

1.5KE6.8CL SERIES

BI-DIRECTIONAL TRANSIENT VOLTAGE SUPPRESSOR

V_{BR} : 6.8 - 440 Volts

P_{PK} : 1500 Watts

FEATURES :

- * 1500W surge capability at 1ms
- * Excellent clamping capability
- * Low zener impedance
- * Fast response time : typically less than 1.0 ps from 0 volt to $V_{BR(min.)}$
- * Typical I_R less than $1\mu A$ above 10V
- * Pb / RoHS Free

MECHANICAL DATA

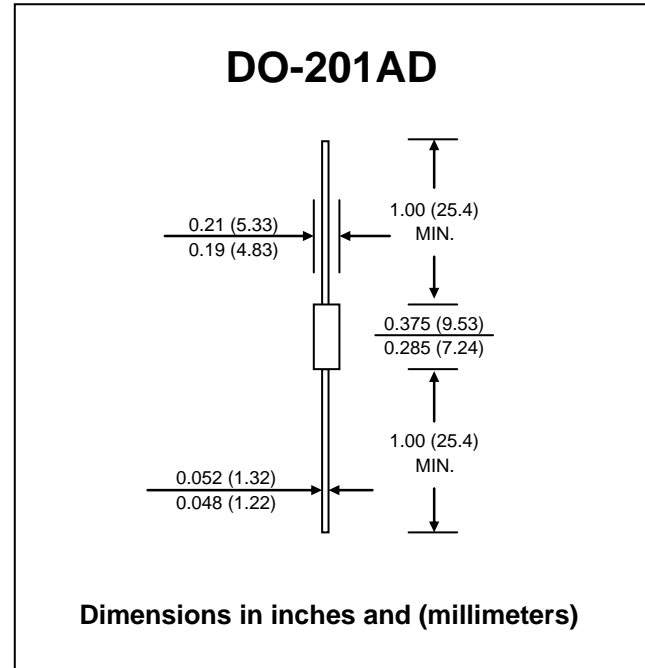
- * Case : DO-201AD Molded plastic
- * Epoxy : UL94V-O rate flame retardant
- * Lead : Axial lead solderable per MIL-STD-202, method 208 guaranteed
- * Mounting position : Any
- * Weight : 1.21 grams

DEVICES FOR UNIPOLAR APPLICATIONS

For uni-directional without "C"
Electrical characteristics apply in both directions

MAXIMUM RATINGS

Rating at 25 °C ambient temperature unless otherwise specified.



| Rating | Symbol | Value | Unit |
|---|----------------|---------------|------------------|
| Peak Power Dissipation at $T_a = 25\text{ }^\circ\text{C}$, $T_p=1\text{ms}$ (Note1) | P_{PK} | Minimum 1500 | W |
| Steady State Power Dissipation at $T_L = 75\text{ }^\circ\text{C}$ Lead Lengths 0.375", (9.5mm) (Note 2) | P_D | 5.0 | W |
| Operating and Storage Temperature Range | T_J, T_{STG} | - 65 to + 175 | $^\circ\text{C}$ |

Notes :

- (1) Non-repetitive Current pulse, per Fig. 2 and derated above $T_a = 25\text{ }^\circ\text{C}$ per Fig. 1
- (2) Mounted on Copper Leaf area of 0.79 in^2 (20mm²).

ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified

| Type No. | Breakdown Voltage @ I_t (Note 1) | | Working Peak Reverse Voltage V_{RWM} | Maximum Reverse Leakage @ V_{RWM} I_R (μA) | Maximum Reverse Current I_{RSM} (A) | Maximum Clamping Voltage @ I_{RSM} V_{RSM} (V) | Maximum Temperature Co-efficient of V_{BR} (% / °C) | |
|-------------|---|------|---|---|---|--|---|---------------|
| | V_{BR} (V) | | | | | | | I_t (mA) |
| | Min. | Max. | | | | | | |
| 1.5KE6.8CL | 6.12 | 7.48 | 10 | 5.50 | 2000 | 139 | 10.8 | 0.057 |
| 1.5KE6.8CAL | 6.45 | 7.14 | 10 | 5.80 | 2000 | 143 | 10.5 | 0.057 |
| 1.5KE7.5CL | 6.75 | 8.25 | 10 | 6.05 | 1000 | 128 | 11.7 | 0.061 |
| 1.5KE7.5CAL | 7.13 | 7.88 | 10 | 6.40 | 1000 | 132 | 11.3 | 0.061 |
| 1.5KE8.2CL | 7.38 | 9.02 | 10 | 6.63 | 400 | 120 | 12.5 | 0.065 |
| 1.5KE8.2CAL | 7.79 | 8.61 | 10 | 7.02 | 400 | 124 | 12.1 | 0.065 |
| 1.5KE9.1CL | 8.19 | 10.0 | 1.0 | 7.37 | 100 | 109 | 13.8 | 0.068 |
| 1.5KE9.1CAL | 8.65 | 9.55 | 1.0 | 7.78 | 100 | 112 | 13.4 | 0.068 |
| 1.5KE10CL | 9.00 | 11.0 | 1.0 | 8.10 | 20 | 100 | 15.0 | 0.073 |
| 1.5KE10CAL | 9.50 | 10.5 | 1.0 | 8.55 | 20 | 103 | 14.5 | 0.073 |
| 1.5KE11CL | 9.90 | 12.1 | 1.0 | 8.92 | 10 | 93.0 | 16.2 | 0.075 |
| 1.5KE11CAL | 10.5 | 11.6 | 1.0 | 9.40 | 10 | 96.0 | 15.6 | 0.075 |
| 1.5KE12CL | 10.8 | 13.2 | 1.0 | 9.72 | 5.0 | 87.0 | 17.3 | 0.078 |
| 1.5KE12CAL | 11.4 | 12.6 | 1.0 | 10.2 | 5.0 | 90.0 | 16.7 | 0.078 |
| 1.5KE13CL | 11.7 | 14.3 | 1.0 | 10.5 | 5.0 | 79.0 | 19.0 | 0.081 |
| 1.5KE13CAL | 12.4 | 13.7 | 1.0 | 11.1 | 5.0 | 82.0 | 18.2 | 0.081 |
| 1.5KE15CL | 13.5 | 16.5 | 1.0 | 12.1 | 5.0 | 68.0 | 22.0 | 0.084 |
| 1.5KE15CAL | 14.3 | 15.8 | 1.0 | 12.8 | 5.0 | 71.0 | 21.2 | 0.084 |
| 1.5KE16CL | 14.4 | 17.6 | 1.0 | 12.9 | 5.0 | 64.0 | 23.5 | 0.086 |
| 1.5KE16CAL | 15.2 | 16.8 | 1.0 | 13.6 | 5.0 | 67.0 | 22.5 | 0.086 |
