

## GLASS PASSIVAED JUNCTION TRANSIENT VOLTAGE SUPPRESSOR

### Features

- ◆ 400w peak pulse power capability
- ◆ Excellent clamping capability
- ◆ Low incremental surge resistance
- ◆ Fast response time: typically less than 1.0ps from 0v
- ◆ to VBR for unidirectional and 5.0ns ror bidirectional
- ◆ types. High temperature soldering guaranteed:  
265 C/10S/9.5mm lead length at 5 lbs tension

### DO-41



### 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 current derate by 20%.

|                                                                                  | SYMBOLS                           | VALUE        | UNITS |
|----------------------------------------------------------------------------------|-----------------------------------|--------------|-------|
| Peak power dissipation                                                           | PPPM                              | Minimum 400  | W     |
| Peak pulse reverse current                                                       | I <sub>PPM</sub>                  | See Table 1  | A     |
| Steady state power dissipation (Note 2)                                          | P <sub>M(AV)</sub>                | 1.0          | W     |
| Peak forward surge current                                                       | I <sub>FSM</sub>                  | 40           | A     |
| Maximum instantaneous forward voltage at 25A<br>for unidirectional only (Note 4) | V <sub>F</sub>                    | 3.5/6.5      | V     |
| Operating junction and storage temperature range                                 | T <sub>STG</sub> , T <sub>J</sub> | -55 to + 175 | °C    |

Notes:

1. 10/1000μs waveform non-repetitive current pulse, per Fig.3 and derated above Ta=25 °C per Fig.2
2. T<sub>L</sub>=75°C, lead lengths 9.5mm, Mounted on copper pad area of (40x40mm) Fig.5
3. Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum.
4. V<sub>F</sub>=3.5V max. for devices of V<sub>(BR)</sub><200V, and V<sub>F</sub>=6.5V max. for devices of V<sub>(BR)</sub>>200V

