

# P6KE SERIES



600 WATT PEAK POWER TRANSIENT VOLTAGE SUPPRESSORS



## FEATURES

- \* 600 Watts Surge Capability at 1ms
- \* Excellent clamping capability
- \* Low zener impedance
- \* Fast response time: Typically less than 1.0ps from 0 volt to BV min.
- \* Typical  $I_R$  less than  $1\mu A$  above 10V
- \* High temperature soldering guaranteed:  $260^\circ C$  / 10 seconds / .375"(9.5mm) lead length, 5lbs.(2.3kg) tension

## MECHANICAL DATA

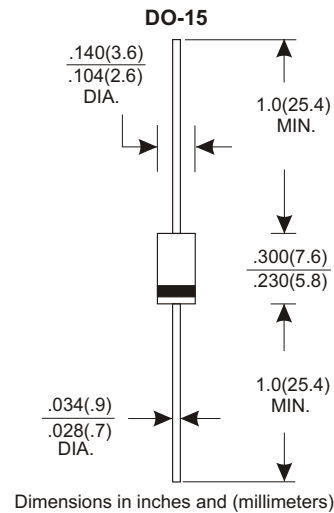
- \* Case: Molded plastic
- \* Epoxy: UL 94V-0 rate flame retardant
- \* Lead: Axial leads, solderable per MIL-STD-202, method 208 guaranteed
- \* Polarity: Color band denotes cathode end
- \* Mounting position: Any
- \* Weight: 0.40 grams

## VOLTAGE RANGE

6.8 to 440 Volts

600 Watts Peak Power

5.0 Watts Steady State



## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

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

| RATINGS                                                                                                         | SYMBOL         | VALUE       | UNITS      |
|-----------------------------------------------------------------------------------------------------------------|----------------|-------------|------------|
| Peak Power Dissipation at $T_A=25^\circ C$ , $T_P=1ms$ (NOTE 1)                                                 | $P_{PK}$       | Minimum 600 | Watts      |
| Steady State Power Dissipation at $T_L=75^\circ C$<br>Lead Length .375"(9.5mm) (NOTE 2)                         | $P_O$          | 5.0         | Watts      |
| Peak Forward Surge Current at 8.3ms Single Half Sine-Wave<br>superimposed on rated load (JEDEC method) (NOTE 3) | $I_{FSM}$      | 100         | Amps       |
| Operating and Storage Temperature Range                                                                         | $T_J, T_{STG}$ | -55 to +175 | $^\circ C$ |

### NOTES:

1. Non-repetitive current pulse per Fig. 3 and derated above  $T_A=25^\circ C$  per Fig. 2.
2. Mounted on Copper Pad area of 1.6" X 1.6" (40mm X 40mm) per Fig.5.
3. 8.3ms single half sine-wave, duty cycle = 4 pulses per minute maximum.

## DEVICES FOR BIPOLAR APPLICATIONS

1. For Bidirectional use C or CA Suffix for types P6KE6.8 thru P6KE440.
2. Electrical characteristics apply in both directions.

