

GPP TRANSIENT VOLTAGE SUPPRESSOR
1500 WATT PEAK POWER 5.0 WATTS STEADY STATE

FEATURES

- * Plastic package has underwriters laboratory certificate
- * Glass passivated chip construction
- * 1500 watt surge capability at 1ms
- * Excellent clamping capability
- * Low zener impedance
- * Fast response time

Ratings at 25 °C ambient temperature unless otherwise specified.

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

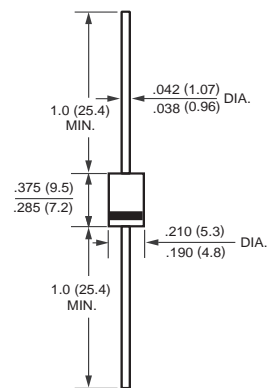
Ratings at 25 °C ambient temperature unless otherwise specified.

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

For capacitive load, derate current by 20%.



1.5KE



Dimensions in inches and (millimeters)

DEVICES FOR BIPOLAR APPLICATIONS

For Bidirectional use C or CA suffix for types 1.5KE 6.8 thru 1.5KE 450

Electrical characteristics apply in both direction

MAXIMUM RATINGS (At $T_A = 25^\circ\text{C}$ unless otherwise noted)

| RATINGS | SYMBOL | VALUE | UNITS |
|---|----------------|--------------|------------------|
| Peak Power Dissipation at $T_A = 25^\circ\text{C}$, $T_P = 1\text{ms}$ (Note 1) | PPPM | Minimum 1500 | Watts |
| Steady State Power Dissipation at $T_L = 75^\circ\text{C}$ lead lengths, .375" (9.5 mm) (Note 2) | $P_{M(AV)}$ | 5.0 | Watts |
| Peak Forward Surge Current, 8.3ms single half sine wave- superimposed on rated load(JEDEC METHOD) unidirectional only | I_{FSM} | 200 | Amps |
| Maximum Instantaneous Forward Current at 50.0A for unidirectional only (Note 3) | V_F | 3.5/5.0 | Volts |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to + 150 | $^\circ\text{C}$ |

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 0.8X0.8" (20X20mm) per Fig.5.

3. $V_F = 3.5\text{V}$ for devices of $V_{(BR)} \leq 200\text{V}$ and $V_F = 5.0\text{ Volts max.}$ for devices of $V_{(BR)} \geq 200\text{V}$.

RATING AND CHARACTERISTIC CURVES (1.5KE6.8 THRU 1.5KE450CA)

