



# 1.5KE SERIES

1500 WATT PEAK POWER TRANSIENT VOLTAGE SUPPRESSORS



## FEATURES

- \* 1500 Watts Surge Capability at 1ms
- \* Excellent clamping capability
- \* Low zener impedance
- \* Fast response time: Typically less than 1.0ps from 0 volt to BV min.
- \* Typical  $I_R$  less than 1 A above 10V
- \* High temperature soldering guaranteed: 260°C / 10 seconds / .375"(9.5mm) lead length, 5lbs.(2.3kg) tension

## MECHANICAL DATA

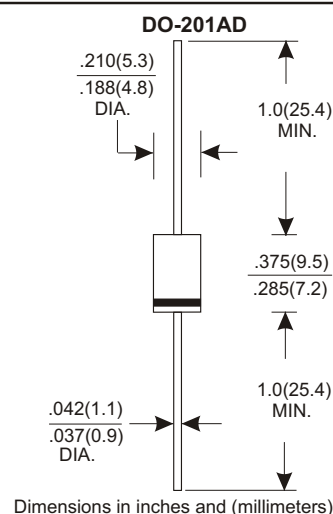
- \* Case: Molded plastic
- \* Epoxy: UL 94V-0 rate flame retardant
- \* Lead: Axial leads, solderable per MIL-STD-202, method 208 guaranteed
- \* Polarity: Color band denotes cathode end
- \* Mounting position: Any
- \* Weight: 1.20 grams

## VOLTAGE RANGE

6.8 to 440 Volts

1500 Watts Peak Power

5.0 Watts Steady State



## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating 25°C ambient temperature unless otherwise specified.  
Single phase half wave, 60Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.

| RATINGS                                                                                                      | SYMBOL         | VALUE        | UNITS |
|--------------------------------------------------------------------------------------------------------------|----------------|--------------|-------|
| Peak Power Dissipation at $T_A=25^\circ\text{C}$ , $T_P=1\text{ms}$ (NOTE 1)                                 | $P_{PK}$       | Minimum 1500 | Watts |
| Steady State Power Dissipation at $T_L=75^\circ\text{C}$                                                     | $P_D$          | 5.0          | Watts |
| Lead Length .375"(9.5mm) (NOTE 2)                                                                            |                |              |       |
| Peak Forward Surge Current at 8.3ms Single Half Sine-Wave superimposed on rated load (JEDEC method) (NOTE 3) | $I_{FSM}$      | 200          | Amps  |
| Operating and Storage Temperature Range                                                                      | $T_J, T_{STG}$ | -55 to +175  | °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 Copper Pad area of 0.8" X 0.8" (20mm X 20mm) per Fig.5.
3. 8.3ms single half sine-wave, duty cycle = 4 pulses per minute maximum.

## DEVICES FOR BIPOLAR APPLICATIONS

1. For Bidirectional use C or CA Suffix for types 1.5KE6.8 thru 1.5KE440.
2. Electrical characteristics apply in both directions.

