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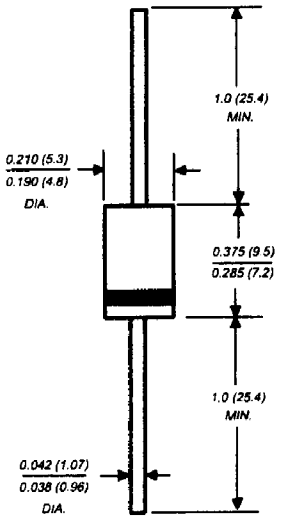
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# 1.5KE6.8 THRU 1.5KE440CA

## TRANSZORB™ TRANSIENT VOLTAGE SUPPRESSOR

***Breakdown Voltage** - 6.8 to 440 Volts* ***Peak Pulse Power** - 1500 Watts*

**Case Style 1.5KE**




*Dimensions in inches and (millimeters)*

## FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Glass passivated junction
- 1500W peak pulse power capability on 10/1000μs 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 uni-directional and 5.0ns for bi-directional types
- For devices with $V_{(BR)}$ >10V, $I_D$ are typically less than 1.0μA
- High temperature soldering guaranteed: 265°C/10 seconds, 0.375" (9.5mm) lead length, 5lbs. (2.3 kg) tension
- Includes 1N6267 thru 1N6303

## MECHANICAL DATA

**Case:** Molded plastic body over passivated junction
**Terminals:** Plated axial leads, solderable per MIL-STD-750, Method 2026
**Polarity:** Color band denotes positive end (cathode) except for bi-directional
**Mounting Position:** Any
**Weight:** 0.045 ounce, 1.2 grams

## DEVICES FOR BI-DIRECTIONAL APPLICATIONS

For bidirectional use C or CA suffix for types 1.5KE6.8 thru types 1.5KE440A (e.g. 1.5KE6.8C, 1.5KE440CA).
Electrical characteristics apply in both directions.

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

| | *SYMBOL* | *VALUE* | *UNITS* |
|---|---|---|---|
| Peak pulse power dissipation with a 10/1000μs waveform (NOTE 1, Fig. 1) | $P_{PPM}$ | Minimum 1500 | Watts |
| Peak pulse current with a 10/1000μs waveform (NOTE 1) | $I_{PPM}$ | SEE TABLE 1 | Amps |
| Steady state power dissipation at $T_L$=75°C lead lengths, 0.375" (9.5mm) (NOTE 2) | $P_{M(AV)}$ | 6.5 | Watts |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) unidirectional only (NOTE 3) | $I_{FSM}$ | 200 | Amps |
| Maximum instantaneous forward voltage at 100A for unidirectional only (NOTE 4) | $V_F$ | 3.5/5.0 | Volts |
| Operating junction and storage temperature range | $T_J$, $T_{STG}$ | -55 to +175 | °C |

