

## 1.5KE Series

**Breakdown Voltage: 6.8 - 440 Volts**  
**Power: 1500 Watt**

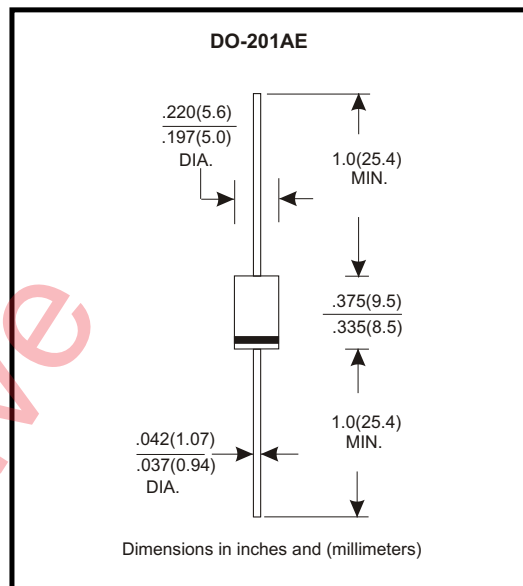


### Features

- Plastic package has underwriters laboratory flammability classification 94V-0
- 1500W surge capability at 1ms
- Excellent clamping capability
- Low zener impedance
- Fast response time: typically less than 1.0 ps from 0 Volts to  $B_v$  min
- Typical  $I_r$  less than  $1\mu A$  above 10V
- High temperature aging guaranteed:  $260^\circ C/10s$  / .375" (9.5mm) lead length/5lbs., (2.3kg) tension

### Mechanical data

- Case: molded plastic
- Terminals: Auaxial leads, solderable per MIL-STD-202, method 208
- Polarity: color band denoted cathode except bipolar
- Weight: 1.2 GRAMS



### Maximum Ratings and Electrical Characteristics

| RATINGS  | SYMBOL         | VALUE         | UNITS      |
|--|----------------|---------------|------------|
| PEAK POWER DISSIPATION AT $T_A=25^\circ C$ , $T_P=1ms$ (NOTE1)   | $P_{PK}$       | MINIMUM 1500  | WATTS      |
| STEADY STATE POWER DISSIPATION AT $T_L=75^\circ C$<br>LEAD LENGTHS .375" (9.5mm) (NOTE 2)                  | PD             | 5.0           | WATTS      |
| PEAK FORWARD SURGE CURRENT, 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 | $^\circ C$ |

NOTE :

1. NON-REPETITIVE CURRENT PULSE, PER FIG.3 AND DERATED ABOVE  $T_A=25^\circ C$  PER FIG 2.
2. MOUNTED ON COPPER LEAF AREA OF  $0.79 \text{ IN}^2$  ( $20 \text{ mm}^2$ )
3. 8.3ms SINGLE HALF SINE-WAVE, DUTY CYCLE=4 PULSES PER MINUTES MAXIMUM
4. FOR BIDIRECTIONAL USE C SUFFIX FOR 10% TOLERANCE, CA SUFFIX FOR 5% TOLERANCE