| 1.5KE18CL | 16.2 | 19.8 | 1.0 | 14.5 | 5.0 | 56.5 | 26.5 | 0.088 |
| 1.5KE18CAL | 17.1 | 18.9 | 1.0 | 15.3 | 5.0 | 59.5 | 25.2 | 0.088 |
| 1.5KE20CL | 18.0 | 22.0 | 1.0 | 16.2 | 5.0 | 51.5 | 29.1 | 0.090 |
| 1.5KE20CAL | 19.0 | 21.0 | 1.0 | 17.1 | 5.0 | 54.0 | 27.7 | 0.090 |
| 1.5KE22CL | 19.8 | 24.2 | 1.0 | 17.8 | 5.0 | 47.0 | 31.9 | 0.092 |
| 1.5KE22CAL | 20.9 | 23.1 | 1.0 | 18.8 | 5.0 | 49.0 | 30.6 | 0.092 |
| 1.5KE24CL | 21.6 | 26.4 | 1.0 | 19.4 | 5.0 | 43.0 | 34.7 | 0.094 |
| 1.5KE24CAL | 22.8 | 25.2 | 1.0 | 20.5 | 5.0 | 45.0 | 33.2 | 0.094 |
| 1.5KE27CL | 24.3 | 29.7 | 1.0 | 21.8 | 5.0 | 38.5 | 39.1 | 0.096 |
| 1.5KE27CAL | 25.7 | 28.4 | 1.0 | 23.1 | 5.0 | 40.0 | 37.5 | 0.096 |
| 1.5KE30CL | 27.0 | 33.0 | 1.0 | 24.3 | 5.0 | 34.5 | 43.5 | 0.097 |
| 1.5KE30CAL | 28.5 | 31.5 | 1.0 | 25.6 | 5.0 | 36.0 | 41.4 | 0.097 |
| 1.5KE33CL | 29.7 | 36.3 | 1.0 | 26.8 | 5.0 | 31.5 | 47.7 | 0.098 |
| 1.5KE33CAL | 31.4 | 34.7 | 1.0 | 28.2 | 5.0 | 33.0 | 45.7 | 0.098 |
| 1.5KE36CL | 32.4 | 39.6 | 1.0 | 29.1 | 5.0 | 29.0 | 52.0 | 0.099 |
| 1.5KE36CAL | 34.2 | 37.8 | 1.0 | 30.8 | 5.0 | 30.0 | 49.9 | 0.099 |
| 1.5KE39CL | 35.1 | 42.9 | 1.0 | 31.6 | 5.0 | 26.5 | 56.4 | 0.100 |
| 1.5KE39CAL | 37.1 | 41.0 | 1.0 | 33.3 | 5.0 | 28.0 | 53.9 | 0.100 |
| 1.5KE43CL | 38.7 | 47.3 | 1.0 | 34.8 | 5.0 | 24.0 | 61.9 | 0.101 |
| 1.5KE43CAL | 40.9 | 45.2 | 1.0 | 36.8 | 5.0 | 25.3 | 59.3 | 0.101 |
| 1.5KE47CL | 42.3 | 51.7 | 1.0 | 38.1 | 5.0 | 22.2 | 67.8 | 0.101 |
| 1.5KE47CAL | 44.7 | 49.4 | 1.0 | 40.2 | 5.0 | 23.2 | 64.8 | 0.101 |
| 1.5KE51CL | 45.9 | 56.1 | 1.0 | 41.3 | 5.0 | 20.4 | 73.5 | 0.102 |
| 1.5KE51CAL | 48.5 | 53.6 | 1.0 | 43.6 | 5.0 | 21.4 | 70.1 | 0.102 |
| 1.5KE56CL | 50.4 | 61.6 | 1.0 | 45.4 | 5.0 | 18.6 | 80.5 | 0.103 |
| 1.5KE56CAL | 53.2 | 58.8 | 1.0 | 47.8 | 5.0 | 19.5 | 77.0 | 0.103 |

