



GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSORS

1.5KE6.8 THRU 1.5KE440CA(GPP)

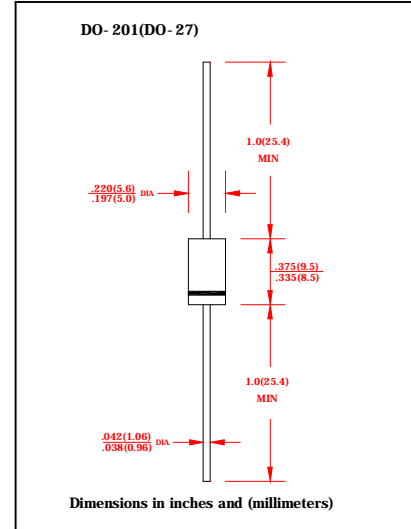
Breakdown Voltage 6.8 to 440 Volts

1.5KE6.8J THRU 1.5KE440CAJ(OPEN JUNCTION)

Peak Pulse Power 1500 Watts

FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94V-O
- Glass passivated junction or silastic guard junction (open junction)
- 1500W peak pulse power capability with a 10/1000 μ s Waveform, repetition rate (duty cycle): 0.05%
- Excellent clamping capability
- Low incremental surge resistance
- Fast response time: typically less than 1.0ps from 0 Volts to $V_{(BR)}$ for unidirectional and 5.0ns for bidirectional types
- Devices with $V_{(BR)} \geq 10V$, I_D are typically less than 1.0 μ A
- High temperature soldering guaranteed:
265°C/10 seconds, 0.375" (9.5mm) lead length, 51bs.(2.3kg) tension



MECHANICAL DATA

- Cass: molded plastic body over passivated junction
- Terminals: plated axial leads, solderable per MIL-STD-750, Method 2026
- Polarity: Color bands denotes positive end (cathode) except for bidirectional
- Mounting Position: any
- Weight: 0.045 ounces, 1.2 grams

DEVICES FOR BIDIRECTIONAL APPLICATIONS

- For bidirectional use C or CA suffix for types 1.5KE6.8 thru types 1.5K440 (e.g. 1.5KE6.8C, 1.5KE440CA).Electrical Characteristics apply in both directions.
- Suffix A denotes $\pm 5\%$ tolerance device, No suffix A denotes $\pm 10\%$ tolerance device

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

- Ratings at 25°C ambient temperature unless otherwise specified

| Ratings | Symbols | Value | Unit |
|---|----------------|-------------|------------|
| Peak Pulse power dissipation with a 10/1000 μ s waveform (NOTE1) | PPPM | Minimum 400 | Watts |
| Peak Pulse current with a 10/1000 μ s waveform (NOTE1,FIG.1) | IPPM | See Table 1 | Amps |
| Steady Stage Power Dissipation at $T_L=75^\circ C$ Lead lengths 0.375"(9.5mm)(Note2) | $P_{M(AV)}$ | 5.0 | Watts |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) unidirectional only | I_{FSM} | 200.0 | Amps |
| Maximum instantaneous forward voltage at 100.0A for unidirectional only (NOTE 3) | V_F | 3.5/5.0 | Volts |
| Operating Junction and Storage Temperature Range | T_J, T_{STG} | 50 to +150 | $^\circ C$ |

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above $T_A=25^\circ C$ per Fig.2
2. Mounted on copper pads ares of 0.8 \times 0.8"(20 \times 20mm) per Fig 5.
3. $V_F=3.5$ V for devices of $V_{(BR)} \leq 200V$, and $V_F=5.0$ Volts max. for devices of $V_{(BR)} > 200v$



GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSORS

1.5KE6.8 THRU 1.5KE440CA(GPP)

Breakdown Voltage 6.8 to 440 Volts

1.5KE6.8J THRU 1.5KE440CAJ(OPEN JUNCTION)

