

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

REVERSE VOLTAGE - **6.8 to 440** Volts  
POWER DISSIPATION - **400** WATTS

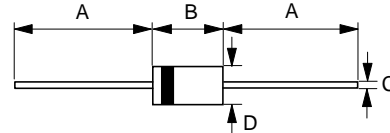
**FEATURES**

- Glass passivated chip
- Low leakage
- Uni and Bidirectional unit
- Excellent clamping capability
- The plastic material has U/L recognition 94V-0
- Fast response time

**MECHANICAL DATA**

- Case : Molded Plastic
- Marking : Unidirectional - type number and cathode band Bidirectional - type number only
- Weight : 0.34 grams

**DO-41**



| DO-41                        |                    |                    |
|------------------------------|--------------------|--------------------|
| Dim.                         | Min.               | Max.               |
| A                            | 25.4               | -                  |
| B                            | 4.10               | 5.20               |
| C                            | 0.71 $\varnothing$ | 0.86 $\varnothing$ |
| D                            | 2.00 $\varnothing$ | 2.70 $\varnothing$ |
| All Dimensions in millimeter |                    |                    |

**MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS**

Ratings 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  | SYMBOLS | VALUE       | UNIT  |
|--|---------|-------------|-------|
| PEAK POWER DISSIPATION AT TA = 25°C, TP = 1ms (Note 1)   | PPK     | Minimum 400 | WATTS |
| Peak Forward Surge Current 8.3ms single half sine-wave super imposed on rated load (Note 2) (JEDEC METHOD) | IFSM    | 40          | AMPS. |
| Steady State Power Dissipation at TL = 75°C lead lengths 0.375" (9.5mm) , see fig. 4                       | PM(AV)  | 1.0         | WATTS |
| Maximum Instantaneous forward voltage at 25A for unidirectional devices only (Note 2)                      | VF      | SEE NOTE 3  | Volts |
| Operating Temperature Range  | TJ      | -55 to +150 | °C    |
| Storage Temperature Range  | TSTG    | -55 to +175 | °C    |

NOTES : 1. Non-repetitive current pulse, per fig. 5 and derated above TA= 25°C per fig. 1  
2. 8.3ms single half sine-wave duty cycle= 4 pulses per minutes maximum (uni-directional units only).  
3. VF= 3.5V on P4KE6.8 thru P4KE200A devices and VF= 5.0V on P4KE220 thru P4KE400A devices.