ELECTRICAL CHARACTERISTICS

Rating at 25°C ambient temperature unless otherwise specified

| Type No. | Breakdown Voltage @ I_t (Note 1) | | Working Peak Reverse Voltage | Maximum Reverse Leakage @ V_{RWM} | Maximum Reverse Current | Maximum Clamping Voltage @ I_{RSM} | Maximum Temperature Co-efficient of V_{BR} (% / °C) | |
|-------------|---------------------------------------|------|------------------------------------|---|-------------------------------|--|---|-----------|
| | V_{BR} (V) | | | | | | | V_{RWM} |
| | Min. | Max. | I_t (mA) | (V) | (μ A) | (A) | (V) | |
| 1.5KE62CL | 55.8 | 68.2 | 1.0 | 50.2 | 5.0 | 16.9 | 89.0 | 0.104 |
| 1.5KE62CAL | 58.9 | 65.1 | 1.0 | 53.0 | 5.0 | 17.7 | 85.0 | 0.104 |
| 1.5KE68CL | 61.2 | 74.8 | 1.0 | 55.1 | 5.0 | 15.3 | 98.0 | 0.104 |
| 1.5KE68CAL | 64.6 | 71.4 | 1.0 | 58.1 | 5.0 | 16.3 | 92.0 | 0.104 |
| 1.5KE75CL | 67.5 | 82.5 | 1.0 | 60.7 | 5.0 | 13.9 | 108 | 0.105 |
| 1.5KE75CAL | 71.3 | 78.8 | 1.0 | 64.1 | 5.0 | 14.6 | 103 | 0.105 |
| 1.5KE82CL | 73.8 | 90.2 | 1.0 | 66.4 | 5.0 | 12.7 | 118 | 0.105 |
| 1.5KE82CAL | 77.9 | 86.1 | 1.0 | 70.1 | 5.0 | 13.3 | 113 | 0.105 |
| 1.5KE91CL | 81.9 | 100 | 1.0 | 73.7 | 5.0 | 11.4 | 131 | 0.106 |
| 1.5KE91CAL | 86.5 | 95.5 | 1.0 | 77.8 | 5.0 | 12.0 | 125 | 0.106 |
| 1.5KE100CL | 90.0 | 110 | 1.0 | 81.0 | 5.0 | 10.4 | 144 | 0.106 |
| 1.5KE100CAL | 95.0 | 105 | 1.0 | 85.5 | 5.0 | 11.0 | 137 | 0.106 |
| 1.5KE110CL | 99.0 | 121 | 1.0 | 89.2 | 5.0 | 9.5 | 158 | 0.107 |
| 1.5KE110CAL | 105 | 116 | 1.0 | 94.0 | 5.0 | 9.9 | 152 | 0.107 |
| 1.5KE120CL | 108 | 132 | 1.0 | 97.2 | 5.0 | 8.7 | 173 | 0.107 |
| 1.5KE120CAL | 114 | 126 | 1.0 | 102 | 5.0 | 9.1 | 165 | 0.107 |
| 1.5KE130CL | 117 | 143 | 1.0 | 105 | 5.0 | 8.0 | 187 | 0.107 |
| 1.5KE130CAL | 124 | 137 | 1.0 | 111 | 5.0 | 8.4 | 179 | 0.107 |
| 1.5KE150CL | 135 | 165 | 1.0 | 121 | 5.0 | 7.0 | 215 | 0.108 |
| 1.5KE150CAL | 143 | 158 | 1.0 | 128 | 5.0 | 7.2 | 207 | 0.108 |
| 1.5KE160CL | 144 | 176 | 1.0 | 130 | 5.0 | 6.5 | 230 | 0.108 |
| 1.5KE160CAL | 152 | 168 | 1.0 | 136 | 5.0 | 6.8 | 219 | 0.108 |
| 1.5KE170CL | 153 | 187 | 1.0 | 138 | 5.0 | 6.2 | 244 | 0.108 |
| 1.5KE170CAL | 162 | 179 | 1.0 | 145 | 5.0 | 6.4 | 234 | 0.108 |
| 1.5KE180CL | 162 | 198 | 1.0 | 146 | 5.0 | 5.8 | 258 | 0.108 |
| 1.5KE180CAL | 171 | 189 | 1.0 | 154 | 5.0 | 6.1 | 246 | 0.108 |
| 1.5KE200CL | 180 | 220 | 1.0 | 162 | 5.0 | 5.2 | 287 | 0.108 |
| 1.5KE200CAL | 190 | 210 | 1.0 | 171 | 5.0 | 5.5 | 274 | 0.108 |
| 1.5KE220CL | 198 | 242 | 1.0 | 175 | 5.0 | 4.3 | 344 | 0.108 |
| 1.5KE220CAL | 209 | 231 | 1.0 | 185 | 5.0 | 4.6 | 328 | 0.108 |
| 1.5KE250CL | 225 | 275 | 1.0 | 202 | 5.0 | 4.2 | 360 | 0.110 |
| 1.5KE250CAL | 237 | 263 | 1.0 | 214 | 5.0 | 4.4 | 344 | 0.110 |
| 1.5KE300CL | 270 | 330 | 1.0 | 243 | 5.0 | 3.5 | 430 | 0.110 |
| 1.5KE300CAL | 285 | 315 | 1.0 | 256 | 5.0 | 3.6 | 414 | 0.110 |
| 1.5KE350CL | 315 | 385 | 1.0 | 284 | 5.0 | 3.0 | 504 | 0.110 |
| 1.5KE350CAL | 332 | 368 | 1.0 | 300 | 5.0 | 3.1 | 482 | 0.110 |
| 1.5KE400CL | 360 | 440 | 1.0 | 324 | 5.0 | 2.6 | 574 | 0.110 |
| 1.5KE400CAL | 380 | 420 | 1.0 | 342 | 5.0 | 2.7 | 548 | 0.110 |
| 1.5KE440CL | 396 | 484 | 1.0 | 356 | 5.0 | 2.4 | 631 | 0.110 |
| 1.5KE440CAL | 418 | 462 | 1.0 | 376 | 5.0 | 2.5 | 602 | 0.110 |

