

**GLASS PASSIVATED  
UNIDIRECTIONAL AND BIDIRECTIONAL  
TRANSIENT VOLTAGE SUPPRESSORS**

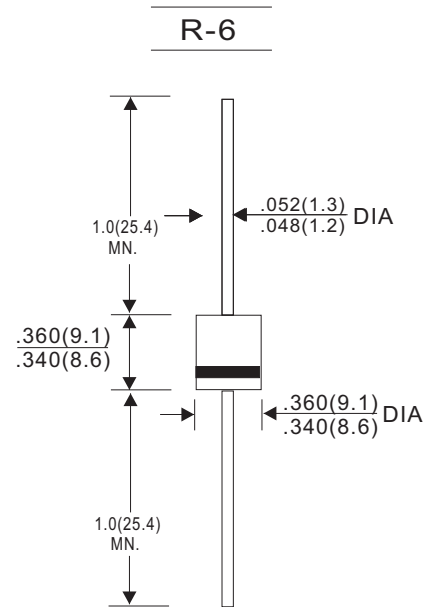
**REVERSE VOLTAGE** - 5.0 to 180 VOLTS  
**FORWARD CURRENT** - 5000 Amperes

**FEATURES**

- Glass passivated chip
- Low Leakage
- Uni and Bidirectional unit
- Excellent clamping capability
- Plastic material has UL recognition 94V-0
- Fast response time

**MECHANICAL DATA**

- Case: Molded Plastic
- Marking: Unidirectional - type number and cathode band  
Bidirectional - type number only
- Weight: 0.07 ounces, 2.1 grams



**MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS**

Rating at 25°C ambient temperature unless otherwise specified  
Single phase, half wave, 60Hz, resistive or inductive load.  
For capacitive load, derate current by 20%

| CHARACTERISTICS                                                                                         | SYMBOL    | VALUE        | UNIT             |
|---------------------------------------------------------------------------------------------------------|-----------|--------------|------------------|
| Peak Power Dissipation at $T_A=25^\circ\text{C}$<br>TP=1ms(Note 1)                                      | $P_{PK}$  | Minimum 5000 | WATTS            |
| Peak Forward Surge Current<br>8.3ms single half sine-wave<br>super imposed on rated load (JEDEC Method) | $I_{FSM}$ | 400          | AMPS             |
| Steady State Power Dissipation at $T_L=75^\circ\text{C}$<br>lead lengths 0.375 (9.5mm), see Fig.4       |           | 8.0          | WATTS            |
| Maximum Instantaneous forward voltage<br>at 25A for unidirectional devices only (Note 2)                | $V_F$     | See Note 3   | VOLTS            |
| Operating Temperature Range                                                                             | $T_J$     | -55 to +125  | $^\circ\text{C}$ |
| Storage Temperature Range                                                                               | $T_{STG}$ | -55 to +150  | $^\circ\text{C}$ |

NOTES: 1. Non-repetitive current pulse, per Fig. 5 and derated above  $T_A=25^\circ\text{C}$  per Fig. 1.  
2. 8.3ms single half sine-wave duty cycle=4 pulses per minutes maximum (uni-directional units only).  
3.  $V_F=3.5\text{V}$  on 5KP5.0 thru 5KP100A devices and  $V_F=5.0\text{V}$  on P4KE220 thru P4KE400A devices.

