

UNIDIRECTIONAL AND BIDIRECTIONAL TRANSIENT VOLTAGE SUPPRESSORS

REVERSE VOLTAGE - 6.8 to 440 Volts
POWER DISSIPATION - 1500 Watts

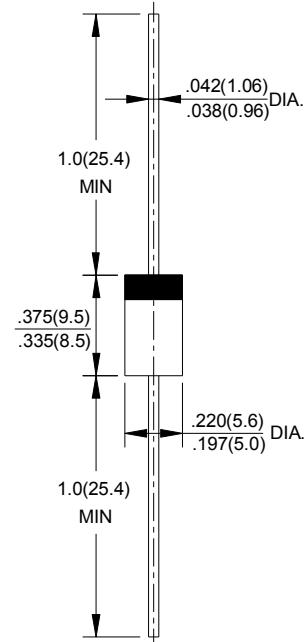
FEATURES

- Glass passivate chip
- Low leakage
- Uni and bidirectional unit
- Excellent clamping capability
- Plastic material has UL recognition 94V-0
- Fast response time

MECHANICAL DATA

- Case : Molded Plastic
- Marking : Unidirectional -type number and cathode band
Bidirectional-type number only
- Weight :1.2 grams

DO-201



Dimensions in inches and(millimeters)

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating at 25°C ambient temperature unless otherwise specified.

Single phase, half wave ,60Hz, resistive or inductive load.

For capacitive load, derate current by 20%

| CHARACTERISTICS | SYMBOL | VALUE | UNIT |
|---|-------------|--------------|------------------|
| Peak Power Dissipation at $T_A=25^\circ\text{C}$ TP=1ms (NOTE1) | P_{PK} | Minimum 1500 | WATTS |
| Peak Forward Surge Current 8.3ms Single Half Sine-Wave Super Imposed on Rated Load (JEDEC Method) | I_{FSM} | 200 | AMPS |
| Steady State Power Dissipation at $T_L=75^\circ\text{C}$ Lead Lengths 0.375"(9.5mm),See Fig. 4 | $P_{M(AV)}$ | 5.0 | WATTS |
| Maximum Instantaneous Forward Voltage at 50A for Unidirectional Devices Only (NOTE2) | V_F | See NOTE 3 | VOLTS |
| Operating Temperature Range | T_J | -55 to + 150 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{STG} | -55 to + 175 | $^\circ\text{C}$ |

NOTES:1. Non-repetitive current pulse ,per Fig. 5 and derated above $T_A=25^\circ\text{C}$ per Fig. 1 .

2. 8.3ms single half-wave duty cycle=4 pulses per minutes maximum (uni-directional units only).

3. $V_F=3.5\text{V}$ on 1.5KE6.8 thru 1.5KE200A devices and $V_F=5.0\text{V}$ on 1.5KE1100 thru 1.5KE400A devices.

