



CHENMKO ENTERPRISE CO.,LTD

GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSOR
VOLTAGE-6.8 TO 400 VOLTS
1500 WATTS PEAK POWER 6.5 WATTS STEADY STATE

**1.5KE
 SERIES**

Lead free devices

FEATURES

- * Plastic package
- * 1500W surge capability at 1ms
- * Glass passivated chip junction in DO-201 Package
- * Excellent clamping capability
- * Low Zener Impedance
- * Fast response time: typically less than 1.0ps from 0 volts to BV min.
- * Typical IR less than 1 uA above 10V
- * High temperature soldering guaranteed: 300 degree C/10seconds/.375"(9.5mm) lead length/51 bs., (2.3k) tension

MECHANICAL DATA

Case: JEDEC DO-201 molded plastic
Terminals: Plated axial leads, solderable per MIL-STD-750, Method 2026
Polarity: Color band denotes cathode end
Mounting Position: Any
Weight: 0.045 ounce, 1.2 grams



DO-201



DO-201

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings 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%.

DEVICES FOR BIDIRECTIONAL APPLICATIONS

For Bidirectional use C or CA Suffix for types 1.5KE6.8 thru types 1.5KE400
 Electrical characteristics apply in both directions.

MAXIMUM RATINGS (At TA = 25°C unless otherwise noted)

| RATINGS | SYMBOL | VALUE | UNITS |
|---|----------|--------------|-------|
| Peak Power Dissipation at TA = 25°C, Tp = 1ms (Note1) | PPK | Minimum 1500 | Watts |
| Steady State Power Dissipation at TL = 75°C Lead Lengths .375" (9.5mm) | PD | 6.5 | Watts |
| Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load (Note 2) | IFSM | 200 | Amps |
| Operating and Storage Temperature Range | TJ, TSTG | -65 to +175 | °C |

NOTES : 1. Non-repetitive current pulse, per Fig. 3 and derated above TA = 25°C per Fig. 2.
 2. 8.3ms single half sine-wave, duty cycle = 4 pulses per minute maximum.