FIG. 1 - PULSE DERATING CURVE

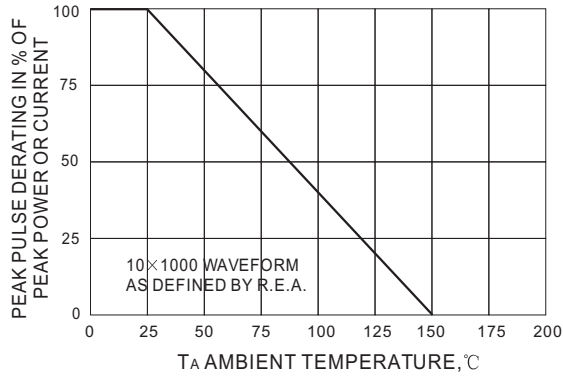


FIG. 2 - TYPICAL JUNCTION CAPACITANCE

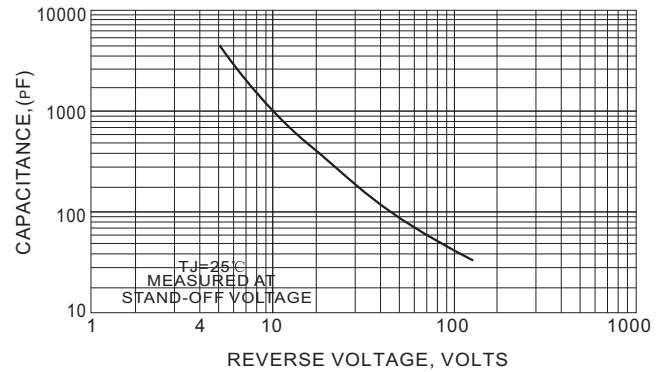


FIG. 3 - PULSE RATING CURVE

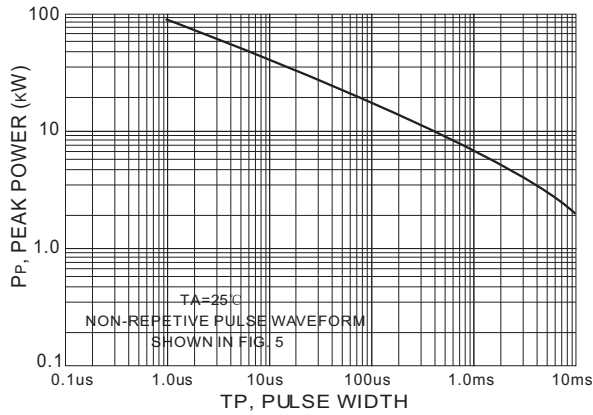


FIG. 4 - STEADY STATE POWER DERATING CURVE

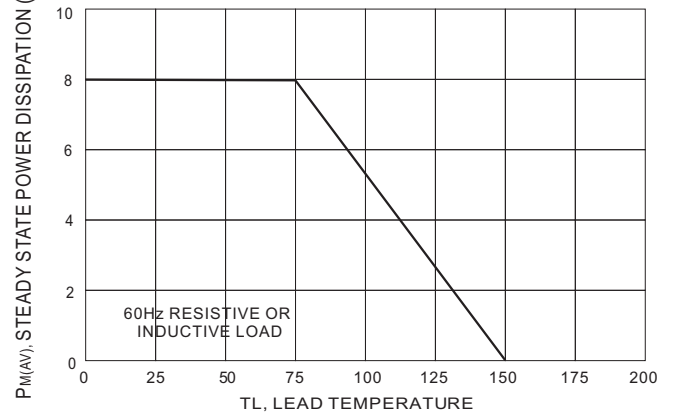
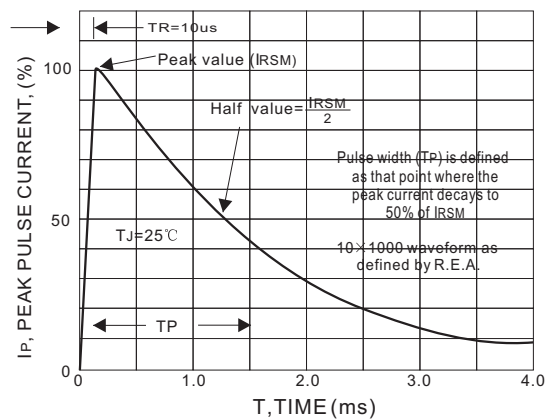