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

**ELECTRICAL CHARACTERISTICS at ($T_A$=25°C unless otherwise noted) TABLE 1**

| JEDEC TYPE NUMBER | PART NUMBER | Breakdown Voltage $V_{(BR)}$ (Volts) (NOTE 1) | | Test Current at $I_T$ (mA) | Stand-off Voltage $V_{WM}$ (Volts) | Maximum Reverse Leakage at $V_{WM}$ $I_D$ (NOTE 4) (μA) | Maximum Peak Pulse Current $I_{PPM}$ (NOTE 2) Amps | Maximum Clamping Voltage at $I_{PPM}$ Vc (Volts) | Maximum Temperature Coefficient of $V_{(BR)}$ (% / °C) |
|---|---|---|---|---|---|---|---|---|---|
| | | 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 | 133 | 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 | 8.61 | 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 | 92.6 | 16.2 | 0.075 |
| 1N6272A | +1.5KE11A | 10.5 | 11.6 | 1.0 | 9.40 | 5.0 | 96.2 | 15.6 | 0.075 |
| 1N6273 | +1.5KE12 | 10.8 | 13.2 | 1.0 | 9.72 | 5.0 | 86.7 | 17.3 | 0.076 |
| 1N6273A | +1.5KE12A | 11.4 | 12.6 | 1.0 | 10.2 | 5.0 | 89.8 | 16.7 | 0.078 |
| 1N6274 | +1.5KE13 | 11.7 | 14.3 | 1.0 | 10.5 | 5.0 | 78.9 | 19.0 | 0.081 |
| 1N6274A | +1.5KE13A | 12.4 | 13.7 | 1.0 | 11.1 | 5.0 | 82.4 | 18.2 | 0.081 |
| 1N6275 | +1.5KE15 | 13.5 | 16.5 | 1.0 | 12.1 | 5.0 | 68.2 | 22.0 | 0.084 |
| 1N6275A | +1.5KE15A | 14.3 | 15.8 | 1.0 | 12.8 | 5.0 | 70.8 | 21.2 | 0.084 |
| 1N6276 | +1.5KE16 | 14.4 | 17.6 | 1.0 | 12.9 | 5.0 | 63.8 | 23.5 | 0.086 |
| 1N6276A | +1.5KE16A | 15.2 | 16.8 | 1.0 | 13.6 | 5.0 | 66.7 | 22.5 | 0.086 |
| 1N6277 | +1.5KE18 | 16.2 | 19.8 | 1.0 | 14.5 | 5.0 | 56.6 | 26.5 | 0.088 |
| 1N6277A | +1.5KE18A | 17.1 | 18.9 | 1.0 | 15.3 | 5.0 | 59.5 | 25.2 | 0.089 |
| 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 | 54.2 | 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 | 43.2 | 34.7 | 0.094 |
| 1N6280A | +1.5KE24A | 22.8 | 25.2 | 1.0 | 20.5 | 5.0 | 45.2 | 33.2 | 0.094 |
| 1N6281 | +1.5KE27 | 24.3 | 29.7 | 1.0 | 21.8 | 5.0 | 38.4 | 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 | 36.2 | 41.4 | 0.097 |
| 1N6283 | +1.5KE33 | 29.7 | 36.3 | 1.0 | 26.8 | 5.0 | 31.4 | 47.7 | 0.098 |
| 1N6283A | +1.5KE33A | 31.4 | 34.7 | 1.0 | 28.2 | 5.0 | 32.8 | 45.7 | 0.098 |
| 1N6284 | +1.5KE36 | 32.4 | 39.6 | 1.0 | 29.1 | 5.0 | 28.8 | 52.0 | 0.099 |
| 1N6284A | +1.5KE36A | 34.2 | 37.8 | 1.0 | 30.8 | 5.0 | 30.1 | 49.9 | 0.099 |
| 1N6285 | +1.5KE39 | 35.1 | 42.9 | 1.0 | 31.6 | 5.0 | 26.6 | 56.4 | 0.100 |
| 1N6285A | +1.5KE39A | 37.1 | 41.0 | 1.0 | 33.3 | 5.0 | 27.8 | 53.9 | 0.100 |
| 1N6286 | +1.5KE43 | 38.7 | 47.3 | 1.0 | 34.8 | 5.0 | 24.2 | 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 | 38.1 | 5.0 | 22.1 | 67.8 | 0.101 |
| 1N6287A | +1.5KE47A | 44.7 | 49.4 | 1.0 | 40.2 | 5.0 | 23.1 | 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 | 17.6 | 85.0 | 0.104 |
| 1N6291 | 1.5KE68 | 61.2 | 74.8 | 1.0 | 55.1 | 5.0 | 15.3 | 98.0 | 0.104 |

ELECTRICAL CHARACTERISTICS at ($T_A$=25 C unless otherwise noted) TABLE 1 (Cont'd)