REV. 2, 01-Dec-2000, KDIC01

FIG.1 - PULSE DERATING CURVE

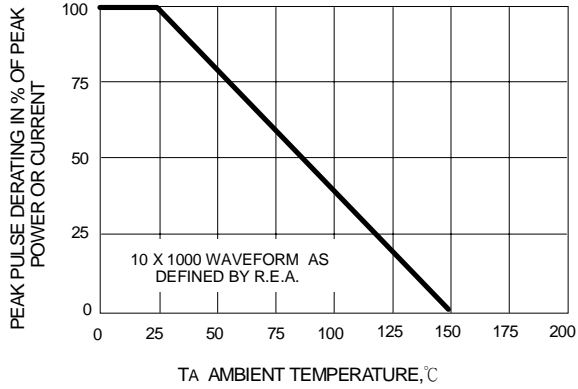


FIG.2 - TYPICAL JUNCTION CAPACITANCE

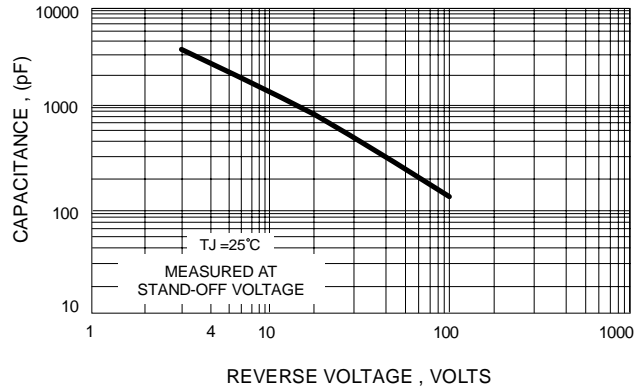


FIG.3 - PULSE RATING CURVE

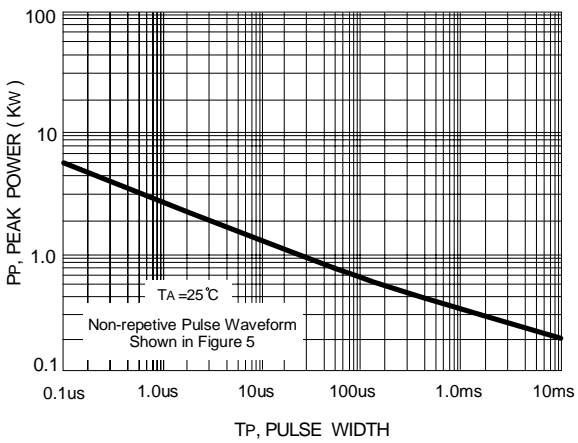


FIG.4 - STEADY STATE POWER DERATING CURVE

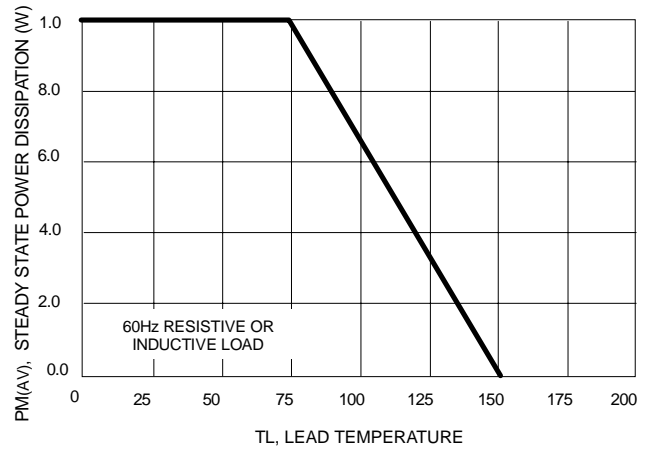
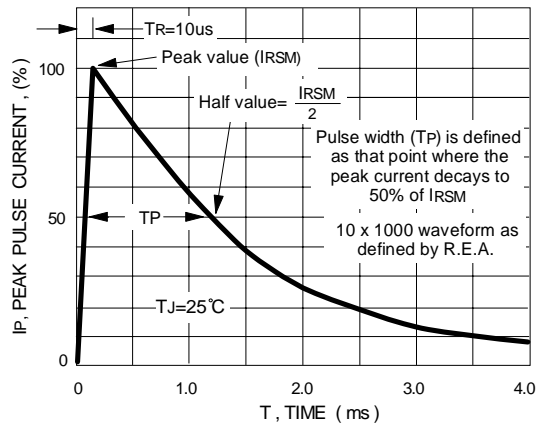