FIG. 1 - PULSE POWER RATING CURVE

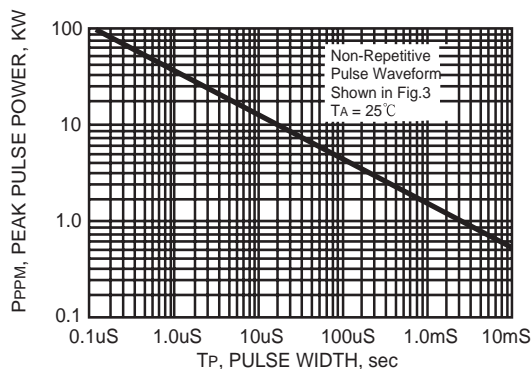


FIG. 2 - PULSE DERATING CURVE

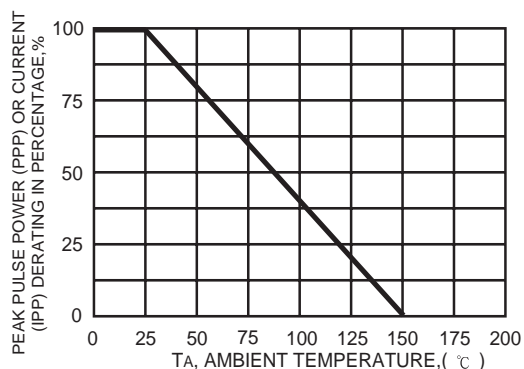


FIG. 3 - PULSE WAVEFORM

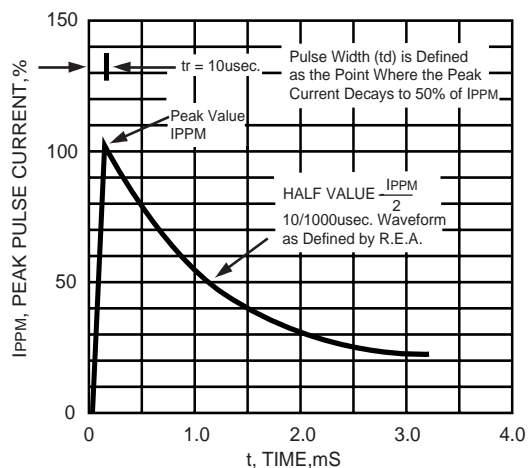


FIG. 4 - TYPICAL JUNCTION CAPACITANCE

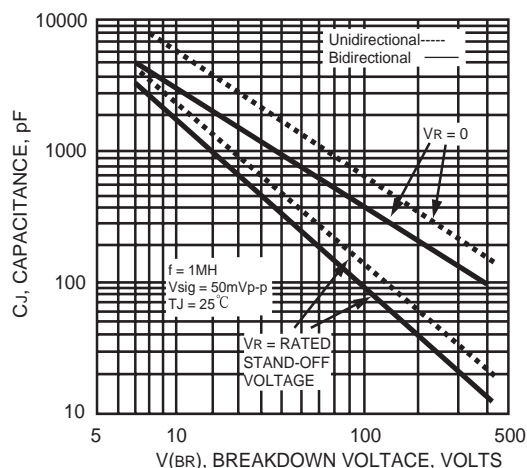


FIG. 5 - STEADY STATE POWER DERATING CURVE

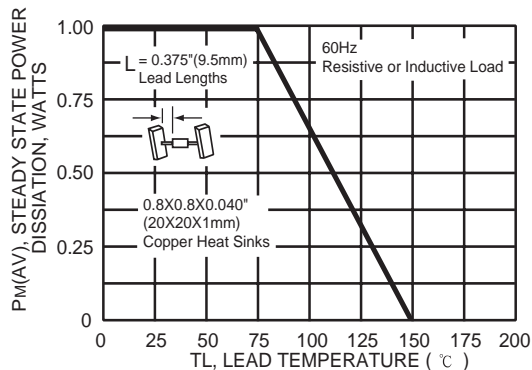
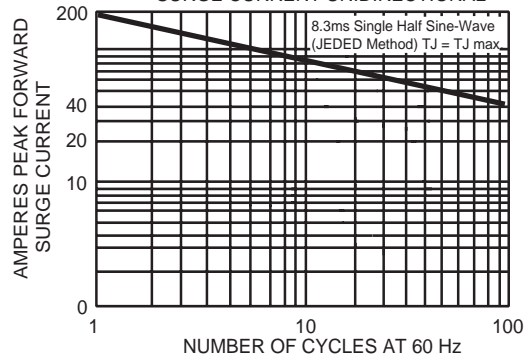


FIG. 6 - MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL



RATING AND CHARACTERISTIC CURVES (1.5KE6.8 THRU 1.5KE450CA)