Peak Pulse Power 1500 Watts

Electrical Characteristic at (T_A = 25°C unless otherwise noted) TABLE1

| Device Type | Breakdown Voltage V _(BR) (Volts) (Note 1) | | Test Current at I _r (mA) | Stand-off Voltage V _{WM} (Volts) | Maximum Reverse Leakage at V _{WM} I _D (μ A) | Maximum Peak Pulse Current I _{PPM} (Note 2) (Amps) | Maximum Clamping Voltage at I _{PPM} V _c (Volts) | Maximum Temperature Coefficient of V _(BR) (%/°C) |
|-------------|--|------|-------------------------------------|---|---|---|---|---|
| | MIN | MAX | | | | | | |
| 1.5KE6.8/J | 6.12 | 7.48 | 10 | 5.5 | 1000 | 139 | 10.8 | 0.057 |
| 1.5KE6.8A/J | 6.45 | 7.14 | 10 | 5.8 | 1000 | 143 | 10.5 | 0.057 |
| 1.5KE7.5/J | 6.75 | 8.25 | 10 | 6.05 | 500 | 128 | 11.7 | 0.061 |
| 1.5KE7.5A/J | 7.13 | 7.88 | 10 | 6.4 | 500 | 133 | 11.3 | 0.061 |
| 1.5KE8.2/J | 7.38 | 9.02 | 10 | 6.63 | 200 | 120 | 12.5 | 0.065 |
| 1.5KE8.2A/J | 7.79 | 8.61 | 10 | 7.02 | 200 | 124 | 12.1 | 0.065 |
| 1.5KE9.1/J | 8.19 | 10 | 1 | 7.37 | 50 | 109 | 13.8 | 0.068 |
| 1.5KE9.1A/J | 7.65 | 9.55 | 1 | 7.78 | 50 | 112 | 13.4 | 0.068 |
| 1.5KE10/J | 9 | 11 | 1 | 8.1 | 10 | 100 | 15 | 0.073 |
| 1.5KE10A/J | 9.5 | 10.5 | 1 | 8.55 | 10 | 103 | 14.5 | 0.073 |
| 1.5KE11/J | 9.9 | 12.1 | 1 | 8.92 | 5 | 92.6 | 16.2 | 0.075 |
| 1.5KE11A/J | 10.5 | 11.6 | 1 | 9.4 | 5 | 96.2 | 15.6 | 0.075 |
| 1.5KE12/J | 10.8 | 13.2 | 1 | 9.372 | 5 | 86.7 | 17.3 | 0.076 |
| 1.5KE12A/J | 11.4 | 12.6 | 1 | 10.2 | 5 | 89.8 | 16.7 | 0.078 |
| 1.5KE13/J | 11.7 | 14.3 | 1 | 10.5 | 5 | 78.9 | 19 | 0.081 |
| 1.5KE13A/J | 12.4 | 13.7 | 1 | 11.1 | 5 | 82.4 | 18.2 | 0.081 |
| 1.5KE15/J | 13.5 | 16.5 | 1 | 12.1 | 5 | 68.2 | 22 | 0.084 |
| 1.5KE15A/J | 14.3 | 15.8 | 1 | 12.8 | 5 | 70.8 | 21.2 | 0.084 |
| 1.5KE16/J | 14.4 | 17.6 | 1 | 12.9 | 5 | 63.8 | 23.5 | 0.086 |
| 1.5KE16A/J | 15.2 | 16.8 | 1 | 13.6 | 5 | 66.7 | 22.5 | 0.086 |
