

**GPP TRANSIENT VOLTAGE SUPPRESSOR**  
**5000 WATT PEAK POWER 8.0 WATTS STEADY STATE**

**FEATURES**

- \* Plastic package has underwriters laboratory
- \* Glass passivated chip construction
- \* 5000 watt surge capability at 1ms
- \* Excellent clamping capability
- \* Low zener impedance
- \* Fast response time

**MECHANICAL DATA**

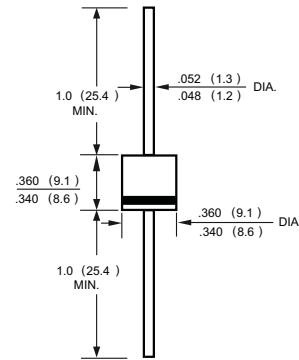
- \* Epoxy: Device has UL flammability classification 94V-O
- \* UL file No.:E211196

**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%.



**R-6**



Dimensions in inches and (millimeters)

**DEVICES FOR BIPOLAR APPLICATIONS**

For Bidirectional use C or CA suffix for types 5KP5.0 thru 5KP250A

Electrical characteristics apply in both direction

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

| RATINGS                                                                                                     | SYMBOL           | VALUE        | UNITS            |
|-------------------------------------------------------------------------------------------------------------|------------------|--------------|------------------|
| Peak Pulse Power Dissipation with a 10/1000uS waveform (Note 1, FIG.1)                                      | PPPM             | Minimum 5000 | Watts            |
| Peak Pulse Current with a 10/1000uS waveform (Note 1, Fig. 3)                                               | IPPM             | SEE TABLE 1  | Amps             |
| Steady State Power Dissipation at TL = 75°C lead lengths 0.375" (9.5mm) (Note 2)                            | PM(AV)           | 8.0          | Watts            |
| Peak Forward Surge Current, 8.3ms single half sine wave-superimposed on rated load( JEDEC METHOD ) (Note 3) | IFSM             | 600          | Amps             |
| Typical Current Squared Time                                                                                | I <sup>2</sup> T | 1494         | A <sup>2</sup> S |
| Instantaneous Forward Voltage at 100A, (Note 3)                                                             | VF               | 3.5/5.0      | Volts            |
| Operating and Storage Temperature Range                                                                     | TJ, TSTG         | -55 to + 175 | °C               |

- NOTES :
1. Non-repetitive current pulse, per Fig.3 and derated above TA = 25°C per Fig.2.
  2. Mounted on copper pad area of 0.8 X 0.8" ( 20 X 20mm ) per Fig. 5
  3. Measured on 8.3mS single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.
  4. VF<3.5V for devices of VBR \_< 200V and VF<5.0V for devices of VBR \_> 201V.

