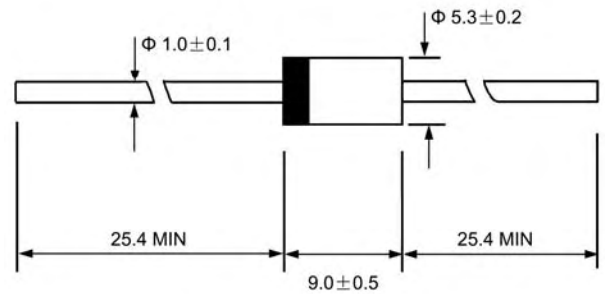




DO - 201AE

Features

- ◇ Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- ◇ 1500W surge capability at 10 x 1000 us waveform
- ◇ Excellent clamping capability
- ◇ Low Dynamic impedance
- ◇ Fast response time: Typically less than 1.0ps from 0 volts to VBR for unidirectional and 5.0 ns for bidirectional
- ◇ Typical I_R less than 1uA above 10V
- ◇ High temperature soldering guaranteed: 260°C / 10 seconds / .375", (9.5mm) lead length / 5lbs., (2.3kg) tension



Dimensions in millimeters

Mechanical Data

- ◇ Case: Molded plastic
- ◇ Polarity: Color band denotes cathode except bipolar
- ◇ Weight: 0.9 gram

Maximum Ratings and Electrical Characteristics

Rating at 25 °C ambient temperature unless otherwise specified.

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

For capacitive load, derate current by 20%

| Type Number | Symbol | Value | Units |
|---|----------------|--------------|-------|
| Peak Power Dissipation at $T_A=25^\circ\text{C}$, $T_p=1\text{ms}$ (Note 1) | P_{PK} | Minimum 1500 | Watts |
| Steady State Power Dissipation at $T_L=75^\circ\text{C}$ Lead Lengths .375", 9.5mm (Note 2) | P_D | 5.0 | Watts |
| Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method) (Note 3) | I_{FSM} | 200 | Amps |
| Maximum Instantaneous Forward Voltage at 50.0A for Unidirectional Only (Note 4) | V_F | 3.5 / 5.0 | Volts |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to + 175 | °C |

- Notes:
1. Non-repetitive Current Pulse Per Fig. 3 and Derated above $T_A=25^\circ\text{C}$ Per Fig. 2.
 2. Mounted on Copper Pad Area of 0.6 x 0.6" (16 x 16 mm) Per Fig. 4.
 3. 8.3ms Single Half Sine-wave or Equivalent Square Wave, Duty Cycle=4 Pulses Per Minutes Maximum.
 4. $V_F=3.5\text{V}$ for Devices of $V_{BR} \leq 200\text{V}$ and $V_F=5.0\text{V}$ Max. for Devices $V_{BR}>200\text{V}$.

Devices for Bipolar Applications

1. For Bidirectional Use C or CA Suffix for Types 1.5KE6.8 through Types 1.5KE440.
2. Electrical Characteristics Apply in Both Directions.

RATINGS AND CHARACTERISTIC CURVES (1.5KE SERIES)

