

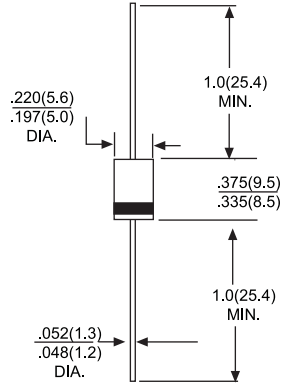


# 1.5KE SERIES

## TRANSIENT VOLTAGE SUPPRESSOR DIODES

**Voltage Range**  
**6.8 to 400 Volts**  
**1500 Watts Peak Power**  
**5.0 Watts Steady State**

### DO-201AD



Dimensions in inches and (millimeters)

#### Features

- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Exceeds environmental standards of MIL-STD 19500
- 1500W surge capability at 10 x 100us waveform, duty cycle: 0.01%
- Excellent clamping capability
- Low zener impedance
- Fast response time: Typically less than 1.0ps from 0 volts to VBR for unidirection and 5.0 ns for bidirectional
- Typical IR less 1 uA above 10V
- High temperature soldering guaranteed: 250°C/10 seconds/ .375", (9.5mm) Lead length / 5lbs., (2.3kg) tension

#### Mechanical Data

- Cases: Molded plastic
- Lead: Axial leads, solderable per MIL-STD-202, Method 208
- Polarity: Color band denotes cathode except bipolar
- Weight: 0.94 gram

### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating at 25°C ambient temperature unless otherwise specified.  
 Single phase, half wave, 60Hz, resistive or inductive load.  
 For capacitive load, derate current by 20%

| Type Number                                                                                                | Value    | Units                 |
|------------------------------------------------------------------------------------------------------------|----------|-----------------------|
| Peak Power Dissipation at TA=25°C, Tp=1ms (Note 1)                                                         | PPK      | Minimum 1500<br>Watts |
| Steady State Power Dissipation at TL=25°C Lead Lengths .375", 9.5mm (Note 2)                               | PD       | 5.0<br>Watts          |
| Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method)(Note 3) | IFSM     | 200<br>Amps           |
| Maximum Instantaneous Forward Voltage at 25.0A for Unidirectional Only (Note 4)                            | VF       | 3.5/5.0<br>Volts      |
| Operating and Storage Temperature Range                                                                    | TJ, TSTG | -55 to +175<br>°C     |

- NOTES: 1. Non-repetitive Current Pulse Per Fig.3 and Derated above TA=25°C Per Fig.2.  
 2. Mounted on Copper Pad Area of 0.8 x 0.8"(40 x40 mm)Per Fig.4  
 3. 8.3ms Single Half Sine-Wave or Equivalent Square Wave, Duty Cycle=4 Pulses Per Minutes Maximum.  
 4. VF=3.5V for Devices of VBR≤200V and VF=5.0V Max. for Devices VBR>200V.  
 Devices for Bipolar Applications  
 1. For Bidirectional Use C or CA Suffix for Types 1.5KE6.8 through Types 1.5KE400.  
 2. Electrical Characteristics Apply in Both Directions.