| 1.5KE18/J | 16.2 | 19.8 | 1 | 14.5 | 5 | 56.6 | 26.5 | 0.088 |
| 1.5KE18A/J | 17.1 | 18.9 | 1 | 15.3 | 5 | 59.5 | 25.2 | 0.089 |
| 1.5KE20/J | 18 | 22 | 1 | 16.2 | 5 | 51.5 | 29.1 | 0.09 |
| 1.5KE20A/J | 19 | 21 | 1 | 17.1 | 5 | 54.2 | 27.7 | 0.09 |
| 1.5KE22/J | 19.8 | 24.2 | 1 | 17.8 | 5 | 47 | 31.9 | 0.092 |
| 1.5KE22A/J | 20.9 | 23.1 | 1 | 18.8 | 5 | 49 | 30.6 | 0.092 |
| 1.5KE24/J | 21.6 | 26.4 | 1 | 19.4 | 5 | 43.2 | 34.7 | 0.094 |
| 1.5KE24A/J | 22.8 | 25.2 | 1 | 20.5 | 5 | 45.2 | 33.2 | 0.094 |
| 1.5KE27/J | 24.3 | 29.7 | 1 | 21.8 | 5 | 38.4 | 39.1 | 0.096 |
| 1.5KE27A/J | 25.7 | 28.4 | 1 | 23.1 | 5 | 40 | 37.5 | 0.096 |
| 1.5KE30/J | 27 | 33 | 1 | 24.3 | 5 | 34.5 | 43.5 | 0.097 |
| 1.5KE30A/J | 28.5 | 31.5 | 1 | 25.6 | 5 | 36.2 | 41.4 | 0.097 |
| 1.5KE33/J | 29.7 | 36.3 | 1 | 26.8 | 5 | 31.4 | 47.7 | 0.098 |
| 1.5KE33A/J | 31.4 | 34.7 | 1 | 28.2 | 5 | 32.8 | 45.7 | 0.098 |
| 1.5KE36/J | 32.4 | 39.6 | 1 | 29.1 | 5 | 28.8 | 52 | 0.099 |
| 1.5KE36A/J | 34.2 | 37.8 | 1 | 30.8 | 5 | 30.1 | 49.9 | 0.099 |
| 1.5KE39/J | 35.1 | 42.9 | 1 | 31.6 | 5 | 26.6 | 56.4 | 0.1 |
| 1.5KE39A/J | 37.1 | 41 | 1 | 33.3 | 5 | 27.8 | 53.9 | 0.1 |
| 1.5KE43/J | 38.7 | 47.3 | 1 | 34.8 | 5 | 24.2 | 61.9 | 0.101 |
| 1.5KE43A/J | 40.9 | 45.2 | 1 | 36.8 | 5 | 25.3 | 59.3 | 0.101 |
| 1.5KE47/J | 42.3 | 51.7 | 1 | 38.1 | 5 | 22.1 | 67.8 | 0.101 |
| 1.5KE47A/J | 44.7 | 49.4 | 1 | 40.2 | 5 | 23.1 | 64.8 | 0.101 |
| 1.5KE51/J | 45.7 | 56.1 | 1 | 41.3 | 5 | 20.4 | 73.5 | 0.102 |
| 1.5KE51A/J | 48.5 | 43.6 | 1 | 43.6 | 5 | 21.4 | 70.1 | 0.102 |
| 1.5KE56/J | 50.4 | 61.6 | 1 | 45.4 | 5 | 18.6 | 80.5 | 0.103 |
| 1.5KE56A/J | 53.2 | 58.8 | 1 | 47.8 | 5 | 19.5 | 77 | 0.103 |
| 1.5KE62/J | 55.8 | 68.8 | 1 | 50.2 | 5 | 16.9 | 89 | 0.104 |
| 1.5KE62A/J | 58.9 | 65.1 | 1 | 53 | 5 | 17.6 | 85 | 0.104 |



GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSORS

1.5KE6.8 THRU 1.5KE440CA(GPP)

Breakdown Voltage 6.8 to 440 Volts

1.5KE6.8J THRU 1.5KE440CAJ(OPEN JUNCTION)

Peak Pulse Power 1500 Watts

Electrical Characteristic at (T_A =25°C unless otherwise noted) TABLE 1 (Cont'd)

| Device Type | Breakdown Voltage V _(BR) (Volts) (Note 1) | | Test Current at I _r (mA) | Stand-off Voltage V _{WM} (Volts) | Maximum Reverse Leakage at V _{WM} I _D (μ A) (Note3) | Maximum Peak Pulse Current I _{PPM} (Note 2) (Amps) | Maximum Clamping Voltage at I _{PPM} V _c (Volts) | Maximum Temperature Coefficient of V _(BR) (%/°C) |
|-------------|--|------|-------------------------------------|---|---|---|---|---|
| | MIN | MAX | | | | | | |
| 1.5KE68/J | 61.2 | 74.8 | 1 | 55.1 | 5 | 15.3 | 98 | 0.104 |
| 1.5KE68A/J | 64.6 | 71.4 | 1 | 58.1 | 5 | 16.3 | 92 | 0.104 |
| 1.5KE75/J | 67.5 | 82.5 | 1 | 60.7 | 5 | 13.9 | 105 | 0.105 |
| 1.5KE75A/J | 71.3 | 78.8 | 1 | 64.1 | 5 | 14.6 | 103 | 0.105 |
| 1.5KE82/J | 73.8 | 90.2 | 1 | 66.4 | 5 | 12.7 | 118 | 0.105 |
| 1.5KE82A/J | 77.9 | 86.1 | 1 | 70.1 | 5 | 13.3 | 113 | 0.105 |
| 1.5KE91/J | 81.9 | 100 | 1 | 73.7 | 5 | 11.5 | 131 | 0.106 |
| 1.5KE91A/J | 86.5 | 95.5 | 1 | 77.8 | 5 | 12 | 125 | 0.106 |
| 1.5KE100/J | 90 | 110 | 1 | 81 | 5 | 10.4 | 144 | 0.106 |
| 1.5KE100A/J | 95 | 105 | 1 | 85.5 | 5 | 10.9 | 137 | 0.106 |
| 1.5KE110/J | 99 | 121 | 1 | 89.2 | 5 | 9.5 | 158 | 0.107 |
| 1.5KE110A/J | 105 | 116 | 1 | 94 | 5 | 9.9 | 152 | 0.107 |
| 1.5KE120/J | 108 | 132 | 1 | 97.2 | 5 | 8.7 | 173 | 0.107 |
| 1.5KE120A/J | 114 | 126 | 1 | 102 | 5 | 9.1 | 165 | 0.107 |
| 1.5KE130/J | 117 | 143 | 1 | 105 | 5 | 8 | 187 | 0.107 |
| 1.5KE130A/J | 124 | 137 | 1 | 111 | 5 | 8.4 | 179 | 0.107 |
| 1.5KE150/J | 135 | 165 | 1 | 121 | 5 | 7 | 215 | 0.108 |
| 1.5KE150A/J | 143 | 159 | 1 | 128 | 5 | 7.2 | 207 | 0.108 |
| 1.5KE160/J | 144 | 175 | 1 | 130 | 5 | 6.5 | 230 | 0.108 |
| 1.5KE160A/J | 152 | 167 | 1 | 136 | 5 | 6.8 | 219 | 0.108 |
| 1.5KE170/J | 153 | 187 | 1 | 138 | 5 | 6.1 | 244 | 0.108 |
| 1.5KE170A/J | 162 | 179 | 1 | 145 | 5 | 6.4 | 234 | 0.108 |
| 1.5KE180/J | 162 | 197 | 1 | 146 | 5 | 5.8 | 258 | 0.108 |
| 1.5KE180A/J | 171 | 189 | 1 | 154 | 5 | 6.1 | 246 | 0.108 |
| 1.5KE200/J | 180 | 220 | 1 | 162 | 5 | 5.2 | 287 | 0.108 |
| 1.5KE200A/J | 190 | 210 | 1 | 171 | 5 | 5.5 | 274 | 0.108 |
| 1.5KE220/J | 198 | 242 | 1 | 175 | 5 | 4.4 | 344 | 0.108 |
| 1.5KE220A/J | 209 | 231 | 1 | 185 | 5 | 4.6 | 328 | 0.108 |
| 1.5KE250/J | 25 | 275 | 1 | 202 | 5 | 4.2 | 360 | 0.11 |
| 1.5KE250A/J | 237 | 267 | 1 | 214 | 5 | 4.4 | 344 | 0.11 |
| 1.5KE300/J | 270 | 330 | 1 | 243 | 5 | 3.5 | 430 | 0.11 |
| 1.5KE300A/J | 285 | 315 | 1 | 245 | 5 | 3.6 | 414 | 0.11 |
| 1.5KE350/J | 315 | 385 | 1 | 284 | 5 | 3 | 504 | 0.11 |
| 1.5KE350A/J | 332 | 368 | 1 | 300 | 5 | 3.1 | 482 | 0.11 |
| 1.5KE400/J | 360 | 440 | 1 | 324 | 5 | 2.6 | 574 | 0.11 |
| 1.5KE400A/J | 380 | 420 | 1 | 342 | 5 | 2.7 | 548 | 0.11 |
| 1.5KE440/J | 396 | 484 | 1 | 356 | 5 | 2.4 | 631 | 0.11 |
| 1.5KE440A/J | 418 | 462 | 1 | 376 | 5 | 2.5 | 602 | 0.11 |