2023-02  
REV:F

## RATING AND CHARACTERISTIC CURVES ( 5KP5.0 THRU 5KP250CA )

FIG. 1 - PEAK PULSE POWER RATING CURVE

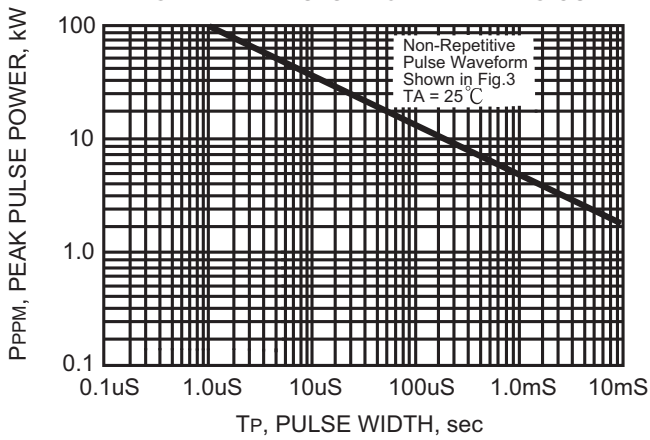


FIG. 2 - PULSE DERATING CURVE

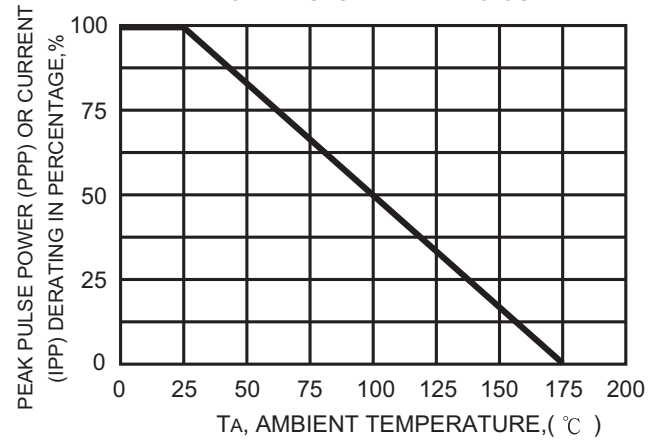


FIG. 3 - PULSE WAVEFORM

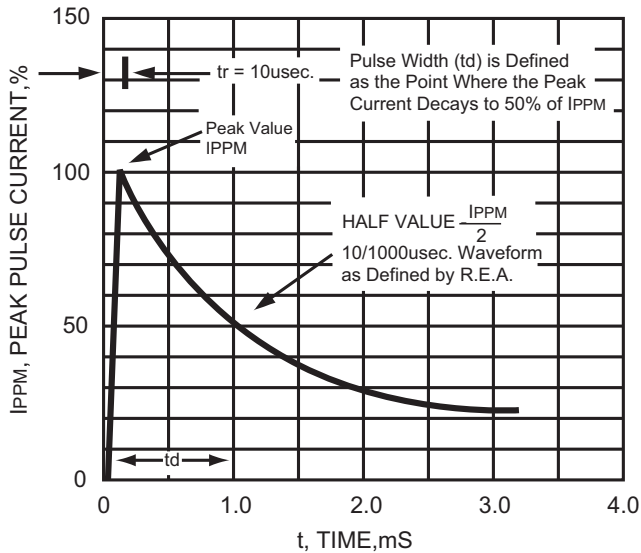


FIG. 4 - TYPICAL JUNCTION CAPACITANCE

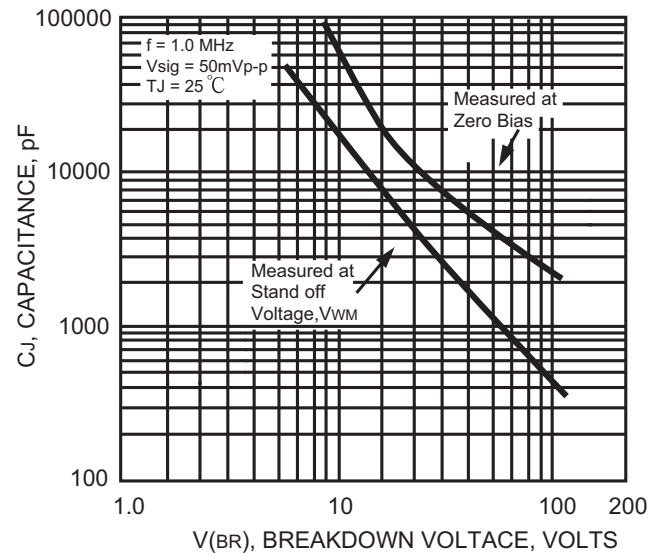


FIG. 5 - STEADY STATE POWER DERATING CURVE

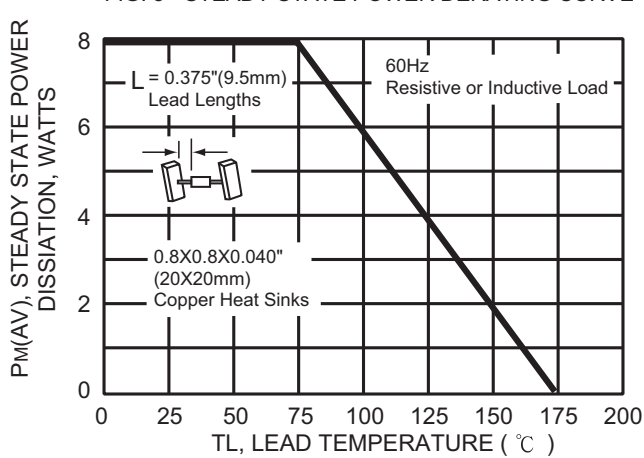
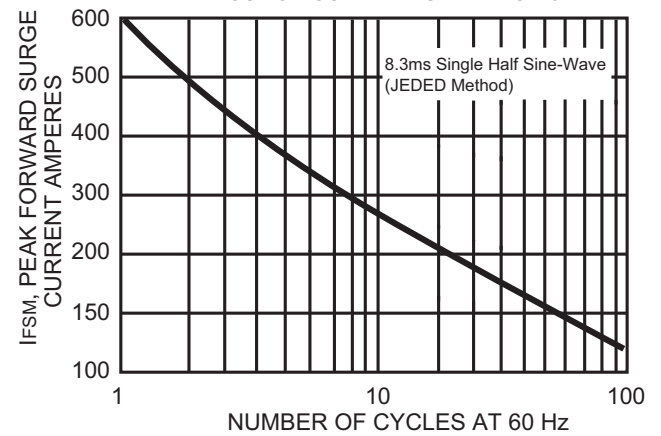