# RATING AND CHARACTERISTIC CURVES

## 1.5KE SERIES



FIG.1-PEAK PULSE POWER RATING CURRENT

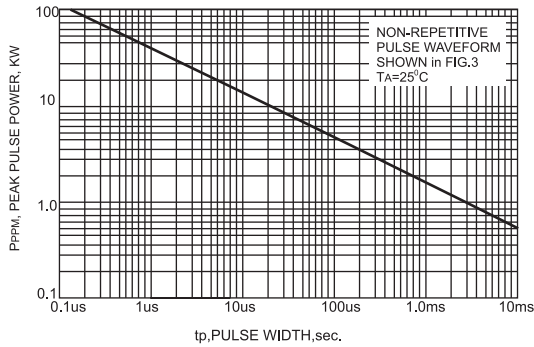


FIG.2-PULSE DERATING CURVE

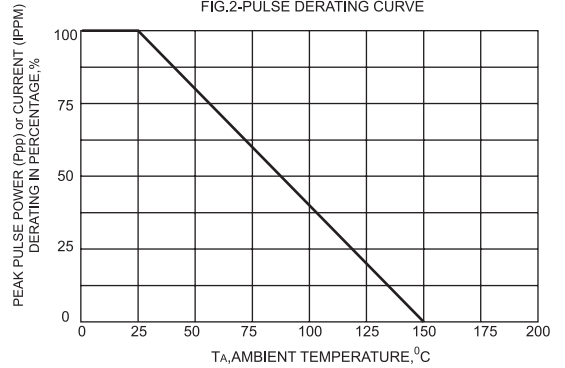


FIG.3- PULSE WAVEFORM

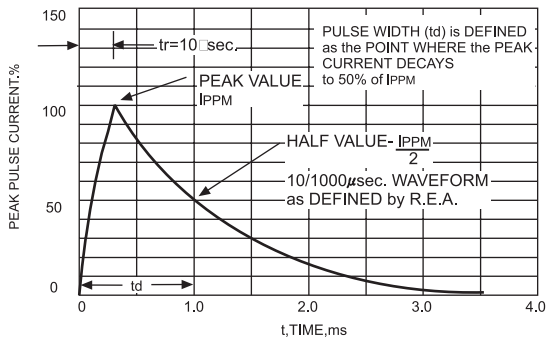


FIG.4-STEADY STATE POWER DERATING CURVE

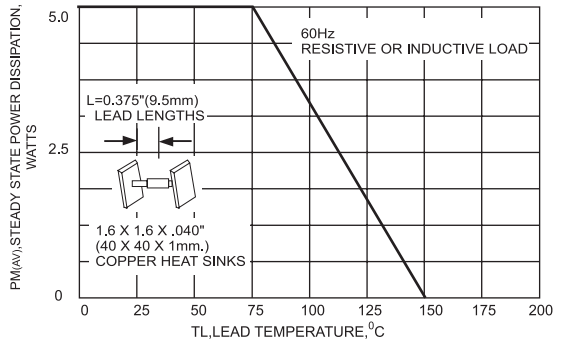


FIG.5-TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL

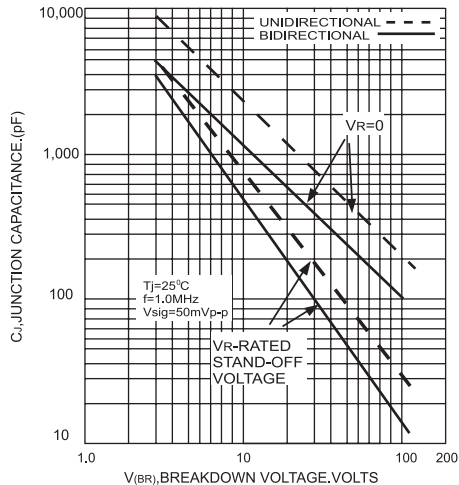
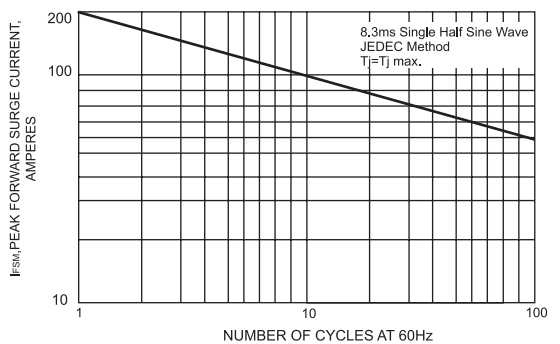