## ELECTRICAL CHARACTERISTICS (at TA=25 °C unless otherwise noted)

| Device Type | Breakdown Voltage<br>V <sub>(BR)</sub><br>(Volts)(NOTES 1) |      | Test<br>Current<br>I <sub>T</sub> (mA) | Stand-off<br>Voltage<br>V <sub>WM</sub><br>(Volts) | Maximum<br>Reverse<br>Leakage<br>at V <sub>WM</sub><br>I <sub>D</sub> (NOTE3)(μA) | Maximum<br>Peak Pulse<br>Reverse Current<br>I <sub>PPM</sub> (NOTE2)<br>(Amps) | Maximum<br>Clamping<br>Voltage at<br>I <sub>PPM</sub><br>V <sub>C</sub> (Volts) | Maximum<br>Temperature<br>Coefficient<br>of V <sub>(BR)</sub><br>(%/°C) |
|-------------|------------------------------------------------------------|------|----------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-------------------------------------------------------------------------|
|             | MIN                                                        | MAX  |                                        |                                                    |                                                                                   |                                                                                |                                                                                 |                                                                         |
| P4KE6.8A    | 6.45                                                       | 7.14 | 10.0                                   | 5.80                                               | 1000.0                                                                            | 38.1                                                                           | 10.5                                                                            | 0.057                                                                   |
| P4KE6.8CA   | 6.45                                                       | 7.14 | 10.0                                   | 5.80                                               | 1000.0                                                                            | 38.1                                                                           | 10.5                                                                            | 0.057                                                                   |
| P4KE7.5A    | 7.13                                                       | 7.88 | 10.0                                   | 6.40                                               | 500.0                                                                             | 35.4                                                                           | 11.3                                                                            | 0.061                                                                   |
| P4KE7.5CA   | 7.13                                                       | 7.88 | 10.0                                   | 6.40                                               | 500.0                                                                             | 35.4                                                                           | 11.3                                                                            | 0.061                                                                   |
| P4KE8.2A    | 7.79                                                       | 8.61 | 10.0                                   | 7.02                                               | 200.0                                                                             | 33.1                                                                           | 12.1                                                                            | 0.065                                                                   |
| P4KE8.2CA   | 7.79                                                       | 8.61 | 10.0                                   | 7.02                                               | 200.0                                                                             | 33.1                                                                           | 12.1                                                                            | 0.065                                                                   |
| P4KE9.1A    | 8.65                                                       | 9.55 | 1.0                                    | 7.78                                               | 50.0                                                                              | 29.9                                                                           | 13.4                                                                            | 0.068                                                                   |
| P4KE9.1CA   | 8.65                                                       | 9.55 | 1.0                                    | 7.78                                               | 50.0                                                                              | 29.9                                                                           | 13.4                                                                            | 0.068                                                                   |
| P4KE10A     | 9.50                                                       | 10.5 | 1.0                                    | 8.55                                               | 10.0                                                                              | 27.6                                                                           | 14.5                                                                            | 0.073                                                                   |
| P4KE10CA    | 9.50                                                       | 10.5 | 1.0                                    | 8.55                                               | 10.0                                                                              | 27.6                                                                           | 14.5                                                                            | 0.073                                                                   |
| P4KE11A     | 10.5                                                       | 11.6 | 1.0                                    | 9.40                                               | 5.0                                                                               | 25.6                                                                           | 15.6                                                                            | 0.075                                                                   |
| P4KE11CA    | 10.5                                                       | 11.6 | 1.0                                    | 9.40                                               | 5.0                                                                               | 25.6                                                                           | 15.6                                                                            | 0.075                                                                   |
| P4KE12A     | 11.4                                                       | 12.6 | 1.0                                    | 10.2                                               | 5.0                                                                               | 24.0                                                                           | 16.7                                                                            | 0.078                                                                   |
| P4KE12CA    | 11.4                                                       | 12.6 | 1.0                                    | 10.2                                               | 5.0                                                                               | 24.0                                                                           | 16.7                                                                            | 0.078                                                                   |
| P4KE13A     | 12.4                                                       | 13.7 | 1.0                                    | 11.1                                               | 5.0                                                                               | 22.0                                                                           | 18.2                                                                            | 0.081                                                                   |
| P4KE13CA    | 12.4                                                       | 13.7 | 1.0                                    | 11.1                                               | 5.0                                                                               | 22.0                                                                           | 18.2                                                                            | 0.081                                                                   |
| P4KE15A     | 14.3                                                       | 15.8 | 1.0                                    | 12.8                                               | 5.0                                                                               | 18.9                                                                           | 21.2                                                                            | 0.084                                                                   |
| P4KE15CA    | 14.3                                                       | 15.8 | 1.0                                    | 12.8                                               | 5.0                                                                               | 18.9                                                                           | 21.2                                                                            | 0.084                                                                   |
| P4KE16A     | 15.2                                                       | 16.8 | 1.0                                    | 13.6                                               | 5.0                                                                               | 17.8                                                                           | 22.5                                                                            | 0.086                                                                   |
| P4KE16CA    | 15.2                                                       | 16.8 | 1.0                                    | 13.6                                               | 5.0                                                                               | 17.8                                                                           | 22.5                                                                            | 0.086                                                                   |
| P4KE18A     | 17.1                                                       | 18.9 | 1.0                                    | 15.3                                               | 5.0                                                                               | 15.9                                                                           | 25.5                                                                            | 0.088                                                                   |
| P4KE18CA    | 17.1                                                       | 18.9 | 1.0                                    | 15.3                                               | 5.0                                                                               | 15.9                                                                           | 25.5                                                                            | 0.088                                                                   |
