

# 1.5KE SERIES

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

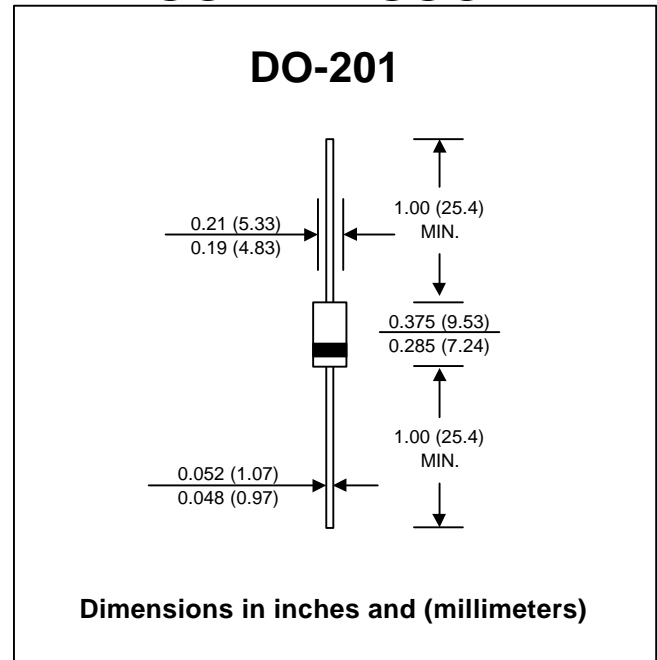
## FEATURES :

- \* 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-201 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 : 0.93 grams

# TRANSIENT VOLTAGE SUPPRESSOR



## 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)   | PPK      | Minimum 1500  | W    |
| Steady State Power Dissipation at TL = 75 °C<br>Lead Lengths 0.375", (9.5mm) (Note 2)                            | PD       | 5.0           | W    |
| Peak Forward Surge Current, 8.3ms Single Half<br>Sine-Wave Superimposed on Rated Load<br>(JEDEC Method) (Note 3) | IFSM     | 200           | A    |
| Operating and Storage Temperature Range  | TJ, TSTG | - 65 to + 175 | °C   |

## Notes :

- (1) Non-repetitive Current pulse, per Fig. 5 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>).
- (3) 8.3 ms single half sine-wave, duty cycle = 4 pulses per minutes maximum.

