

## UNIDIRECTIONAL AND BIDIRECTIONAL TRANSIENT VOLTAGE SUPPRESSORS

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

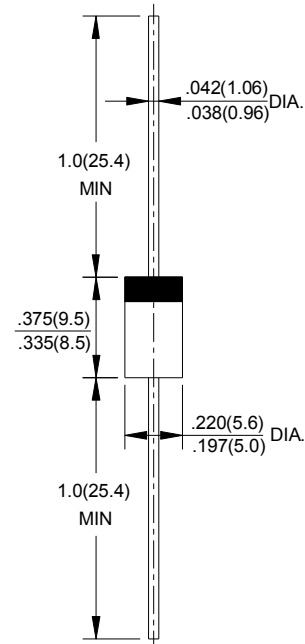
### FEATURES

- 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 $T_A=25^\circ\text{C}$<br>TP=1ms (NOTE1)                                      | $P_{PK}$    | Minimum 1500 | WATTS            |
| Peak Forward Surge Current<br>8.3ms Single Half Sine-Wave<br>Super Imposed on Rated Load (JEDEC Method) | $I_{FSM}$   | 200          | AMPS             |
| Steady State Power Dissipation at $T_L=75^\circ\text{C}$<br>Lead Lengths 0.375"(9.5mm),See Fig. 4       | $P_{M(AV)}$ | 5.0          | WATTS            |
| Maximum Instantaneous Forward Voltage<br>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

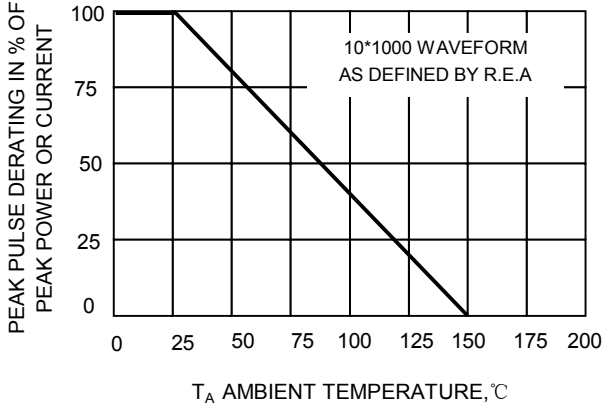


FIG.2-TYPICAL JUNCTION CAPACITANCE



FIG.3-PULSE RATING CURVE

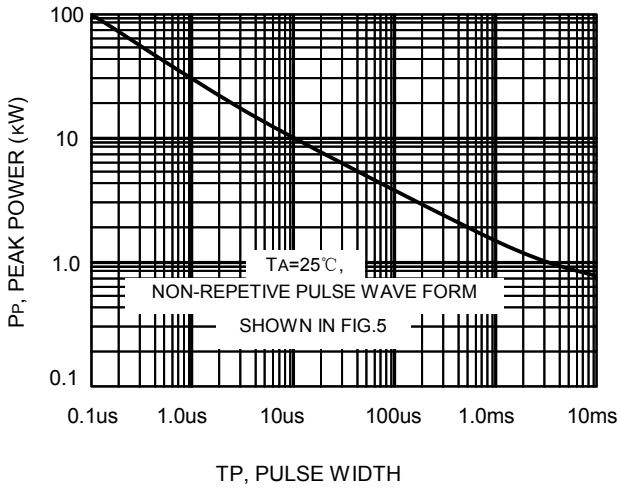


FIG.4-STEADY STATE POWER DERATING CURVE

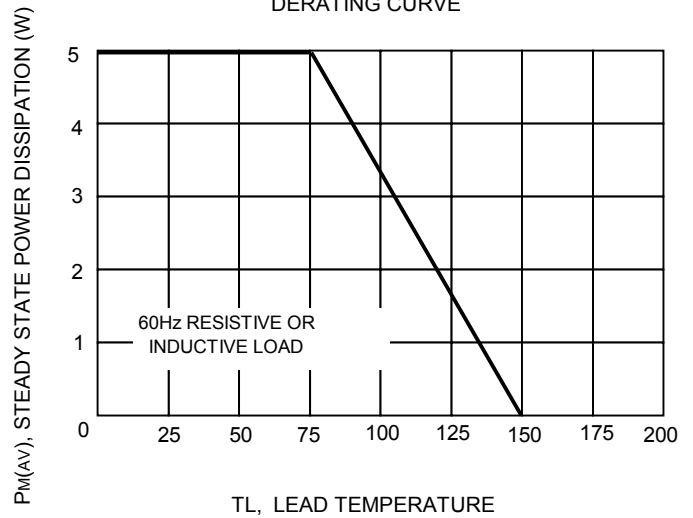


FIG.5-PULSE WAVEFORM





# 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 .