| PRODUCT NO. | Breakdown Voltage | | | Working Peak Reverse Voltage | Maximum Reverse Leakage at Vrwm | Maximum Reverse Current (NOTE 2) | Maximum Reverse Voltage at Irsm (clamping) | Maximum Temperature Coefficient of Vbr |
|-------------|-------------------------|------|----------------|------------------------------|---------------------------------|------------------------------------|--|--|
| | VBR Volts (NOTE 1) | | @ IT (mA) | | | | | |
| | MIN. | MAX. | | Vrwm (V) | Ir (uA) | Irsm (A) | Vrsm (V) | (%C) |
| 1.5KE6.8PT | 6.12 | 7.48 | 10 | 5.50 | 1000 | 139 | 10.8 | 0.057 |
| 1.5KE6.8APT | 6.45 | 7.14 | 10 | 5.80 | 1000 | 143 | 10.5 | 0.057 |
| 1.5KE7.5PT | 6.75 | 8.25 | 10 | 6.05 | 500 | 128 | 11.7 | 0.061 |
| 1.5KE7.5APT | 7.13 | 7.88 | 10 | 6.40 | 500 | 132 | 11.3 | 0.061 |
| 1.5KE8.2PT | 7.38 | 9.02 | 10 | 6.63 | 200 | 120 | 12.5 | 0.065 |
| 1.5KE8.2APT | 7.79 | 8.61 | 10 | 7.02 | 200 | 124 | 12.1 | 0.065 |
| 1.5KE9.1PT | 8.19 | 10.0 | 1.0 | 7.37 | 50 | 109 | 13.8 | 0.068 |
| 1.5KE9.1APT | 8.65 | 9.55 | 1.0 | 7.78 | 50 | 112 | 13.4 | 0.068 |
| 1.5KE10PT | 9.0 | 11.0 | 1.0 | 8.10 | 10 | 100 | 15.0 | 0.073 |
| 1.5KE10APT | 9.5 | 10.5 | 1.0 | 8.55 | 10 | 103 | 14.5 | 0.073 |
| 1.5KE11PT | 9.9 | 12.1 | 1.0 | 8.92 | 5.0 | 93.0 | 16.2 | 0.075 |
| 1.5KE11APT | 10.5 | 11.6 | 1.0 | 9.40 | 5.0 | 96.0 | 15.6 | 0.075 |
| 1.5KE12PT | 10.8 | 13.2 | 1.0 | 9.72 | 5.0 | 87.0 | 17.3 | 0.078 |
| 1.5KE12APT | 11.4 | 12.6 | 1.0 | 10.2 | 5.0 | 90.0 | 16.7 | 0.078 |
| 1.5KE13PT | 11.7 | 14.3 | 1.0 | 10.5 | 5.0 | 79.0 | 19.0 | 0.081 |
| 1.5KE13APT | 12.4 | 13.7 | 1.0 | 11.1 | 5.0 | 82.0 | 18.2 | 0.081 |
| 1.5KE15PT | 13.5 | 16.5 | 1.0 | 12.1 | 5.0 | 68.0 | 22.0 | 0.084 |
| 1.5KE15APT | 14.3 | 15.8 | 1.0 | 12.8 | 5.0 | 71.0 | 21.2 | 0.084 |
| 1.5KE16PT | 14.4 | 17.6 | 1.0 | 12.9 | 5.0 | 64.0 | 23.5 | 0.086 |