## RATING AND CHARACTERISTIC CURVES (1.5KE SERIES)

FIG.1-PEAK PULSE POWER DERATING CURVE

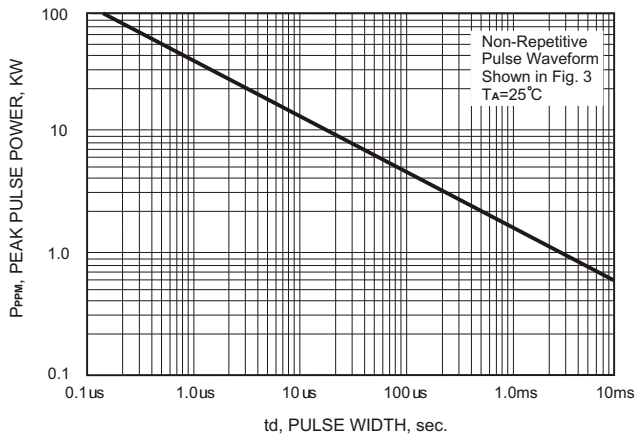


FIG.2-PULSE DERATING CURVE

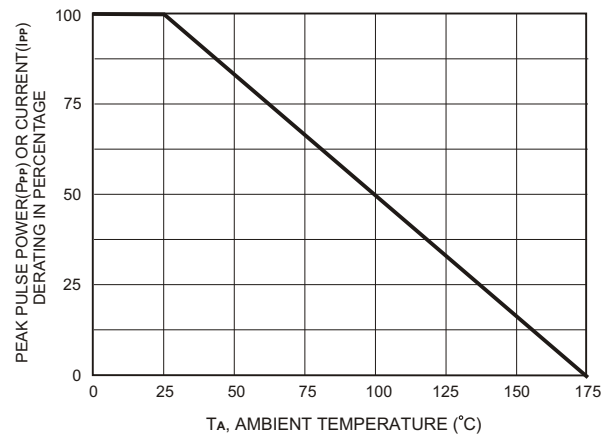


FIG.3-PULSE WAVE FORM

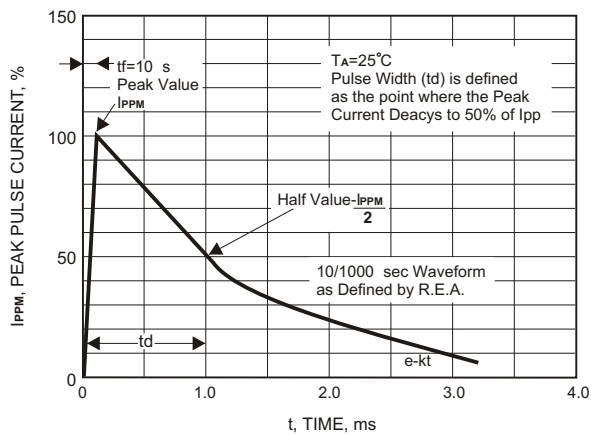


FIG.4-TYPICAL JUNCTION CAPACITANCE

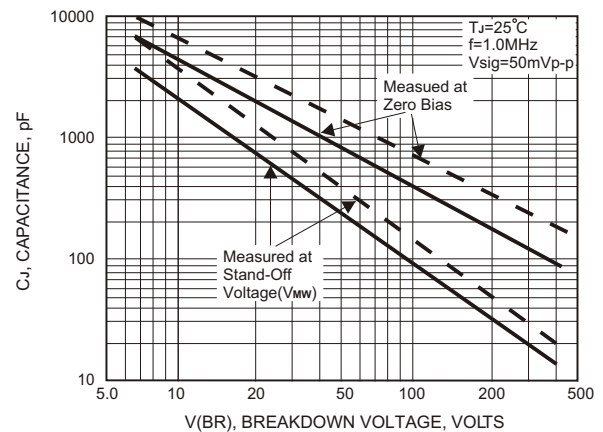


FIG.5-STEADY STATE POWER DERATING CURVE

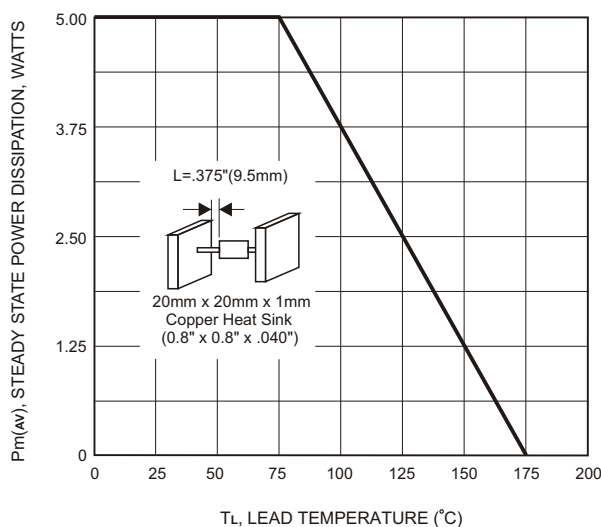
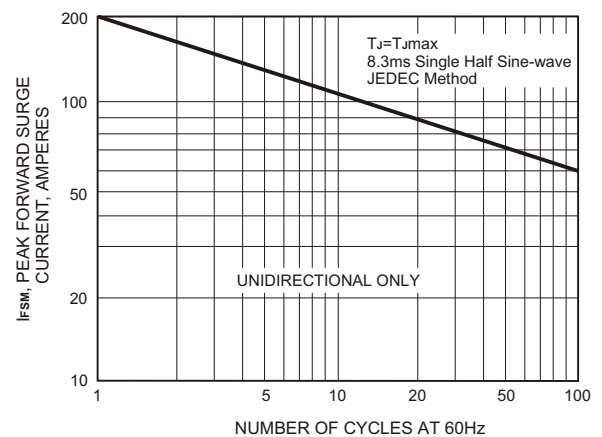