Notes:/

- (1) V_(BR) measured after I_r applied for 300ms I_r =square wave pulse or equivalent
- (2) Surge current waveform per Figure 3 and derate per Fig.2
- (3) All terms and symbols are consistent with ANSI/IEEE C62.35
- (4) For bidirectional type having V_{WM} of 10 volts and less, the I_D limit is doubled



GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSORS

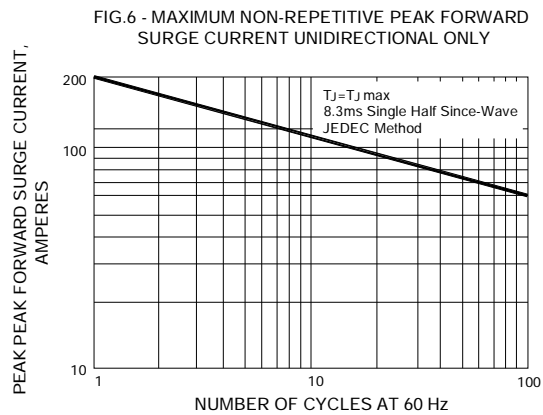
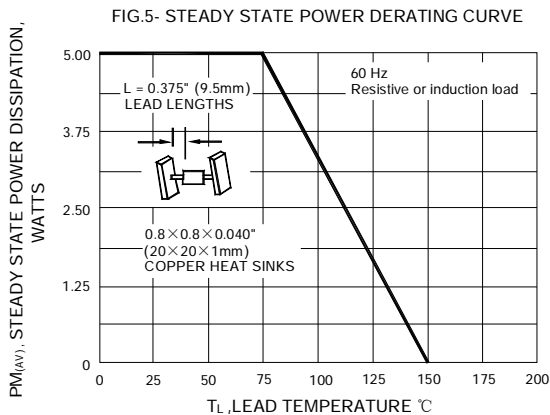
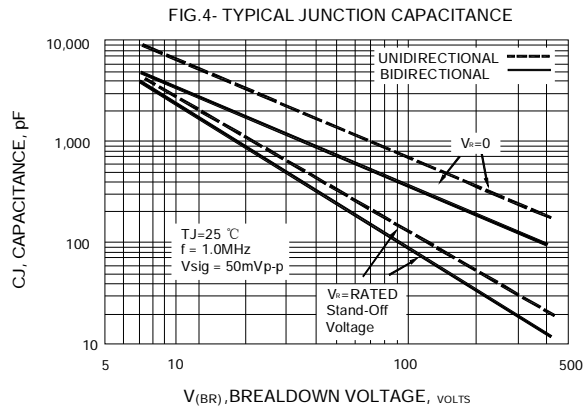
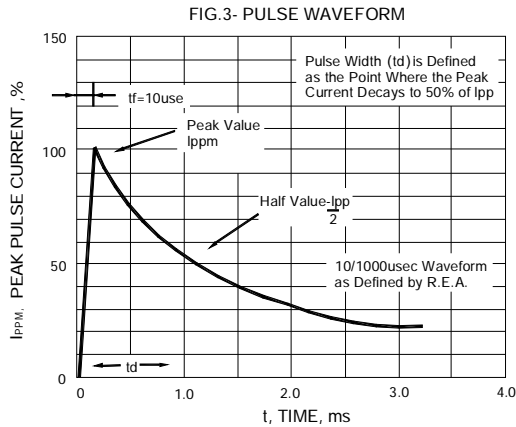
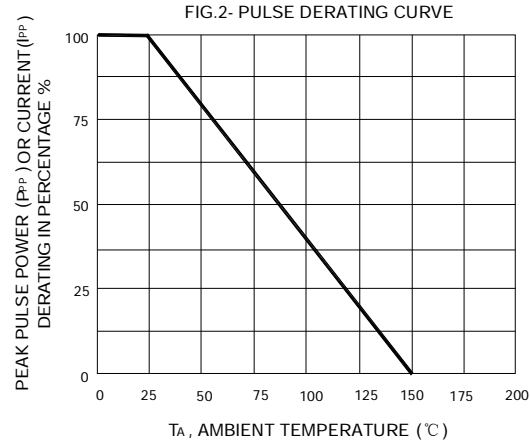
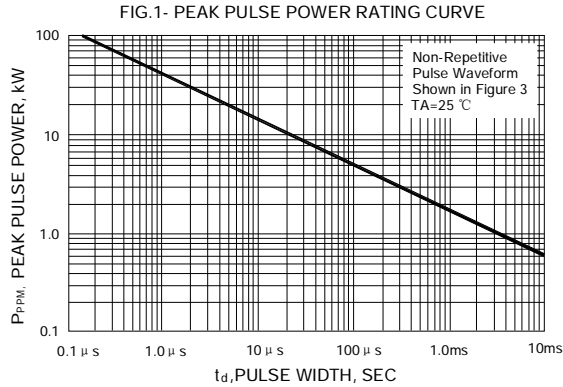
1.5KE6.8 THRU 1.5KE440CA(GPP)

