



# CHENMKO ENTERPRISE CO.,LTD

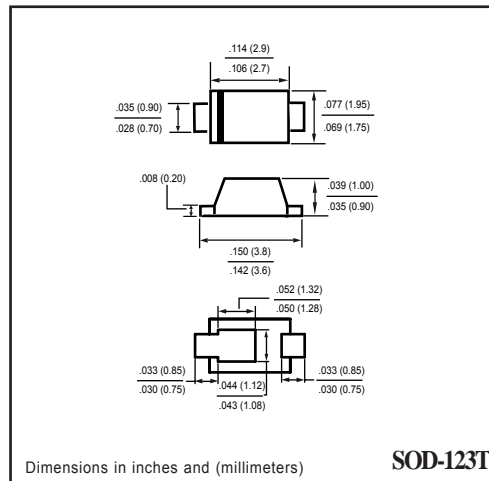
**GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSOR**  
**VOLTAGE-5.0 TO 51 VOLTS**  
**225 WATTS PEAK POWER 1.0 WATT STEADY STATE**

**TVSE  
 SERIES**

*Halogens free devices*

### FEATURES

- \* □ Plastic package
- \* □ 225W surge capability at 1ms
- \* □ Glass passivated chip junction in SOD-123T 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 :  
 □ 260°C/10 seconds at terminals



### 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 TVSE5.0APT thru types TVSE51APT  
 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 225 | Watts |
| Steady State Power Dissipation at TL = 25°C  | PD       | 1.0         | Watts |
| Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load ( Note 2 ) | IFSM     | 50          | 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.  
 3. PC Board Mounted on 0.2 X 0.2" ( 5 X 5mm ) copper pad area

2008-07

| Part Number | Reverse Standoff Voltage | Breakdown Voltage<br>$V_{BR}$ @ $I_T$ |        | Test Current | Max. Reverse Leakage<br>@ $V_{RWM}$ | Max. Clamping Voltage<br>@ $I_{PP}$ | Max. Peak Pulse Current<br>$I_{PP}$ |
|-------------|--------------------------|---------------------------------------|--------|--------------|-------------------------------------|-------------------------------------|-------------------------------------|
|             |                          | Min(V)                                | Max(V) |              |                                     |                                     |                                     |
| TVSE5.0AGP  | 5.0                      | 6.40                                  | 7.0    | 10           | 400                                 | 9.2                                 | 24.5                                |
| TVSE6.0AGP  | 6.0                      | 6.67                                  | 7.37   | 10           | 400                                 | 10.3                                | 21.8                                |
| TVSE6.5AGP  | 6.5                      | 7.22                                  | 7.98   | 10           | 250                                 | 11.2                                | 20.1                                |
| TVSE7.0AGP  | 7.0                      | 7.78                                  | 8.60   | 10           | 100                                 | 12.0                                | 18.8                                |
| TVSE7.5AGP  | 7.5                      | 8.33                                  | 9.21   | 1.0          | 50                                  | 12.9                                | 17.4                                |
| TVSE8.0AGP  | 8.0                      | 8.89                                  | 9.83   | 1.0          | 25                                  | 13.6                                | 16.5                                |
| TVSE8.5AGP  | 8.5                      | 9.44                                  | 10.4   | 1.0          | 10                                  | 14.4                                | 15.6                                |
| TVSE9.0AGP  | 9.0                      | 10.0                                  | 11.1   | 1.0          | 5.0                                 | 15.4                                | 14.6                                |
| TVSE10AGP   | 10                       | 11.1                                  | 12.3   | 1.0          | 2.5                                 | 17.0                                | 13.2                                |
| TVSE11AGP   | 11                       | 12.2                                  | 13.5   | 1.0          | 2.5                                 | 18.2                                | 12.4                                |
| TVSE12AGP   | 12                       | 13.3                                  | 14.7   | 1.0          | 2.5                                 | 19.9                                | 11.3                                |
| TVSE13AGP   | 13                       | 14.4                                  | 15.9   | 1.0          | 1.0                                 | 21.5                                | 10.5                                |
| TVSE14AGP   | 14                       | 15.6                                  | 17.2   | 1.0          | 1.0                                 | 23.2                                | 9.7                                 |
| TVSE15AGP   | 15                       | 16.7                                  | 18.5   | 1.0          | 1.0                                 | 24.4                                | 9.22                                |
| TVSE16AGP   | 16                       | 17.8                                  | 19.7   | 1.0          | 1.0                                 | 26.0                                | 8.65                                |
| TVSE17AGP   | 17                       | 18.9                                  | 20.9   | 1.0          | 1.0                                 | 27.6                                | 8.15                                |
| TVSE18AGP   | 18                       | 20.0                                  | 22.1   | 1.0          | 1.0                                 | 29.2                                | 7.71                                |
| TVSE20AGP   | 20                       | 22.2                                  | 24.5   | 1.0          | 1.0                                 | 32.4                                | 6.94                                |
| TVSE22AGP   | 22                       | 24.4                                  | 26.9   | 1.0          | 1.0                                 | 35.5                                | 6.34                                |
| TVSE24AGP   | 24                       | 26.7                                  | 29.5   | 1.0          | 1.0                                 | 38.9                                | 5.78                                |
| TVSE26AGP   | 26                       | 28.9                                  | 31.9   | 1.0          | 1.0                                 | 42.1                                | 5.35                                |
| TVSE27AGP   | 27                       | 30                                    | 33.15  | 1.0          | 1.0                                 | 43.7                                | 5.15                                |
| TVSE28AGP   | 28                       | 31.1                                  | 34.4   | 1.0          | 1.0                                 | 45.4                                | 4.96                                |
| TVSE30AGP   | 30                       | 33.3                                  | 36.8   | 1.0          | 1.0                                 | 48.4                                | 4.65                                |
| TVSE33AGP   | 33                       | 36.7                                  | 40.6   | 1.0          | 1.0                                 | 53.3                                | 4.22                                |
| TVSE36AGP   | 36                       | 40.0                                  | 44.2   | 1.0          | 1.0                                 | 58.1                                | 3.87                                |
| TVSE40AGP   | 40                       | 44.4                                  | 49.1   | 1.0          | 1.0                                 | 64.5                                | 3.49                                |
| TVSE43AGP   | 43                       | 47.8                                  | 52.8   | 1.0          | 1.0                                 | 69.4                                | 3.24                                |
| TVSE45AGP   | 45                       | 50.0                                  | 55.3   | 1.0          | 1.0                                 | 72.7                                | 3.10                                |
| TVSE48AGP   | 48                       | 53.3                                  | 58.9   | 1.0          | 1.0                                 | 77.4                                | 2.91                                |
| TVSE51AGP   | 51                       | 56.7                                  | 62.7   | 1.0          | 1.0                                 | 82.4                                | 2.73                                |