FIG.6-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL ONLY





# ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

| JEDEC TYPE NUMBER | GENERAL PART NUMBER | Nominal Voltage (Volts) | Breakdown Voltage    |       | Test Current @IT (mA) | Stand-off voltage VWM (Volts) | Maximum Reverse Leakage at VWM ID(µA) | Maximum Peak Pulse Current IPPM (Note 2)(Amps) | Maximum Clamping Voltage at IPPM Vc(Volts) | Maximum Temperature Coefficient of VBR(%/°C) |
|-------------------|---------------------|-------------------------|----------------------|-------|-----------------------|-------------------------------|---------------------------------------|------------------------------------------------|--------------------------------------------|----------------------------------------------|
|                   |                     |                         | VBR (Volts) (Note 1) |       |                       |                               |                                       |                                                |                                            |                                              |
|                   |                     |                         | Min                  | Max   |                       |                               |                                       |                                                |                                            |                                              |
| 1N6267            | 1.5KE6.8            | 6.8                     | 6.12                 | 7.48  | 10                    | 5.50                          | 1000                                  | 145                                            | 10.8                                       | 0.057                                        |
| 1N6267A           | 1.5KE6.8A           | 6.8                     | 6.46                 | 7.14  | 10                    | 5.80                          | 1000                                  | 150                                            | 10.5                                       | 0.057                                        |
| 1N6268            | 1.5KE7.5            | 7.5                     | 6.75                 | 8.25  | 10                    | 6.05                          | 500                                   | 134                                            | 11.7                                       | 0.061                                        |
| 1N6268A           | 1.5KE7.5A           | 7.5                     | 7.13                 | 7.98  | 10                    | 6.40                          | 500                                   | 139                                            | 11.3                                       | 0.061                                        |
| 1N6269            | 1.5KE8.2            | 8.2                     | 7.38                 | 9.02  | 10                    | 6.63                          | 200                                   | 126                                            | 12.5                                       | 0.065                                        |
| 1N6269A           | 1.5KE8.2A           | 8.2                     | 7.79                 | 8.61  | 10                    | 7.02                          | 200                                   | 130                                            | 12.1                                       | 0.065                                        |
| 1N6270            | 1.5KE9.1            | 9.1                     | 8.19                 | 10.0  | 1.0                   | 7.37                          | 50                                    | 114                                            | 13.8                                       | 0.068                                        |
| 1N6270A           | 1.5KE9.1A           | 9.1                     | 8.65                 | 9.55  | 1.0                   | 7.78                          | 50                                    | 117                                            | 13.4                                       | 0.068                                        |
| 1N6271            | 1.5KE10             | 10                      | 9.00                 | 11.0  | 1.0                   | 8.10                          | 10                                    | 105                                            | 15.0                                       | 0.073                                        |
| 1N6271A           | 1.5KE10A            | 10                      | 9.50                 | 10.5  | 1.0                   | 8.55                          | 10                                    | 108                                            | 14.5                                       | 0.073                                        |
| 1N6272            | 1.5KE11             | 11                      | 9.90                 | 12.1  | 1.0                   | 8.92                          | 5.0                                   | 97                                             | 16.2                                       | 0.075                                        |
| 1N6272A           | 1.5KE11A            | 11                      | 10.5                 | 11.6  | 1.0                   | 9.40                          | 5.0                                   | 100                                            | 15.6                                       | 0.075                                        |
| 1N6273            | 1.5KE12             | 12                      | 10.8                 | 13.2  | 1.0                   | 9.72                          | 5.0                                   | 91                                             | 17.3                                       | 0.078                                        |
| 1N6273A           | 1.5KE12A            | 12                      | 11.4                 | 12.6  | 1.0                   | 10.2                          | 5.0                                   | 94                                             | 16.7                                       | 0.078                                        |
| 1N6274            | 1.5KE13             | 13                      | 11.7                 | 14.3  | 1.0                   | 10.5                          | 5.0                                   | 82                                             | 19.0                                       | 0.081                                        |
| 1N6274A           | 1.5KE13A            | 13                      | 12.4                 | 13.7  | 1.0                   | 11.1                          | 5.0                                   | 86                                             | 18.2                                       | 0.081                                        |
| 1N6275            | 1.5KE15             | 15                      | 13.5                 | 16.5  | 1.0                   | 12.1                          | 5.0                                   | 71                                             | 22.0                                       | 0.084                                        |
| 1N6275A           | 1.5KE15A            | 15                      | 14.3                 | 15.8  | 1.0                   | 12.8                          | 5.0                                   | 74                                             | 21.2                                       | 0.084                                        |