| P4KE20A     | 19.0                                                       | 21.0 | 1.0                                    | 17.1                                               | 5.0                                                                               | 14.4                                                                           | 27.7                                                                            | 0.090                                                                   |
| P4KE20CA    | 19.0                                                       | 21.0 | 1.0                                    | 17.1                                               | 5.0                                                                               | 14.4                                                                           | 27.7                                                                            | 0.090                                                                   |
| P4KE22A     | 20.9                                                       | 23.1 | 1.0                                    | 18.8                                               | 5.0                                                                               | 13.1                                                                           | 30.6                                                                            | 0.092                                                                   |
| P4KE22CA    | 20.9                                                       | 23.1 | 1.0                                    | 18.8                                               | 5.0                                                                               | 13.1                                                                           | 30.6                                                                            | 0.092                                                                   |
| P4KE24A     | 22.8                                                       | 25.2 | 1.0                                    | 20.5                                               | 5.0                                                                               | 12.0                                                                           | 33.2                                                                            | 0.094                                                                   |
| P4KE24CA    | 22.8                                                       | 25.2 | 1.0                                    | 20.5                                               | 5.0                                                                               | 12.0                                                                           | 33.2                                                                            | 0.094                                                                   |
| P4KE27A     | 25.7                                                       | 28.4 | 1.0                                    | 23.1                                               | 5.0                                                                               | 10.7                                                                           | 37.5                                                                            | 0.096                                                                   |
| P4KE27CA    | 25.7                                                       | 28.4 | 1.0                                    | 23.1                                               | 5.0                                                                               | 10.7                                                                           | 37.5                                                                            | 0.096                                                                   |
| P4KE30A     | 28.5                                                       | 31.5 | 1.0                                    | 25.6                                               | 50.                                                                               | 9.7                                                                            | 41.4                                                                            | 0.097                                                                   |
| P4KE30CA    | 28.5                                                       | 31.5 | 1.0                                    | 25.6                                               | 50.                                                                               | 9.7                                                                            | 41.4                                                                            | 0.097                                                                   |
| P4KE33A     | 31.4                                                       | 34.7 | 1.0                                    | 28.2                                               | 5.0                                                                               | 8.8                                                                            | 45.7                                                                            | 0.098                                                                   |
| P4KE33CA    | 31.4                                                       | 34.7 | 1.0                                    | 28.2                                               | 5.0                                                                               | 8.8                                                                            | 45.7                                                                            | 0.098                                                                   |
| P4KE36A     | 34.2                                                       | 37.8 | 1.0                                    | 30.8                                               | 5.0                                                                               | 8.0                                                                            | 49.9                                                                            | 0.099                                                                   |
| P4KE36CA    | 34.2                                                       | 37.8 | 1.0                                    | 30.8                                               | 5.0                                                                               | 8.0                                                                            | 49.9                                                                            | 0.099                                                                   |
| P4KE39A     | 37.1                                                       | 41.0 | 1.0                                    | 33.3                                               | 5.0                                                                               | 7.4                                                                            | 53.9                                                                            | 0.100                                                                   |
| P4KE39CA    | 37.1                                                       | 41.0 | 1.0                                    | 33.3                                               | 5.0                                                                               | 7.4                                                                            | 53.9                                                                            | 0.100                                                                   |
| P4KE43A     | 40.9                                                       | 45.2 | 1.0                                    | 36.8                                               | 5.0                                                                               | 6.7                                                                            | 59.3                                                                            | 0.101                                                                   |
| P4KE43CA    | 40.9                                                       | 45.2 | 1.0                                    | 36.8                                               | 5.0                                                                               | 6.7                                                                            | 59.3                                                                            | 0.101                                                                   |
| P4KE47A     | 44.7                                                       | 49.4 | 1.0                                    | 40.2                                               | 5.0                                                                               | 6.2                                                                            | 64.8                                                                            | 0.101                                                                   |
| P4KE47CA    | 44.7                                                       | 49.4 | 1.0                                    | 40.2                                               | 5.0                                                                               | 6.2                                                                            | 64.8                                                                            | 0.101                                                                   |
| P4KE51A     | 48.5                                                       | 53.6 | 1.0                                    | 43.6                                               | 5.0                                                                               | 5.7                                                                            | 70.1                                                                            | 0.102                                                                   |
| P4KE51CA    | 48.5                                                       | 53.6 | 1.0                                    | 43.6                                               | 5.0                                                                               | 5.7                                                                            | 70.1                                                                            | 0.102                                                                   |
| P4KE56A     | 53.2                                                       | 58.8 | 1.0                                    | 47.8                                               | 5.0                                                                               | 5.2                                                                            | 77.0                                                                            | 0.103                                                                   |
| P4KE56CA    | 53.2                                                       | 58.8 | 1.0                                    | 47.8                                               | 5.0                                                                               | 5.2                                                                            | 77.0                                                                            | 0.103                                                                   |