## ELECTRICAL CHARACTERISTICS

Rating at 25°C ambient temperature unless otherwise specified

| Type No.        |                | 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 |
|-----------------|----------------|--------------------------------------|------|------|------------------------------------|--------------------------------------|-------------------------------|---------------------------------------|--|
| Uni-directional | Bi-directional | VBR (V)                              |      | It   | VRWM                               | IR                                   | IRSM                          | VRSM                                  | of VBR<br>(% /°C)                                |
|                 |                | Min.                                 | Max. | (mA) | (V)                                | (µA)                                 | (A)                           | (V)                                   |  |
| 1.5KE6.8A       | 1.5KE6.8CA     | 6.45                                 | 7.14 | 10   | 5.80                               | 2000                                 | 143                           | 10.5                                  | 0.057  |
| 1.5KE7.5A       | 1.5KE7.5CA     | 7.13                                 | 7.88 | 10   | 6.40                               | 1000                                 | 132                           | 11.3                                  | 0.061  |
| 1.5KE8.2A       | 1.5KE8.2CA     | 7.79                                 | 8.61 | 10   | 7.02                               | 400                                  | 124                           | 12.1                                  | 0.065  |
| 1.5KE9.1A       | 1.5KE9.1CA     | 8.65                                 | 9.55 | 1.0  | 7.78                               | 100                                  | 112                           | 13.4                                  | 0.068  |
| 1.5KE10A        | 1.5KE10CA      | 9.50                                 | 10.5 | 1.0  | 8.55                               | 10                                   | 103                           | 14.5                                  | 0.073  |
| 1.5KE11A        | 1.5KE11CA      | 10.5                                 | 11.6 | 1.0  | 9.40                               | 10                                   | 96.0                          | 15.6                                  | 0.075  |
| 1.5KE12A        | 1.5KE12CA      | 11.4                                 | 12.6 | 1.0  | 10.2                               | 5.0                                  | 90.0                          | 16.7                                  | 0.078  |
| 1.5KE13A        | 1.5KE13CA      | 12.4                                 | 13.7 | 1.0  | 11.1                               | 5.0                                  | 82.0                          | 18.2                                  | 0.081  |
| 1.5KE15A        | 1.5KE15CA      | 14.3                                 | 15.8 | 1.0  | 12.8                               | 5.0                                  | 71.0                          | 21.2                                  | 0.084  |
| 1.5KE16A        | 1.5KE16CA      | 15.2                                 | 16.8 | 1.0  | 13.6                               | 5.0                                  | 67.0                          | 22.5                                  | 0.086  |
| 1.5KE18A        | 1.5KE18CA      | 17.1                                 | 18.9 | 1.0  | 15.3                               | 5.0                                  | 59.5                          | 25.2                                  | 0.088  |
| 1.5KE20A        | 1.5KE20CA      | 19.0                                 | 21.0 | 1.0  | 17.1                               | 5.0                                  | 54.0                          | 27.7                                  | 0.090  |
| 1.5KE22A        | 1.5KE22CA      | 20.9                                 | 23.1 | 1.0  | 18.8                               | 5.0                                  | 49.0                          | 30.6                                  | 0.092  |
| 1.5KE24A        | 1.5KE24CA      | 22.8                                 | 25.2 | 1.0  | 20.5                               | 5.0                                  | 45.0                          | 33.2                                  | 0.094  |
| 1.5KE27A        | 1.5KE27CA      | 25.7                                 | 28.4 | 1.0  | 23.1                               | 5.0                                  | 40.0                          | 37.5                                  | 0.096  |
| 1.5KE30A        | 1.5KE30CA      | 28.5                                 | 31.5 | 1.0  | 25.6                               | 5.0                                  | 36.0                          | 41.4                                  | 0.097  |
| 1.5KE33A        | 1.5KE33CA      | 31.4                                 | 34.7 | 1.0  | 28.2                               | 5.0                                  | 33.0                          | 45.7                                  | 0.098  |
| 1.5KE36A        | 1.5KE36CA      | 34.2                                 | 37.8 | 1.0  | 30.8                               | 5.0                                  | 30.0                          | 49.9                                  | 0.099  |
| 1.5KE39A        | 1.5KE39CA      | 37.1                                 | 41.0 | 1.0  | 33.3                               | 5.0                                  | 28.0                          | 53.9                                  | 0.100  |
| 1.5KE43A        | 1.5KE43CA      | 40.9                                 | 45.2 | 1.0  | 36.8                               | 5.0                                  | 25.3                          | 59.3                                  | 0.101  |