# 1500W Transient Voltage Suppressor

| JEDEC TYPE NUMBER | GENERAL PART NUMBER | BREAKDOWN V <sub>BR</sub> (VOLTS) |      | @IT (mA) | WORKING PEAK REVERSE VOLTAGE V <sub>RWM</sub> (VOLTS) | MAXIMUM REVERSE LEAKAGE AT V <sub>RWM</sub> IR(μA) | MAXIMUM REVERSE SURGE CURRENT I <sub>RSM</sub> (AMPS) | MAX CLAMPING VOLTAGE V <sub>RWM</sub> (VOLTS) | MAXIMUM TEMPERATURE COEFFICIENT OF V <sub>BR</sub> (%C) V <sub>RSM</sub> (VOLTS) |
|-------------------|---------------------|-----------------------------------|------|----------|---|--|---|---|--|
|                   |                     | MIN                               | MAX  |          |   |  |   |   |  |
| 1N6267            | 1.5KE6.8            | 6.12                              | 7.48 | 10       | 5.50  | 1000   | 139   | 10.8  | 0.057  |
| 1N6267A           | 1.5KE6.8A           | 6.45                              | 7.14 | 10       | 5.80  | 1000   | 143   | 10.5  | 0.057  |
| 1N6268            | 1.5KE7.5            | 6.75                              | 8.25 | 10       | 6.05  | 500  | 128   | 11.7  | 0.061  |
| 1N6268A           | 1.5KE7.5A           | 7.13                              | 7.88 | 10       | 6.40  | 500  | 132   | 11.3  | 0.061  |
| 1N6269            | 1.5KE8.2            | 7.38                              | 9.02 | 10       | 6.63  | 200  | 120   | 12.5  | 0.065  |
| 1N6269A           | 1.5KE8.2A           | 7.79                              | 8.00 | 10       | 7.02  | 200  | 124   | 12.1  | 0.065  |
| 1N6270            | 1.5KE9.1            | 8.19                              | 10.0 | 1.0      | 7.37  | 50   | 109   | 13.8  | 0.068  |
| 1N6270A           | 1.5KE9.1A           | 8.65                              | 9.55 | 1.0      | 7.78  | 50   | 112   | 13.4  | 0.068  |
| 1N6271            | 1.5KE10             | 9.00                              | 11.0 | 1.0      | 8.10  | 10   | 100   | 15.0  | 0.073  |
| 1N6271A           | 1.5KE10A            | 9.50                              | 10.5 | 1.0      | 8.55  | 10   | 103   | 14.5  | 0.073  |
| 1N6272            | 1.5KE11             | 9.90                              | 12.1 | 1.0      | 8.92  | 5.0  | 93.0  | 16.2  | 0.075  |
| 1N6272A           | 1.5KE11A            | 10.5                              | 11.6 | 1.0      | 9.40  | 5.0  | 96.0  | 15.6  | 0.075  |
| 1N6273            | 1.5KE12             | 10.8                              | 13.2 | 1.0      | 9.72  | 5.0  | 87.0  | 17.3  | 0.078  |
| 1N6273A           | 1.5KE12A            | 11.4                              | 12.6 | 1.0      | 10.2  | 5.0  | 90.0  | 16.7  | 0.078  |
| 1N6274            | 1.5KE13             | 11.7                              | 14.3 | 1.0      | 10.5  | 5.0  | 79.0  | 19.0  | 0.081  |
| 1N6274A           | 1.5KE13A            | 12.4                              | 13.7 | 1.0      | 11.1  | 5.0  | 82.0  | 18.2  | 0.081  |
| 1N6275            | 1.5KE15             | 13.5                              | 16.5 | 1.0      | 12.1  | 5.0  | 68.0  | 22.0  | 0.084  |
| 1N6275A           | 1.5KE15A            | 14.3                              | 15.8 | 1.0      | 12.8  | 5.0  | 71.0  | 21.2  | 0.084  |
| 1N6276            | 1.5KE16             | 14.4                              | 17.6 | 1.0      | 12.9  | 5.0  | 64.0  | 23.5  | 0.086  |
| 1N6276A           | 1.5KE16A            | 15.2                              | 16.8 | 1.0      | 13.6  | 5.0  | 67.0  | 22.5  | 0.086  |
| 1N6277            | 1.5KE18             | 16.2                              | 19.8 | 1.0      | 14.5  | 5.0  | 56.5  | 26.5  | 0.088  |
| 1N6277A           | 1.5KE18A            | 17.1                              | 18.9 | 1.0      | 15.3  | 5.0  | 59.5  | 25.2  | 0.088  |
| 1N6278            | 1.5KE20             | 18.0                              | 22.0 | 1.0      | 16.2  | 5.0  | 51.5  | 29.1  | 0.090  |
| 1N6278A           | 1.5KE20A            | 19.0                              | 21.0 | 1.0      | 17.1  | 5.0  | 54.0  | 27.7  | 0.090  |
| 1N6279            | 1.5KE22             | 19.8                              | 24.2 | 1.0      | 17.8  | 5.0  | 47.0  | 31.9  | 0.092  |