## RATING AND CHARACTERISTIC CURVES (P6KE SERIES)

FIG.1-PEAK PULSE POWER DERATING CURVE

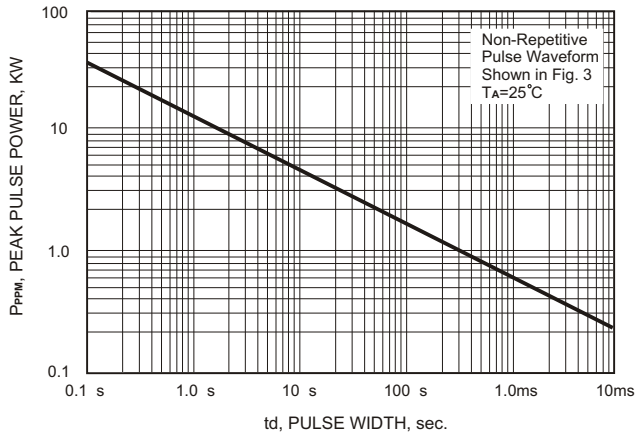


FIG.2-PULSE DERATING CURVE

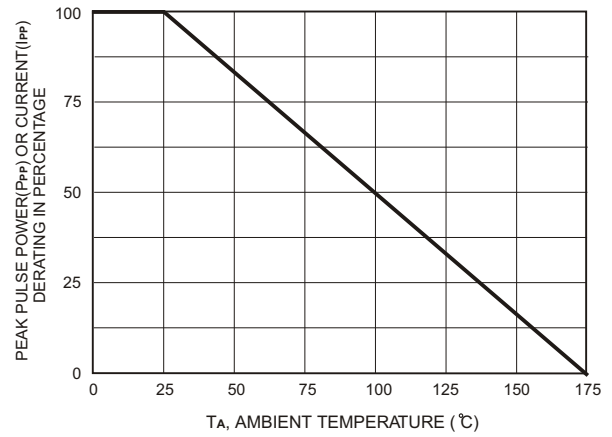


FIG.3-PULSE WAVE FORM

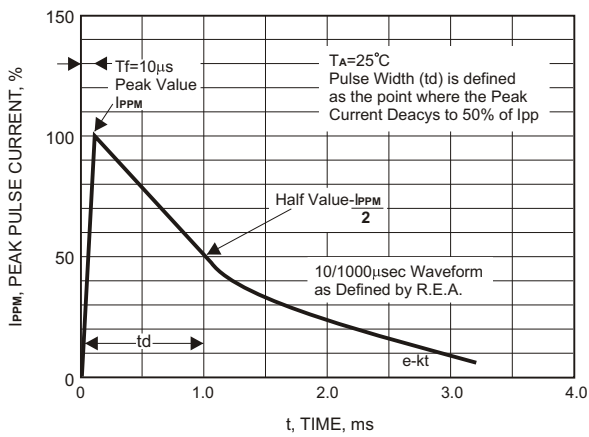


FIG.4-TYPICAL JUNCTION CAPACITANCE

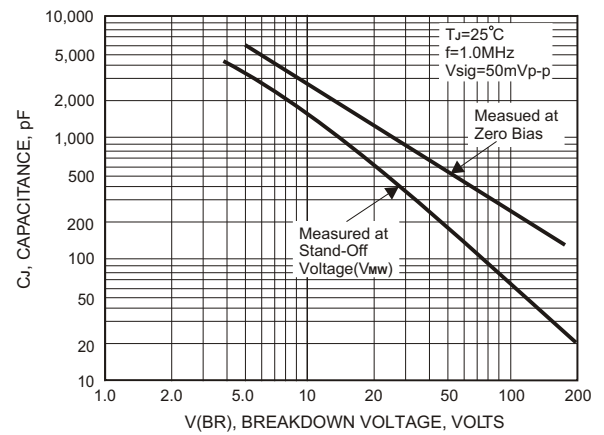


FIG.5-STEADY STATE POWER DERATING CURVE

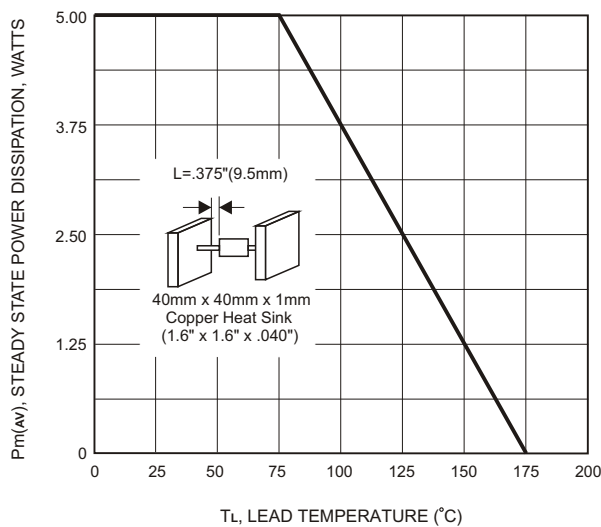
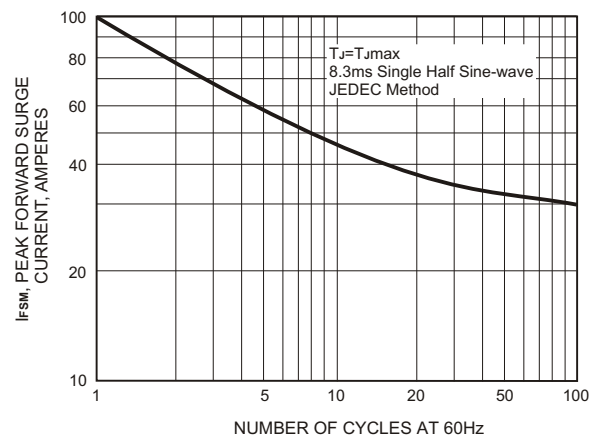