FIG. 7 - INCREMENTAL CLAMPING VOLTAGE CURVE UNIDIRECTIONAL

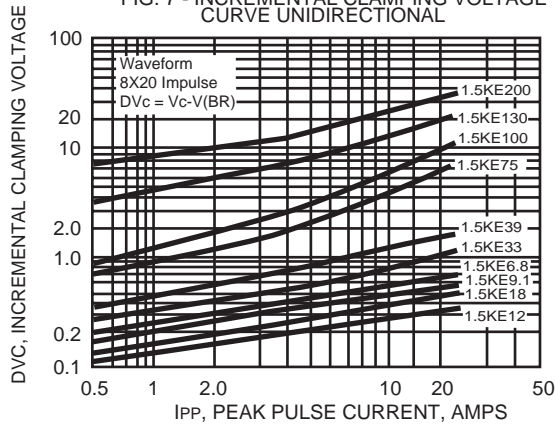


FIG. 7 - INCREMENTAL CLAMPING VOLTAGE CURVE UNIDIRECTIONAL

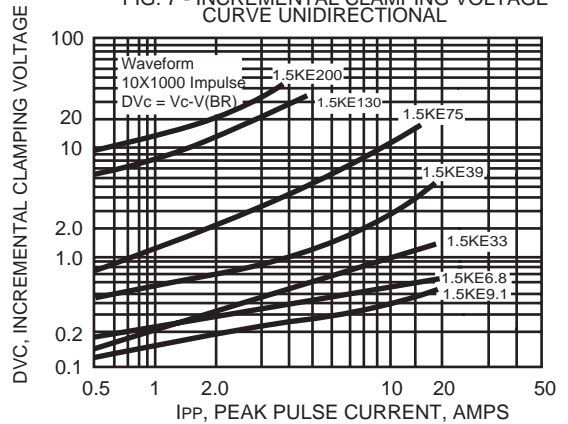


FIG. 9 - INCREMENTAL CLAMPING VOLTAGE CURVE UNIDIRECTIONAL

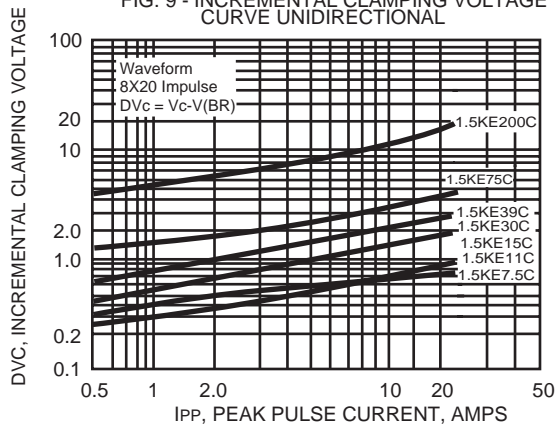


FIG. 7 - INCREMENTAL CLAMPING VOLTAGE CURVE UNIDIRECTIONAL

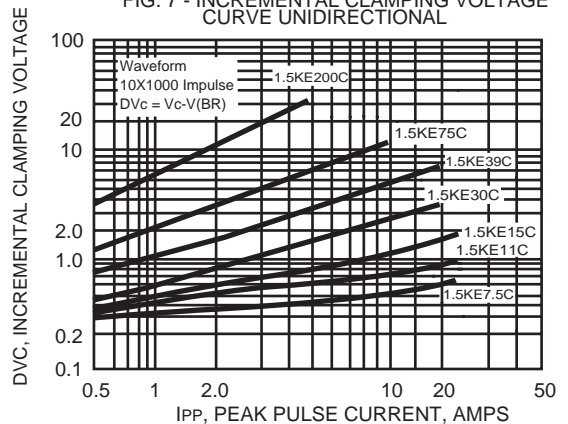


FIG. 11 - INSTANTANEOUS FORWARD VOLTAGE CHARACTERISTICS CURVE

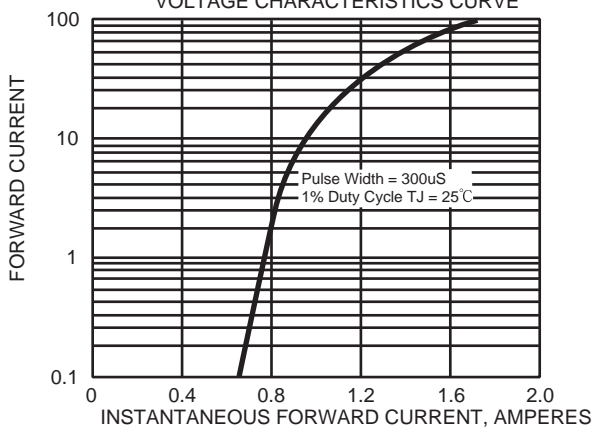
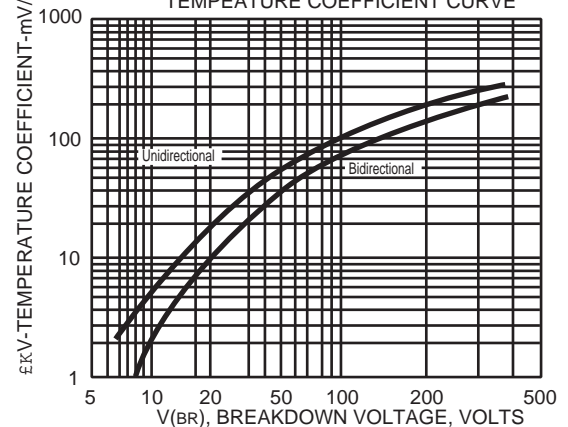