| 1N6279A           | 1.5KE22A            | 20.9                              | 23.1 | 1.0      | 18.8  | 5.0  | 49.0  | 30.6  | 0.092  |
| 1N6280            | 1.5KE24             | 21.6                              | 26.4 | 1.0      | 19.4  | 5.0  | 43.0  | 34.7  | 0.094  |
| 1N6280A           | 1.5KE24A            | 22.8                              | 25.2 | 1.0      | 20.5  | 5.0  | 45.0  | 33.2  | 0.094  |
| 1N6281            | 1.5KE27             | 24.3                              | 29.7 | 1.0      | 21.8  | 5.0  | 38.5  | 39.1  | 0.096  |
| 1N6281A           | 1.5KE27A            | 25.7                              | 28.4 | 1.0      | 23.1  | 5.0  | 40.0  | 37.5  | 0.096  |
| 1N6282            | 1.5KE30             | 27.0                              | 33.0 | 1.0      | 24.3  | 5.0  | 34.5  | 43.5  | 0.097  |
| 1N6282A           | 1.5KE30A            | 28.5                              | 31.5 | 1.0      | 25.6  | 5.0  | 36.0  | 41.4  | 0.097  |
| 1N6283            | 1.5KE33             | 29.7                              | 36.3 | 1.0      | 26.8  | 5.0  | 31.5  | 47.7  | 0.098  |
| 1N6283A           | 1.5KE33A            | 31.4                              | 34.7 | 1.0      | 28.2  | 5.0  | 33.0  | 45.7  | 0.098  |
| 1N6284            | 1.5KE36             | 32.4                              | 39.6 | 1.0      | 29.1  | 5.0  | 29.0  | 52.0  | 0.099  |
| 1N6284A           | 1.5KE36A            | 34.2                              | 37.8 | 1.0      | 30.8  | 5.0  | 30.0  | 49.9  | 0.099  |
| 1N6285            | 1.5KE39             | 35.1                              | 42.9 | 1.0      | 31.6  | 5.0  | 26.5  | 56.4  | 0.100  |
| 1N6285A           | 1.5KE39A            | 37.1                              | 41.0 | 1.0      | 33.3  | 5.0  | 28.0  | 53.9  | 0.100  |
| 1N6286            | 1.5KE43             | 38.7                              | 47.3 | 1.0      | 34.8  | 5.0  | 24.0  | 61.9  | 0.101  |
| 1N6286A           | 1.5KE43A            | 40.9                              | 45.2 | 1.0      | 36.8  | 5.0  | 25.3  | 59.3  | 0.101  |
| 1N6287            | 1.5KE47             | 42.3                              | 51.7 | 1.0      | 36.1  | 5.0  | 22.2  | 67.8  | 0.101  |
| 1N6287A           | 1.5KE47A            | 44.7                              | 49.4 | 1.0      | 40.2  | 5.0  | 23.2  | 64.8  | 0.101  |
| 1N6288            | 1.5KE51             | 45.9                              | 56.1 | 1.0      | 41.3  | 5.0  | 20.4  | 73.5  | 0.102  |
| 1N6288A           | 1.5KE51A            | 48.5                              | 53.6 | 1.0      | 43.6  | 5.0  | 21.4  | 70.1  | 0.102  |
| 1N6289            | 1.5KE56             | 50.4                              | 61.8 | 1.0      | 45.4  | 5.0  | 18.6  | 80.5  | 0.103  |
| 1N6289A           | 1.5KE56A            | 53.2                              | 58.8 | 1.0      | 47.8  | 5.0  | 19.5  | 77.0  | 0.103  |
| 1N6290            | 1.5KE62             | 55.8                              | 68.2 | 1.0      | 50.2  | 5.0  | 16.9  | 89.0  | 0.104  |
| 1N6290A           | 1.5KE62A            | 58.9                              | 65.1 | 1.0      | 53.0  | 5.0  | 17.7  | 85.0  | 0.104  |
| 1N6291            | 1.5KE68             | 61.2                              | 74.8 | 1.0      | 55.1  | 5.0  | 15.3  | 98.0  | 0.104  |
| 1N6291A           | 1.5KE68A            | 64.6                              | 71.4 | 1.0      | 58.1  | 5.0  | 16.3  | 92.0  | 0.104  |
| 1N6292            | 1.5KE75             | 67.5                              | 82.5 | 1.0      | 60.7  | 5.0  | 13.9  | 108.0   | 0.105  |
| 1N6292A           | 1.5KE75A            | 71.3                              | 78.8 | 1.0      | 64.1  | 5.0  | 14.6  | 103.0   | 0.105  |
| 1N6293            | 1.5KE82             | 73.8                              | 90.2 | 1.0      | 66.4  | 5.0  | 12.7  | 118.0   | 0.105  |
| 1N6293A           | 1.5KE82A            | 77.9                              | 86.1 | 1.0      | 70.1  | 5.0  | 13.3  | 113.0   | 0.105  |

