

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 $1\mu A$ above 10V
- * High temperature soldering guaranteed: $260^\circ C$ / 10 seconds / .375"(9.5mm) lead length, 5lbs.(2.3kg) tension

MECHANICAL DATA

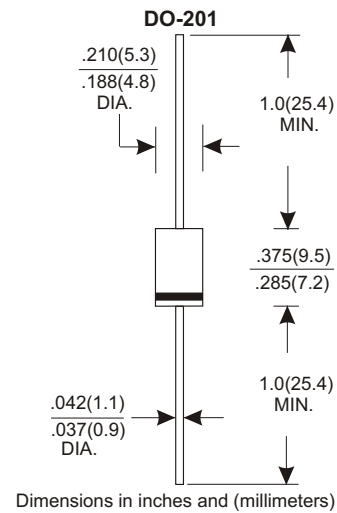
- * Case: Molded plastic
- * Epoxy: UL 94V-0 rate flame retardant
- * Lead: Axial leads, solderable per MIL-STD-202, method 208 guaranteed
- * Polarity: Color band denotes cathode end
- * Mounting position: Any
- * Weight: 1.20 grams

VOLTAGE RANGE

6.8 to 440 Volts

1500 Watts Peak Power

5.0 Watts Steady State



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating $25^\circ C$ 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 $T_A=25^\circ C$, $T_P=1ms$ (NOTE 1) | P_{PK} | Minimum 1500 | Watts |
| Steady State Power Dissipation at $T_L=75^\circ C$ Lead Length .375"(9.5mm) (NOTE 2) | P_D | 5.0 | Watts |
| 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 | $^\circ C$ |

NOTES:

1. Non-repetitive current pulse per Fig. 3 and derated above $T_A=25^\circ C$ 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