FIG. 12 - BREAKDOWN VOLTAGE TEMPERATURE COEFFICIENT CURVE



TRANSIENT VOLTAGE SUPPRESSORS

1500W SERIES TVS DIODES / 1.5KE (CASE 10) 1500W

| TYPE | Breakdown Voltage | | | Reverse Stand off Voltage VWM (Volts) | Maximum Reverse Leakage at VWM ID(uA) | Maximum Peak Pulse Current IPPM (Amps) | Maximum Clamping Voltage at IPPM VC (Volts) |
|-----------|-------------------|------|-------------|---|--|--|--|
| | VBR (Volts) | | @IT (mA) | | | | |
| | MIN. | MAX. | | | | | |
| 1.5KE6.8 | 6.12 | 7.48 | 10 | 5.50 | 1000 | 139 | 10.8 |
| 1.5KE6.8A | 6.45 | 7.14 | 10 | 5.80 | 1000 | 143 | 10.5 |
| 1.5KE7.5 | 6.75 | 8.25 | 10 | 6.05 | 500 | 128 | 11.7 |
| 1.5KE7.5A | 7.13 | 7.88 | 10 | 6.40 | 500 | 133 | 11.3 |
| 1.5KE8.2 | 7.38 | 9.02 | 10 | 6.63 | 200 | 120 | 12.5 |
| 1.5KE8.2A | 7.79 | 8.61 | 10 | 7.02 | 200 | 124 | 12.1 |
| 1.5KE9.1 | 8.19 | 10.0 | 1.0 | 7.37 | 50 | 109 | 13.8 |
| 1.5KE9.1A | 8.65 | 9.55 | 1.0 | 7.78 | 50 | 112 | 13.4 |
| 1.5KE10 | 9.00 | 11.0 | 1.0 | 8.10 | 10 | 100 | 15.0 |
| 1.5KE10A | 9.50 | 10.5 | 1.0 | 8.55 | 10 | 103 | 14.5 |
| 1.5KE11 | 9.90 | 12.1 | 1.0 | 8.92 | 5.0 | 92.6 | 16.2 |
| 1.5KE11A | 10.5 | 11.6 | 1.0 | 9.40 | 5.0 | 96.2 | 15.6 |
| 1.5KE12 | 10.8 | 13.2 | 1.0 | 9.72 | 5.0 | 86.7 | 17.3 |
| 1.5KE12A | 11.4 | 12.6 | 1.0 | 10.2 | 5.0 | 89.8 | 16.7 |
| 1.5KE13 | 11.7 | 14.3 | 1.0 | 10.5 | 5.0 | 78.9 | 19.0 |
| 1.5KE13A | 12.4 | 13.7 | 1.0 | 11.1 | 5.0 | 82.4 | 18.2 |
| 1.5KE15 | 13.5 | 16.5 | 1.0 | 12.1 | 5.0 | 68.2 | 22.0 |
| 1.5KE15A | 14.3 | 15.8 | 1.0 | 12.8 | 5.0 | 70.8 | 21.2 |
| 1.5KE16 | 14.4 | 17.6 | 1.0 | 12.9 | 5.0 | 63.8 | 23.5 |