FIG. 6 - MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL



## TRANSIENT VOLTAGE SUPPRESSORS

5000W SERIES TVS DIODES / R-6 ( CASE 12 ) 5000W

| TYPE    | Breakdown Voltage          |      |                         | Reverse Stand off Voltage<br>V <sub>WM</sub><br>(Volts) | Maximum Reverse Leakage at V <sub>WM</sub><br>I <sub>D</sub> (uA) | Maximum Peak Pulse Current<br>I <sub>PPM</sub><br>(Amps) | Maximum Clamping Voltage at I <sub>PPM</sub><br>V <sub>C</sub> (Volts) |
|---------|----------------------------|------|-------------------------|---------------------------------------------------------|-------------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------|
|         | V <sub>BR</sub><br>(Volts) |      | @I <sub>T</sub><br>(mA) |                                                         |                                                                   |                                                          |                                                                        |
|         | MIN.                       | MAX. |                         |                                                         |                                                                   |                                                          |                                                                        |
| 5KP5.0  | 6.40                       | 7.30 | 50                      | 5.0                                                     | 2000                                                              | 521                                                      | 9.6                                                                    |
| 5KP5.0A | 6.40                       | 7.00 | 50                      | 5.0                                                     | 2000                                                              | 543                                                      | 9.2                                                                    |
| 5KP6.0  | 6.67                       | 8.15 | 50                      | 6.0                                                     | 5000                                                              | 439                                                      | 11.4                                                                   |
| 5KP6.0A | 6.67                       | 7.37 | 50                      | 6.0                                                     | 5000                                                              | 485                                                      | 10.3                                                                   |
| 5KP6.5  | 7.22                       | 8.82 | 50                      | 6.5                                                     | 2000                                                              | 407                                                      | 12.3                                                                   |
| 5KP6.5A | 7.22                       | 7.98 | 50                      | 6.5                                                     | 2000                                                              | 446                                                      | 11.2                                                                   |
| 5KP7.0  | 7.78                       | 9.51 | 50                      | 7.0                                                     | 1000                                                              | 376                                                      | 13.3                                                                   |
| 5KP7.0A | 7.78                       | 8.60 | 50                      | 7.0                                                     | 1000                                                              | 417                                                      | 12.0                                                                   |
| 5KP7.5  | 8.33                       | 10.2 | 5.0                     | 7.5                                                     | 250                                                               | 350                                                      | 14.3                                                                   |
| 5KP7.5A | 8.33                       | 9.21 | 5.0                     | 7.5                                                     | 250                                                               | 388                                                      | 12.9                                                                   |
| 5KP8.0  | 8.89                       | 10.9 | 5.0                     | 8.0                                                     | 150                                                               | 333                                                      | 15.0                                                                   |
| 5KP8.0A | 8.89                       | 9.83 | 5.0                     | 8.0                                                     | 150                                                               | 368                                                      | 13.6                                                                   |
| 5KP8.5  | 9.44                       | 11.5 | 5.0                     | 8.5                                                     | 50                                                                | 314                                                      | 15.9                                                                   |
| 5KP8.5A | 9.44                       | 10.4 | 5.0                     | 8.5                                                     | 50                                                                | 347                                                      | 14.4                                                                   |
| 5KP9.0  | 10.0                       | 12.2 | 5.0                     | 9.0                                                     | 20                                                                | 296                                                      | 16.9                                                                   |
| 5KP9.0A | 10.0                       | 11.1 | 5.0                     | 9.0                                                     | 20                                                                | 325                                                      | 15.4                                                                   |
| 5KP10   | 11.1                       | 13.6 | 5.0                     | 10.0                                                    | 15                                                                | 266                                                      | 18.8                                                                   |
| 5KP10A  | 11.1                       | 12.3 | 5.0                     | 10.0                                                    | 15                                                                | 294                                                      | 17.0                                                                   |
| 5KP11   | 12.2                       | 14.9 | 5.0                     | 11.0                                                    | 10                                                                | 249                                                      | 20.1                                                                   |
| 5KP11A  | 12.2                       | 13.5 | 5.0                     | 11.0                                                    | 10                                                                | 275                                                      | 18.2                                                                   |
| 5KP12   | 13.3                       | 16.3 | 5.0                     | 12.0                                                    | 10                                                                | 227                                                      | 22.0                                                                   |