| JEDEC TYPE NUMBER | NUMBER | Breakdown Voltage $V_{(BR)}$ (Volts) (NOTE 1) | | Test Current at (mA) $I_T$ | Stand-off Voltage $V_{WM}$ (Volts) | Maximum Reverse Leakage at $V_{WM}$ $I_D$ (NOTE 4) (μA) | Maximum Peak Pulse Current $I_{PPM}$ (NOTE 2) Amps | Maximum Clamping Voltage at $I_{PPM}$ Vc (Volts) | Maximum Temperature Coefficient of $V_{(BR)}$ (% / °C) |
|---|---|---|---|---|---|---|---|---|---|
| | | Min | Max | | | | | | |
| 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 | 109 | 0.105 |
| 1N6292A | 1.5KE75A | 71.3 | 78.8 | 1.0 | 64.1 | 5.0 | 14.6 | 104 | 0.105 |
| 1N6293 | 1.5KE82 | 73.8 | 90.2 | 1.0 | 66.4 | 5.0 | 12.7 | 118 | 0.105 |
| 1N6293A | 1.5KE82A | 77.9 | 86.1 | 1.0 | 70.1 | 5.0 | 13.3 | 113 | 0.105 |
| 1N6294 | 1.5KE91 | 81.9 | 100.0 | 1.0 | 73.7 | 5.0 | 11.5 | 131 | 0.106 |
| 1N6294A | 1.5KE91A | 86.5 | 95.5 | 1.0 | 77.8 | 5.0 | 12.0 | 125 | 0.106 |
| 1N6295 | 1.5KE100 | 90.0 | 110 | 1.0 | 81.0 | 5.0 | 10.4 | 144 | 0.106 |
| 1N6295A | 1.5KE100A | 95.0 | 105 | 1.0 | 85.5 | 5.0 | 10.9 | 137 | 0.106 |
| 1N6296 | 1.5KE110 | 99.0 | 121 | 1.0 | 89.2 | 5.0 | 9.5 | 158 | 0.107 |
| 1N6296A | 1.5KE 110A | 105 | 116 | 1.0 | 94.0 | 5.0 | 9.9 | 152 | 0.107 |
| 1N6297 | 1.5KE120 | 108 | 132 | 1.0 | 97.2 | 5.0 | 8.7 | 173 | 0.107 |
| 1N6297A | 1.5KE120A | 114 | 126 | 1.0 | 102 | 5.0 | 9.1 | 165 | 0.107 |
| 1N6298 | 1.5KE130 | 117 | 143 | 1.0 | 105 | 5.0 | 8.0 | 187 | 0.107 |
| 1N6298A | 1.5KE130A | 124 | 137 | 1.0 | 111 | 5.0 | 8.4 | 179 | 0.107 |
| 1N6299 | 1.5KE150 | 136 | 165 | 1.0 | 121 | 5.0 | 7.0 | 215 | 0.108 |
| 1N6299A | 1.5KE150A | 143 | 158 | 1.0 | 128 | 5.0 | 7.2 | 207 | 0.106 |
| 1N6300 | 1.5KE160 | 144 | 176 | 1.0 | 130 | 5.0 | 6.5 | 230 | 0.106 |
| 1N6300A | 1.5KE160A | 152 | 168 | 1.0 | 136 | 5.0 | 6.8 | 219 | 0.108 |
| 1N6301 | 1.5KE170 | 153 | 187 | 1.0 | 138 | 5.0 | 6.1 | 244 | 0.108 |
| 1N6301A | 1.5KE170A | 162 | 179 | 1.0 | 145 | 5.0 | 6.4 | 234 | 0.108 |
| 1N6302 | 1.5KE180 | 162 | 198 | 1.0 | 146 | 5.0 | 5.8 | 258 | 0.108 |
| 1N6302A | 1.5KE180A | 171 | 189 | 1.0 | 154 | 5.0 | 6.1 | 246 | 0.108 |
| 1N6303 | 1.5KE200 | 180 | 220 | 1.0 | 162 | 5.0 | 5.2 | 287 | 0.108 |
| 1N6303A | 1.5KE200A* | 190 | 210 | 1.0 | 171 | 5.0 | 5.5 | 274 | 0.108 |
| | 1.5KE220 | 198 | 242 | 1.0 | 175 | 5.0 | 4.4 | 344 | 0.108 |
| | 1.5KE220A* | 209 | 231 | 1.0 | 185 | 5.0 | 4.6 | 328 | 0.108 |
| | 1.5KE250 | 225 | 275 | 1.0 | 202 | 5.0 | 4.2 | 360 | 0.110 |
| | 1.5KE250A | 237 | 263 | 1.0 | 214 | 5.0 | 4.4 | 344 | 0.110 |
| | 1.5KE300 | 270 | 330 | 1.0 | 243 | 5.0 | 3.5 | 430 | 0.110 |
| | 1.5KE300A | 285 | 315 | 1.0 | 256 | 5.0 | 3.6 | 414 | 0.110 |
| | 1.5KE350 | 315 | 385 | 1.0 | 284 | 5.0 | 3.0 | 504 | 0.110 |
| | 1.5KE350A | 333 | 368 | 1.0 | 300 | 5.0 | 3.1 | 482 | 0.110 |
| | 1.5KE400 | 360 | 440 | 1.0 | 324 | 5.0 | 2.6 | 574 | 0.110 |
| | 1.5KE400A | 380 | 420 | 1.0 | 342 | 5.0 | 2.7 | 548 | 0.110 |
| | 1.5KE440 | 396 | 484 | 1.0 | 356 | 5.0 | 2.4 | 631 | 0.110 |
| | 1.5KE440A | 418 | 462 | 1.0 | 378 | 5.0 | 2.5 | 602 | 0.110 |

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