RATING AND CHARACTERISTIC CURVES

1.5KE SERIES



FIG.1-PULSE DERATING CURVE

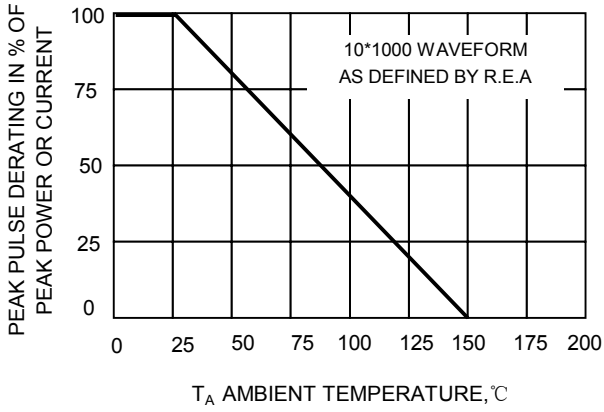


FIG.2-TYPICAL JUNCTION CAPACITANCE

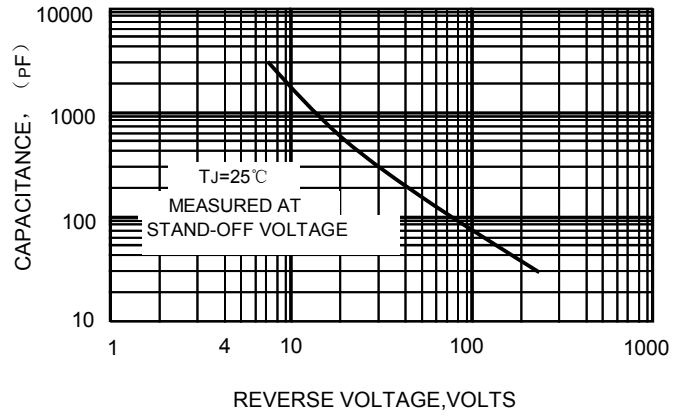


FIG.3-PULSE RATING CURVE

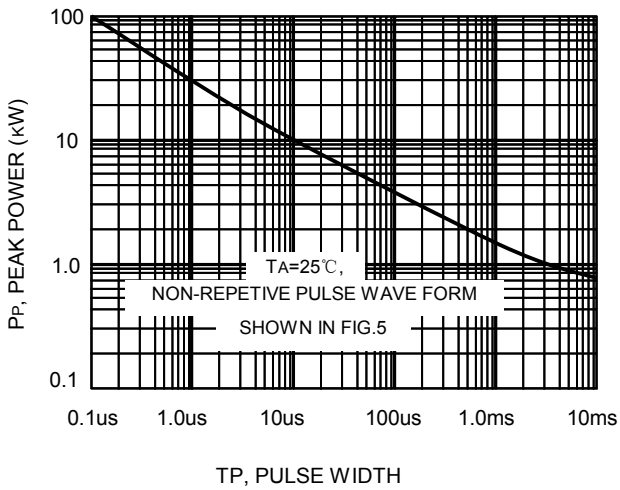


FIG.4-STEADY STATE POWER DERATING CURVE

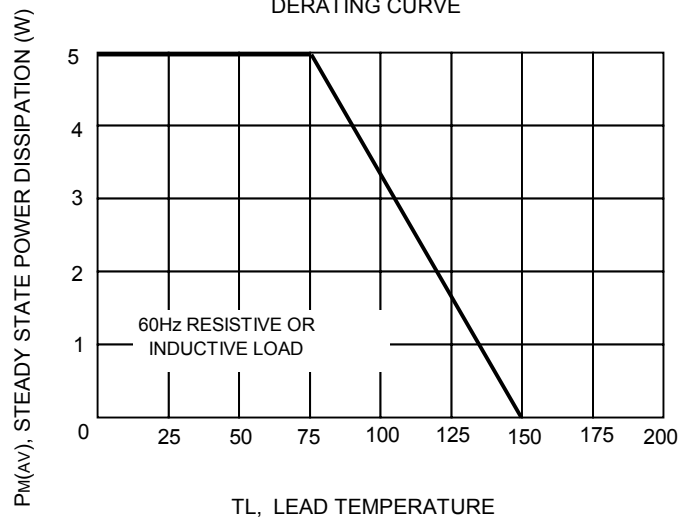
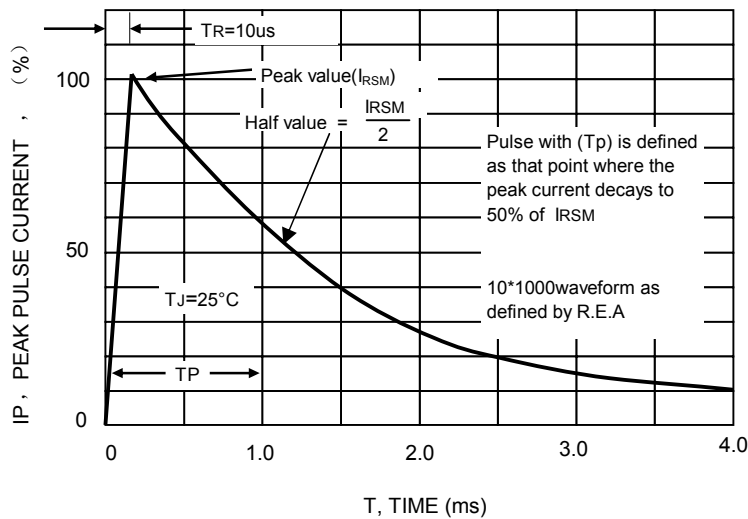