# 1500W Transient Voltage Suppressor

| DEVICE  | GENERAL PART NUMBER | BREAKDOWN $V_{BR}$ (VOLTS) |       | @ $I_T$ (mA) | WORKING PEAK REVERSE VOLTAGE $V_{RWM}$ (VOLTS) | MAXIMUM REVERSE LEAKAGE AT $V_{RWM}$ $I_R$ ( $\mu$ A) | MAXIMUM REVERSE CURRENT $I_{RSM}$ (AMPS) | MAX CLAMPING VOLTAGE $V_{RWM}$ (VOLTS) | MAXIMUM TEMPERATURE COEFFICIENT OF $V_{BR}$ (%C) $V_{RSM}$ (VOLTS) |
|---------|---------------------|----------------------------|-------|--------------|--|---|--|--|--|
|         |                     | MIN                        | MAX   |              |  |   |  |  |  |
| 1N6294  | 1.5KE91             | 81.9                       | 100.0 | 1.0          | 73.7   | 5.0   | 11.4                                     | 131.8                                  | 0.106  |
| 1N6294A | 1.5KE91A            | 86.5                       | 95.50 | 1.0          | 77.8   | 5.0   | 12.0                                     | 125.0                                  | 0.106  |
| 1N6295  | 1.5KE100            | 90.0                       | 110.0 | 1.0          | 81.0   | 5.0   | 10.4                                     | 144.0                                  | 0.106  |
| 1N6295A | 1.5KE100A           | 95.0                       | 105.0 | 1.0          | 85.5   | 5.0   | 11.0                                     | 137.0                                  | 0.106  |
| 1N6296  | 1.5KE110            | 99.0                       | 121.0 | 1.0          | 89.2   | 5.0   | 9.5                                      | 158.0                                  | 0.107  |
| 1N6296A | 1.5KE110A           | 106.0                      | 116.0 | 1.0          | 94.0   | 5.0   | 9.9                                      | 152.0                                  | 0.107  |
| 1N6297  | 1.5KE120            | 108.0                      | 132.0 | 1.0          | 97.2   | 5.0   | 8.7                                      | 173.0                                  | 0.107  |
| 1N6297A | 1.5KE120A           | 114.0                      | 126.0 | 1.0          | 102.0  | 5.0   | 9.1                                      | 165.0                                  | 0.107  |
| 1N6298  | 1.5KE130            | 117.0                      | 143.0 | 1.0          | 106.0  | 5.0   | 8.0                                      | 187.0                                  | 0.107  |
| 1N6298A | 1.5KE130A           | 124.0                      | 137.0 | 1.0          | 111.0  | 5.0   | 8.4                                      | 179.0                                  | 0.107  |
| 1N6299  | 1.5KE150            | 136.0                      | 165.0 | 1.0          | 121.0  | 5.0   | 7.0                                      | 215.0                                  | 0.108  |
| 1N6299A | 1.5KE150A           | 143.0                      | 158.0 | 1.0          | 128.0  | 5.0   | 7.2                                      | 207.0                                  | 0.108  |
| 1N6300  | 1.5KE160            | 144.0                      | 176.0 | 1.0          | 130.0  | 5.0   | 6.5                                      | 230.0                                  | 0.108  |
| 1N6300A | 1.5KE160A           | 152.0                      | 168.0 | 1.0          | 136.0  | 5.0   | 6.8                                      | 219.0                                  | 0.108  |
| 1N6301  | 1.5KE170            | 153.0                      | 187.0 | 1.0          | 138.0  | 5.0   | 6.2                                      | 244.0                                  | 0.108  |
| 1N6301A | 1.5KE170A           | 162.0                      | 179.0 | 1.0          | 145.0  | 5.0   | 6.4                                      | 234.0                                  | 0.108  |
| 1N6302  | 1.5KE180            | 162.0                      | 198.0 | 1.0          | 146.0  | 5.0   | 5.8                                      | 258.0                                  | 0.108  |
| 1N6302A | 1.5KE180A           | 171.0                      | 189.0 | 1.0          | 154.0  | 5.0   | 6.1                                      | 246.0                                  | 0.108  |
| 1N6303  | 1.5KE200            | 180.0                      | 220.0 | 1.0          | 162.0  | 5.0   | 5.2                                      | 287.0                                  | 0.108  |
| 1N6303A | 1.5KE200A           | 190.0                      | 210.0 | 1.0          | 171.0  | 5.0   | 5.5                                      | 274.0                                  | 0.108  |
|         | 1.5KE220            | 196.0                      | 242.0 | 1.0          | 175.0  | 5.0   | 4.4                                      | 344.0                                  | 0.108  |
|         | 1.5KE220A           | 209.0                      | 231.0 | 1.0          | 185.0  | 5.0   | 4.6                                      | 328.0                                  | 0.108  |
|         | 1.5KE250            | 225.0                      | 275.0 | 1.0          | 202.0  | 5.0   | 4.2                                      | 360.0                                  | 0.110  |
|         | 1.5KE250A           | 237.0                      | 263.0 | 1.0          | 214.0  | 5.0   | 4.4                                      | 344.0                                  | 0.110  |
|         | 1.5KE300            | 270.0                      | 330.0 | 1.0          | 243.0  | 5.0   | 3.5                                      | 430.0                                  | 0.110  |
|         | 1.5KE300A           | 285.0                      | 315.0 | 1.0          | 256.0  | 5.0   | 3.6                                      | 414.0                                  | 0.110  |
|         | 1.5KE350            | 315.0                      | 385.0 | 1.0          | 284.0  | 5.0   | 3.0                                      | 504.0                                  | 0.110  |
|         | 1.5KE350A           | 333.0                      | 368.0 | 1.0          | 300.0  | 5.0   | 3.1                                      | 482.0                                  | 0.110  |
|         | 1.5KE400            | 360.0                      | 440.0 | 1.0          | 324.0  | 5.0   | 2.6                                      | 574.0                                  | 0.110  |
|         | 1.5KE400A           | 380.0                      | 420.0 | 1.0          | 342.0  | 5.0   | 2.7                                      | 548.0                                  | 0.110  |
|         | 1.5KE440            | 396.0                      | 484.0 | 1.0          | 356.0  | 5.0   | 2.4                                      | 631.0                                  | 0.110  |
|         | 1.5KE440A           | 418.0                      | 462.0 | 1.0          | 376.0  | 5.0   | 2.5                                      | 602.0                                  | 0.110  |