Breakdown Voltage 6.8 to 440 Volts

1.5KE6.8J THRU 1.5KE440CAJ(OPEN JUNCTION)

Peak Pulse Power 1500 Watts

RATING AND CHARACTERISTIC CURVES 1.5KE6.8/J THRU 1.5KE440CA/J





GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSORS

1.5KE6.8 THRU 1.5KE440CA(GPP)

Breakdown Voltage 6.8 to 440 Volts

1.5KE6.8J THRU 1.5KE440CAJ(OPEN JUNCTION)

Peak Pulse Power 1500 Watts

RATING AND CHARACTERISTIC CURVES 1.5KE6.8/J THRU 1.5KE440CA/J

FIG.7- INCREMENTAL CLAMPING VOLTAGE CURVE UNIDIRECTIONAL

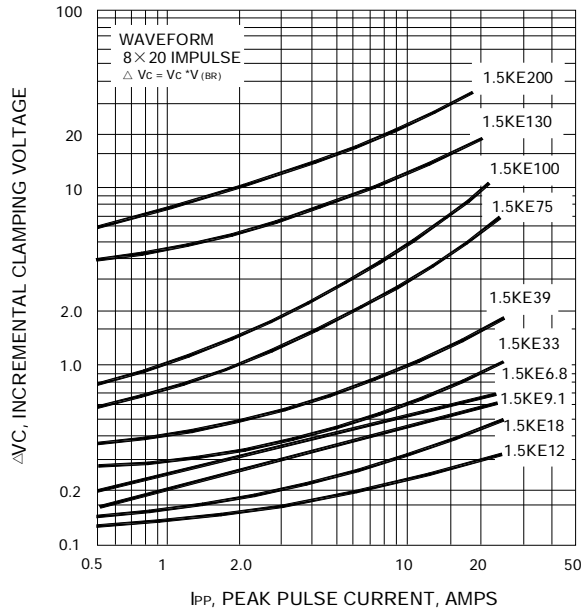


FIG.8- INCREMENTAL CLAMPING VOLTAGE CURVE UNIDIRECTIONAL

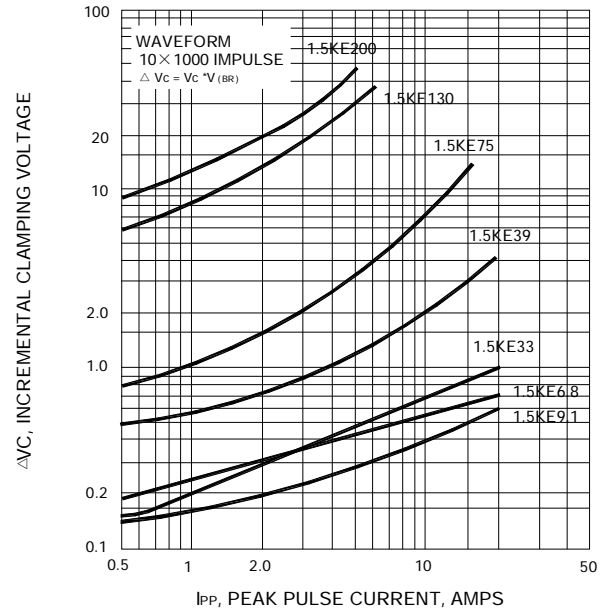