The electrical characteristics above is for reference only.

## ELECTRICAL CHARACTERISTICS (at TA=25 °C unless otherwise noted)

| Device Type | Breakdown Voltage<br>V <sub>(BR)</sub><br>(Volts)(NOTES 1) |      | Test<br>Current<br>I <sub>T</sub> (mA) | Stand-off<br>Voltage<br>V <sub>WM</sub><br>(Volts) | Maximum<br>Reverse<br>Leakage<br>at V <sub>WM</sub><br>I <sub>D</sub> (NOTE3)(μA) | Maximum<br>Peak Pulse<br>Reverse Current<br>I <sub>PPM</sub> (NOTE2)<br>(Amps) | Maximum<br>Clamping<br>Voltage at<br>I <sub>PPM</sub><br>V <sub>c</sub> (Volts) | Maximum<br>Temperature<br>Coefficient<br>of V <sub>(BR)</sub><br>(%/°C) |
|-------------|------------------------------------------------------------|------|----------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-------------------------------------------------------------------------|
|             | MIN                                                        | MAX  |                                        |                                                    |                                                                                   |                                                                                |                                                                                 |                                                                         |
| P4KE62A     | 58.9                                                       | 65.1 | 1.0                                    | 53.0                                               | 5.0                                                                               | 4.7                                                                            | 85.0                                                                            | 0.104                                                                   |
| P4KE62CA    | 58.9                                                       | 65.1 | 1.0                                    | 53.0                                               | 5.0                                                                               | 4.7                                                                            | 85.0                                                                            | 0.104                                                                   |
| P4KE68A     | 64.6                                                       | 71.4 | 1.0                                    | 58.1                                               | 5.0                                                                               | 4.3                                                                            | 92.0                                                                            | 0.104                                                                   |
| P4KE68CA    | 64.6                                                       | 71.4 | 1.0                                    | 58.1                                               | 5.0                                                                               | 4.3                                                                            | 92.0                                                                            | 0.104                                                                   |
| P4KE75A     | 71.3                                                       | 78.8 | 1.0                                    | 64.1                                               | 5.0                                                                               | 3.9                                                                            | 103                                                                             | 0.105                                                                   |
| P4KE75CA    | 71.3                                                       | 78.8 | 1.0                                    | 64.1                                               | 5.0                                                                               | 3.9                                                                            | 103                                                                             | 0.105                                                                   |
| P4KE82A     | 77.9                                                       | 86.1 | 1.0                                    | 70.1                                               | 5.0                                                                               | 3.5                                                                            | 113                                                                             | 0.105                                                                   |
| P4KE82CA    | 77.9                                                       | 86.1 | 1.0                                    | 70.1                                               | 5.0                                                                               | 3.5                                                                            | 113                                                                             | 0.105                                                                   |
| P4KE91A     | 86.5                                                       | 95.5 | 1.0                                    | 77.8                                               | 5.0                                                                               | 3.2                                                                            | 125                                                                             | 0.106                                                                   |
| P4KE91CA    | 86.5                                                       | 95.5 | 1.0                                    | 77.8                                               | 5.0                                                                               | 3.2                                                                            | 125                                                                             | 0.106                                                                   |
| P4KE100A    | 95.0                                                       | 105  | 1.0                                    | 85.5                                               | 5.0                                                                               | 2.9                                                                            | 137                                                                             | 0.106                                                                   |
| P4KE100CA   | 95.0                                                       | 105  | 1.0                                    | 85.5                                               | 5.0                                                                               | 2.9                                                                            | 137                                                                             | 0.106                                                                   |
| P4KE110A    | 105                                                        | 116  | 1.0                                    | 94.0                                               | 5.0                                                                               | 2.6                                                                            | 152                                                                             | 0.107                                                                   |
| P4KE110CA   | 105                                                        | 116  | 1.0                                    | 94.0                                               | 5.0                                                                               | 2.6                                                                            | 152                                                                             | 0.107                                                                   |
| P4KE120A    | 114                                                        | 126  | 1.0                                    | 102                                                | 5.0                                                                               | 2.4                                                                            | 165                                                                             | 0.107                                                                   |
| P4KE120CA   | 114                                                        | 126  | 1.0                                    | 102                                                | 5.0                                                                               | 2.4                                                                            | 165                                                                             | 0.107                                                                   |
| P4KE130A    | 124                                                        | 137  | 1.0                                    | 111                                                | 5.0                                                                               | 2.2                                                                            | 179                                                                             | 0.107                                                                   |
| P4KE130CA   | 124                                                        | 137  | 1.0                                    | 111                                                | 5.0                                                                               | 2.2                                                                            | 179                                                                             | 0.107                                                                   |
| P4KE150A    | 143                                                        | 158  | 1.0                                    | 128                                                | 5.0                                                                               | 1.9                                                                            | 207                                                                             | 0.108                                                                   |