| 5KP12A  | 13.3                       | 14.7 | 5.0                     | 12.0                                                    | 10                                                                | 251                                                      | 19.9                                                                   |
| 5KP13   | 14.4                       | 17.6 | 5.0                     | 13.0                                                    | 10                                                                | 210                                                      | 23.8                                                                   |
| 5KP13A  | 14.4                       | 15.9 | 5.0                     | 13.0                                                    | 10                                                                | 233                                                      | 21.5                                                                   |
| 5KP14   | 15.6                       | 19.1 | 5.0                     | 14.0                                                    | 10                                                                | 194                                                      | 25.8                                                                   |
| 5KP14A  | 15.6                       | 17.2 | 5.0                     | 14.0                                                    | 10                                                                | 216                                                      | 23.2                                                                   |
| 5KP15   | 16.7                       | 20.4 | 5.0                     | 15.0                                                    | 10                                                                | 186                                                      | 26.9                                                                   |
| 5KP15A  | 16.7                       | 18.5 | 5.0                     | 15.0                                                    | 10                                                                | 205                                                      | 24.4                                                                   |
| 5KP16   | 17.8                       | 21.8 | 5.0                     | 16.0                                                    | 10                                                                | 174                                                      | 28.8                                                                   |
| 5KP16A  | 17.8                       | 19.7 | 5.0                     | 16.0                                                    | 10                                                                | 192                                                      | 26.0                                                                   |
| 5KP17   | 18.9                       | 23.1 | 5.0                     | 17.0                                                    | 10                                                                | 164                                                      | 30.5                                                                   |
| 5KP17A  | 18.9                       | 20.9 | 5.0                     | 17.0                                                    | 10                                                                | 181                                                      | 27.6                                                                   |
| 5KP18   | 20.0                       | 24.4 | 5.0                     | 18.0                                                    | 10                                                                | 155                                                      | 32.2                                                                   |
| 5KP18A  | 20.0                       | 22.1 | 5.0                     | 18.0                                                    | 10                                                                | 171                                                      | 29.2                                                                   |
| 5KP20   | 22.2                       | 27.1 | 5.0                     | 20.0                                                    | 10                                                                | 140                                                      | 35.8                                                                   |
| 5KP20A  | 22.2                       | 24.5 | 5.0                     | 20.0                                                    | 10                                                                | 154                                                      | 32.4                                                                   |
| 5KP22   | 24.4                       | 29.8 | 5.0                     | 22.0                                                    | 10                                                                | 127                                                      | 39.4                                                                   |
| 5KP22A  | 24.4                       | 26.9 | 5.0                     | 22.0                                                    | 10                                                                | 141                                                      | 35.5                                                                   |
| 5KP24   | 26.7                       | 32.6 | 5.0                     | 24.0                                                    | 10                                                                | 116                                                      | 43.0                                                                   |
| 5KP24A  | 26.7                       | 29.5 | 5.0                     | 24.0                                                    | 10                                                                | 129                                                      | 38.9                                                                   |
| 5KP26   | 28.9                       | 35.3 | 5.0                     | 26.0                                                    | 10                                                                | 107                                                      | 46.6                                                                   |
| 5KP26A  | 28.9                       | 31.9 | 5.0                     | 26.0                                                    | 10                                                                | 119                                                      | 42.1                                                                   |
| 5KP28   | 31.1                       | 38.0 | 5.0                     | 28.0                                                    | 10                                                                | 100                                                      | 50.1                                                                   |
| 5KP28A  | 31.1                       | 34.4 | 5.0                     | 28.0                                                    | 10                                                                | 110                                                      | 45.4                                                                   |
| 5KP30   | 33.3                       | 40.7 | 5.0                     | 30.0                                                    | 10                                                                | 93.5                                                     | 53.5                                                                   |
| 5KP30A  | 33.3                       | 36.8 | 5.0                     | 30.0                                                    | 10                                                                | 103                                                      | 48.4                                                                   |