NOTES : 1.  $V_{BR}$  MEASURED AFTER  $I_T$  APPLIED FOR 300  $\mu$ S,  $I_T$ =SQUARE WAVE PULSE OR EQUIVALENT

2. SURGE CURRENT WAVEFORM PER FIGURE 3 AND DERATED PER FIGURE 2.

3.  $V_F$ =3.5V MAX,  $I_F$ =100A (1.5KE6.8 THRU 1.5KE91A)

$V_F$ =5.0V MAX,  $I_F$ =100A (1.5KE100 THRU 1.5KE440A) PER 1/2 SQUARE OR EQUIVALENT SINE WAVE.

PW=8.3ms, DUTY CYCLE=4 PULSES PER MINUTE MXIMUM

4. FOR BIPOLAR TYPES HAVING  $V_{RWM}$  OF 10 VOLTS AND UNDER, THE  $I_R$  LIMIT IS DOUBLED

## Rating and Characteristic Curves (1.5KE6.8 THRU 1.5KE440CA)

FIG. 1 - PEAK PULSE POWER RATING CURVE

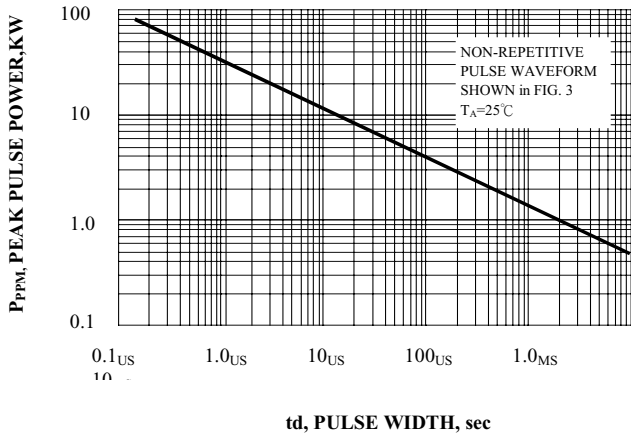


FIG. 2 - PULSE DERATING CURVE

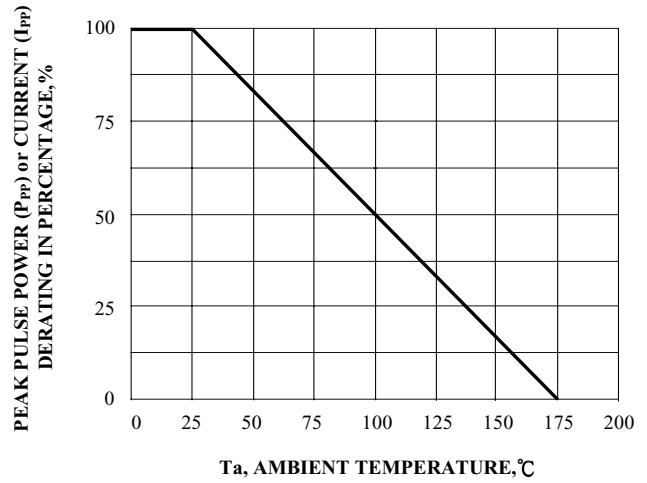


FIG. 3 - PULSE WAVEFORM

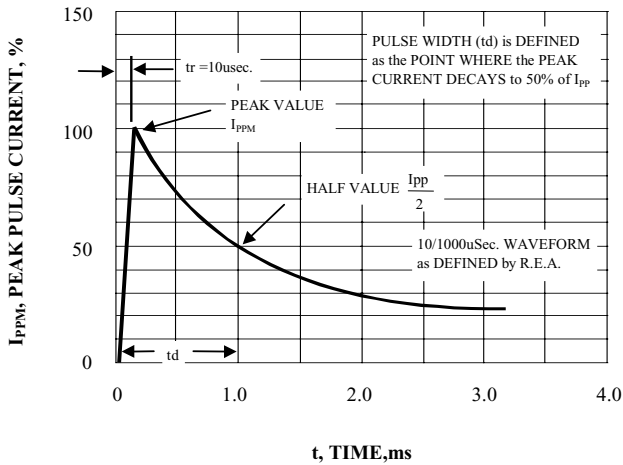


