



# 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<br>Lead Lengths .375" (9.5mm)                       | PD       | 6.5          | Watts |
| Peak Forward Surge Current 8.3ms Single Half<br>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<br>Volts ( NOTE 1 ) |      | @ IT<br>( 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<br>Volts ( NOTE 1 ) |      | @ IT<br>( 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

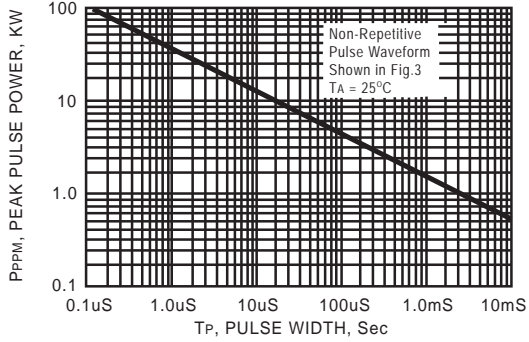


FIG. 2 - PULSE DERATING CURVE

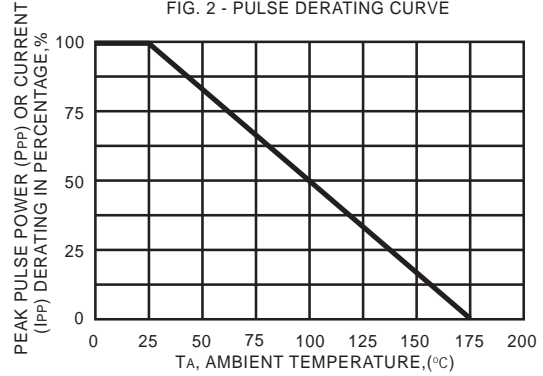


FIG. 3 - PULSE WAVEFORM

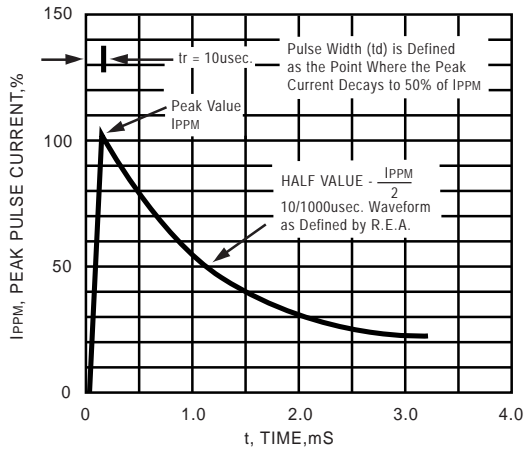


FIG. 4 - TYPICAL JUNCTION CAPACITANCE

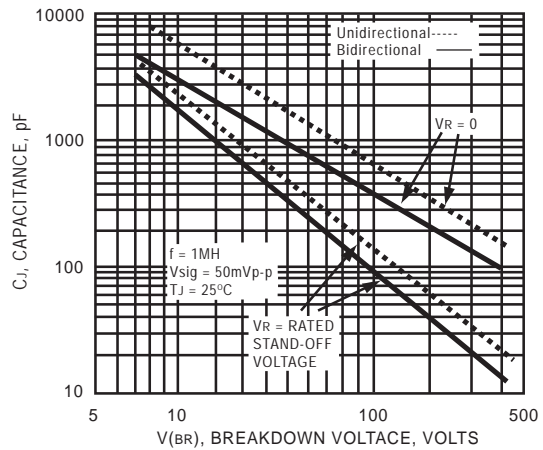


FIG. 5 - STEADY STATE POWER DERATING CURVE

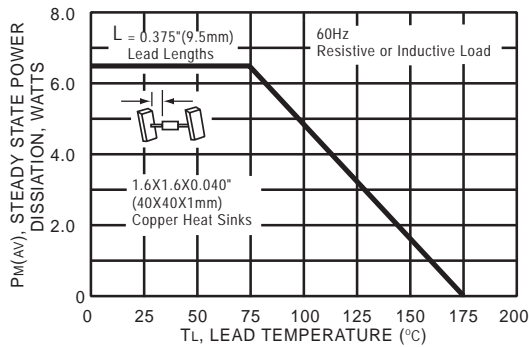
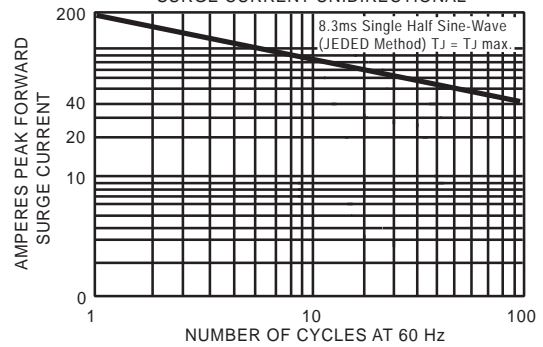


FIG. 6 - MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL



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

