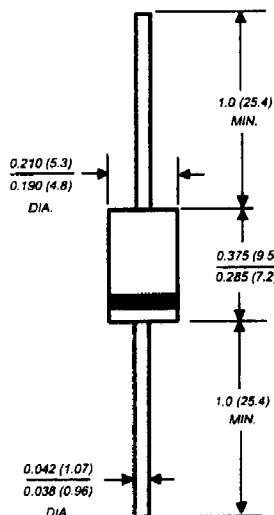


# 1.5KE6.8 THRU 1.5KE440CA

**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 10/1000 $\mu$ 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 uni-directional and 5.0ns for bi-directional types
- ◆ For devices with  $V_{BR} > 10V$ ,  $I_B$  are typically less than 1.0 $\mu$ A
- ◆ 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 10/1000 $\mu$ s waveform (NOTE 1, Fig. 1)                                                  | PPPM           | Minimum 1500 | Watts |
| Peak pulse current with a 10/1000 $\mu$ s waveform (NOTE 1)                                                                    | IPPM           | SEE TABLE 1  | Amps  |
| Steady state power dissipation at $T_L=75^\circ\text{C}$ 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) | IFSM           | 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 (TA=25°C unless otherwise noted) TABLE 1

| JEDEC<br>TYPE<br>NUMBER | PART<br>NUMBER | Breakdown Voltage<br>V <sub>BR</sub><br>(Volts) (NOTE 1) |      | Test<br>Current<br>at<br>I <sub>T</sub> (mA) | Stand-off<br>Voltage<br>V <sub>WM</sub><br>(Volts) | Maximum<br>Reverse<br>Leakage<br>at V <sub>WM</sub><br>I <sub>D</sub> (NOTE 4) (μA) | Maximum<br>Peak Pulse<br>Current I <sub>PPM</sub><br>(NOTE 2)<br>Amps | Maximum<br>Clamping<br>Voltage at I <sub>PPM</sub><br>V <sub>C</sub><br>(Volts) | Maximum<br>Temperature<br>Coefficient of V <sub>BR</sub><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                                                     | 12.8 | 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                                                                  | 30.8                                                                            | 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                                          | 31.8                                               | 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 (TA=25 °C unless otherwise noted) TABLE 1 (Cont'd)

| JEDEC<br>TYPE<br>NUMBER | NUMBER     | Breakdown Voltage<br>V <sub>BR</sub><br>(Volts) (NOTE 1) |       | Test<br>Current<br>at<br>(mA) I <sub>T</sub> | Stand-off<br>Voltage<br>V <sub>WM</sub><br>(Volts) | Maximum<br>Reverse<br>Leakage<br>at V <sub>WM</sub><br>I <sub>D</sub> (NOTE 4) (μA) | Maximum<br>Peak Pulse<br>Current I <sub>PPM</sub><br>(NOTE 2)<br>Amps | Maximum<br>Clamping<br>Voltage at I <sub>PPM</sub><br>V <sub>C</sub><br>(Volts) | Maximum<br>Temperature<br>Coefficient of V <sub>BR</sub><br>(% / °C) |
|-------------------------|------------|----------------------------------------------------------|-------|----------------------------------------------|----------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------|
|                         |            | Min                                                      | Max   |                                              |                                                    |                                                                                     |                                                                       |                                                                                 |                                                                      |
| 1N6291A                 | 1.5KE68A   | 64.8                                                     | 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                                                                             | 0.106                                                                |
| 1N6301                  | 1.5KE170   | 153                                                      | 187   | 1.0                                          | 138                                                | 5.0                                                                                 | 6.1                                                                   | 244                                                                             | 0.106                                                                |
| 1N6301A                 | 1.5KE170A  | 162                                                      | 179   | 1.0                                          | 145                                                | 5.0                                                                                 | 6.4                                                                   | 234                                                                             | 0.106                                                                |
| 1N6302                  | 1.5KE180   | 162                                                      | 198   | 1.0                                          | 146                                                | 5.0                                                                                 | 5.8                                                                   | 258                                                                             | 0.106                                                                |
| 1N6302A                 | 1.5KE180A  | 171                                                      | 189   | 1.0                                          | 154                                                | 5.0                                                                                 | 6.1                                                                   | 246                                                                             | 0.106                                                                |
| 1N6303                  | 1.5KE200   | 180                                                      | 220   | 1.0                                          | 162                                                | 5.0                                                                                 | 5.2                                                                   | 287                                                                             | 0.106                                                                |
| 1N6303A                 | 1.5KE200A* | 190                                                      | 210   | 1.0                                          | 171                                                | 5.0                                                                                 | 5.5                                                                   | 274                                                                             | 0.106                                                                |
|                         | 1.5KE220   | 198                                                      | 242   | 1.0                                          | 175                                                | 5.0                                                                                 | 4.4                                                                   | 344                                                                             | 0.106                                                                |
|                         | 1.5KE220A* | 209                                                      | 231   | 1.0                                          | 185                                                | 5.0                                                                                 | 4.6                                                                   | 328                                                                             | 0.106                                                                |
|                         | 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                                          | 376                                                | 5.0                                                                                 | 2.5                                                                   | 602                                                                             | 0.110                                                                |