.1CA | 8.65                                    | 9.55 | 1.0                                | 7.78                                      | 100                           | 112  | 13.4  | 0.068 |
| 1.5KE10C   | 9.00                                    | 11.0 | 1.0                                | 8.10                                      | 10                            | 100  | 15.0  | 0.073 |
| 1.5KE10CA  | 9.50                                    | 10.5 | 1.0                                | 8.55                                      | 10                            | 103  | 14.5  | 0.073 |
| 1.5KE11C   | 9.90                                    | 12.1 | 1.0                                | 8.92                                      | 10                            | 93.0                                       | 16.2  | 0.075 |
| 1.5KE11CA  | 10.5                                    | 11.6 | 1.0                                | 9.40                                      | 10                            | 96.0                                       | 15.6  | 0.075 |
| 1.5KE12C   | 10.8                                    | 13.2 | 1.0                                | 9.72                                      | 5.0                           | 87.0                                       | 17.3  | 0.078 |
| 1.5KE12CA  | 11.4                                    | 12.6 | 1.0                                | 10.2                                      | 5.0                           | 90.0                                       | 16.7  | 0.078 |
| 1.5KE13C   | 11.7                                    | 14.3 | 1.0                                | 10.5                                      | 5.0                           | 79.0                                       | 19.0  | 0.081 |
| 1.5KE13CA  | 12.4                                    | 13.7 | 1.0                                | 11.1                                      | 5.0                           | 82.0                                       | 18.2  | 0.081 |
| 1.5KE15C   | 13.5                                    | 16.5 | 1.0                                | 12.1                                      | 5.0                           | 68.0                                       | 22.0  | 0.084 |
| 1.5KE15CA  | 14.3                                    | 15.8 | 1.0                                | 12.8                                      | 5.0                           | 71.0                                       | 21.2  | 0.084 |
| 1.5KE16C   | 14.4                                    | 17.6 | 1.0                                | 12.9                                      | 5.0                           | 64.0                                       | 23.5  | 0.086 |
| 1.5KE16CA  | 15.2                                    | 16.8 | 1.0                                | 13.6                                      | 5.0                           | 67.0                                       | 22.5  | 0.086 |
| 1.5KE18C   | 16.2                                    | 19.8 | 1.0                                | 14.5                                      | 5.0                           | 56.5                                       | 26.5  | 0.088 |
| 1.5KE18CA  | 17.1                                    | 18.9 | 1.0                                | 15.3                                      | 5.0                           | 59.5                                       | 25.2  | 0.088 |
| 1.5KE20C   | 18.0                                    | 22.0 | 1.0                                | 16.2                                      | 5.0                           | 51.5                                       | 29.1  | 0.090 |
| 1.5KE20CA  | 19.0                                    | 21.0 | 1.0                                | 17.1                                      | 5.0                           | 54.0                                       | 27.7  | 0.090 |
| 1.5KE22C   | 19.8                                    | 24.2 | 1.0                                | 17.8                                      | 5.0                           | 47.0                                       | 31.9  | 0.092 |
| 1.5KE22CA  | 20.9                                    | 23.1 | 1.0                                | 18.8                                      | 5.0                           | 49.0                                       | 30.6  | 0.092 |
| 1.5KE24C   | 21.6                                    | 26.4 | 1.0                                | 19.4                                      | 5.0                           | 43.0                                       | 34.7  | 0.094 |