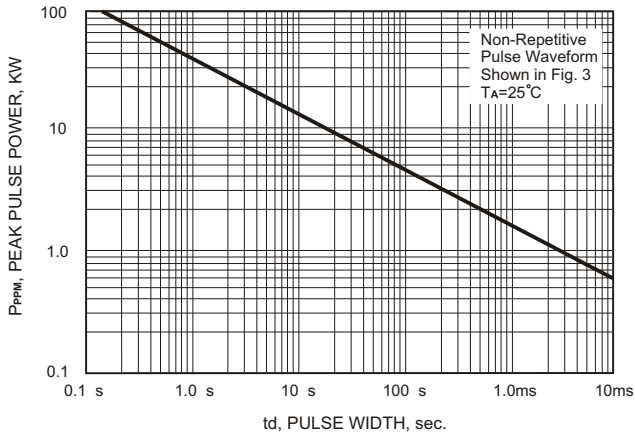


FIG.2-PULSE DERATING CURVE

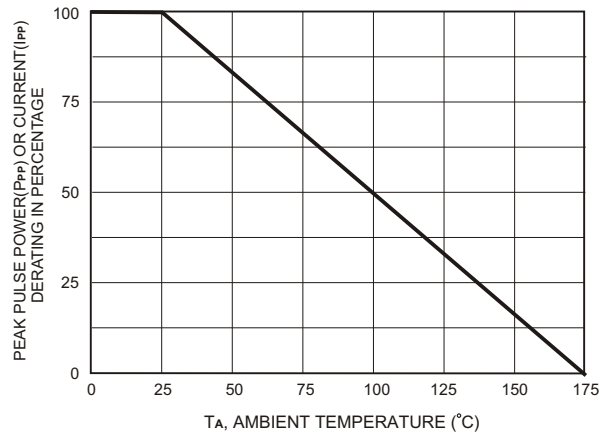


FIG.3-PULSE WAVE FORM

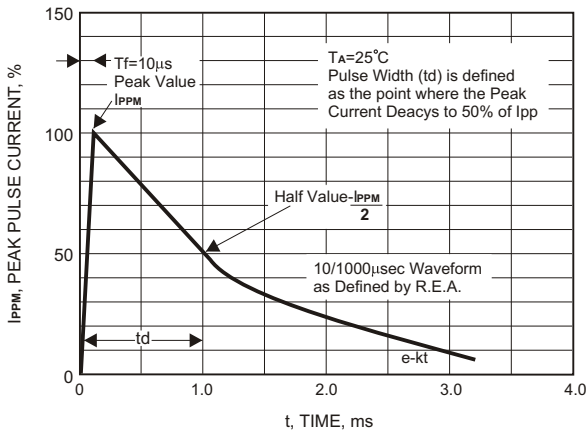


FIG.4-TYPICAL JUNCTION CAPACITANCE

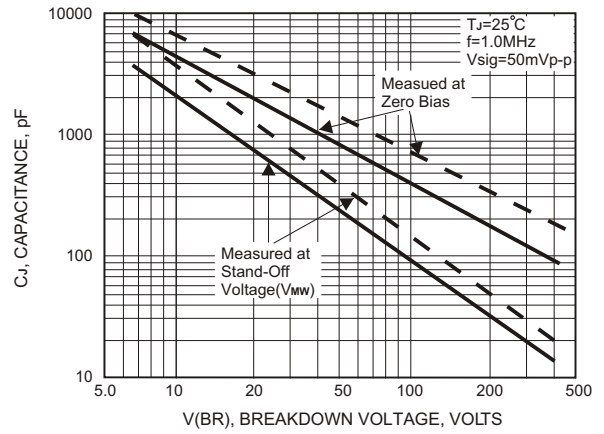


FIG.5-STEADY STATE POWER DERATING CURVE

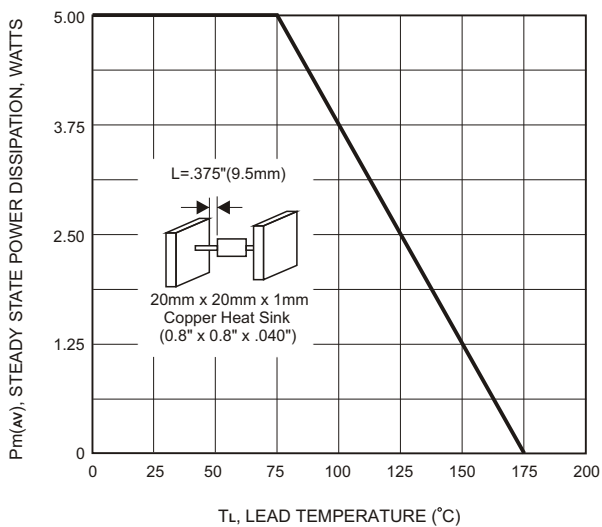
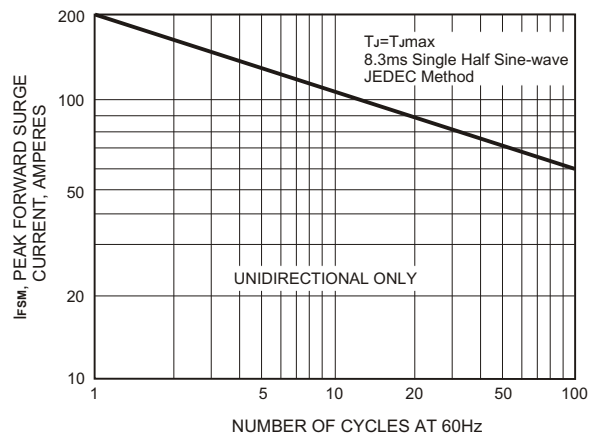