| 1N6276            | 1.5KE16             | 16                      | 14.4                 | 17.6  | 1.0                   | 12.9                          | 5.0                                   | 67                                             | 23.5                                       | 0.086                                        |
| 1N6276A           | 1.5KE16A            | 16                      | 15.2                 | 16.8  | 1.0                   | 13.6                          | 5.0                                   | 70                                             | 22.5                                       | 0.086                                        |
| 1N6277            | 1.5KE18             | 18                      | 16.2                 | 19.8  | 1.0                   | 14.5                          | 5.0                                   | 59                                             | 26.5                                       | 0.088                                        |
| 1N6277A           | 1.5KE18A            | 18                      | 17.1                 | 18.9  | 1.0                   | 15.3                          | 5.0                                   | 60                                             | 25.5                                       | 0.088                                        |
| 1N6278            | 1.5KE20             | 20                      | 18.0                 | 22.0  | 1.0                   | 16.2                          | 5.0                                   | 54                                             | 29.1                                       | 0.090                                        |
| 1N6278A           | 1.5KE20A            | 20                      | 19.0                 | 21.0  | 1.0                   | 17.1                          | 5.0                                   | 56                                             | 27.7                                       | 0.090                                        |
| 1N6279            | 1.5KE22             | 22                      | 19.8                 | 24.2  | 1.0                   | 17.8                          | 5.0                                   | 49                                             | 31.9                                       | 0.092                                        |
| 1N6279A           | 1.5KE22A            | 22                      | 20.9                 | 23.1  | 1.0                   | 18.8                          | 5.0                                   | 51                                             | 30.6                                       | 0.092                                        |
| 1N6280            | 1.5KE24             | 24                      | 21.6                 | 26.4  | 1.0                   | 19.4                          | 5.0                                   | 45                                             | 34.7                                       | 0.094                                        |
| 1N6280A           | 1.5KE24A            | 24                      | 22.8                 | 25.2  | 1.0                   | 20.5                          | 5.0                                   | 47                                             | 33.2                                       | 0.094                                        |
| 1N6281            | 1.5KE27             | 27                      | 24.3                 | 29.7  | 1.0                   | 21.8                          | 5.0                                   | 40                                             | 39.1                                       | 0.096                                        |
| 1N6281A           | 1.5KE27A            | 27                      | 25.7                 | 28.4  | 1.0                   | 23.1                          | 5.0                                   | 42                                             | 37.5                                       | 0.096                                        |
| 1N6282            | 1.5KE30             | 30                      | 27.0                 | 33.0  | 1.0                   | 24.3                          | 5.0                                   | 36                                             | 43.5                                       | 0.097                                        |
| 1N6282A           | 1.5KE30A            | 30                      | 28.5                 | 31.5  | 1.0                   | 25.6                          | 5.0                                   | 38                                             | 41.4                                       | 0.097                                        |
| 1N6283            | 1.5KE33             | 33                      | 29.7                 | 36.3  | 1.0                   | 26.8                          | 5.0                                   | 33                                             | 47.7                                       | 0.098                                        |
| 1N6283A           | 1.5KE33A            | 33                      | 31.4                 | 34.7  | 1.0                   | 28.2                          | 5.0                                   | 34                                             | 45.7                                       | 0.098                                        |
| 1N6284            | 1.5KE36             | 36                      | 32.4                 | 39.6  | 1.0                   | 29.1                          | 5.0                                   | 30                                             | 52.0                                       | 0.099                                        |
| 1N6284A           | 1.5KE36A            | 36                      | 34.2                 | 37.8  | 1.0                   | 30.8                          | 5.0                                   | 31                                             | 49.9                                       | 0.099                                        |
| 1N6285            | 1.5KE39             | 39                      | 35.1                 | 42.9  | 1.0                   | 31.6                          | 5.0                                   | 27                                             | 56.4                                       | 0.100                                        |
| 1N6285A           | 1.5KE39A            | 39                      | 37.1                 | 41.0  | 1.0                   | 33.3                          | 5.0                                   | 29                                             | 53.9                                       | 0.100                                        |
| 1N6286            | 1.5KE43             | 43                      | 38.7                 | 47.3  | 1.0                   | 34.8                          | 5.0                                   | 25                                             | 61.9                                       | 0.101                                        |
| 1N6286A           | 1.5KE43A            | 43                      | 40.9                 | 45.2  | 1.0                   | 36.8                          | 5.0                                   | 26                                             | 59.3                                       | 0.101                                        |