Notes:

- (1) V_{BR} measured after I_t applied for 300 μ s., I_t = square wave pulse or equivalent.
- (2) "1.5" will be omitted in marking on the diode.

RATING AND CHARACTERISTIC CURVES (1.5KE6.8CL SERIES)

FIG.1 - PULSE DERATING CURVE

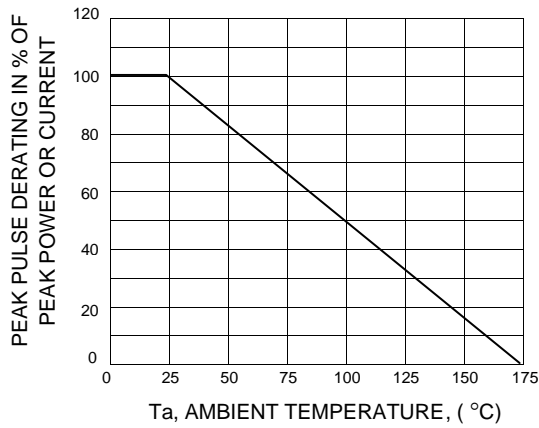


FIG.2 - PULSE WAVEFORM

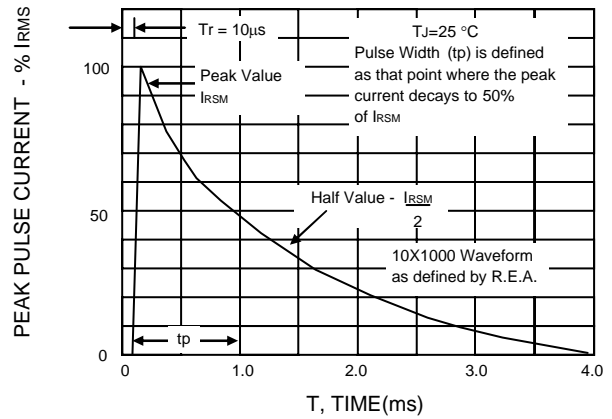


FIG.3 - STEADY STATE POWER DERATING

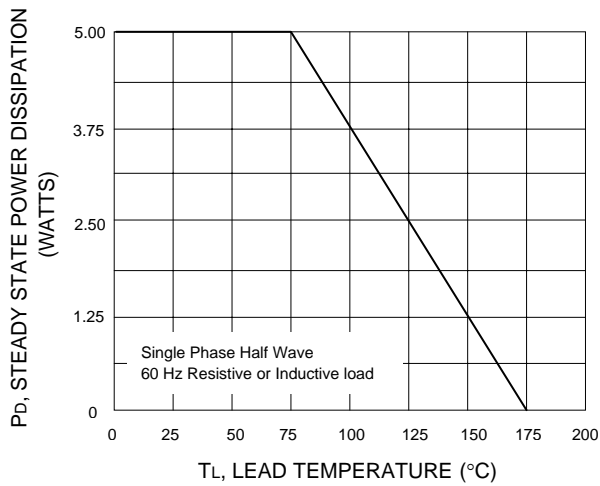


FIG.4 - PULSE RATING CURVE