FIG.5 - PULSE WAVEFORM



| Type Number | Type Number | Reverse Standoff Voltage | Breakdown Voltage BV Volts @It |       |        | Max. Reverse Leakage @VR | Max. Clamping Voltage @Ipp | Max. Peak Pulse Current | Max. Voltage Temp. Variation of Bv |
|-------------|-------------|--------------------------|--------------------------------|-------|--------|--------------------------|----------------------------|-------------------------|------------------------------------|
|             |             |                          | (UNI)                          | (BI)  | VR (V) |                          |                            |                         |                                    |
| P4KE6.8     | P4KE6.8C    | 5.50                     | 6.12                           | 7.48  | 10     | 1000                     | 10.8                       | 38.00                   | 0.057                              |
| P4KE6.8A    | P4KE6.8CA   | 5.80                     | 6.45                           | 7.14  | 10     | 1000                     | 10.5                       | 40.00                   | 0.057                              |
| P4KE7.5     | P4KE7.5C    | 6.05                     | 6.75                           | 8.25  | 10     | 500                      | 11.7                       | 35.00                   | 0.061                              |
| P4KE7.5A    | P4KE7.5CA   | 6.40                     | 7.13                           | 7.88  | 10     | 500                      | 11.3                       | 37.00                   | 0.061                              |
| P4KE8.2     | P4KE8.2C    | 6.63                     | 7.38                           | 9.02  | 10     | 200                      | 12.5                       | 33.00                   | 0.065                              |
| P4KE8.2A    | P4KE8.2CA   | 7.02                     | 7.79                           | 8.61  | 10     | 200                      | 12.1                       | 34.00                   | 0.065                              |
| P4KE9.1     | P4KE9.1C    | 7.37                     | 8.19                           | 10.00 | 1      | 50                       | 13.8                       | 30.00                   | 0.068                              |
| P4KE9.1A    | P4KE9.1CA   | 7.78                     | 8.65                           | 9.55  | 1      | 50                       | 13.4                       | 31.00                   | 0.068                              |
| P4KE10      | P4KE10C     | 8.10                     | 9.00                           | 11.00 | 1      | 10                       | 15.0                       | 28.00                   | 0.073                              |
| P4KE10A     | P4KE10CA    | 8.55                     | 9.50                           | 10.50 | 1      | 10                       | 14.5                       | 29.00                   | 0.073                              |
| P4KE11      | P4KE11C     | 8.92                     | 9.90                           | 12.10 | 1      | 5                        | 16.2                       | 26.00                   | 0.075                              |
| P4KE11A     | P4KE11CA    | 9.40                     | 10.50                          | 11.60 | 1      | 5                        | 15.6                       | 27.00                   | 0.075                              |
| P4KE12      | P4KE12C     | 9.72                     | 10.80                          | 13.20 | 1      | 5                        | 17.3                       | 24.00                   | 0.078                              |
| P4KE12A     | P4KE12CA    | 10.20                    | 11.40                          | 12.60 | 1      | 5                        | 16.7                       | 25.00                   | 0.078                              |
| P4KE13      | P4KE13C     | 10.5                     | 11.7                           | 14.3  | 1      | 5                        | 19.0                       | 22.00                   | 0.081                              |
| P4KE13A     | P4KE13CA    | 11.1                     | 12.4                           | 13.7  | 1      | 5                        | 18.2                       | 23.00                   | 0.081                              |
| P4KE15      | P4KE15C     | 12.1                     | 13.5                           | 16.5  | 1      | 5                        | 22.0                       | 19.00                   | 0.084                              |
| P4KE15A     | P4KE15CA    | 12.8                     | 14.3                           | 15.8  | 1      | 5                        | 21.2                       | 20.00                   | 0.084                              |
| P4KE16      | P4KE16C     | 12.9                     | 14.4                           | 17.6  | 1      | 5                        | 23.5                       | 17.80                   | 0.086                              |
| P4KE16A     | P4KE16CA    | 13.6                     | 15.2                           | 16.8  | 1      | 5                        | 22.5                       | 18.60                   | 0.086                              |
| P4KE18      | P4KE18C     | 14.5                     | 16.2                           | 19.8  | 1      | 5                        | 26.5                       | 16.00                   | 0.088                              |