FIG.6-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT, UNIDIRECTIONAL



1500 Watt Axial Lead TVS



| UNI DIRECTIONAL PART NUMBER | REVERSE STAND-OFF VOLTAGE VRWM (V) | BREAKDOWN VOLTAGE VBR (V) MIN. @IT | BREAKDOWN VOLTAGE VRB (V) MAX. @IT | TEST CURRENT IT (mA) | MAXIMUM CLAMPING VOLTAGE @Ipp Vc (V) | PEAK PULSE CURRENT Ipp (A) | REVERSE LEAKAGE @ VRWM IR(μA) |
|-----------------------------|------------------------------------|------------------------------------|------------------------------------|----------------------|--------------------------------------|----------------------------|-------------------------------|
| 1.5KE6.8 | 5.50 | 6.12 | 7.48 | 10 | 10.8 | 140.7 | 1000 |
| 1.5KE6.8A | 5.80 | 6.45 | 7.14 | 10 | 10.5 | 144.8 | 1000 |
| 1.5KE7.5 | 6.05 | 6.75 | 8.25 | 10 | 11.7 | 129.9 | 500 |
| 1.5KE7.5A | 6.40 | 7.13 | 7.88 | 10 | 11.3 | 134.5 | 500 |
| 1.5KE8.2 | 6.63 | 7.38 | 9.02 | 10 | 12.5 | 121.6 | 200 |
| 1.5KE8.2A | 7.02 | 7.79 | 8.61 | 10 | 12.1 | 125.6 | 200 |
| 1.5KE9.1 | 7.37 | 8.19 | 10.00 | 1 | 13.8 | 110.1 | 50 |
| 1.5KE9.1A | 7.78 | 8.65 | 9.50 | 1 | 13.4 | 113.4 | 50 |
| 1.5KE10 | 8.10 | 9.00 | 11.00 | 1 | 15.0 | 101.3 | 10 |
| 1.5KE10A | 8.55 | 9.50 | 10.50 | 1 | 14.5 | 104.8 | 10 |
| 1.5KE11 | 8.92 | 9.90 | 12.10 | 1 | 16.2 | 93.8 | 5 |
| 1.5KE11A | 9.40 | 10.50 | 11.60 | 1 | 15.6 | 97.4 | 5 |
| 1.5KE12 | 9.72 | 10.80 | 13.20 | 1 | 17.3 | 87.9 | 5 |
| 1.5KE12A | 10.20 | 11.40 | 12.60 | 1 | 16.7 | 91.0 | 5 |
| 1.5KE13 | 10.50 | 11.70 | 14.30 | 1 | 19.0 | 80.0 | 5 |
| 1.5KE13A | 11.10 | 12.40 | 13.70 | 1 | 18.2 | 83.5 | 5 |
| 1.5KE15 | 12.10 | 13.50 | 16.50 | 1 | 22.0 | 69.1 | 5 |
| 1.5KE15A | 12.80 | 14.30 | 15.80 | 1 | 21.2 | 71.7 | 5 |
| 1.5KE16 | 12.90 | 14.40 | 17.60 | 1 | 23.5 | 64.7 | 5 |
| 1.5KE16A | 13.60 | 15.20 | 16.80 | 1 | 22.5 | 67.6 | 5 |