| 1.5KE16APT | 15.2 | 16.8 | 1.0 | 13.6 | 5.0 | 67.0 | 22.5 | 0.086 |
| 1.5KE18PT | 16.2 | 19.8 | 1.0 | 14.5 | 5.0 | 56.5 | 26.5 | 0.088 |
| 1.5KE18APT | 17.1 | 18.9 | 1.0 | 15.3 | 5.0 | 59.5 | 25.2 | 0.088 |
| 1.5KE20PT | 18.0 | 22.0 | 1.0 | 16.2 | 5.0 | 51.5 | 29.1 | 0.090 |
| 1.5KE20APT | 19.0 | 21.0 | 1.0 | 17.1 | 5.0 | 54.0 | 27.7 | 0.090 |
| 1.5KE22PT | 19.8 | 24.2 | 1.0 | 17.8 | 5.0 | 47.0 | 31.9 | 0.092 |
| 1.5KE22APT | 20.9 | 23.1 | 1.0 | 18.8 | 5.0 | 49.0 | 30.6 | 0.092 |
| 1.5KE24PT | 21.6 | 26.4 | 1.0 | 19.4 | 5.0 | 43.0 | 34.7 | 0.094 |
| 1.5KE24APT | 22.8 | 25.2 | 1.0 | 20.5 | 5.0 | 45.0 | 33.2 | 0.094 |
| 1.5KE27PT | 24.3 | 29.7 | 1.0 | 21.8 | 5.0 | 38.5 | 39.1 | 0.096 |
| 1.5KE27APT | 25.7 | 28.4 | 1.0 | 23.1 | 5.0 | 40.0 | 37.5 | 0.096 |
| 1.5KE30PT | 27.0 | 33.0 | 1.0 | 24.3 | 5.0 | 34.5 | 43.5 | 0.097 |
| 1.5KE30APT | 28.5 | 31.5 | 1.0 | 25.6 | 5.0 | 36.0 | 41.4 | 0.097 |
| 1.5KE33PT | 29.7 | 36.3 | 1.0 | 26.8 | 5.0 | 31.5 | 47.7 | 0.098 |
| 1.5KE33APT | 31.4 | 34.7 | 1.0 | 28.2 | 5.0 | 33.0 | 45.7 | 0.098 |
| 1.5KE36PT | 32.4 | 39.6 | 1.0 | 29.1 | 5.0 | 29.0 | 52.0 | 0.099 |
| 1.5KE36APT | 34.2 | 37.8 | 1.0 | 30.8 | 5.0 | 30.0 | 49.9 | 0.099 |
| 1.5KE39PT | 35.1 | 42.9 | 1.0 | 31.6 | 5.0 | 26.5 | 56.4 | 0.100 |
| 1.5KE39APT | 37.1 | 41.0 | 1.0 | 33.3 | 5.0 | 28.0 | 53.9 | 0.100 |
| 1.5KE43PT | 38.7 | 47.3 | 1.0 | 34.8 | 5.0 | 24.0 | 61.9 | 0.101 |
| 1.5KE43APT | 40.9 | 45.2 | 1.0 | 36.8 | 5.0 | 25.3 | 59.3 | 0.101 |
| 1.5KE47PT | 42.3 | 51.7 | 1.0 | 38.1 | 5.0 | 22.2 | 67.8 | 0.101 |
| 1.5KE47APT | 44.7 | 49.4 | 1.0 | 40.2 | 5.0 | 23.2 | 64.8 | 0.101 |
| 1.5KE51PT | 45.9 | 56.1 | 1.0 | 41.3 | 5.0 | 20.4 | 73.5 | 0.102 |
| 1.5KE51APT | 48.5 | 53.6 | 1.0 | 43.6 | 5.0 | 21.4 | 70.1 | 0.102 |
| 1.5KE56PT | 50.4 | 61.6 | 1.0 | 45.4 | 5.0 | 18.6 | 80.5 | 0.103 |