FIG. 4 - TYPICAL JUNCTION CAPACITANCE

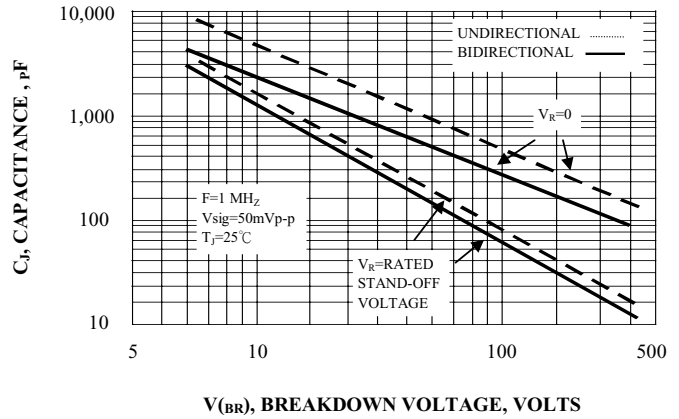


FIG. 5 - STEADY STATE POWER DERATING

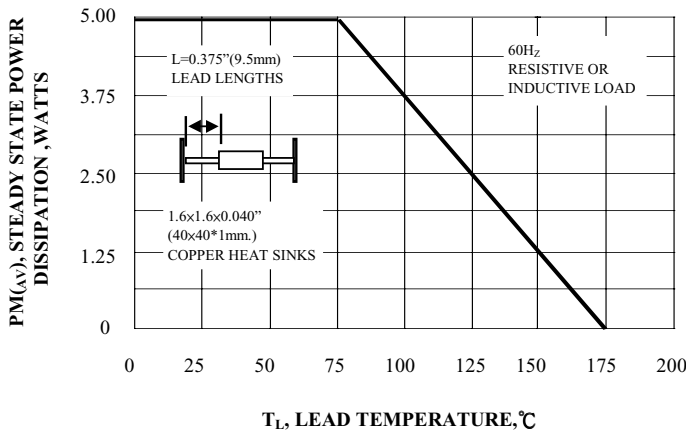
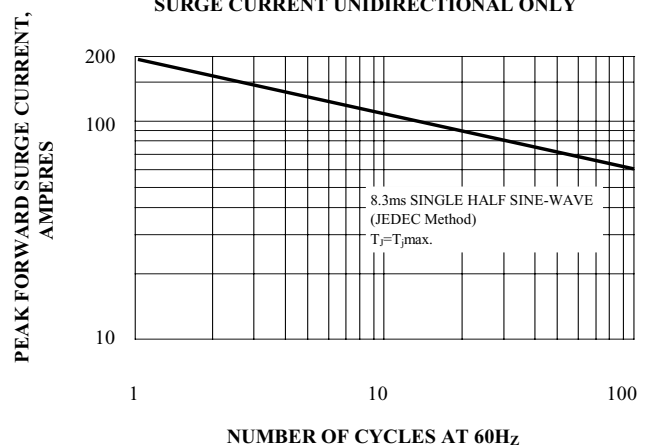
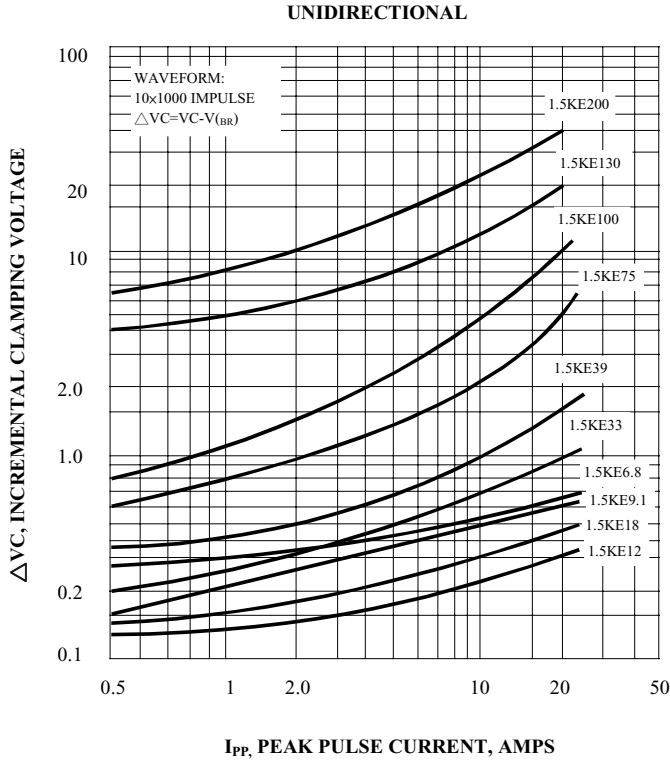


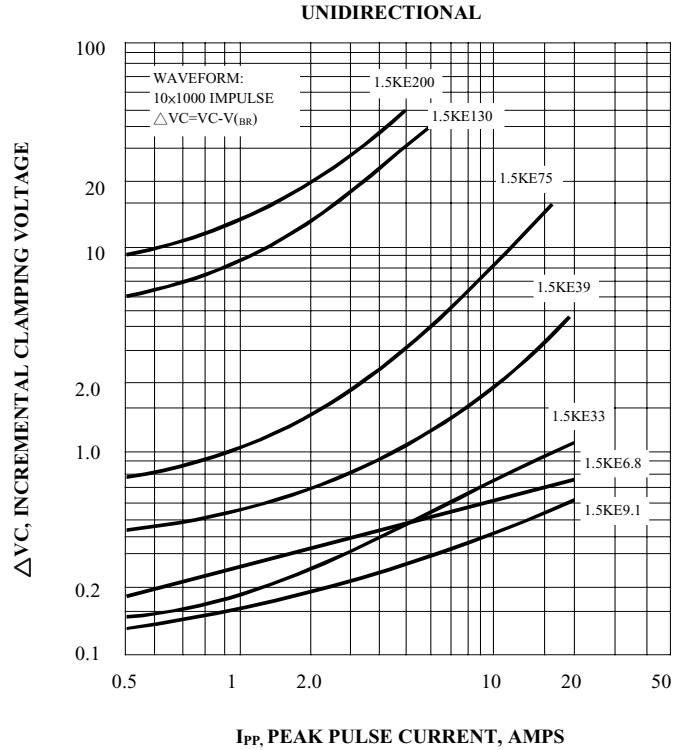
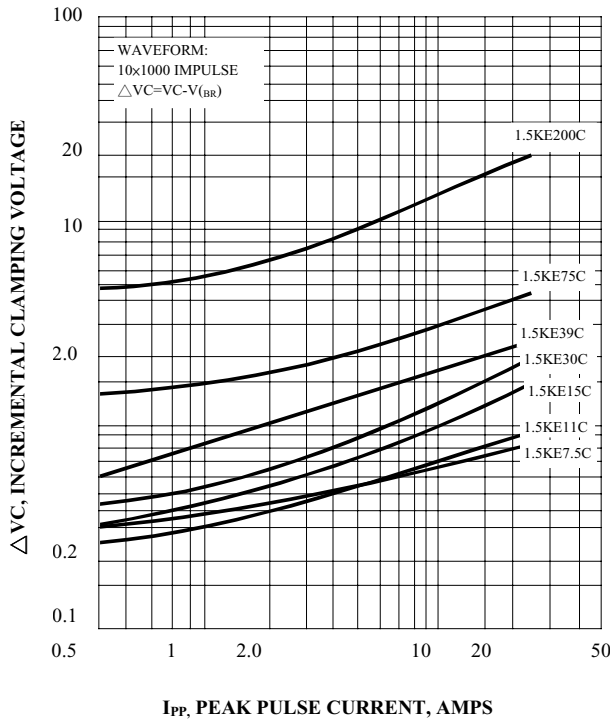
FIG. 6 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT UNIDIRECTIONAL ONLY