FIG.6-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT, UNIDIRECTIONAL



# 600 Watt Axial Lead TVS



| UNI<br>DIRECTIONAL<br>PART<br>NUMBER | REVERSE<br>STAND-OFF<br>VOLTAGE<br>VRWM (V) | BREAKDOWN<br>VOLTAGE<br>VBR (V)<br>MIN. @IT | BREAKDOWN<br>VOLTAGE<br>VRB (V)<br>MAX. @IT | TEST<br>CURRENT<br>IT<br>(mA) | MAXIMUM<br>CLAMPING<br>VOLTAGE<br>@Ipp Vc (V) | PEAK<br>PULSE<br>CURRENT<br>Ipp (A) | REVERSE<br>LEAKAGE<br>@ VRWM<br>IR(μA) |
|--------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|-------------------------------|-----------------------------------------------|-------------------------------------|----------------------------------------|
| P6KE6.8                              | 5.50                                        | 6.12                                        | 7.48                                        | 10                            | 10.8                                          | 56.0                                | 1000                                   |
| P6KE6.8A                             | 5.80                                        | 6.45                                        | 7.14                                        | 10                            | 10.5                                          | 57.0                                | 1000                                   |
| P6KE7.5                              | 6.05                                        | 6.75                                        | 8.25                                        | 10                            | 11.7                                          | 51.0                                | 500                                    |
| P6KE7.5A                             | 6.40                                        | 7.13                                        | 7.88                                        | 10                            | 11.3                                          | 53.0                                | 500                                    |
| P6KE8.2                              | 6.63                                        | 7.38                                        | 9.02                                        | 10                            | 12.5                                          | 48.0                                | 200                                    |
| P6KE8.2A                             | 7.02                                        | 7.79                                        | 8.61                                        | 10                            | 12.1                                          | 50.0                                | 200                                    |
| P6KE9.1                              | 7.37                                        | 8.19                                        | 10.00                                       | 1                             | 13.8                                          | 44.0                                | 50                                     |
| P6KE9.1A                             | 7.78                                        | 8.65                                        | 9.50                                        | 1                             | 13.4                                          | 45.0                                | 50                                     |
| P6KE10                               | 8.10                                        | 9.00                                        | 11.00                                       | 1                             | 15.0                                          | 40.0                                | 10                                     |
| P6KE10A                              | 8.55                                        | 9.50                                        | 10.50                                       | 1                             | 14.5                                          | 41.0                                | 10                                     |
| P6KE11                               | 8.92                                        | 9.90                                        | 12.10                                       | 1                             | 16.2                                          | 37.0                                | 5                                      |
| P6KE11A                              | 9.40                                        | 10.50                                       | 11.60                                       | 1                             | 15.6                                          | 38.0                                | 5                                      |
| P6KE12                               | 9.72                                        | 10.80                                       | 13.20                                       | 1                             | 17.3                                          | 35.0                                | 5                                      |
| P6KE12A                              | 10.20                                       | 11.40                                       | 12.60                                       | 1                             | 16.7                                          | 36.0                                | 5                                      |
| P6KE13                               | 10.50                                       | 11.70                                       | 14.30                                       | 1                             | 19.0                                          | 32.0                                | 5                                      |
| P6KE13A                              | 11.10                                       | 12.40                                       | 13.70                                       | 1                             | 18.2                                          | 33.0                                | 5                                      |
| P6KE15                               | 12.10                                       | 13.50                                       | 16.50                                       | 1                             | 22.0                                          | 27.0                                | 5                                      |
| P6KE15A                              | 12.80                                       | 14.30                                       | 15.80                                       | 1                             | 21.2                                          | 28.0                                | 5                                      |
| P6KE16                               | 12.90                                       | 14.40                                       | 17.60                                       | 1                             | 23.5                                          | 26.0                                | 5                                      |
| P6KE16A                              | 13.60                                       | 15.20                                       | 16.80                                       | 1                             | 22.5                                          | 27.0                                | 5                                      |
| P6KE18                               | 14.50                                       | 16.20                                       | 19.80                                       | 1                             | 26.5                                          | 23.0                                | 5                                      |
| P6KE18A                              | 15.30                                       | 17.10                                       | 18.90                                       | 1                             | 25.2                                          | 24.0                                | 5                                      |
| P6KE20                               | 16.20                                       | 18.00                                       | 22.00                                       | 1                             | 29.1                                          | 21.0                                | 5                                      |
| P6KE20A                              | 17.10                                       | 19.00                                       | 21.00                                       | 1                             | 27.7                                          | 22.0                                | 5                                      |
| P6KE22                               | 17.80                                       | 19.80                                       | 24.20                                       | 1                             | 31.9                                          | 19.0                                | 5                                      |