| 1N6287            | 1.5KE47             | 47                      | 42.3                 | 51.7  | 1.0                   | 38.1                          | 5.0                                   | 23                                             | 67.8                                       | 0.101                                        |
| 1N6287A           | 1.5KE47A            | 47                      | 44.7                 | 49.4  | 1.0                   | 40.2                          | 5.0                                   | 24                                             | 64.8                                       | 0.101                                        |
| 1N6288            | 1.5KE51             | 51                      | 45.9                 | 56.1  | 1.0                   | 41.3                          | 5.0                                   | 21                                             | 73.5                                       | 0.102                                        |
| 1N6288A           | 1.5KE51A            | 51                      | 48.5                 | 53.6  | 1.0                   | 43.6                          | 5.0                                   | 22                                             | 70.1                                       | 0.102                                        |
| 1N6289            | 1.5KE56             | 56                      | 50.4                 | 61.6  | 1.0                   | 45.4                          | 5.0                                   | 19                                             | 80.5                                       | 0.103                                        |
| 1N6289A           | 1.5KE56A            | 56                      | 53.2                 | 58.8  | 1.0                   | 47.8                          | 5.0                                   | 20                                             | 77.0                                       | 0.103                                        |
| 1N6290            | 1.5KE62             | 62                      | 55.8                 | 68.2  | 1.0                   | 50.2                          | 5.0                                   | 17                                             | 89.0                                       | 0.104                                        |
| 1N6290A           | 1.5KE62A            | 62                      | 58.9                 | 65.1  | 1.0                   | 53.0                          | 5.0                                   | 18                                             | 85.0                                       | 0.104                                        |
| 1N6291            | 1.5KE68             | 68                      | 61.2                 | 74.8  | 1.0                   | 55.1                          | 5.0                                   | 16                                             | 98.0                                       | 0.104                                        |
| 1N6291A           | 1.5KE68A            | 68                      | 64.6                 | 71.4  | 1.0                   | 58.1                          | 5.0                                   | 17                                             | 92.0                                       | 0.104                                        |
| 1N6292            | 1.5KE75             | 75                      | 67.5                 | 82.5  | 1.0                   | 60.7                          | 5.0                                   | 14                                             | 108.0                                      | 0.105                                        |
| 1N6292A           | 1.5KE75A            | 75                      | 71.3                 | 78.8  | 1.0                   | 64.1                          | 5.0                                   | 15                                             | 103.0                                      | 0.105                                        |
| 1N6293            | 1.5KE82             | 82                      | 73.8                 | 90.2  | 1.0                   | 66.4                          | 5.0                                   | 13                                             | 118.0                                      | 0.105                                        |
| 1N6293A           | 1.5KE82A            | 82                      | 77.9                 | 86.1  | 1.0                   | 70.1                          | 5.0                                   | 13.9                                           | 113.0                                      | 0.105                                        |
| 1N6294            | 1.5KE91             | 91                      | 81.9                 | 100.0 | 1.0                   | 73.7                          | 5.0                                   | 12                                             | 131.0                                      | 0.106                                        |
| 1N6294A           | 1.5KE91A            | 91                      | 86.5                 | 95.5  | 1.0                   | 77.8                          | 5.0                                   | 12.6                                           | 125.0                                      | 0.106                                        |
| 1N6295            | 1.5KE100            | 100                     | 90.0                 | 110.0 | 1.0                   | 81.0                          | 5.0                                   | 10.9                                           | 144.0                                      | 0.106                                        |
| 1N6295A           | 1.5KE100A           | 100                     | 95.0                 | 105.0 | 1.0                   | 85.5                          | 5.0                                   | 11.4                                           | 137.0                                      | 0.106                                        |
| 1N6296            | 1.5KE110            | 110                     | 99.0                 | 121.0 | 1.0                   | 89.2                          | 5.0                                   | 9.9                                            | 158.0                                      | 0.107                                        |
| 1N6296A           | 1.5KE110A           | 110                     | 105.0                | 116.0 | 1.0                   | 94.0                          | 5.0                                   | 10.3                                           | 152.0                                      | 0.107                                        |
| 1N6297            | 1.5KE120            | 120                     | 108.0                | 132.0 | 1.0                   | 97.2                          | 5.0                                   | 9.1                                            | 173.0                                      | 0.107                                        |
| 1N6297A           | 1.5KE120A           | 120                     | 114.0                | 126.0 | 1.0                   | 102.0                         | 5.0                                   | 9.5                                            | 165.0                                      | 0.107                                        |
| 1N6298            | 1.5KE130            | 130                     | 117.0                | 143.0 | 1.0                   | 105.0                         | 5.0                                   | 8.4                                            | 187.0                                      | 0.107                                        |