FIG.5 - PULSEWAVEFORM



| Type Number | Type Number | Reverse Standoff Voltage | Breakdown Voltage BV Volts @It |        |        | Max. Reverse Leakage @VR | Max. Clamping Voltage @VR | Max. Peak Pulse Current | Max. VOLTAGE Temp Variation Of Bv |
|-------------|-------------|--------------------------|--------------------------------|--------|--------|--------------------------|---------------------------|-------------------------|-----------------------------------|
| (UN)        | (BI)        | VR(V)                    | Min(V)                         | Max(v) | It(mA) | IR(uA)                   | Vc(V)                     | Ipp(A)                  | %/°C                              |
| 5KP33       | 5KP33C      | 33.0                     | 36.70                          | 44.90  | 5.0    | 10                       | 59.0                      | 86.0                    | 41                                |
| 5KP33A      | 5KP33CA     | 33.0                     | 36.70                          | 40.60  | 5.0    | 10                       | 53.3                      | 94.0                    | 38                                |
| 5KP36       | 5KP36C      | 36.0                     | 40.00                          | 48.90  | 5.0    | 10                       | 64.3                      | 78.0                    | 45                                |
| 5KP36A      | 5KP36CA     | 36.0                     | 40.00                          | 44.20  | 5.0    | 10                       | 58.1                      | 86.0                    | 40                                |
| 5KP40       | 5KP40C      | 40.0                     | 44.40                          | 54.30  | 5.0    | 10                       | 71.4                      | 70.0                    | 50                                |
| 5KP40A      | 5KP40CA     | 40.0                     | 44.40                          | 49.10  | 5.0    | 10                       | 64.5                      | 78.0                    | 45                                |
| 5KP43       | 5KP43C      | 43.0                     | 47.80                          | 58.40  | 5.0    | 10                       | 76.7                      | 65.0                    | 54                                |
| 5KP43A      | 5KP43CA     | 43.0                     | 47.80                          | 52.80  | 5.0    | 10                       | 69.4                      | 72.0                    | 49                                |
| 5KP45       | 5KP45C      | 45.0                     | 50.00                          | 61.10  | 5.0    | 10                       | 80.3                      | 62.0                    | 57                                |
| 5KP45A      | 5KP45CA     | 45.0                     | 50.00                          | 55.30  | 5.0    | 10                       | 72.7                      | 69.0                    | 51                                |
| 5KP48       | 5KP48C      | 48.0                     | 53.30                          | 65.10  | 5.0    | 10                       | 85.5                      | 58.0                    | 62                                |
| 5KP48A      | 5KP48CA     | 48.0                     | 53.30                          | 58.90  | 5.0    | 10                       | 77.4                      | 65.0                    | 55                                |
| 5KP51       | 5KP51C      | 51.0                     | 56.70                          | 69.30  | 5.0    | 10                       | 91.1                      | 55.0                    | 65                                |
| 5KP51A      | 5KP51CA     | 51.0                     | 56.70                          | 62.70  | 5.0    | 10                       | 82.4                      | 61.0                    | 60                                |
| 5KP54       | 5KP54C      | 54.0                     | 60.00                          | 73.30  | 5.0    | 10                       | 96.3                      | 52.0                    | 70                                |
| 5KP54A      | 5KP54CA     | 54.0                     | 60.00                          | 66.30  | 5.0    | 10                       | 87.1                      | 57.0                    | 64                                |
| 5KP58       | 5KP58C      | 58.0                     | 64.40                          | 78.70  | 5.0    | 10                       | 103.0                     | 49.0                    | 77                                |
| 5KP58A      | 5KP58CA     | 58.0                     | 64.40                          | 71.20  | 5.0    | 10                       | 93.6                      | 53.0                    | 69                                |
| 5KP60       | 5KP60C      | 60.0                     | 66.70                          | 81.50  | 5.0    | 10                       | 107.0                     | 47.0                    | 79                                |
| 5KP60A      | 5KP60CA     | 60.0                     | 66.70                          | 73.70  | 5.0    | 10                       | 96.8                      | 52.0                    | 70                                |
| 5KP64       | 5KP64C      | 64.0                     | 71.10                          | 86.90  | 5.0    | 10                       | 114.0                     | 44.0                    | 85                                |
| 5KP64A      | 5KP64CA     | 64.0                     | 71.10                          | 78.60  | 5.0    | 10                       | 103.0                     | 49.0                    | 75                                |
| 5KP70       | 5KP70C      | 70.0                     | 77.80                          | 95.10  | 5.0    | 10                       | 125.0                     | 40.0                    | 93                                |
| 5KP70A      | 5KP70CA     | 70.0                     | 77.80                          | 86.00  | 5.0    | 10                       | 113.0                     | 44.0                    | 84                                |
| 5KP75       | 5KP75C      | 75.0                     | 83.30                          | 102.00 | 5.0    | 10                       | 134.0                     | 37.0                    | 100                               |
| 5KP75A      | 5KP75CA     | 75.0                     | 83.30                          | 92.10  | 5.0    | 10                       | 121.0                     | 41.0                    | 90                                |
| 5KP78       | 5KP78C      | 78.0                     | 86.70                          | 106.00 | 5.0    | 10                       | 139.0                     | 36.0                    | 104                               |
| 5KP78A      | 5KP78CA     | 78.0                     | 86.70                          | 95.80  | 5.0    | 10                       | 126.0                     | 40.0                    | 94                                |
| 5KP85       | 5KP85C      | 85.0                     | 94.40                          | 115.00 | 5.0    | 10                       | 151.0                     | 33.0                    | 113                               |
| 5KP85A      | 5KP85CA     | 85.0                     | 94.40                          | 104.00 | 5.0    | 10                       | 137.0                     | 36.0                    | 102                               |
| 5KP90       | 5KP90C      | 90.0                     | 100.00                         | 122.00 | 5.0    | 10                       | 160.0                     | 31.0                    | 120                               |
| 5KP90A      | 5KP90CA     | 90.0                     | 100.00                         | 111.00 | 5.0    | 10                       | 146.0                     | 34.0                    | 109                               |
| 5KP100      | 5KP100C     | 100.0                    | 111.00                         | 136.00 | 5.0    | 10                       | 179.0                     | 28.0                    | 134                               |
| 5KP110      | 5KP110C     | 110.0                    | 122.00                         | 149.00 | 5.0    | 10                       | 196.0                     | 26.0                    | 147                               |
| 5KP120      | 5KP120C     | 120.0                    | 133.00                         | 163.00 | 5.0    | 10                       | 215.0                     | 23.0                    | 158                               |
| 5KP150      | 5KP150C     | 150.0                    | 166.00                         | 204.00 | 5.0    | 10                       | 218.0                     | 18.5                    | 200                               |
| 5KP180      | 5KP180C     | 180.0                    | 200.00                         | 244.00 | 5.0    | 10                       | 320.0                     | 15.0                    | 240                               |

NOTES: Suffix C denotes bidirectional device. Suffix A denotes 5% tolerance device, no suffix denotes 10% tolerance device.  
1. For bidirectional devices having VR of 10 volts and under, the IR limit is doubled.