FIG.5-PULSE WAVEFORM





1.5KE SERIES

| Type Number | Type Number | Reverse Standoff Voltage | Breakdown Voltage BV Lotts@It | | | Max. Reverse Leakage @ VR | Max. Clamping Voltage @ Ipp | Max. Peak Pulse Current | Max. Voltage Temp. Variation of Bv |
|-------------|-------------|--------------------------|-------------------------------|-------|-------|---------------------------|-----------------------------|-------------------------|------------------------------------|
| | | | (UNI) | (BI) | VR(V) | | | | |
| 1.5KE6.8 | 1.5KE6.8C | 5.50 | 6.12 | 7.48 | 10 | 1000 | 10.8 | 139.0 | 0.057 |
| 1.5KE6.8A | 1.5KE6.8CA | 5.80 | 6.45 | 7.14 | 10 | 1000 | 10.5 | 143.0 | 0.057 |
| 1.5KE7.5 | 1.5KE7.5C | 6.05 | 6.75 | 8.25 | 10 | 500 | 11.7 | 128.0 | 0.061 |
| 1.5KE7.5A | 1.5KE7.5CA | 6.40 | 7.13 | 7.88 | 10 | 500 | 11.3 | 132.0 | 0.061 |
| 1.5KE8.2 | 1.5KE8.2C | 6.63 | 7.38 | 9.02 | 10 | 200 | 12.5 | 120.0 | 0.065 |
| 1.5KE8.2A | 1.5KE8.2CA | 7.02 | 7.79 | 8.61 | 10 | 200 | 12.1 | 124.0 | 0.065 |
| 1.5KE9.1 | 1.5KE9.1C | 7.37 | 8.19 | 10.00 | 1 | 50 | 13.8 | 109.0 | 0.068 |
| 1.5KE9.1A | 1.5KE9.1CA | 7.78 | 8.65 | 9.55 | 1 | 50 | 13.4 | 112.0 | 0.068 |
| 1.5KE10 | 1.5KE10C | 8.10 | 9.00 | 11.00 | 1 | 10 | 15.0 | 100.0 | 0.073 |
| 1.5KE10A | 1.5KE10CA | 8.55 | 9.50 | 10.50 | 1 | 10 | 14.5 | 103.0 | 0.073 |
| 1.5KE11 | 1.5KE11C | 8.92 | 9.90 | 12.10 | 1 | 5 | 16.2 | 93.0 | 0.075 |
| 1.5KE11A | 1.5KE11CA | 9.40 | 10.50 | 11.60 | 1 | 5 | 15.6 | 96.0 | 0.075 |
| 1.5KE12 | 1.5KE12C | 9.72 | 10.80 | 13.20 | 1 | 5 | 17.3 | 87.0 | 0.078 |
| 1.5KE12A | 1.5KE12CA | 10.20 | 11.40 | 12.60 | 1 | 5 | 16.7 | 90.0 | 0.078 |
| 1.5KE13 | 1.5KE13C | 10.50 | 11.70 | 14.30 | 1 | 5 | 19.0 | 79.0 | 0.081 |
| 1.5KE13A | 1.5KE13CA | 11.10 | 12.40 | 13.70 | 1 | 5 | 18.2 | 82.0 | 0.081 |
| 1.5KE15 | 1.5KE15C | 12.10 | 13.50 | 16.50 | 1 | 5 | 22.0 | 68.0 | 0.084 |
| 1.5KE15A | 1.5KE15CA | 12.80 | 14.30 | 15.80 | 1 | 5 | 21.2 | 71.0 | 0.084 |
| 1.5KE16 | 1.5KE16C | 12.90 | 14.40 | 17.60 | 1 | 5 | 23.5 | 64.0 | 0.086 |
| 1.5KE16A | 1.5KE16CA | 13.60 | 15.20 | 16.80 | 1 | 5 | 22.5 | 67.0 | 0.086 |