| 1.5KE24CA  | 22.8                                    | 25.2 | 1.0                                | 20.5                                      | 5.0                           | 45.0                                       | 33.2  | 0.094 |
| 1.5KE27C   | 24.3                                    | 29.7 | 1.0                                | 21.8                                      | 5.0                           | 38.5                                       | 39.1  | 0.096 |
| 1.5KE27CA  | 25.7                                    | 28.4 | 1.0                                | 23.1                                      | 5.0                           | 40.0                                       | 37.5  | 0.096 |
| 1.5KE30C   | 27.0                                    | 33.0 | 1.0                                | 24.3                                      | 5.0                           | 34.5                                       | 43.5  | 0.097 |
| 1.5KE30CA  | 28.5                                    | 31.5 | 1.0                                | 25.6                                      | 5.0                           | 36.0                                       | 41.4  | 0.097 |
| 1.5KE33C   | 29.7                                    | 36.3 | 1.0                                | 26.8                                      | 5.0                           | 31.5                                       | 47.7  | 0.098 |
| 1.5KE33CA  | 31.4                                    | 34.7 | 1.0                                | 28.2                                      | 5.0                           | 33.0                                       | 45.7  | 0.098 |
| 1.5KE36C   | 32.4                                    | 39.6 | 1.0                                | 29.1                                      | 5.0                           | 29.0                                       | 52.0  | 0.099 |
| 1.5KE36CA  | 34.2                                    | 37.8 | 1.0                                | 30.8                                      | 5.0                           | 30.0                                       | 49.9  | 0.099 |
| 1.5KE39C   | 35.1                                    | 42.9 | 1.0                                | 31.6                                      | 5.0                           | 26.5                                       | 56.4  | 0.100 |
| 1.5KE39CA  | 37.1                                    | 41.0 | 1.0                                | 33.3                                      | 5.0                           | 28.0                                       | 53.9  | 0.100 |
| 1.5KE43C   | 38.7                                    | 47.3 | 1.0                                | 34.8                                      | 5.0                           | 24.0                                       | 61.9  | 0.101 |
| 1.5KE43CA  | 40.9                                    | 45.2 | 1.0                                | 36.8                                      | 5.0                           | 25.3                                       | 59.3  | 0.101 |
| 1.5KE47C   | 42.3                                    | 51.7 | 1.0                                | 38.1                                      | 5.0                           | 22.2                                       | 67.8  | 0.101 |
| 1.5KE47CA  | 44.7                                    | 49.4 | 1.0                                | 40.2                                      | 5.0                           | 23.2                                       | 64.8  | 0.101 |
| 1.5KE51C   | 45.9                                    | 56.1 | 1.0                                | 41.3                                      | 5.0                           | 20.4                                       | 73.5  | 0.102 |
| 1.5KE51CA  | 48.5                                    | 53.6 | 1.0                                | 43.6                                      | 5.0                           | 21.4                                       | 70.1  | 0.102 |
| 1.5KE56C   | 50.4                                    | 61.6 | 1.0                                | 45.4                                      | 5.0                           | 18.6                                       | 80.5  | 0.103 |
| 1.5KE56CA  | 53.2                                    | 58.8 | 1.0                                | 47.8                                      | 5.0                           | 19.5                                       | 77.0  | 0.103 |