| 1.5KE47A        | 1.5KE47CA      | 44.7                                 | 49.4 | 1.0  | 40.2                               | 5.0                                  | 23.2                          | 64.8                                  | 0.101  |
| 1.5KE51A        | 1.5KE51CA      | 48.5                                 | 53.6 | 1.0  | 43.6                               | 5.0                                  | 21.4                          | 70.1                                  | 0.102  |
| 1.5KE56A        | 1.5KE56CA      | 53.2                                 | 58.8 | 1.0  | 47.8                               | 5.0                                  | 19.5                          | 77.0                                  | 0.103  |
| 1.5KE62A        | 1.5KE62CA      | 58.9                                 | 65.1 | 1.0  | 53.0                               | 5.0                                  | 17.7                          | 85.0                                  | 0.104  |
| 1.5KE68A        | 1.5KE68CA      | 64.6                                 | 71.4 | 1.0  | 58.1                               | 5.0                                  | 16.3                          | 92.0                                  | 0.104  |
| 1.5KE75A        | 1.5KE75CA      | 71.3                                 | 78.8 | 1.0  | 64.1                               | 5.0                                  | 14.6                          | 103                                   | 0.105  |
| 1.5KE82A        | 1.5KE82CA      | 77.9                                 | 86.1 | 1.0  | 70.1                               | 5.0                                  | 13.3                          | 113                                   | 0.105  |
| 1.5KE91A        | 1.5KE91CA      | 86.5                                 | 95.5 | 1.0  | 77.8                               | 5.0                                  | 12.0                          | 125                                   | 0.106  |
| 1.5KE100A       | 1.5KE100CA     | 95.0                                 | 105  | 1.0  | 85.5                               | 5.0                                  | 11.0                          | 137                                   | 0.106  |
| 1.5KE110A       | 1.5KE110CA     | 105                                  | 116  | 1.0  | 94.0                               | 5.0                                  | 9.9                           | 152                                   | 0.107  |
| 1.5KE120A       | 1.5KE120CA     | 114                                  | 126  | 1.0  | 102                                | 5.0                                  | 9.1                           | 165                                   | 0.107  |
| 1.5KE130A       | 1.5KE130CA     | 124                                  | 137  | 1.0  | 111                                | 5.0                                  | 8.4                           | 179                                   | 0.107  |
| 1.5KE150A       | 1.5KE150CA     | 143                                  | 158  | 1.0  | 128                                | 5.0                                  | 7.2                           | 207                                   | 0.108  |
| 1.5KE160A       | 1.5KE160CA     | 152                                  | 168  | 1.0  | 136                                | 5.0                                  | 6.8                           | 219                                   | 0.108  |
| 1.5KE170A       | 1.5KE170CA     | 162                                  | 179  | 1.0  | 145                                | 5.0                                  | 6.4                           | 234                                   | 0.108  |
| 1.5KE180A       | 1.5KE180CA     | 171                                  | 189  | 1.0  | 154                                | 5.0                                  | 6.1                           | 246                                   | 0.108  |
| 1.5KE200A       | 1.5KE200CA     | 190                                  | 210  | 1.0  | 171                                | 5.0                                  | 5.5                           | 274                                   | 0.108  |
| 1.5KE220A       | 1.5KE220CA     | 209                                  | 231  | 1.0  | 185                                | 5.0                                  | 4.6                           | 328                                   | 0.108  |
| 1.5KE250A       | 1.5KE250CA     | 237                                  | 263  | 1.0  | 214                                | 5.0                                  | 5.0                           | 344                                   | 0.110  |
| 1.5KE300A       | 1.5KE300CA     | 285                                  | 315  | 1.0  | 256                                | 5.0                                  | 5.0                           | 414                                   | 0.110  |
| 1.5KE350A       | 1.5KE350CA     | 332                                  | 368  | 1.0  | 300                                | 5.0                                  | 4.0                           | 482                                   | 0.110  |
| 1.5KE400A       | 1.5KE400CA     | 380                                  | 420  | 1.0  | 342                                | 5.0                                  | 4.0                           | 548                                   | 0.110  |
| 1.5KE440A       | 1.5KE440CA     | 418                                  | 462  | 1.0  | 376                                | 5.0                                  | 2.50                          | 602                                   | 0.110  |