FIG.6-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT, UNIDIRECTIONAL



# 1500 Watt Axial Lead TVS

| UNI<br>DIRECTIONAL<br>PART<br>NUMBER | REVERSE<br>STAND-OFF<br>VOLTAGE<br>VRWM (V) | BREAKDOWN<br>VOLTAGE<br>VBR (V)<br>MIN. @IT | BREAKDOWN<br>VOLTAGE<br>VRB (V)<br>MAX. @IT | TEST<br>CURRENT<br>IT<br>(mA) | MAXIMUM<br>CLAMPING<br>VOLTAGE<br>@Ipp Vc (V) | PEAK<br>PULSE<br>CURRENT<br>Ipp (A) | REVERSE<br>LEAKAGE<br>@ VRWM<br>IR( A) |
|--------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|-------------------------------|-----------------------------------------------|-------------------------------------|----------------------------------------|
| 1.5KE6.8(C)A                         | 5.80                                        | 6.45                                        | 7.14                                        | 10                            | 10.5                                          | 144.8                               | 1000                                   |
| 1.5KE7.5(C)A                         | 6.40                                        | 7.13                                        | 7.88                                        | 10                            | 11.3                                          | 134.5                               | 500                                    |
| 1.5KE8.2(C)A                         | 7.02                                        | 7.79                                        | 8.61                                        | 10                            | 12.1                                          | 125.6                               | 200                                    |
| 1.5KE9.1(C)A                         | 7.78                                        | 8.65                                        | 9.50                                        | 1                             | 13.4                                          | 113.4                               | 50                                     |
| 1.5KE10(C)A                          | 8.55                                        | 9.50                                        | 10.50                                       | 1                             | 14.5                                          | 104.8                               | 10                                     |
| 1.5KE11(C)A                          | 9.40                                        | 10.50                                       | 11.60                                       | 1                             | 15.6                                          | 97.4                                | 5                                      |
| 1.5KE12(C)A                          | 10.20                                       | 11.40                                       | 12.60                                       | 1                             | 16.7                                          | 91.0                                | 5                                      |
| 1.5KE13(C)A                          | 11.10                                       | 12.40                                       | 13.70                                       | 1                             | 18.2                                          | 83.5                                | 5                                      |
| 1.5KE15(C)A                          | 12.80                                       | 14.30                                       | 15.80                                       | 1                             | 21.2                                          | 71.7                                | 5                                      |
| 1.5KE16(C)A                          | 13.60                                       | 15.20                                       | 16.80                                       | 1                             | 22.5                                          | 67.6                                | 5                                      |
| 1.5KE18(C)A                          | 15.30                                       | 17.10                                       | 18.90                                       | 1                             | 25.2                                          | 60.3                                | 5                                      |
| 1.5KE20(C)A                          | 17.10                                       | 19.00                                       | 21.00                                       | 1                             | 27.7                                          | 54.9                                | 5                                      |
| 1.5KE22(C)A                          | 18.80                                       | 20.90                                       | 23.10                                       | 1                             | 30.6                                          | 49.7                                | 5                                      |
| 1.5KE24(C)A                          | 20.50                                       | 22.80                                       | 25.20                                       | 1                             | 33.2                                          | 45.8                                | 5                                      |
| 1.5KE27(C)A                          | 23.10                                       | 25.70                                       | 28.40                                       | 1                             | 37.5                                          | 40.5                                | 5                                      |
| 1.5KE30(C)A                          | 25.60                                       | 28.50                                       | 31.50                                       | 1                             | 41.4                                          | 36.7                                | 5                                      |
| 1.5KE33(C)A                          | 28.20                                       | 31.40                                       | 34.70                                       | 1                             | 45.7                                          | 33.3                                | 5                                      |
| 1.5KE36(C)A                          | 30.80                                       | 34.20                                       | 37.80                                       | 1                             | 49.9                                          | 30.5                                | 5                                      |
| 1.5KE39(C)A                          | 33.30                                       | 37.10                                       | 41.00                                       | 1                             | 53.9                                          | 28.2                                | 5                                      |
| 1.5KE43(C)A                          | 36.80                                       | 40.90                                       | 45.20                                       | 1                             | 59.3                                          | 25.6                                | 5                                      |
| 1.5KE47(C)A                          | 40.20                                       | 44.70                                       | 49.40                                       | 1                             | 64.8                                          | 23.5                                | 5                                      |
| 1.5KE51(C)A                          | 43.60                                       | 48.50                                       | 53.60                                       | 1                             | 70.1                                          | 21.7                                | 5                                      |
| 1.5KE56(C)A                          | 47.80                                       | 53.20                                       | 58.80                                       | 1                             | 77.0                                          | 19.7                                | 5                                      |
| 1.5KE62(C)A                          | 53.00                                       | 58.90                                       | 65.10                                       | 1                             | 85.0                                          | 17.9                                | 5                                      |
| 1.5KE68(C)A                          | 58.10                                       | 64.60                                       | 71.40                                       | 1                             | 92.0                                          | 16.5                                | 5                                      |
| 1.5KE75(C)A                          | 64.10                                       | 71.30                                       | 78.80                                       | 1                             | 103.0                                         | 14.8                                | 5                                      |