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5000W SERIES TVS DIODES / R-6 ( CASE 12 ) 5000W

| TYPE    | Breakdown Voltage          |      |                         | Reverse Stand off Voltage<br>V <sub>WM</sub><br>(Volts) | Maximum Reverse Leakage at V <sub>WM</sub><br>I <sub>D</sub> (uA) | Maximum Peak Pulse Current<br>I <sub>PPM</sub><br>(Amps) | Maximum Clamping Voltage at I <sub>PPM</sub><br>V <sub>C</sub> (Volts) |
|---------|----------------------------|------|-------------------------|---------------------------------------------------------|-------------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------|
|         | V <sub>BR</sub><br>(Volts) |      | @I <sub>T</sub><br>(mA) |                                                         |                                                                   |                                                          |                                                                        |
|         | MIN.                       | MAX. |                         |                                                         |                                                                   |                                                          |                                                                        |
| 5KP33   | 36.7                       | 44.9 | 5.0                     | 33.0                                                    | 10                                                                | 84.7                                                     | 59.0                                                                   |
| 5KP33A  | 36.7                       | 40.6 | 5.0                     | 33.0                                                    | 10                                                                | 93.8                                                     | 53.3                                                                   |
| 5KP36   | 40.0                       | 48.9 | 5.0                     | 36.0                                                    | 10                                                                | 77.8                                                     | 64.3                                                                   |
| 5KP36A  | 40.0                       | 44.2 | 5.0                     | 36.0                                                    | 10                                                                | 86.1                                                     | 58.1                                                                   |
| 5KP40   | 44.4                       | 54.3 | 5.0                     | 40.0                                                    | 10                                                                | 70.0                                                     | 71.4                                                                   |
| 5KP40A  | 44.4                       | 49.1 | 5.0                     | 40.0                                                    | 10                                                                | 77.5                                                     | 64.5                                                                   |
| 5KP43   | 47.8                       | 58.4 | 5.0                     | 43.0                                                    | 10                                                                | 65.2                                                     | 76.7                                                                   |
| 5KP43A  | 47.8                       | 52.8 | 5.0                     | 43.0                                                    | 10                                                                | 72.0                                                     | 69.4                                                                   |
| 5KP45   | 50.0                       | 61.1 | 5.0                     | 45.0                                                    | 10                                                                | 62.3                                                     | 80.3                                                                   |
| 5KP45A  | 50.0                       | 55.3 | 5.0                     | 45.0                                                    | 10                                                                | 68.8                                                     | 72.7                                                                   |
| 5KP48   | 53.3                       | 65.2 | 5.0                     | 48.0                                                    | 10                                                                | 58.5                                                     | 85.5                                                                   |
| 5KP48A  | 53.3                       | 58.9 | 5.0                     | 48.0                                                    | 10                                                                | 64.6                                                     | 77.4                                                                   |
| 5KP51   | 56.7                       | 69.3 | 5.0                     | 51.0                                                    | 10                                                                | 54.9                                                     | 91.1                                                                   |
| 5KP51A  | 56.7                       | 62.7 | 5.0                     | 51.0                                                    | 10                                                                | 60.7                                                     | 82.4                                                                   |
| 5KP54   | 60.0                       | 73.3 | 5.0                     | 54.0                                                    | 10                                                                | 51.9                                                     | 96.3                                                                   |
| 5KP54A  | 60.0                       | 66.3 | 5.0                     | 54.0                                                    | 10                                                                | 57.4                                                     | 87.1                                                                   |
| 5KP58   | 64.4                       | 78.7 | 5.0                     | 58.0                                                    | 10                                                                | 48.5                                                     | 103                                                                    |
| 5KP58A  | 64.4                       | 71.2 | 5.0                     | 58.0                                                    | 10                                                                | 53.4                                                     | 94                                                                     |
| 5KP60   | 66.7                       | 81.5 | 5.0                     | 60.0                                                    | 10                                                                | 46.7                                                     | 107                                                                    |
| 5KP60A  | 66.7                       | 73.7 | 5.0                     | 60.0                                                    | 10                                                                | 51.7                                                     | 97                                                                     |
| 5KP64   | 71.1                       | 96.9 | 5.0                     | 64.0                                                    | 10                                                                | 43.9                                                     | 114                                                                    |
| 5KP64A  | 71.1                       | 78.6 | 5.0                     | 64.0                                                    | 10                                                                | 48.5                                                     | 103                                                                    |
| 5KP70   | 77.8                       | 95.1 | 5.0                     | 70.0                                                    | 10                                                                | 40.0                                                     | 125                                                                    |
| 5KP70A  | 77.8                       | 86.0 | 5.0                     | 70.0                                                    | 10                                                                | 44.2                                                     | 113                                                                    |
| 5KP75   | 83.3                       | 102  | 5.0                     | 75.0                                                    | 10                                                                | 37.3                                                     | 134                                                                    |
| 5KP75A  | 83.3                       | 92.1 | 5.0                     | 75.0                                                    | 10                                                                | 41.3                                                     | 121                                                                    |
| 5KP78   | 86.7                       | 106  | 5.0                     | 78.0                                                    | 10                                                                | 36.0                                                     | 139                                                                    |
| 5KP78A  | 86.7                       | 95.8 | 5.0                     | 78.0                                                    | 10                                                                | 39.7                                                     | 126                                                                    |
| 5KP85   | 94.4                       | 115  | 5.0                     | 85.0                                                    | 10                                                                | 33.1                                                     | 151                                                                    |
| 5KP85A  | 94.4                       | 104  | 5.0                     | 85.0                                                    | 10                                                                | 36.5                                                     | 137                                                                    |
| 5KP90   | 100                        | 122  | 5.0                     | 90.0                                                    | 10                                                                | 31.3                                                     | 160                                                                    |
| 5KP90A  | 100                        | 111  | 5.0                     | 90.0                                                    | 10                                                                | 34.2                                                     | 146                                                                    |
| 5KP100  | 111                        | 136  | 5.0                     | 100                                                     | 10                                                                | 27.9                                                     | 179                                                                    |
| 5KP100A | 111                        | 123  | 5.0                     | 100                                                     | 10                                                                | 30.9                                                     | 162                                                                    |
| 5KP110  | 122                        | 149  | 5.0                     | 110                                                     | 10                                                                | 25.5                                                     | 196                                                                    |
| 5KP110A | 122                        | 135  | 5.0                     | 110                                                     | 10                                                                | 28.2                                                     | 177                                                                    |