## 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)   |       |
| 1.5KE62C   | 55.8                                    | 68.2 | 1.0                                | 50.2                                      | 5.0                           | 16.9                                       | 89.0  | 0.104 |
| 1.5KE62CA  | 58.9                                    | 65.1 | 1.0                                | 53.0                                      | 5.0                           | 17.7                                       | 85.0  | 0.104 |
| 1.5KE68C   | 61.2                                    | 74.8 | 1.0                                | 55.1                                      | 5.0                           | 15.3                                       | 98.0  | 0.104 |
| 1.5KE68CA  | 64.6                                    | 71.4 | 1.0                                | 58.1                                      | 5.0                           | 16.3                                       | 92.0  | 0.104 |
| 1.5KE75C   | 67.5                                    | 82.5 | 1.0                                | 60.7                                      | 5.0                           | 13.9                                       | 108   | 0.105 |
| 1.5KE75CA  | 71.3                                    | 78.8 | 1.0                                | 64.1                                      | 5.0                           | 14.6                                       | 103   | 0.105 |
| 1.5KE82C   | 73.8                                    | 90.2 | 1.0                                | 66.4                                      | 5.0                           | 12.7                                       | 118   | 0.105 |
| 1.5KE82CA  | 77.9                                    | 86.1 | 1.0                                | 70.1                                      | 5.0                           | 13.3                                       | 113   | 0.105 |
| 1.5KE91C   | 81.9                                    | 100  | 1.0                                | 73.7                                      | 5.0                           | 11.4                                       | 131   | 0.106 |
| 1.5KE91CA  | 86.5                                    | 95.5 | 1.0                                | 77.8                                      | 5.0                           | 12.0                                       | 125   | 0.106 |
| 1.5KE100C  | 90.0                                    | 110  | 1.0                                | 81.0                                      | 5.0                           | 10.4                                       | 144   | 0.106 |
| 1.5KE100CA | 95.0                                    | 105  | 1.0                                | 85.5                                      | 5.0                           | 11.0                                       | 137   | 0.106 |
| 1.5KE110C  | 99.0                                    | 121  | 1.0                                | 89.2                                      | 5.0                           | 9.5  | 158   | 0.107 |
| 1.5KE110CA | 105                                     | 116  | 1.0                                | 94.0                                      | 5.0                           | 9.9  | 152   | 0.107 |
| 1.5KE120C  | 108                                     | 132  | 1.0                                | 97.2                                      | 5.0                           | 8.7  | 173   | 0.107 |
| 1.5KE120CA | 114                                     | 126  | 1.0                                | 102                                       | 5.0                           | 9.1  | 165   | 0.107 |
| 1.5KE130C  | 117                                     | 143  | 1.0                                | 105                                       | 5.0                           | 8.0  | 187   | 0.107 |
| 1.5KE130CA | 124                                     | 137  | 1.0                                | 111                                       | 5.0                           | 8.4  | 179   | 0.107 |
| 1.5KE150C  | 135                                     | 165  | 1.0                                | 121                                       | 5.0                           | 7.0  | 215   | 0.108 |
| 1.5KE150CA | 143                                     | 158  | 1.0                                | 128                                       | 5.0                           | 7.2  | 207   | 0.108 |
| 1.5KE160C  | 144                                     | 176  | 1.0                                | 130                                       | 5.0                           | 6.5  | 230   | 0.108 |
| 1.5KE160CA | 152                                     | 168  | 1.0                                | 136                                       | 5.0                           | 6.8  | 219   | 0.108 |
| 1.5KE170C  | 153                                     | 187  | 1.0                                | 138                                       | 5.0                           | 6.2  | 244   | 0.108 |
| 1.5KE170CA | 162                                     | 179  | 1.0                                | 145                                       | 5.0                           | 6.4  | 234   | 0.108 |
| 1.5KE180C  | 162                                     | 198  | 1.0                                | 146                                       | 5.0                           | 5.8  | 258   | 0.108 |
| 1.5KE180CA | 171                                     | 189  | 1.0                                | 154                                       | 5.0                           | 6.1  | 246   | 0.108 |
| 1.5KE200C  | 180                                     | 220  | 1.0                                | 162                                       | 5.0                           | 5.2  | 287   | 0.108 |
| 1.5KE200CA | 190                                     | 210  | 1.0                                | 171                                       | 5.0                           | 5.5  | 274   | 0.108 |
| 1.5KE220C  | 198                                     | 242  | 1.0                                | 175                                       | 5.0                           | 4.3  | 344   | 0.108 |
| 1.5KE220CA | 209                                     | 231  | 1.0                                | 185                                       | 5.0                           | 4.6  | 328   | 0.108 |
| 1.5KE250C  | 225                                     | 275  | 1.0                                | 202                                       | 5.0                           | 5.0  | 360   | 0.110 |
| 1.5KE250CA | 237                                     | 263  | 1.0                                | 214                                       | 5.0                           | 5.0  | 344   | 0.110 |
| 1.5KE300C  | 270                                     | 330  | 1.0                                | 243                                       | 5.0                           | 5.0  | 430   | 0.110 |
| 1.5KE300CA | 285                                     | 315  | 1.0                                | 256                                       | 5.0                           | 5.0  | 414   | 0.110 |
| 1.5KE350C  | 315                                     | 385  | 1.0                                | 284                                       | 5.0                           | 4.0  | 504   | 0.110 |
| 1.5KE350CA | 332                                     | 368  | 1.0                                | 300                                       | 5.0                           | 4.0  | 482   | 0.110 |
| 1.5KE400C  | 360                                     | 440  | 1.0                                | 324                                       | 5.0                           | 4.0  | 574   | 0.110 |
| 1.5KE400CA | 380                                     | 420  | 1.0                                | 342                                       | 5.0                           | 4.0  | 548   | 0.110 |
| 1.5KE440C  | 396                                     | 484  | 1.0                                | 356                                       | 5.0                           | 2.38                                       | 631   | 0.110 |
| 1.5KE440CA | 418                                     | 462  | 1.0                                | 376                                       | 5.0                           | 2.50                                       | 602   | 0.110 |