| 1.5KE16A | 15.2 | 16.8 | 1.0 | 13.6 | 5.0 | 66.7 | 22.5 |
| 1.5KE18 | 16.2 | 19.8 | 1.0 | 14.5 | 5.0 | 56.6 | 26.5 |
| 1.5KE18A | 17.1 | 18.9 | 1.0 | 15.3 | 5.0 | 59.5 | 25.2 |
| 1.5KE20 | 18.0 | 22.0 | 1.0 | 16.2 | 5.0 | 51.5 | 29.1 |
| 1.5KE20A | 19.0 | 21.0 | 1.0 | 17.1 | 5.0 | 54.2 | 27.7 |
| 1.5KE22 | 19.8 | 24.2 | 1.0 | 17.8 | 5.0 | 47 | 31.9 |
| 1.5KE22A | 20.9 | 23.1 | 1.0 | 18.8 | 5.0 | 49 | 30.6 |
| 1.5KE24 | 21.6 | 26.4 | 1.0 | 19.4 | 5.0 | 43.2 | 34.7 |
| 1.5KE24A | 22.8 | 25.2 | 1.0 | 20.5 | 5.0 | 45.2 | 33.2 |
| 1.5KE27 | 24.3 | 29.7 | 1.0 | 21.8 | 5.0 | 38.4 | 39.1 |
| 1.5KE27A | 25.7 | 28.4 | 1.0 | 23.1 | 5.0 | 40 | 37.5 |
| 1.5KE30 | 27.0 | 33.0 | 1.0 | 24.3 | 5.0 | 34.5 | 43.5 |
| 1.5KE30A | 28.5 | 31.5 | 1.0 | 25.6 | 5.0 | 36.2 | 41.4 |
| 1.5KE33 | 29.7 | 36.3 | 1.0 | 26.8 | 5.0 | 31.4 | 47.7 |
| 1.5KE33A | 31.4 | 34.7 | 1.0 | 28.2 | 5.0 | 32.8 | 45.7 |
| 1.5KE36 | 32.4 | 39.6 | 1.0 | 29.1 | 5.0 | 28.8 | 52.0 |
| 1.5KE36A | 34.2 | 37.8 | 1.0 | 30.8 | 5.0 | 30.1 | 49.9 |
| 1.5KE39 | 35.1 | 42.9 | 1.0 | 31.6 | 5.0 | 26.6 | 56.4 |
| 1.5KE39A | 37.1 | 41.0 | 1.0 | 33.3 | 5.0 | 27.8 | 53.9 |
| 1.5KE43 | 38.7 | 47.3 | 1.0 | 34.8 | 5.0 | 24.2 | 61.9 |
| 1.5KE43A | 40.9 | 45.2 | 1.0 | 36.8 | 5.0 | 25.3 | 59.3 |
| 1.5KE47 | 42.3 | 51.7 | 1.0 | 38.1 | 5.0 | 22.1 | 67.8 |
| 1.5KE47A | 44.7 | 49.4 | 1.0 | 40.2 | 5.0 | 23.1 | 64.8 |
| 1.5KE51 | 45.9 | 56.1 | 1.0 | 41.3 | 5.0 | 20.4 | 73.5 |
| 1.5KE51A | 48.5 | 53.6 | 1.0 | 43.6 | 5.0 | 21.4 | 70.1 |
| 1.5KE56 | 50.4 | 61.6 | 1.0 | 45.4 | 5.0 | 18.6 | 80.5 |
| 1.5KE56A | 53.2 | 58.8 | 1.0 | 47.8 | 5.0 | 19.5 | 77.0 |