| 1.5KE18 | 1.5KE18C | 14.50 | 16.20 | 19.80 | 1 | 5 | 26.5 | 56.5 | 0.088 |
| 1.5KE18A | 1.5KE18CA | 15.30 | 17.10 | 18.90 | 1 | 5 | 25.2 | 59.5 | 0.088 |
| 1.5KE20 | 1.5KE20C | 16.20 | 18.00 | 22.00 | 1 | 5 | 29.1 | 51.5 | 0.090 |
| 1.5KE20A | 1.5KE20CA | 17.10 | 19.00 | 21.00 | 1 | 5 | 27.7 | 54.0 | 0.090 |
| 1.5KE22 | 1.5KE22C | 17.80 | 19.80 | 24.20 | 1 | 5 | 31.9 | 47.0 | 0.092 |
| 1.5KE22A | 1.5KE22CA | 18.80 | 20.90 | 23.10 | 1 | 5 | 30.6 | 49.0 | 0.092 |
| 1.5KE24 | 1.5KE24C | 19.40 | 21.60 | 26.40 | 1 | 5 | 34.7 | 43.0 | 0.094 |
| 1.5KE24A | 1.5KE24CA | 20.50 | 22.80 | 25.20 | 1 | 5 | 33.2 | 45.0 | 0.094 |
| 1.5KE27 | 1.5KE27C | 21.80 | 24.30 | 29.70 | 1 | 5 | 39.1 | 38.5 | 0.096 |
| 1.5KE27A | 1.5KE27CA | 23.10 | 25.70 | 28.40 | 1 | 5 | 37.5 | 40.0 | 0.096 |
| 1.5KE30 | 1.5KE30C | 24.30 | 27.00 | 33.00 | 1 | 5 | 43.5 | 34.5 | 0.097 |
| 1.5KE30A | 1.5KE30CA | 25.60 | 28.50 | 31.50 | 1 | 5 | 41.4 | 36.0 | 0.097 |
| 1.5KE33 | 1.5KE33C | 26.80 | 29.70 | 36.30 | 1 | 5 | 47.7 | 31.5 | 0.098 |
| 1.5KE33A | 1.5KE33CA | 28.20 | 31.40 | 34.70 | 1 | 5 | 45.7 | 33.0 | 0.098 |
| 1.5KE36 | 1.5KE36C | 29.10 | 32.40 | 39.60 | 1 | 5 | 52.0 | 29.0 | 0.099 |
| 1.5KE36A | 1.5KE36CA | 30.80 | 34.20 | 37.80 | 1 | 5 | 49.9 | 30.0 | 0.099 |
| 1.5KE39 | 1.5KE39C | 31.60 | 35.10 | 42.90 | 1 | 5 | 56.4 | 26.5 | 0.100 |
| 1.5KE39A | 1.5KE39CA | 33.30 | 37.10 | 41.00 | 1 | 5 | 53.9 | 28.0 | 0.100 |
| 1.5KE43 | 1.5KE43C | 34.80 | 38.70 | 47.30 | 1 | 5 | 61.9 | 24.0 | 0.101 |
| 1.5KE43A | 1.5KE43CA | 36.80 | 40.90 | 45.20 | 1 | 5 | 59.3 | 25.3 | 0.101 |
| 1.5KE47 | 1.5KE47C | 38.10 | 42.30 | 51.70 | 1 | 5 | 67.8 | 22.2 | 0.101 |
| 1.5KE47A | 1.5KE47CA | 40.20 | 44.70 | 49.40 | 1 | 5 | 64.8 | 23.2 | 0.101 |
| 1.5KE51 | 1.5KE51C | 41.30 | 45.90 | 56.10 | 1 | 5 | 73.5 | 20.4 | 0.102 |
| 1.5KE51A | 1.5KE51CA | 43.60 | 48.50 | 53.60 | 1 | 5 | 70.1 | 21.4 | 0.102 |
| 1.5KE56 | 1.5KE56C | 45.40 | 50.40 | 61.60 | 1 | 5 | 80.5 | 18.6 | 0.103 |
| 1.5KE56A | 1.5KE56CA | 47.80 | 53.20 | 58.80 | 1 | 5 | 77.0 | 19.5 | 0.103 |