| 1N6298A           | 1.5KE130A           | 130                     | 124.0                | 137.0 | 1.0                   | 111.0                         | 5.0                                   | 8.7                                            | 179.0                                      | 0.107                                        |
| 1N6299            | 1.5KE150            | 150                     | 135.0                | 165.0 | 1.0                   | 121.0                         | 5.0                                   | 7.3                                            | 215.0                                      | 0.108                                        |
| 1N6299A           | 1.5KE150A           | 150                     | 143.0                | 158.0 | 1.0                   | 128.0                         | 5.0                                   | 7.6                                            | 207.0                                      | 0.108                                        |
| 1N6300            | 1.5KE160            | 160                     | 144.0                | 176.0 | 1.0                   | 130.0                         | 5.0                                   | 6.8                                            | 230.0                                      | 0.108                                        |
| 1N6300A           | 1.5KE160A           | 160                     | 152.0                | 168.0 | 1.0                   | 136.0                         | 5.0                                   | 7.1                                            | 219.0                                      | 0.108                                        |
| 1N6301            | 1.5KE170            | 170                     | 153.0                | 187.0 | 1.0                   | 138.0                         | 5.0                                   | 6.4                                            | 244.0                                      | 0.108                                        |
| 1N6301A           | 1.5KE170A           | 170                     | 162.0                | 179.0 | 1.0                   | 145.0                         | 5.0                                   | 6.7                                            | 234.0                                      | 0.108                                        |
| 1N6302            | 1.5KE180            | 180                     | 162.0                | 198.0 | 1.0                   | 146.0                         | 5.0                                   | 6.1                                            | 258.0                                      | 0.108                                        |
| 1N6302A           | 1.5KE180A           | 180                     | 171.0                | 189.0 | 1.0                   | 154.0                         | 5.0                                   | 6.4                                            | 246.0                                      | 0.108                                        |
| 1N6303            | 1.5KE200            | 200                     | 180.0                | 220.0 | 1.0                   | 162.0                         | 5.0                                   | 5.7                                            | 287.0                                      | 0.108                                        |
| 1N6303A           | 1.5KE200A           | 200                     | 190.0                | 210.0 | 1.0                   | 171.0                         | 5.0                                   | 5.7                                            | 274.0                                      | 0.108                                        |
|                   | 1.5KE220            | 220                     | 198.0                | 242.0 | 1.0                   | 175.0                         | 5.0                                   | 4.5                                            | 344.0                                      | 0.108                                        |
|                   | 1.5KE220A           | 220                     | 209.0                | 231.0 | 1.0                   | 185.0                         | 5.0                                   | 4.8                                            | 328.0                                      | 0.108                                        |
|                   | 1.5KE250            | 250                     | 225.0                | 275.0 | 1.0                   | 202.0                         | 5.0                                   | 4.3                                            | 360.0                                      | 0.110                                        |
|                   | 1.5KE250A           | 250                     | 237.0                | 263.0 | 1.0                   | 214.0                         | 5.0                                   | 4.5                                            | 344.0                                      | 0.110                                        |
|                   | 1.5KE300            | 300                     | 270.0                | 330.0 | 1.0                   | 243.0                         | 5.0                                   | 3.6                                            | 430.0                                      | 0.110                                        |
|                   | 1.5KE300A           | 300                     | 285.0                | 315.0 | 1.0                   | 256.0                         | 5.0                                   | 3.8                                            | 414.0                                      | 0.110                                        |
|                   | 1.5KE350            | 350                     | 315.0                | 385.0 | 1.0                   | 284.0                         | 5.0                                   | 3.1                                            | 504.0                                      | 0.110                                        |
|                   | 1.5KE350A           | 350                     | 332.0                | 368.0 | 1.0                   | 300.0                         | 5.0                                   | 3.2                                            | 482.0                                      | 0.110                                        |
|                   | 1.5KE400            | 400                     | 360.0                | 440.0 | 1.0                   | 324.0                         | 5.0                                   | 2.7                                            | 574.0                                      | 0.110                                        |
|                   | 1.5KE400A           | 400                     | 380.0                | 420.0 | 1.0                   | 342.0                         | 5.0                                   | 2.8                                            | 548.0                                      | 0.110                                        |

- Notes:  
1.VBR measured after IT applied for 300us.IT=square wave pulse or equivalent.  
2.Surge current waveform per Figure 3 and derate per Figure 2.  
3.For bipolar types having VWMof 10 volts and under,the ID limit is doubled.  
4.All terms and symbols are consistent with ANSIMEC E62.35.