# RATING CHARACTERISTIC CURVES ( TVSE5.0AGP ~ TVSE51AGP )

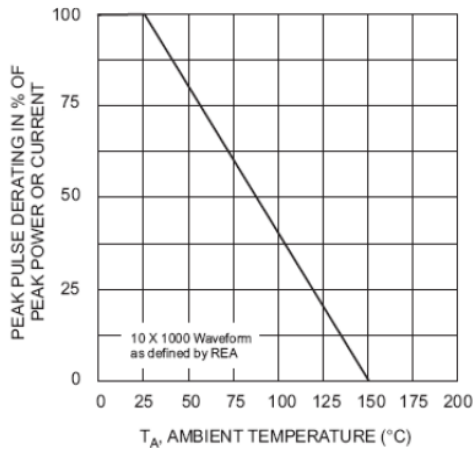


Fig1. Pulse Derating Curve

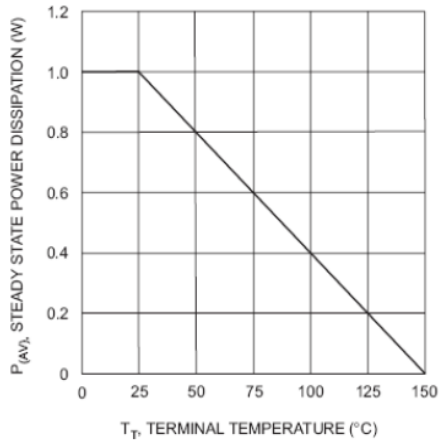


Fig2. Steady State Power Derating

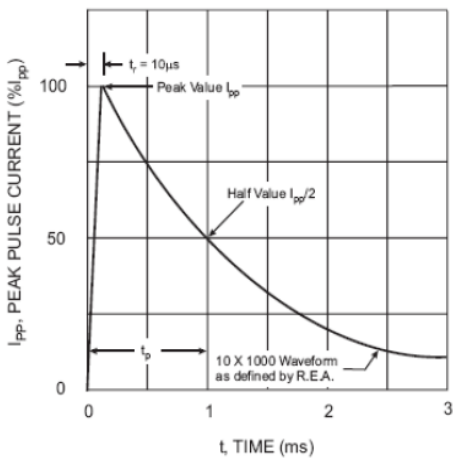


Fig3. Pulse Waveform

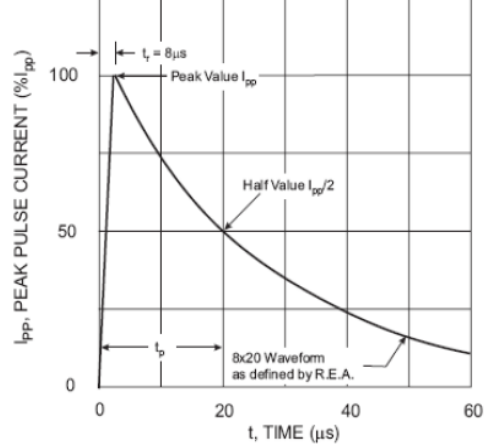


Fig4. Pulse Waveform

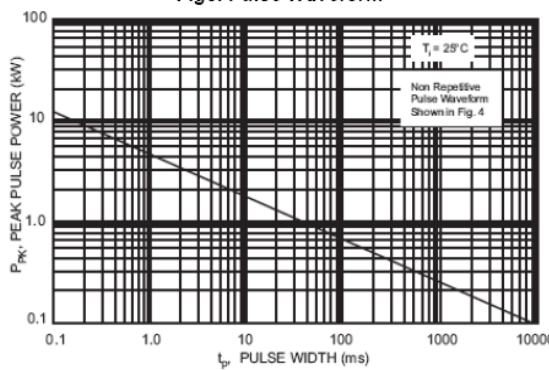


Fig5. Pulse Rating Curve

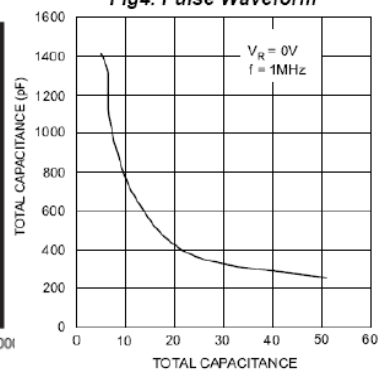


Fig6.  $V_{RWM}$  (V)