| PRODUCT NO. | Breakdown Voltage | | | Working Peak Reverse Voltage | Maximum Reverse Leakage at Vrwm | Maximum Reverse Current (NOTE 2) | Maximum Reverse Voltage at Irsm (clamping) | Maximum Temperature Coefficient of Vbr |
|-------------|-------------------------|------|----------------|------------------------------|---------------------------------|------------------------------------|--|--|
| | VBR Volts (NOTE 1) | | @ IT (mA) | | | | | |
| | MIN. | MAX. | | Vrwm (V) | Ir (uA) | Irsm (A) | Vrsm (V) | (%C) |
| 1.5KE56APT | 53.2 | 58.8 | 1.0 | 47.8 | 5.0 | 19.5 | 77.0 | 0.103 |
| 1.5KE62PT | 55.8 | 68.2 | 1.0 | 50.2 | 5.0 | 16.9 | 89.0 | 0.104 |
| 1.5KE62APT | 58.9 | 65.1 | 1.0 | 53.0 | 5.0 | 17.7 | 85.0 | 0.104 |
| 1.5KE68PT | 61.2 | 74.8 | 1.0 | 55.1 | 5.0 | 15.3 | 98.0 | 0.104 |
| 1.5KE68APT | 64.6 | 71.4 | 1.0 | 58.0 | 5.0 | 16.3 | 92.0 | 0.104 |
| 1.5KE75PT | 67.5 | 82.5 | 1.0 | 60.7 | 5.0 | 13.9 | 108 | 0.105 |
| 1.5KE75APT | 71.3 | 78.8 | 1.0 | 64.1 | 5.0 | 14.6 | 103 | 0.105 |
| 1.5KE82PT | 73.8 | 90.2 | 1.0 | 66.4 | 5.0 | 12.7 | 118 | 0.105 |
| 1.5KE82APT | 77.9 | 86.1 | 1.0 | 70.1 | 5.0 | 13.3 | 113 | 0.105 |
| 1.5KE91PT | 81.9 | 100 | 1.0 | 73.7 | 5.0 | 11.4 | 131 | 0.106 |
| 1.5KE91APT | 86.5 | 95.5 | 1.0 | 77.8 | 5.0 | 12.0 | 125 | 0.106 |
| 1.5KE100PT | 90.0 | 110 | 1.0 | 81.0 | 5.0 | 10.4 | 144 | 0.106 |
| 1.5KE100APT | 95.0 | 105 | 1.0 | 85.5 | 5.0 | 11.0 | 137 | 0.106 |
| 1.5KE110PT | 99.0 | 121 | 1.0 | 89.2 | 5.0 | 9.5 | 158 | 0.107 |
| 1.5KE110APT | 105 | 116 | 1.0 | 94.0 | 5.0 | 9.9 | 152 | 0.107 |
| 1.5KE120PT | 108 | 132 | 1.0 | 97.2 | 5.0 | 8.7 | 173 | 0.107 |
| 1.5KE120APT | 114 | 126 | 1.0 | 102 | 5.0 | 9.1 | 165 | 0.107 |
| 1.5KE130PT | 117 | 143 | 1.0 | 105 | 5.0 | 8.0 | 187 | 0.107 |
| 1.5KE130APT | 124 | 137 | 1.0 | 111 | 5.0 | 8.4 | 179 | 0.107 |
| 1.5KE150PT | 135 | 165 | 1.0 | 121 | 5.0 | 7.0 | 215 | 0.108 |
| 1.5KE150APT | 143 | 158 | 1.0 | 128 | 5.0 | 7.2 | 207 | 0.108 |
| 1.5KE160PT | 144 | 176 | 1.0 | 130 | 5.0 | 6.5 | 230 | 0.108 |
| 1.5KE160APT | 152 | 168 | 1.0 | 136 | 5.0 | 6.8 | 219 | 0.108 |
| 1.5KE170PT | 153 | 187 | 1.0 | 138 | 5.0 | 6.2 | 244 | 0.108 |
| 1.5KE170APT | 162 | 179 | 1.0 | 145 | 5.0 | 6.4 | 234 | 0.108 |
| 1.5KE180PT | 162 | 198 | 1.0 | 146 | 5.0 | 5.8 | 258 | 0.108 |
| 1.5KE180APT | 171 | 189 | 1.0 | 154 | 5.0 | 6.1 | 246 | 0.108 |
| 1.5KE200PT | 180 | 220 | 1.0 | 162 | 5.0 | 5.2 | 287 | 0.108 |
| 1.5KE200APT | 190 | 210 | 1.0 | 171 | 5.0 | 5.5 | 274 | 0.108 |
| 1.5KE220PT | 198 | 242 | 1.0 | 175 | 5.0 | 4.3 | 344 | 0.108 |
| 1.5KE220APT | 209 | 231 | 1.0 | 185 | 5.0 | 4.6 | 328 | 0.108 |
| 1.5KE250PT | 225 | 275 | 1.0 | 202 | 5.0 | 5.0 | 360 | 0.110 |
| 1.5KE250APT | 237 | 263 | 1.0 | 214 | 5.0 | 5.0 | 344 | 0.110 |
| 1.5KE300PT | 270 | 330 | 1.0 | 243 | 5.0 | 5.0 | 430 | 0.110 |
| 1.5KE300APT | 285 | 315 | 1.0 | 256 | 5.0 | 5.0 | 414 | 0.110 |
| 1.5KE350PT | 315 | 385 | 1.0 | 284 | 5.0 | 4.0 | 504 | 0.110 |
| 1.5KE350APT | 332 | 368 | 1.0 | 300 | 5.0 | 4.0 | 482 | 0.110 |
| 1.5KE400PT | 360 | 440 | 1.0 | 324 | 5.0 | 4.0 | 574 | 0.110 |
| 1.5KE400APT | 380 | 420 | 1.0 | 342 | 5.0 | 4.0 | 548 | 0.110 |