TRANSIENT VOLTAGE SUPPRESSORS

1500W SERIES TVS DIODES / 1.5KE (CASE 10) 1500W

| TYPE | Breakdown Voltage | | | Reverse Stand off Voltage V _{WM} (Volts) | Maximum Reverse Leakage at V _{WM} I _D (uA) | Maximum Peak Pulse Current I _{PPM} (Amps) | Maximum Clamping Voltage at I _{PPM} V _C (Volts) |
|-----------|----------------------------|-------|--------------------------|---|---|--|--|
| | V _{BR} (Volts) | | @ I _T (mA) | | | | |
| | MIN. | MAX. | | | | | |
| 1.5KE62 | 55.8 | 68.2 | 1.0 | 50.2 | 5.0 | 16.9 | 89.0 |
| 1.5KE62A | 58.9 | 65.1 | 1.0 | 53.0 | 5.0 | 17.6 | 85.0 |
| 1.5KE68 | 61.2 | 74.8 | 1.0 | 55.1 | 5.0 | 15.3 | 98.0 |
| 1.5KE68A | 64.6 | 71.4 | 1.0 | 58.1 | 5.0 | 16.3 | 92.0 |
| 1.5KE75 | 67.5 | 82.5 | 1.0 | 60.7 | 5.0 | 13.9 | 109 |
| 1.5KE75A | 71.3 | 78.8 | 1.0 | 64.1 | 5.0 | 14.6 | 104 |
| 1.5KE82 | 73.8 | 90.2 | 1.0 | 66.4 | 5.0 | 12.7 | 118 |
| 1.5KE82A | 77.9 | 86.1 | 1.0 | 70.1 | 5.0 | 13.3 | 113 |
| 1.5KE91 | 81.9 | 100 | 1.0 | 73.7 | 5.0 | 11.5 | 131 |
| 1.5KE91A | 86.5 | 95.5 | 1.0 | 77.8 | 5.0 | 12.0 | 125 |
| 1.5KE100 | 90.0 | 110 | 1.0 | 81.0 | 5.0 | 10.4 | 144 |
| 1.5KE100A | 95.0 | 105 | 1.0 | 85.5 | 5.0 | 10.9 | 137 |
| 1.5KE110 | 99.0 | 121 | 1.0 | 89.2 | 5.0 | 9.5 | 158 |
| 1.5KE110A | 105 | 116 | 1.0 | 94.0 | 5.0 | 9.9 | 152 |
| 1.5KE120 | 108 | 132 | 1.0 | 97.2 | 5.0 | 8.7 | 173 |
| 1.5KE120A | 114 | 126 | 1.0 | 102 | 5.0 | 9.1 | 165 |
| 1.5KE130 | 117 | 143 | 1.0 | 105 | 5.0 | 8.0 | 187 |
| 1.5KE130A | 124 | 137 | 1.0 | 111 | 5.0 | 8.4 | 179 |
| 1.5KE150 | 135 | 165 | 1.0 | 121 | 5.0 | 7.0 | 215 |
| 1.5KE150A | 143 | 158 | 1.0 | 128 | 5.0 | 7.2 | 207 |
| 1.5KE160 | 144 | 176 | 1.0 | 130 | 5.0 | 6.5 | 230 |
| 1.5KE160A | 152 | 168 | 1.0 | 136 | 5.0 | 6.8 | 219 |
| 1.5KE170 | 153 | 187 | 1.0 | 138 | 5.0 | 6.1 | 244 |
| 1.5KE170A | 162 | 179 | 1.0 | 145 | 5.0 | 6.4 | 234 |
| 1.5KE180 | 162 | 198 | 1.0 | 146 | 5.0 | 5.8 | 258 |
| 1.5KE180A | 171 | 189 | 1.0 | 154 | 5.0 | 6.1 | 246 |
| 1.5KE200 | 180 | 220 | 1.0 | 162 | 5.0 | 5.2 | 287 |
| 1.5KE200A | 190 | 210 | 1.0 | 171 | 5.0 | 5.5 | 274 |
| 1.5KE220 | 198 | 242 | 1.0 | 175 | 5.0 | 4.4 | 344 |
| 1.5KE220A | 209 | 231 | 1.0 | 185 | 5.0 | 4.6 | 328 |
| 1.5KE250 | 225 | 275 | 1.0 | 202 | 5.0 | 4.2 | 360 |
| 1.5KE250A | 237 | 263 | 1.0 | 214 | 5.0 | 4.4 | 344 |
| 1.5KE300 | 270 | 330 | 1.0 | 243 | 5.0 | 3.5 | 430 |
| 1.5KE300A | 285 | 315 | 1.0 | 256 | 5.0 | 3.6 | 414 |
| 1.5KE350 | 315 | 385 | 1.0 | 284 | 5.0 | 3.0 | 504 |
| 1.5KE350A | 333 | 368 | 1.0 | 300 | 5.0 | 3.1 | 482 |
| 1.5KE400 | 360 | 440 | 1.0 | 324 | 5.0 | 2.6 | 574 |
| 1.5KE400A | 380 | 420 | 1.0 | 342 | 5.0 | 2.7 | 548 |
| 1.5KE440 | 396 | 484 | 1.0 | 356 | 5.0 | 2.4 | 631 |
| 1.5KE440A | 418 | 462 | 1.0 | 376 | 5.0 | 2.5 | 602 |
| 1.5KE450 | 405 | 495 | 1.0 | 364 | 5.0 | 2.2 | 682 |
| 1.5KE450A | 427.5 | 472.5 | 1.0 | 385 | 5.0 | 2.3 | 652 |

- Notes :
1. V_{BR} measured after I_T applied for 300ms. I_T = square pulse or equivalent.
 2. For bidirectional use C or CA suffixs for all types (ex. 1.5KE6.8C, 1.5KE450CA) electrical characteristics apply in both directions.
 3. For bidirectional types having V_{WM} of 10 volts and less, the I_D limit is doubled.
 4. All devices UL listed file# E211196.