- Notes :
1. V<sub>BR</sub> measured after I<sub>T</sub> applied for 300ms. I<sub>T</sub> = square pulse or equivalent.
  2. All devices UL listed under file# E211196.

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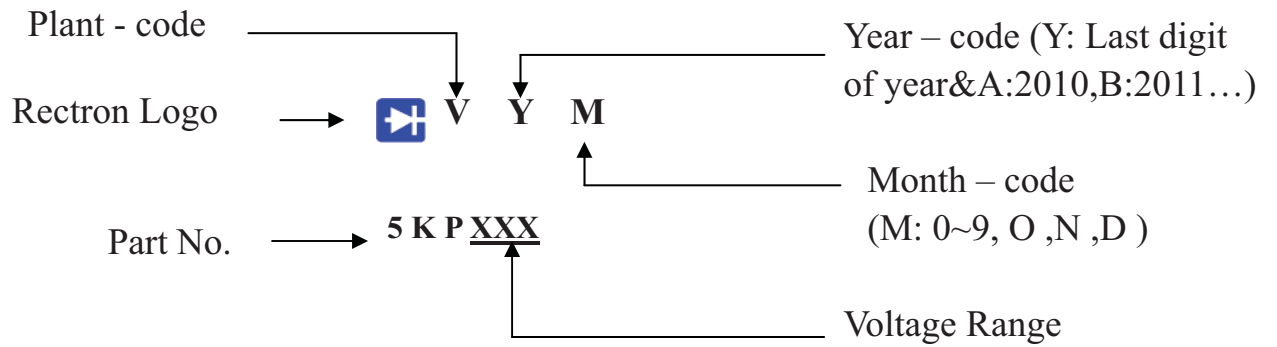
5000W SERIES TVS DIODES / R-6 ( CASE 12 ) 5000W