| 1.5KE18 | 14.50 | 16.20 | 19.80 | 1 | 26.5 | 57.4 | 5 |
| 1.5KE18A | 15.30 | 17.10 | 18.90 | 1 | 25.2 | 60.3 | 5 |
| 1.5KE20 | 16.20 | 18.00 | 22.00 | 1 | 29.1 | 52.2 | 5 |
| 1.5KE20A | 17.10 | 19.00 | 21.00 | 1 | 27.7 | 54.9 | 5 |
| 1.5KE22 | 17.80 | 19.80 | 24.20 | 1 | 31.9 | 47.6 | 5 |
| 1.5KE22A | 18.80 | 20.90 | 23.10 | 1 | 30.6 | 49.7 | 5 |
| 1.5KE24 | 19.40 | 21.60 | 26.40 | 1 | 34.7 | 43.8 | 5 |
| 1.5KE24A | 20.50 | 22.80 | 25.20 | 1 | 33.2 | 45.8 | 5 |
| 1.5KE27 | 21.80 | 24.30 | 29.70 | 1 | 39.1 | 38.9 | 5 |
| 1.5KE27A | 23.10 | 25.70 | 28.40 | 1 | 37.5 | 40.5 | 5 |
| 1.5KE30 | 24.30 | 27.00 | 33.00 | 1 | 43.5 | 34.9 | 5 |
| 1.5KE30A | 25.60 | 28.50 | 31.50 | 1 | 41.4 | 36.7 | 5 |
| 1.5KE33 | 26.80 | 29.70 | 36.30 | 1 | 47.7 | 31.9 | 5 |
| 1.5KE33A | 28.20 | 31.40 | 34.70 | 1 | 45.7 | 33.3 | 5 |
| 1.5KE36 | 29.10 | 32.40 | 39.60 | 1 | 52.0 | 29.2 | 5 |
| 1.5KE36A | 30.80 | 34.20 | 37.80 | 1 | 49.9 | 30.5 | 5 |
| 1.5KE39 | 31.60 | 35.10 | 42.90 | 1 | 56.4 | 27.0 | 5 |
| 1.5KE39A | 33.30 | 37.10 | 41.00 | 1 | 53.9 | 28.2 | 5 |
| 1.5KE43 | 34.80 | 38.70 | 47.30 | 1 | 61.9 | 24.6 | 5 |
| 1.5KE43A | 36.80 | 40.90 | 45.20 | 1 | 59.3 | 25.6 | 5 |
| 1.5KE47 | 38.10 | 42.30 | 51.70 | 1 | 67.8 | 22.4 | 5 |
| 1.5KE47A | 40.20 | 44.70 | 49.40 | 1 | 64.8 | 23.5 | 5 |
| 1.5KE51 | 41.30 | 45.90 | 56.10 | 1 | 73.5 | 20.7 | 5 |
| 1.5KE51A | 43.60 | 48.50 | 53.60 | 1 | 70.1 | 21.7 | 5 |
| 1.5KE56 | 45.40 | 50.40 | 61.60 | 1 | 80.5 | 18.9 | 5 |
| 1.5KE56A | 47.80 | 53.20 | 58.80 | 1 | 77.0 | 19.7 | 5 |
| 1.5KE62 | 50.20 | 55.80 | 68.20 | 1 | 89.0 | 17.1 | 5 |
| 1.5KE62A | 53.00 | 58.90 | 65.10 | 1 | 85.0 | 17.9 | 5 |
| 1.5KE68 | 55.10 | 61.20 | 74.80 | 1 | 98.0 | 15.5 | 5 |
| 1.5KE68A | 58.10 | 64.60 | 71.40 | 1 | 92.0 | 16.5 | 5 |
| 1.5KE75 | 60.70 | 67.50 | 82.50 | 1 | 108.0 | 14.1 | 5 |
| 1.5KE75A | 64.10 | 71.30 | 78.80 | 1 | 103.0 | 14.8 | 5 |