**Notes:**

- (1) VBR measured after It applied for 300 µs., It = square wave pulse or equivalent.
- (2) VF = 3.5 Vmax., IF = 100 Amps. ( 6.8 Volts thru 91 Volts )  
 VF = 5.0 Vmax., IF = 100 Amps. ( 100 Volts thru 440 Volts ) per 1/2 square or equivalent sine wave.  
 PW = 8.3 ms, duty cycle = 4 pulses per minute maximum.
- (3) "1.5" will be omitted in marking on the diode.

## RATING AND CHARACTERISTIC CURVES ( 1.5KE SERIES )

FIG.1 - PULSE DERATING CURVE

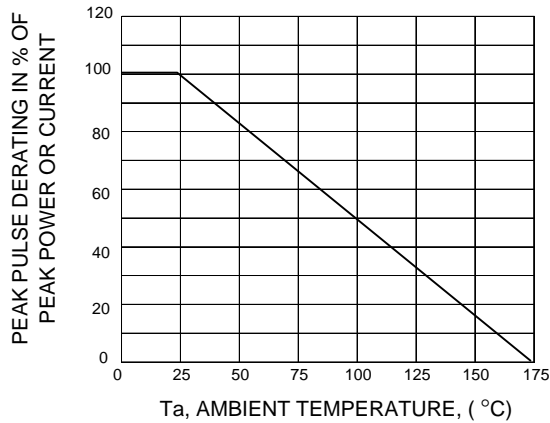


FIG.2 - MAXIMUM NON-REPETITIVE SURGE CURRENT

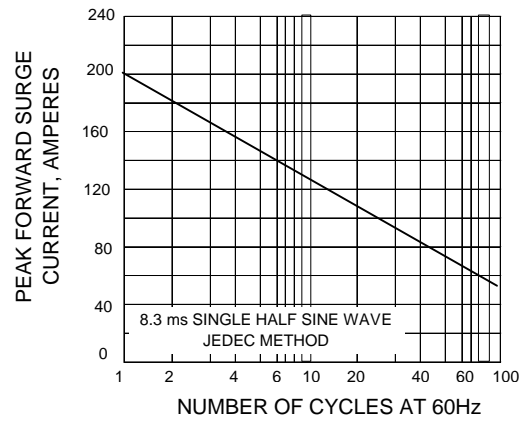


FIG.3 - STEADY STATE POWER DERATING

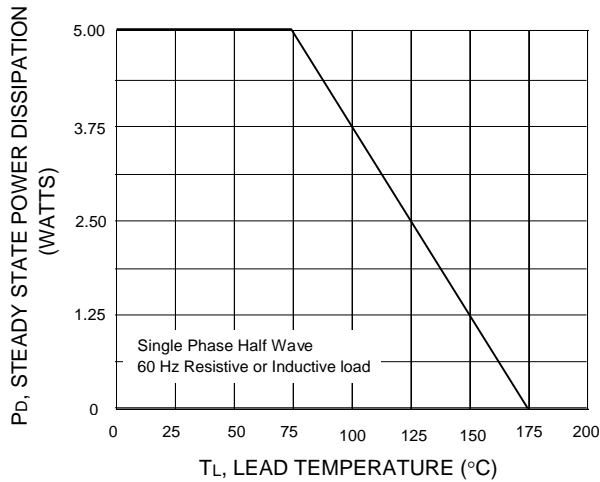


FIG.4 - PULSE RATING CURVE

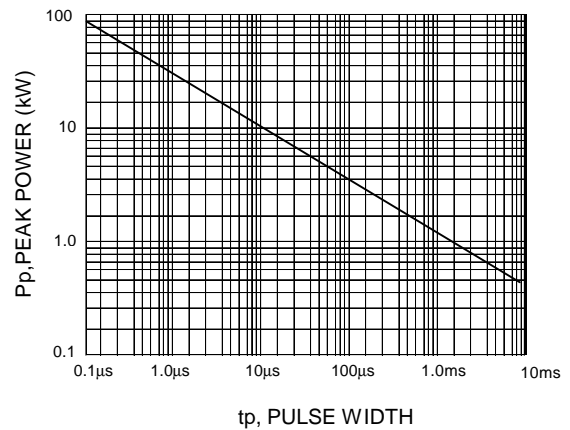


FIG.5 - PULSE WAVEFORM