| TYPE    | Breakdown Voltage          |      |                         | Reverse Stand off Voltage<br>V <sub>WM</sub><br>(Volts) | Maximum Reverse Leakage at V <sub>WM</sub><br>I <sub>D</sub> (uA) | Maximum Peak Pulse Current<br>I <sub>PPM</sub><br>(Amps) | Maximum Clamping Voltage at I <sub>PPM</sub><br>V <sub>C</sub> (Volts) |
|---------|----------------------------|------|-------------------------|---------------------------------------------------------|-------------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------|
|         | V <sub>BR</sub><br>(Volts) |      | @I <sub>T</sub><br>(mA) |                                                         |                                                                   |                                                          |                                                                        |
|         | MIN.                       | MAX. |                         |                                                         |                                                                   |                                                          |                                                                        |
| 5KP120A | 133                        | 147  | 5.0                     | 120                                                     | 10                                                                | 26.4                                                     | 193                                                                    |
| 5KP130A | 144                        | 159  | 5.0                     | 130                                                     | 10                                                                | 24.4                                                     | 209                                                                    |
| 5KP150A | 167                        | 185  | 5.0                     | 150                                                     | 10                                                                | 21.0                                                     | 243                                                                    |
| 5KP160A | 178                        | 197  | 5.0                     | 160                                                     | 10                                                                | 19.7                                                     | 259                                                                    |
| 5KP170A | 189                        | 209  | 5.0                     | 170                                                     | 10                                                                | 18.5                                                     | 275                                                                    |
| 5KP180A | 200                        | 221  | 5.0                     | 180                                                     | 10                                                                | 17.5                                                     | 292                                                                    |
| 5KP190A | 211                        | 233  | 5.0                     | 190                                                     | 10                                                                | 16.5                                                     | 310                                                                    |
| 5KP200A | 222                        | 246  | 5.0                     | 200                                                     | 10                                                                | 15.5                                                     | 329.2                                                                  |
| 5KP210A | 233                        | 258  | 5.0                     | 210                                                     | 10                                                                | 14.6                                                     | 349.5                                                                  |
| 5KP220A | 244                        | 270  | 5.0                     | 220                                                     | 10                                                                | 13.7                                                     | 371.1                                                                  |
| 5KP250A | 277                        | 306  | 5.0                     | 250                                                     | 10                                                                | 12.0                                                     | 425                                                                    |

- Notes :
1. V<sub>BR</sub> measured after I<sub>T</sub> applied for 300ms. I<sub>T</sub> = square pulse or equivalent.
  2. All devices UL listed under file# E211196.

## Attachment information about 5KPXXX

### Mark Description



## PACKAGING OF DIODE AND BRIDGE RECTIFIERS

### BULK PACK

| PACKAGE | PACKING CODE | EA PER BOX | INNER BOX SIZE<br>(mm) | CARTON SIZE<br>(mm) | EA PER CARTON | GROSS<br>WEIGHT(Kg) |
|---------|--------------|------------|------------------------|---------------------|---------------|---------------------|
| R-6/R-7 | -B           | 200        | 300*73*40              | 347*320*271         | 4,800         | 12.93/14.57         |

### REEL PACK

| PACKAGE | PACKING<br>CODE | EA PER<br>REEL | EA PER<br>INNER<br>BOX | COMPONENT<br>SPACE<br>(mm) | TAPE SPACE<br>(mm) | REEL DIA<br>(mm) | CARTON SIZE<br>(mm) | EA PER<br>CARTON | GROSS<br>WEIGHT(Kg) |
|---------|-----------------|----------------|------------------------|----------------------------|--------------------|------------------|---------------------|------------------|---------------------|
| R-6/R-7 | -T              | 800            | 800                    | 9.5                        | 52                 | 330              | 355*350*335         | 3,200            | 9.72/9.91           |

### AMMO PACK

| PACKAGE | PACKING<br>CODE | REEL<br>( EA ) | COMPONENT<br>SPACE(mm) | TAPE SPACE<br>(mm) | BOX SIZE<br>(mm) | CARTON<br>SIZE(mm) | CARTON<br>( EA ) | GROSS<br>WEIGHT (Kg) |
|---------|-----------------|----------------|------------------------|--------------------|------------------|--------------------|------------------|----------------------|
| R-6/R-7 | -F              | 300            | 9.5                    | 52                 | 255*73*100       | 400*268*225        | 3,000            | 8.5/8.7              |

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