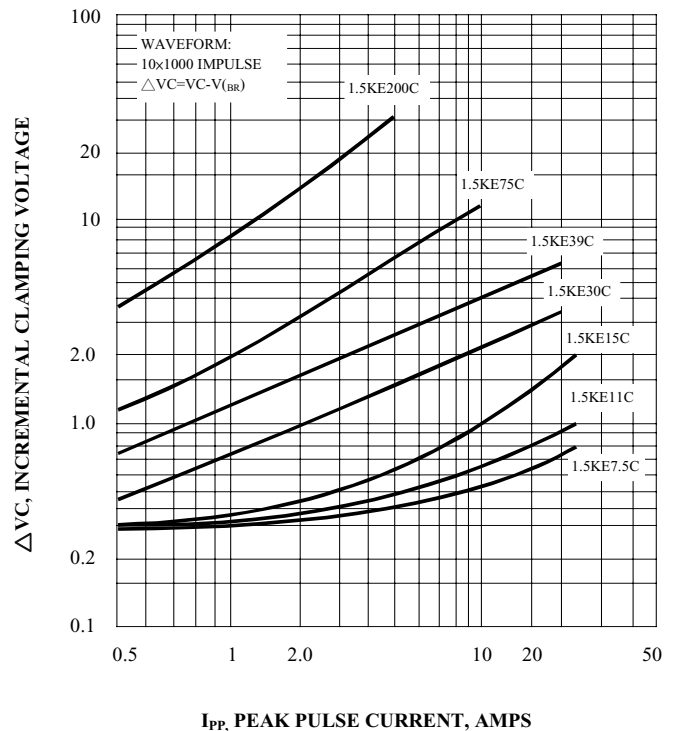
## Rating and Characteristic Curves (1.5KE6.8 THRU 1.5KE440CA)



**FIG. 9 - INCREMENTAL CLAMPING VOLTAGE CURVE BIDIRECTIONAL**



**FIG. 10 - INCREMENTAL CLAMPING VOLTAGE CURVE BIDIRECTIONAL**



## Rating and Characteristic Curves (1.5KE6.8 THRU 1.5KE440CA)

FIG. 11 - INSTANTANEOUS FORWARD VOLTAGE CHARACTERISTICS CURVE

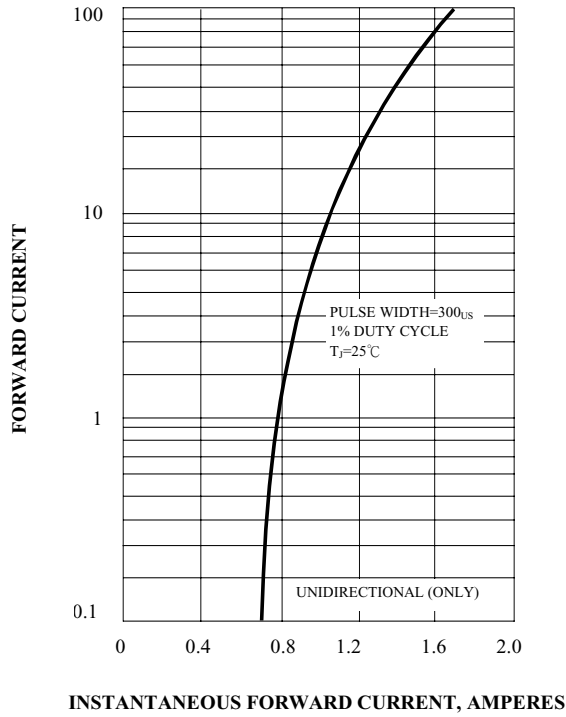


FIG. 12 - BREAKDOWN VOLTAGE TEMPERATURE COEFFICIENT CURVE