| P6KE22A                              | 18.80                                       | 20.90                                       | 23.10                                       | 1                             | 30.6                                          | 20.0                                | 5                                      |
| P6KE24                               | 19.40                                       | 21.60                                       | 26.40                                       | 1                             | 34.7                                          | 17.0                                | 5                                      |
| P6KE24A                              | 20.50                                       | 22.80                                       | 25.20                                       | 1                             | 33.2                                          | 18.0                                | 5                                      |
| P6KE27                               | 21.80                                       | 24.30                                       | 29.70                                       | 1                             | 39.1                                          | 15.0                                | 5                                      |
| P6KE27A                              | 23.10                                       | 25.70                                       | 28.40                                       | 1                             | 37.5                                          | 16.0                                | 5                                      |
| P6KE30                               | 24.30                                       | 27.00                                       | 33.00                                       | 1                             | 43.5                                          | 14.0                                | 5                                      |
| P6KE30A                              | 25.60                                       | 28.50                                       | 31.50                                       | 1                             | 41.4                                          | 14.4                                | 5                                      |
| P6KE33                               | 26.80                                       | 29.70                                       | 36.30                                       | 1                             | 47.7                                          | 12.6                                | 5                                      |
| P6KE33A                              | 28.20                                       | 31.40                                       | 34.70                                       | 1                             | 45.7                                          | 13.2                                | 5                                      |
| P6KE36                               | 29.10                                       | 32.40                                       | 39.60                                       | 1                             | 52.0                                          | 11.6                                | 5                                      |
| P6KE36A                              | 30.80                                       | 34.20                                       | 37.80                                       | 1                             | 49.9                                          | 12.0                                | 5                                      |
| P6KE39                               | 31.60                                       | 35.10                                       | 42.90                                       | 1                             | 56.4                                          | 10.6                                | 5                                      |
| P6KE39A                              | 33.30                                       | 37.10                                       | 41.00                                       | 1                             | 53.9                                          | 11.2                                | 5                                      |
| P6KE43                               | 34.80                                       | 38.70                                       | 47.30                                       | 1                             | 61.9                                          | 9.6                                 | 5                                      |
| P6KE43A                              | 36.80                                       | 40.90                                       | 45.20                                       | 1                             | 59.3                                          | 10.1                                | 5                                      |
| P6KE47                               | 38.10                                       | 42.30                                       | 51.70                                       | 1                             | 67.8                                          | 8.9                                 | 5                                      |
| P6KE47A                              | 40.20                                       | 44.70                                       | 49.40                                       | 1                             | 64.8                                          | 9.3                                 | 5                                      |
| P6KE51                               | 41.30                                       | 45.90                                       | 56.10                                       | 1                             | 73.5                                          | 8.2                                 | 5                                      |
| P6KE51A                              | 43.60                                       | 48.50                                       | 53.60                                       | 1                             | 70.1                                          | 8.6                                 | 5                                      |
| P6KE56                               | 45.40                                       | 50.40                                       | 61.60                                       | 1                             | 80.5                                          | 7.4                                 | 5                                      |
| P6KE56A                              | 47.80                                       | 53.20                                       | 58.80                                       | 1                             | 77.0                                          | 7.8                                 | 5                                      |
| P6KE62                               | 50.20                                       | 55.80                                       | 68.20                                       | 1                             | 89.0                                          | 6.8                                 | 5                                      |
| P6KE62A                              | 53.00                                       | 58.90                                       | 65.10                                       | 1                             | 85.0                                          | 7.1                                 | 5                                      |
| P6KE68                               | 55.10                                       | 61.20                                       | 74.80                                       | 1                             | 98.0                                          | 6.1                                 | 5                                      |
| P6KE68A                              | 58.10                                       | 64.60                                       | 71.40                                       | 1                             | 92.0                                          | 6.5                                 | 5                                      |
| P6KE75                               | 60.70                                       | 67.50                                       | 82.50                                       | 1                             | 108.0                                         | 5.5                                 | 5                                      |
| P6KE75A                              | 64.10                                       | 71.30                                       | 78.80                                       | 1                             | 103.0                                         | 5.8                                 | 5                                      |