1500 Watt Axial Lead TVS



| UNI DIRECTIONAL PART NUMBER | REVERSE STAND-OFF VOLTAGE VRWM (V) | BREAKDOWN VOLTAGE VBR (V) MIN. @IT | BREAKDOWN VOLTAGE VRB (V) MAX. @IT | TEST CURRENT IT (mA) | MAXIMUM CLAMPING VOLTAGE @Ipp Vc (V) | PEAK PULSE CURRENT Ipp (A) | REVERSE LEAKAGE @ VRWM IR(μA) |
|-----------------------------|------------------------------------|------------------------------------|------------------------------------|----------------------|--------------------------------------|----------------------------|-------------------------------|
| 1.5KE82 | 66.40 | 73.80 | 90.20 | 1 | 118.0 | 12.9 | 5 |
| 1.5KE82A | 70.10 | 77.90 | 86.10 | 1 | 113.0 | 13.5 | 5 |
| 1.5KE91 | 73.70 | 81.90 | 100.00 | 1 | 131.0 | 11.6 | 5 |
| 1.5KE91A | 77.80 | 86.50 | 95.50 | 1 | 125.0 | 12.2 | 5 |
| 1.5KE100 | 81.00 | 90.00 | 110.00 | 1 | 144.0 | 10.6 | 5 |
| 1.5KE100A | 85.50 | 95.00 | 105.00 | 1 | 137.0 | 11.1 | 5 |
| 1.5KE110 | 89.20 | 99.00 | 121.00 | 1 | 158.0 | 9.6 | 5 |
| 1.5KE110A | 94.00 | 105.00 | 116.00 | 1 | 152.0 | 10.0 | 5 |
| 1.5KE120 | 97.20 | 108.00 | 132.00 | 1 | 173.0 | 8.7 | 5 |
| 1.5KE120A | 102.00 | 114.00 | 126.00 | 1 | 165.0 | 9.2 | 5 |
| 1.5KE130 | 105.00 | 117.00 | 143.00 | 1 | 187.0 | 8.1 | 5 |
| 1.5KE130A | 111.00 | 124.00 | 137.00 | 1 | 179.0 | 8.5 | 5 |
| 1.5KE150 | 121.00 | 135.00 | 165.00 | 1 | 215.0 | 7.1 | 5 |
| 1.5KE150A | 128.00 | 143.00 | 158.00 | 1 | 207.0 | 7.3 | 5 |
| 1.5KE160 | 130.00 | 144.00 | 176.00 | 1 | 230.0 | 6.9 | 5 |
| 1.5KE160A | 136.00 | 152.00 | 168.00 | 1 | 219.0 | 6.9 | 5 |
| 1.5KE170 | 138.00 | 153.00 | 187.00 | 1 | 244.0 | 6.2 | 5 |
| 1.5KE170A | 145.00 | 162.00 | 179.00 | 1 | 234.0 | 6.5 | 5 |
| 1.5KE180 | 146.00 | 162.00 | 198.00 | 1 | 258.0 | 5.9 | 5 |
| 1.5KE180A | 154.00 | 171.00 | 189.00 | 1 | 246.0 | 6.2 | 5 |
| 1.5KE200 | 162.00 | 180.00 | 220.00 | 1 | 287.0 | 5.3 | 5 |
| 1.5KE200A | 171.00 | 190.00 | 210.00 | 1 | 274.0 | 5.5 | 5 |
| 1.5KE220 | 175.00 | 198.00 | 242.00 | 1 | 344.0 | 4.4 | 5 |
| 1.5KE220A | 185.00 | 209.00 | 231.00 | 1 | 328.0 | 4.6 | 5 |
| 1.5KE250 | 202.00 | 225.00 | 275.00 | 1 | 360.0 | 4.2 | 5 |
| 1.5KE250A | 214.00 | 237.00 | 263.00 | 1 | 344.0 | 4.4 | 5 |
| 1.5KE300 | 243.00 | 270.00 | 330.00 | 1 | 430.0 | 3.5 | 5 |
| 1.5KE300A | 256.00 | 285.00 | 315.00 | 1 | 414.0 | 3.7 | 5 |
| 1.5KE350 | 284.00 | 315.00 | 385.00 | 1 | 504.0 | 3.0 | 5 |
| 1.5KE350A | 300.00 | 332.00 | 368.00 | 1 | 482.0 | 3.2 | 5 |
| 1.5KE400 | 324.00 | 360.00 | 440.00 | 1 | 574.0 | 2.6 | 5 |
| 1.5KE400A | 342.00 | 380.00 | 420.00 | 1 | 548.0 | 2.8 | 5 |
| 1.5KE440 | 356.00 | 396.00 | 484.00 | 1 | 631.0 | 2.4 | 5 |
| 1.5KE440A | 376.00 | 418.00 | 462.00 | 1 | 600.0 | 2.5 | 5 |