1.5KE SERIES



| Type Number | Type Number | Reverse Standoff Voltage | Breakdown Voltage BV Lolts@It | | | Max. Reverse Leakage @ VR | Max. Clamping Voltage @ Ipp | Max. Peak Pulse Current | Max. Voltage Temp. Variation of Bv |
|-------------|-------------|--------------------------|-------------------------------|--------|--------|---------------------------|-----------------------------|-------------------------|------------------------------------|
| | | | Min(V) | Max(V) | It(mA) | | | | |
| (UNI) | (BI) | VR(V) | Min(V) | Max(V) | It(mA) | IR(μA) | Vc(V) | Ipp(A) | mV/°C |
| 1.5KE62 | 1.5KE62C | 50.2 | 55.8 | 68.2 | 1 | 5 | 89.0 | 16.90 | 0.104 |
| 1.5KE62A | 1.5KE62CA | 53.0 | 58.9 | 65.1 | 1 | 5 | 85.0 | 17.70 | 0.104 |
| 1.5KE68 | 1.5KE68C | 55.1 | 61.2 | 74.8 | 1 | 5 | 98.0 | 15.30 | 0.104 |
| 1.5KE68A | 1.5KE68CA | 58.1 | 64.6 | 71.4 | 1 | 5 | 92.0 | 16.30 | 0.104 |
| 1.5KE75 | 1.5KE75C | 60.7 | 67.5 | 82.5 | 1 | 5 | 108.0 | 13.90 | 0.105 |
| 1.5KE75A | 1.5KE75CA | 64.7 | 71.3 | 78.8 | 1 | 5 | 103.0 | 14.60 | 0.105 |
| 1.5KE82 | 1.5KE82C | 66.4 | 73.8 | 90.2 | 1 | 5 | 118.0 | 12.70 | 0.105 |
| 1.5KE82A | 1.5KE82CA | 70.1 | 77.9 | 86.1 | 1 | 5 | 113.0 | 13.30 | 0.105 |
| 1.5KE91 | 1.5KE91C | 73.7 | 81.9 | 100.0 | 1 | 5 | 131.0 | 11.40 | 0.106 |
| 1.5KE91A | 1.5KE91CA | 77.8 | 86.5 | 95.5 | 1 | 5 | 125.0 | 12.00 | 0.106 |
| 1.5KE100 | 1.5KE100C | 81.0 | 90.0 | 110.0 | 1 | 5 | 144.0 | 10.40 | 0.106 |
| 1.5KE100A | 1.5KE100CA | 85.5 | 95.0 | 105.0 | 1 | 5 | 137.0 | 11.00 | 0.106 |
| 1.5KE110 | 1.5KE110C | 89.2 | 99.0 | 121.0 | 1 | 5 | 158.0 | 9.50 | 0.107 |
| 1.5KE110A | 1.5KE110CA | 94.0 | 105.0 | 116.0 | 1 | 5 | 152.0 | 9.90 | 0.107 |
| 1.5KE120 | 1.5KE120C | 97.2 | 108.0 | 132.0 | 1 | 5 | 173.0 | 8.70 | 0.107 |
| 1.5KE120A | 1.5KE120CA | 102.0 | 114.0 | 126.0 | 1 | 5 | 165.0 | 9.10 | 0.107 |
| 1.5KE130 | 1.5KE130C | 105.0 | 117.0 | 143.0 | 1 | 5 | 187.0 | 8.00 | 0.107 |