| P4KE18A     | P4KE18CA    | 15.3                     | 17.1                           | 18.9  | 1      | 5                        | 25.2                       | 16.50                   | 0.088                              |
| P4KE20      | P4KE20C     | 16.2                     | 18.0                           | 22.0  | 1      | 5                        | 29.1                       | 14.00                   | 0.090                              |
| P4KE20A     | P4KE20CA    | 17.1                     | 19.0                           | 21.0  | 1      | 5                        | 27.7                       | 15.00                   | 0.090                              |
| P4KE22      | P4KE22C     | 17.8                     | 19.8                           | 24.2  | 1      | 5                        | 31.9                       | 13.00                   | 0.092                              |
| P4KE22A     | P4KE22CA    | 18.8                     | 20.9                           | 23.1  | 1      | 5                        | 30.6                       | 13.70                   | 0.092                              |
| P4KE24      | P4KE24C     | 19.4                     | 21.6                           | 26.4  | 1      | 5                        | 34.7                       | 12.00                   | 0.094                              |
| P4KE24A     | P4KE24CA    | 20.5                     | 22.8                           | 25.2  | 1      | 5                        | 33.2                       | 12.60                   | 0.094                              |
| P4KE27      | P4KE27C     | 21.8                     | 24.3                           | 29.7  | 1      | 5                        | 39.1                       | 10.70                   | 0.096                              |
| P4KE27A     | P4KE27CA    | 23.1                     | 25.7                           | 28.4  | 1      | 5                        | 37.5                       | 11.00                   | 0.096                              |
| P4KE30      | P4KE30C     | 24.3                     | 27.0                           | 33.0  | 1      | 5                        | 43.5                       | 9.60                    | 0.097                              |
| P4KE30A     | P4KE30CA    | 25.6                     | 28.5                           | 31.5  | 1      | 5                        | 41.4                       | 10.00                   | 0.097                              |
| P4KE33      | P4KE33C     | 26.8                     | 29.7                           | 36.3  | 1      | 5                        | 47.7                       | 8.80                    | 0.098                              |
| P4KE33A     | P4KE33CA    | 28.2                     | 31.4                           | 34.7  | 1      | 5                        | 45.7                       | 9.00                    | 0.098                              |
| P4KE36      | P4KE36C     | 29.1                     | 32.4                           | 39.6  | 1      | 5                        | 52.0                       | 8.00                    | 0.099                              |
| P4KE36A     | P4KE36CA    | 30.8                     | 34.2                           | 37.8  | 1      | 5                        | 49.9                       | 8.40                    | 0.099                              |
| P4KE39      | P4KE39C     | 31.6                     | 35.1                           | 42.9  | 1      | 5                        | 56.4                       | 7.40                    | 0.100                              |
| P4KE39A     | P4KE39CA    | 33.3                     | 37.1                           | 41.0  | 1      | 5                        | 53.9                       | 7.70                    | 0.100                              |
| P4KE43      | P4KE43C     | 34.8                     | 38.7                           | 47.3  | 1      | 5                        | 61.9                       | 6.70                    | 0.101                              |
| P4KE43A     | P4KE43CA    | 36.8                     | 40.9                           | 45.2  | 1      | 5                        | 59.3                       | 7.00                    | 0.101                              |
| P4KE47      | P4KE47C     | 38.1                     | 42.3                           | 51.7  | 1      | 5                        | 67.8                       | 6.20                    | 0.101                              |
| P4KE47A     | P4KE47CA    | 40.2                     | 44.7                           | 49.4  | 1      | 5                        | 64.8                       | 6.40                    | 0.101                              |
| P4KE51      | P4KE51C     | 41.3                     | 45.9                           | 56.1  | 1      | 5                        | 73.5                       | 5.70                    | 0.102                              |
| P4KE51A     | P4KE51CA    | 43.6                     | 48.5                           | 53.6  | 1      | 5                        | 70.1                       | 6.00                    | 0.102                              |
| P4KE56      | P4KE56C     | 45.4                     | 50.4                           | 61.6  | 1      | 5                        | 80.5                       | 5.20                    | 0.103                              |
| P4KE56A     | P4KE56CA    | 47.8                     | 53.2                           | 58.8  | 1      | 5                        | 77.0                       | 5.40                    | 0.103                              |