- NOTES : 1. Vbr measured after IT applied for 300 us. IT = Square Wave Pulse or equivalent.
2. Surge Current Waveform per Figure 3 and Derated per Figure 2.
3. Vf = 3.5 V max. at If= 100 A (1.5KE6.8 thru 1.5KE91A)
Vf = 5.0 V max. at If = 100 A (1.5KE100 thru 1.5KE400A) on 1/2 Square or equivalent Sine Wave.
PW = 8.3ms, Duty Cycle = 4 Pulses per minute maximum.
4. For Bipolar types having VR of 10 Volts and under, the IR limit is doubled.

RATING CHARACTERISTIC CURVES (1.5KE6.8PT ~ 1.5KE400APT)

FIG. 1 - PULSE POWER RATING CURVE

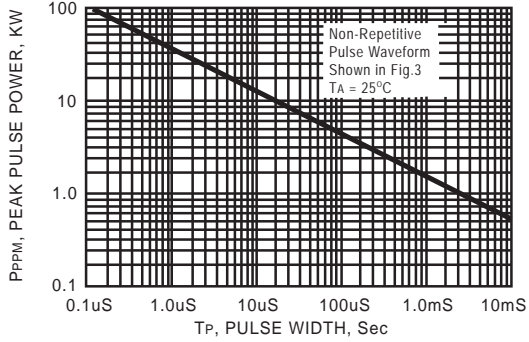


FIG. 2 - PULSE DERATING CURVE

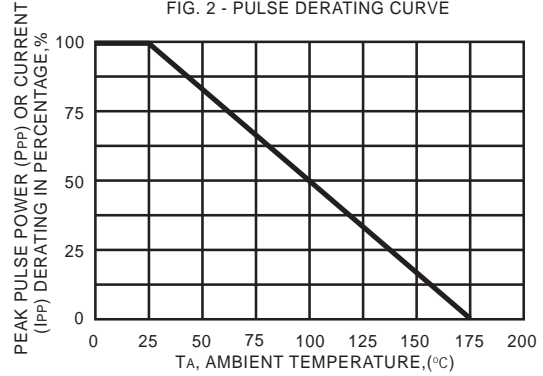


FIG. 3 - PULSE WAVEFORM

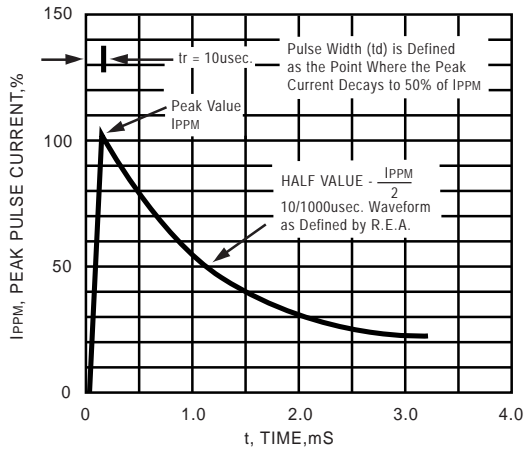


FIG. 4 - TYPICAL JUNCTION CAPACITANCE

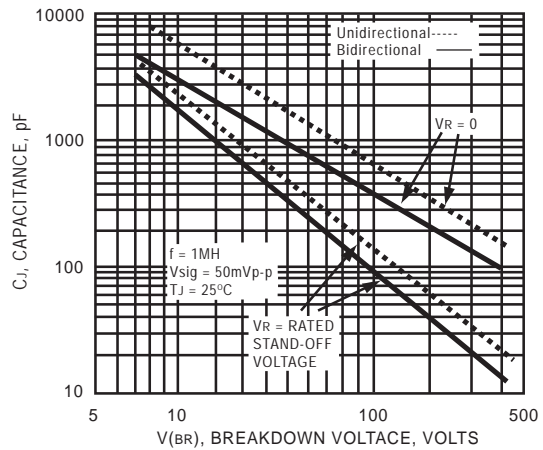


FIG. 5 - STEADY STATE POWER DERATING CURVE

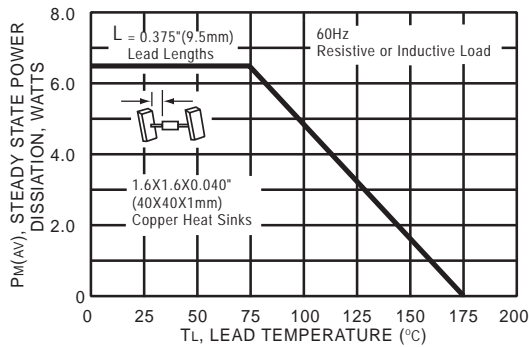
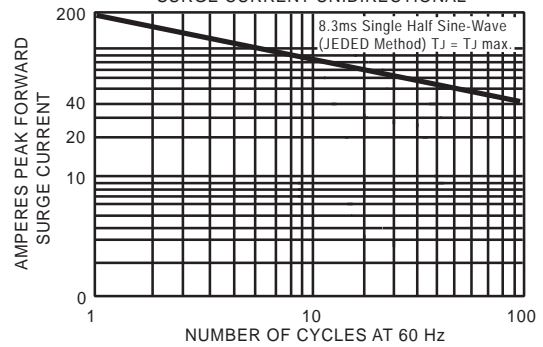


FIG. 6 - MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL



RATING CHARACTERISTIC CURVES (1.5KE6.8PT ~ 1.5KE400APT)