# 600 Watt Axial Lead TVS



| UNI<br>DIRECTIONAL<br>PART<br>NUMBER | REVERSE<br>STAND-OFF<br>VOLTAGE<br>VRWM (V) | BREAKDOWN<br>VOLTAGE<br>VBR (V)<br>MIN. @IT | BREAKDOWN<br>VOLTAGE<br>VRB (V)<br>MAX. @IT | TEST<br>CURRENT<br>IT<br>(mA) | MAXIMUM<br>CLAMPING<br>VOLTAGE<br>@Ipp Vc (V) | PEAK<br>PULSE<br>CURRENT<br>Ipp (A) | REVERSE<br>LEAKAGE<br>@ VRWM<br>IR(μA) |
|--------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|-------------------------------|-----------------------------------------------|-------------------------------------|----------------------------------------|
| P6KE82                               | 66.40                                       | 73.80                                       | 90.20                                       | 1                             | 118.0                                         | 5.2                                 | 5                                      |
| P6KE82A                              | 70.10                                       | 77.90                                       | 86.10                                       | 1                             | 113.0                                         | 5.4                                 | 5                                      |
| P6KE91                               | 73.70                                       | 81.90                                       | 100.00                                      | 1                             | 131.0                                         | 4.7                                 | 5                                      |
| P6KE91A                              | 77.80                                       | 86.50                                       | 95.50                                       | 1                             | 125.0                                         | 4.9                                 | 5                                      |
| P6KE100                              | 81.00                                       | 90.00                                       | 110.00                                      | 1                             | 144.0                                         | 4.2                                 | 5                                      |
| P6KE100A                             | 85.50                                       | 95.00                                       | 105.00                                      | 1                             | 137.0                                         | 4.5                                 | 5                                      |
| P6KE110                              | 89.20                                       | 99.00                                       | 121.00                                      | 1                             | 158.0                                         | 3.9                                 | 5                                      |
| P6KE110A                             | 94.00                                       | 105.00                                      | 116.00                                      | 1                             | 152.0                                         | 4.0                                 | 5                                      |
| P6KE120                              | 97.20                                       | 108.00                                      | 132.00                                      | 1                             | 173.0                                         | 3.5                                 | 5                                      |
| P6KE120A                             | 102.00                                      | 114.00                                      | 126.00                                      | 1                             | 165.0                                         | 3.7                                 | 5                                      |
| P6KE130                              | 105.00                                      | 117.00                                      | 143.00                                      | 1                             | 187.0                                         | 3.3                                 | 5                                      |
| P6KE130A                             | 111.00                                      | 124.00                                      | 137.00                                      | 1                             | 179.0                                         | 3.4                                 | 5                                      |
| P6KE150                              | 121.00                                      | 135.00                                      | 165.00                                      | 1                             | 215.0                                         | 2.8                                 | 5                                      |
| P6KE150A                             | 128.00                                      | 143.00                                      | 158.00                                      | 1                             | 207.0                                         | 2.9                                 | 5                                      |
| P6KE160                              | 130.00                                      | 144.00                                      | 176.00                                      | 1                             | 230.0                                         | 2.7                                 | 5                                      |
| P6KE160A                             | 136.00                                      | 152.00                                      | 168.00                                      | 1                             | 219.0                                         | 2.8                                 | 5                                      |