| 1.5KE130A | 1.5KE130CA | 111.0 | 124.0 | 137.0 | 1 | 5 | 179.0 | 8.40 | 0.107 |
| 1.5KE150 | 1.5KE150C | 121.0 | 135.0 | 165.0 | 1 | 5 | 215.0 | 7.00 | 0.108 |
| 1.5KE150A | 1.5KE150CA | 128.0 | 143.0 | 158.0 | 1 | 5 | 207.0 | 7.20 | 0.108 |
| 1.5KE160 | 1.5KE160C | 130.0 | 144.0 | 176.0 | 1 | 5 | 230.0 | 6.50 | 0.108 |
| 1.5KE160A | 1.5KE160CA | 136.0 | 152.0 | 168.0 | 1 | 5 | 219.0 | 6.80 | 0.108 |
| 1.5KE170 | 1.5KE170C | 138.0 | 153.0 | 187.0 | 1 | 5 | 244.0 | 6.20 | 0.108 |
| 1.5KE170A | 1.5KE170CA | 145.0 | 162.0 | 179.0 | 1 | 5 | 234.0 | 6.40 | 0.108 |
| 1.5KE180 | 1.5KE180C | 146.0 | 162.0 | 198.0 | 1 | 5 | 258.0 | 5.80 | 0.108 |
| 1.5KE180A | 1.5KE180CA | 154.0 | 171.0 | 189.0 | 1 | 5 | 246.0 | 6.10 | 0.108 |
| 1.5KE200 | 1.5KE200C | 162.0 | 180.0 | 220.0 | 1 | 5 | 287.0 | 5.20 | 0.108 |
| 1.5KE200A | 1.5KE200CA | 171.0 | 190.0 | 210.0 | 1 | 5 | 274.0 | 5.50 | 0.108 |
| 1.5KE220 | 1.5KE220C | 175.0 | 198.0 | 242.0 | 1 | 5 | 344.0 | 4.30 | 0.108 |
| 1.5KE220A | 1.5KE220CA | 185.0 | 209.0 | 231.0 | 1 | 5 | 328.0 | 4.60 | 0.108 |
| 1.5KE250 | 1.5KE250C | 202.0 | 225.0 | 275.0 | 1 | 5 | 360.0 | 5.00 | 0.110 |
| 1.5KE250A | 1.5KE250CA | 214.0 | 237.0 | 263.0 | 1 | 5 | 344.4 | 5.00 | 0.110 |
| 1.5KE300 | 1.5KE300C | 243.0 | 270.0 | 330.0 | 1 | 5 | 430.0 | 5.00 | 0.110 |
| 1.5KE300A | 1.5KE300CA | 256.0 | 285.0 | 315.0 | 1 | 5 | 414.0 | 5.00 | 0.110 |
| 1.5KE350 | 1.5KE350C | 284.0 | 315.0 | 385.0 | 1 | 5 | 504.0 | 4.00 | 0.110 |
| 1.5KE350A | 1.5KE350CA | 300.0 | 332.0 | 368.0 | 1 | 5 | 482.0 | 4.00 | 0.110 |
| 1.5KE400 | 1.5KE400C | 324.0 | 360.0 | 440.0 | 1 | 5 | 574.0 | 4.00 | 0.110 |
| 1.5KE400A | 1.5KE400CA | 342.0 | 380.0 | 420.0 | 1 | 5 | 548.0 | 4.00 | 0.110 |

NOTES: Suffix'C' denotes bidirectional device . Suffix'A' denotes 5% tolerance device .no suffix denotes 10% tolerance devive .

1. For bidirectional devices having VR of 10volts and under ,the IR limit is doubled .