FIG.1- PEAK PULSE POWER RATING CURVE

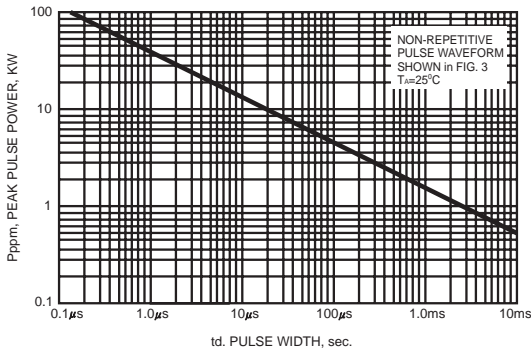


FIG.2- PULSE DERATING CURVE

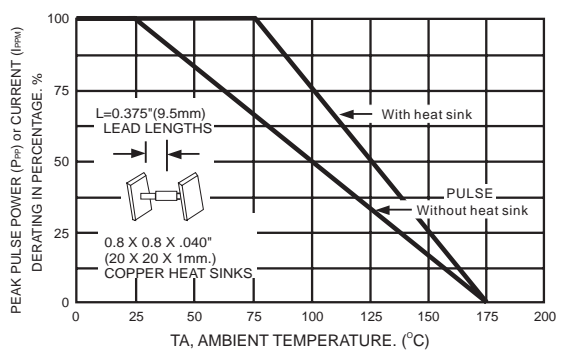


FIG.3- CLAMPING POWER PULSE WAVEFORM

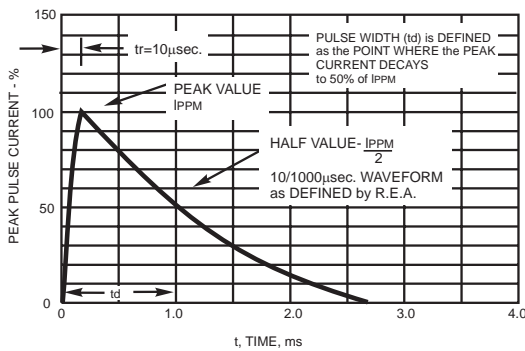


FIG.4- MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

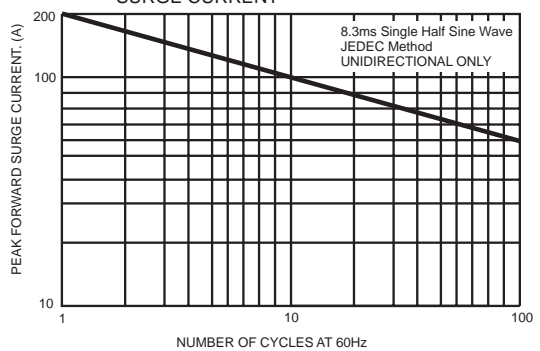
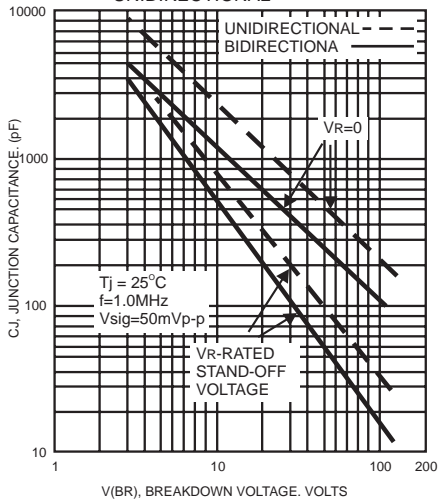


FIG.5- TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL



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

| JEDEC TYPE NUMBER | GENERAL PART NUMBER | Nominal Voltage (Volts) | Breakdown Voltage V _{BR} (Volts) (Note 1) | | Test Current @I _T (mA) | Stand-Off Voltage V _{WM} (Volts) | Maximum Reverse Leakage at V _{WM} I _D (uA) | Maximum Peak Surge Current I _{PPM} (Note 2)(Amps) | Maximum Clamping Voltage at I _{PPM} V _C (volts) | Maximum Temperature Coefficient of V _{BR} (% / °C) |
|-------------------|---------------------|-------------------------|--|------|-----------------------------------|---|--|--|---|---|
| | | | 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 | 6.45 | 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 | 7.88 | 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 | 25.2 | 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 | 61.8 | 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 |

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 (uA) | Maximum Peak Surge Current IPPM (Note 2)(Amps) | Maximum Clamping Voltage at IPPM Vc(volts) | Maximum Temperature Coefficient of VBR(% / °C) |
|-------------------|---------------------|-------------------------|----------------------|-------|----------------------|-------------------------------|--|--|--|--|
| | | | VBR (Volts) (Note 1) | | | | | | | |
| | | | Min | Max | | | | | | |
| 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 | 95.50 | 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 | 106.0 | 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 | 5.4 | 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 | 333.0 | 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 |
| | 1.5KE440 | 440 | 396.0 | 484.0 | 1.0 | 356.0 | 5.0 | 2.4 | 631.0 | 0.110 |
| | 1.5KE440A | 440 | 418.0 | 462.0 | 1.0 | 376.0 | 5.0 | 2.5 | 602.0 | 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 VWM of 10 volts and under, the Id limit is doubled.
4. All terms and symbols are consistent with ANSI/IEEE C62.35.