| P6KE170                              | 138.00                                      | 153.00                                      | 187.00                                      | 1                             | 244.0                                         | 2.5                                 | 5                                      |
| P6KE170A                             | 145.00                                      | 162.00                                      | 179.00                                      | 1                             | 234.0                                         | 2.6                                 | 5                                      |
| P6KE180                              | 146.00                                      | 162.00                                      | 198.00                                      | 1                             | 258.0                                         | 2.4                                 | 5                                      |
| P6KE180A                             | 154.00                                      | 171.00                                      | 189.00                                      | 1                             | 246.0                                         | 2.5                                 | 5                                      |
| P6KE200                              | 162.00                                      | 180.00                                      | 220.00                                      | 1                             | 287.0                                         | 2.1                                 | 5                                      |
| P6KE200A                             | 171.00                                      | 190.00                                      | 210.00                                      | 1                             | 274.0                                         | 2.2                                 | 5                                      |
| P6KE220                              | 175.00                                      | 198.00                                      | 242.00                                      | 1                             | 344.0                                         | 1.8                                 | 5                                      |
| P6KE220A                             | 185.00                                      | 209.00                                      | 231.00                                      | 1                             | 328.0                                         | 1.9                                 | 5                                      |
| P6KE250                              | 202.00                                      | 225.00                                      | 275.00                                      | 1                             | 360.0                                         | 1.7                                 | 5                                      |
| P6KE250A                             | 214.00                                      | 237.00                                      | 263.00                                      | 1                             | 344.0                                         | 1.8                                 | 5                                      |
| P6KE300                              | 243.00                                      | 270.00                                      | 330.00                                      | 1                             | 430.0                                         | 1.4                                 | 5                                      |
| P6KE300A                             | 256.00                                      | 285.00                                      | 315.00                                      | 1                             | 414.0                                         | 1.5                                 | 5                                      |
| P6KE350                              | 284.00                                      | 315.00                                      | 385.00                                      | 1                             | 504.0                                         | 1.2                                 | 5                                      |
| P6KE350A                             | 300.00                                      | 332.00                                      | 368.00                                      | 1                             | 482.0                                         | 1.3                                 | 5                                      |
| P6KE400                              | 324.00                                      | 360.00                                      | 440.00                                      | 1                             | 574.0                                         | 1.1                                 | 5                                      |
| P6KE400A                             | 342.00                                      | 380.00                                      | 420.00                                      | 1                             | 548.0                                         | 1.1                                 | 5                                      |
| P6KE440                              | 356.00                                      | 396.00                                      | 484.00                                      | 1                             | 631.0                                         | 1.0                                 | 5                                      |
| P6KE440A                             | 376.00                                      | 418.00                                      | 462.00                                      | 1                             | 600.0                                         | 1.0                                 | 5                                      |