FIG.9- INCREMENTAL CLAMPING VOLTAGE CURVE BIDIRECTIONAL

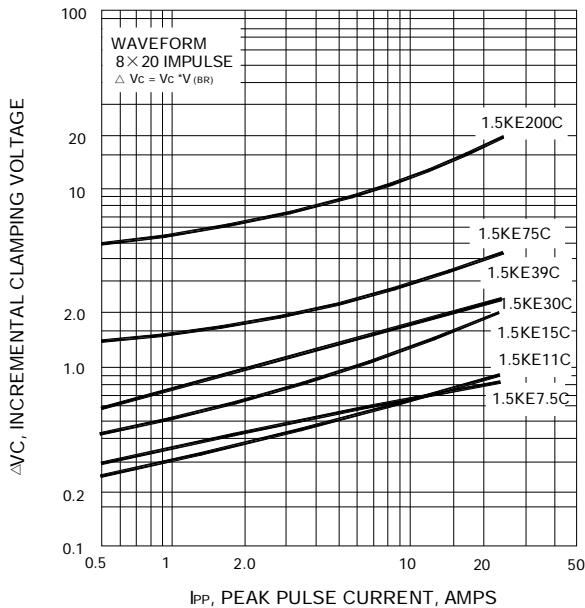
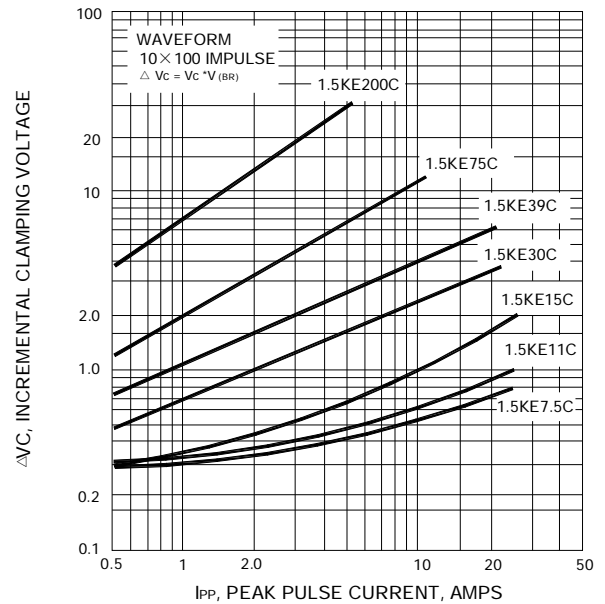


FIG.10- INCREMENTAL CLAMPING VOLTAGE CURVE BIDIRECTIONAL





GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSORS

1.5KE6.8 THRU 1.5KE440CA(GPP)

Breakdown Voltage 6.8 to 440 Volts

1.5KE6.8J THRU 1.5KE440CAJ(OPEN JUNCTION)

Peak Pulse Power 1500 Watts

RATING AND CHARACTERISTIC CURVES 1.5KE6.8/J THRU 1.5KE440CA/J

FIG.11- INSTANTANEOUS FORWARD VOLTAGE CHARACTERISTICS CURVE

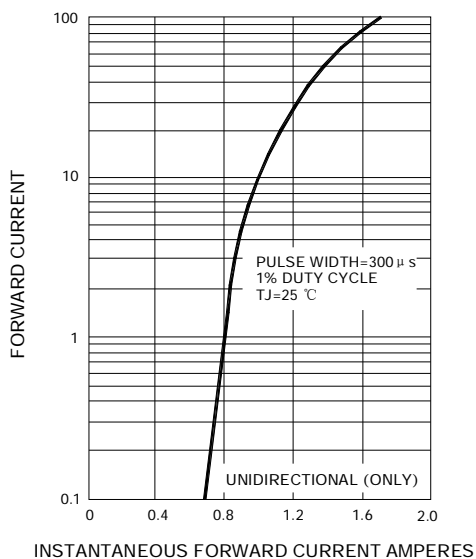


FIG.12- BREAKDOWN VOLTAGE TEMPERATURE COEFFICIENT CURVE