**Note:**

- ( 1 )  $V_{BR}$  measured after  $I_t$  applied for 300  $\mu$ s.,  $I_t$  = square wave pulse or equivalent.
- ( 2 ) "1.5" will be omitted in marking on the diode.

## RATING AND CHARACTERISTIC CURVES ( 1.5KE6.8C SERIES )

FIG.1 - PULSE DERATING CURVE

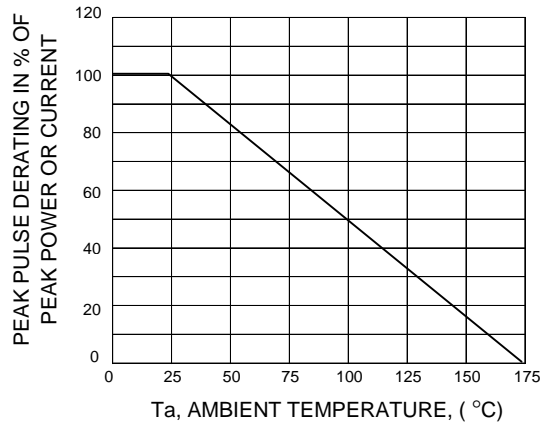


FIG.2 - PULSE WAVEFORM

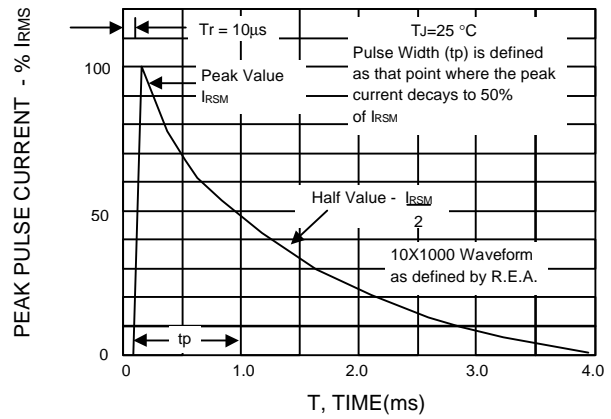


FIG.3 - STEADY STATE POWER DERATING

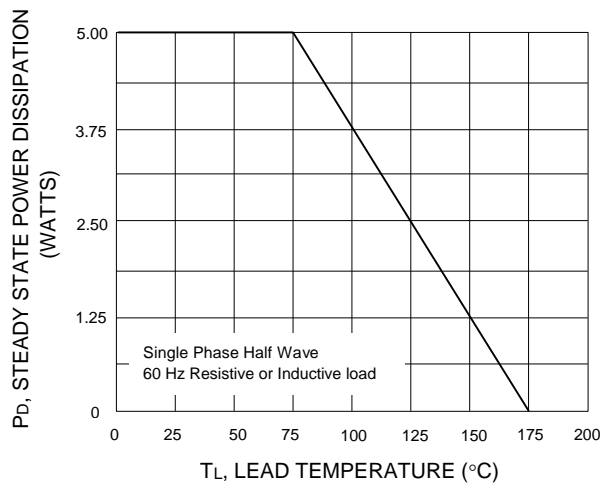


FIG.4 - PULSE RATING CURVE