# 1500 Watt Axial Lead TVS

| UNI<br>DIRECTIONAL<br>PART<br>NUMBER | REVERSE<br>STAND-OFF<br>VOLTAGE<br>VRWM (V) | BREAKDOWN<br>VOLTAGE<br>VBR (V)<br>MIN. @IT | BREAKDOWN<br>VOLTAGE<br>VRB (V)<br>MAX. @IT | TEST<br>CURRENT<br>IT<br>(mA) | MAXIMUM<br>CLAMPING<br>VOLTAGE<br>@Ipp Vc (V) | PEAK<br>PULSE<br>CURRENT<br>Ipp (A) | REVERSE<br>LEAKAGE<br>@ VRWM<br>IR( A) |
|--------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|-------------------------------|-----------------------------------------------|-------------------------------------|----------------------------------------|
| 1.5KE82(C)A                          | 70.10                                       | 77.90                                       | 86.10                                       | 1                             | 113.0                                         | 13.5                                | 5                                      |
| 1.5KE91(C)A                          | 77.80                                       | 86.50                                       | 95.50                                       | 1                             | 125.0                                         | 12.2                                | 5                                      |
| 1.5KE100(C)A                         | 85.50                                       | 95.00                                       | 105.00                                      | 1                             | 137.0                                         | 11.1                                | 5                                      |
| 1.5KE110(C)A                         | 94.00                                       | 105.00                                      | 116.00                                      | 1                             | 152.0                                         | 10.0                                | 5                                      |
| 1.5KE120(C)A                         | 102.00                                      | 114.00                                      | 126.00                                      | 1                             | 165.0                                         | 9.2                                 | 5                                      |
| 1.5KE130(C)A                         | 111.00                                      | 124.00                                      | 137.00                                      | 1                             | 179.0                                         | 8.5                                 | 5                                      |
| 1.5KE150(C)A                         | 128.00                                      | 143.00                                      | 158.00                                      | 1                             | 207.0                                         | 7.3                                 | 5                                      |
| 1.5KE160(C)A                         | 136.00                                      | 152.00                                      | 168.00                                      | 1                             | 219.0                                         | 6.9                                 | 5                                      |
| 1.5KE170(C)A                         | 145.00                                      | 162.00                                      | 179.00                                      | 1                             | 234.0                                         | 6.5                                 | 5                                      |
| 1.5KE180(C)A                         | 154.00                                      | 171.00                                      | 189.00                                      | 1                             | 246.0                                         | 6.2                                 | 5                                      |
| 1.5KE200(C)A                         | 171.00                                      | 190.00                                      | 210.00                                      | 1                             | 274.0                                         | 5.5                                 | 5                                      |
| 1.5KE220(C)A                         | 185.00                                      | 209.00                                      | 231.00                                      | 1                             | 328.0                                         | 4.6                                 | 5                                      |
| 1.5KE250(C)A                         | 214.00                                      | 237.00                                      | 263.00                                      | 1                             | 344.0                                         | 4.4                                 | 5                                      |
| 1.5KE300(C)A                         | 256.00                                      | 285.00                                      | 315.00                                      | 1                             | 414.0                                         | 3.7                                 | 5                                      |
| 1.5KE350(C)A                         | 300.00                                      | 332.00                                      | 368.00                                      | 1                             | 482.0                                         | 3.2                                 | 5                                      |
| 1.5KE400(C)A                         | 342.00                                      | 380.00                                      | 420.00                                      | 1                             | 548.0                                         | 2.8                                 | 5                                      |
| 1.5KE440(C)A                         | 376.00                                      | 418.00                                      | 462.00                                      | 1                             | 600.0                                         | 2.5                                 | 5                                      |