| Type Number | Type Number | Reverse Standoff Voltage | Breakdown Voltage BV Volts @It |       |       | Max. Reverse Leakage @VR | Max. Clamping Voltage @Ipp | Max. Peak Pulse Current | Max. Voltage Temp. Variation of Bv |
|-------------|-------------|--------------------------|--------------------------------|-------|-------|--------------------------|----------------------------|-------------------------|------------------------------------|
|             |             |                          | (UNI)                          | (BI)  | VR(V) |                          |                            |                         |                                    |
| P4KE62      | P4KE62C     | 50.2                     | 55.8                           | 68.2  | 1     | 5                        | 89.0                       | 4.70                    | 0.104                              |
| P4KE62A     | P4KE62CA    | 53.0                     | 58.9                           | 65.1  | 1     | 5                        | 85.0                       | 5.00                    | 0.104                              |
| P4KE68      | P4KE68C     | 55.1                     | 61.2                           | 74.8  | 1     | 5                        | 98.0                       | 4.20                    | 0.104                              |
| P4KE68A     | P4KE68CA    | 58.1                     | 64.6                           | 71.4  | 1     | 5                        | 92.0                       | 4.50                    | 0.104                              |
| P4KE75      | P4KE75C     | 60.7                     | 67.5                           | 82.5  | 1     | 5                        | 108.0                      | 3.80                    | 0.105                              |
| P4KE75A     | P4KE75CA    | 64.7                     | 71.3                           | 78.8  | 1     | 5                        | 103.0                      | 4.00                    | 0.105                              |
| P4KE82      | P4KE82C     | 66.4                     | 73.8                           | 90.2  | 1     | 5                        | 118.0                      | 3.50                    | 0.105                              |
| P4KE82A     | P4KE82CA    | 70.1                     | 77.9                           | 86.1  | 1     | 5                        | 113.0                      | 3.70                    | 0.105                              |
| P4KE91      | P4KE91C     | 73.7                     | 81.9                           | 100.0 | 1     | 5                        | 131.0                      | 3.20                    | 0.106                              |
| P4KE91A     | P4KE91CA    | 77.8                     | 86.5                           | 95.5  | 1     | 5                        | 125.0                      | 3.30                    | 0.106                              |
| P4KE100     | P4KE100C    | 81.0                     | 90.0                           | 110.0 | 1     | 5                        | 144.0                      | 2.90                    | 0.106                              |
| P4KE100A    | P4KE100CA   | 85.5                     | 95.0                           | 105.0 | 1     | 5                        | 137.0                      | 3.00                    | 0.106                              |
| P4KE110     | P4KE110C    | 89.2                     | 99.0                           | 121.0 | 1     | 5                        | 158.0                      | 2.60                    | 0.107                              |
| P4KE110A    | P4KE110CA   | 94.0                     | 105.0                          | 116.0 | 1     | 5                        | 152.0                      | 2.70                    | 0.107                              |
| P4KE120     | P4KE120C    | 97.2                     | 108.0                          | 132.0 | 1     | 5                        | 173.0                      | 2.40                    | 0.107                              |
| P4KE120A    | P4KE120CA   | 102.0                    | 114.0                          | 126.0 | 1     | 5                        | 165.0                      | 2.50                    | 0.107                              |
| P4KE130     | P4KE130C    | 105.0                    | 117.0                          | 143.0 | 1     | 5                        | 187.0                      | 2.20                    | 0.107                              |
| P4KE130A    | P4KE130CA   | 111.0                    | 124.0                          | 137.0 | 1     | 5                        | 179.0                      | 2.30                    | 0.107                              |
| P4KE150     | P4KE150C    | 121.0                    | 135.0                          | 165.0 | 1     | 5                        | 215.0                      | 1.90                    | 0.108                              |
| P4KE150A    | P4KE150CA   | 128.0                    | 143.0                          | 158.0 | 1     | 5                        | 207.0                      | 2.00                    | 0.108                              |
| P4KE160     | P4KE160C    | 130.0                    | 144.0                          | 176.0 | 1     | 5                        | 230.0                      | 1.80                    | 0.108                              |
| P4KE160A    | P4KE160CA   | 136.0                    | 152.0                          | 168.0 | 1     | 5                        | 219.0                      | 1.90                    | 0.108                              |
| P4KE170     | P4KE170C    | 138.0                    | 153.0                          | 187.0 | 1     | 5                        | 244.0                      | 1.70                    | 0.108                              |
| P4KE170A    | P4KE170CA   | 145.0                    | 162.0                          | 179.0 | 1     | 5                        | 234.0                      | 1.80                    | 0.108                              |
| P4KE180     | P4KE180C    | 146.0                    | 162.0                          | 198.0 | 1     | 5                        | 258.0                      | 1.60                    | 0.108                              |
| P4KE180A    | P4KE180CA   | 154.0                    | 171.0                          | 189.0 | 1     | 5                        | 246.0                      | 1.70                    | 0.108                              |
| P4KE200     | P4KE200C    | 162.0                    | 180.0                          | 220.0 | 1     | 5                        | 287.0                      | 1.40                    | 0.108                              |
| P4KE200A    | P4KE200CA   | 171.0                    | 190.0                          | 210.0 | 1     | 5                        | 274.0                      | 1.51                    | 0.108                              |
| P4KE220     | P4KE220C    | 175.0                    | 198.0                          | 242.0 | 1     | 5                        | 344.0                      | 1.20                    | 0.108                              |
| P4KE220A    | P4KE220CA   | 185.0                    | 209.0                          | 231.0 | 1     | 5                        | 328.0                      | 1.30                    | 0.108                              |
| P4KE250     | P4KE250C    | 202.0                    | 225.0                          | 275.0 | 1     | 5                        | 360.0                      | 1.10                    | 0.110                              |
| P4KE250A    | P4KE250CA   | 214.0                    | 237.0                          | 263.0 | 1     | 5                        | 344.0                      | 1.20                    | 0.110                              |
| P4KE300     | P4KE300C    | 243.0                    | 270.0                          | 330.0 | 1     | 5                        | 430.0                      | 0.97                    | 0.110                              |
| P4KE300A    | P4KE300CA   | 256.0                    | 285.0                          | 315.0 | 1     | 5                        | 414.0                      | 1.00                    | 0.110                              |
| P4KE350     | P4KE350C    | 284.0                    | 315.0                          | 385.0 | 1     | 5                        | 504.0                      | 0.83                    | 0.110                              |
| P4KE350A    | P4KE350CA   | 300.0                    | 332.0                          | 368.0 | 1     | 5                        | 482.0                      | 0.87                    | 0.110                              |
| P4KE400     | P4KE400C    | 324.0                    | 360.0                          | 440.0 | 1     | 5                        | 574.0                      | 0.73                    | 0.110                              |
| P4KE400A    | P4KE400CA   | 342.0                    | 380.0                          | 420.0 | 1     | 5                        | 548.0                      | 0.76                    | 0.110                              |
| P4KE440     | P4KE440C    | 356.0                    | 396.0                          | 484.0 | 1     | 5                        | 631.0                      | 0.66                    | 0.110                              |
| P4KE440A    | P4KE440CA   | 376.0                    | 418.0                          | 462.0 | 1     | 5                        | 602.0                      | 0.69                    | 0.110                              |

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 .
2. For unidirectional devices P4KE6.8 to P4KE200A, VFmax = 3.5V at IF=50A 300us square wave pulse.  
For unidirectional devices P4KE220 to P4KE400A, VFmax = 5.0V at IF=50A 300us square wave pulse.