| P4KE150CA   | 143                                                        | 158  | 1.0                                    | 128                                                | 5.0                                                                               | 1.9                                                                            | 207                                                                             | 0.108                                                                   |
| P4KE160A    | 152                                                        | 168  | 1.0                                    | 136                                                | 5.0                                                                               | 1.8                                                                            | 219                                                                             | 0.108                                                                   |
| P4KE160CA   | 152                                                        | 168  | 1.0                                    | 136                                                | 5.0                                                                               | 1.8                                                                            | 219                                                                             | 0.108                                                                   |
| P4KE170A    | 162                                                        | 179  | 1.0                                    | 145                                                | 5.0                                                                               | 1.7                                                                            | 234                                                                             | 0.108                                                                   |
| P4KE170CA   | 162                                                        | 179  | 1.0                                    | 145                                                | 5.0                                                                               | 1.7                                                                            | 234                                                                             | 0.108                                                                   |
| P4KE180A    | 171                                                        | 189  | 1.0                                    | 154                                                | 5.0                                                                               | 1.6                                                                            | 246                                                                             | 0.108                                                                   |
| P4KE180CA   | 171                                                        | 189  | 1.0                                    | 154                                                | 5.0                                                                               | 1.6                                                                            | 246                                                                             | 0.108                                                                   |
| P4KE200A    | 190                                                        | 210  | 1.0                                    | 171                                                | 5.0                                                                               | 1.5                                                                            | 274                                                                             | 0.108                                                                   |
| P4KE200CA   | 190                                                        | 210  | 1.0                                    | 171                                                | 5.0                                                                               | 1.5                                                                            | 274                                                                             | 0.108                                                                   |
| P4KE220A    | 209                                                        | 231  | 1.0                                    | 185                                                | 5.0                                                                               | 1.2                                                                            | 328                                                                             | 0.108                                                                   |
| P4KE220CA   | 209                                                        | 231  | 1.0                                    | 185                                                | 5.0                                                                               | 1.2                                                                            | 328                                                                             | 0.108                                                                   |
| P4KE250A    | 237                                                        | 267  | 1.0                                    | 214                                                | 5.0                                                                               | 1.2                                                                            | 344                                                                             | 0.110                                                                   |
| P4KE250CA   | 237                                                        | 267  | 1.0                                    | 214                                                | 5.0                                                                               | 1.2                                                                            | 344                                                                             | 0.110                                                                   |
| P4KE300A    | 285                                                        | 315  | 1.0                                    | 256                                                | 5.0                                                                               | 1.0                                                                            | 414                                                                             | 0.110                                                                   |
| P4KE300CA   | 285                                                        | 315  | 1.0                                    | 256                                                | 5.0                                                                               | 1.0                                                                            | 414                                                                             | 0.110                                                                   |
| P4KE350A    | 332                                                        | 368  | 1.0                                    | 300                                                | 5.0                                                                               | 0.83                                                                           | 482                                                                             | 0.110                                                                   |
| P4KE350CA   | 332                                                        | 368  | 1.0                                    | 300                                                | 5.0                                                                               | 0.83                                                                           | 482                                                                             | 0.110                                                                   |
| P4KE400A    | 380                                                        | 420  | 1.0                                    | 342                                                | 5.0                                                                               | 0.73                                                                           | 548                                                                             | 0.110                                                                   |
| P4KE400CA   | 380                                                        | 420  | 1.0                                    | 342                                                | 5.0                                                                               | 0.73                                                                           | 548                                                                             | 0.110                                                                   |
| P4KE440A    | 418                                                        | 462  | 1.0                                    | 376                                                | 5.0                                                                               | 0.66                                                                           | 602                                                                             | 0.110                                                                   |
| P4KE440CA   | 418                                                        | 462  | 1.0                                    | 376                                                | 5.0                                                                               | 0.66                                                                           | 602                                                                             | 0.110                                                                   |

### NOTES:

- 1.V<sub>(BR)</sub>measured after I<sub>T</sub> applied for 300μs,I<sub>T</sub>=square wave pulse or equivalent
2. Surge current waveform per Fig.3 and derated per Fig.2
3. For bidirectional types having V<sub>WM</sub> of 10 volts and less,the I<sub>D</sub> limit is doubled
4. All items and symbols are consistent with ANSI/IEEE C62.35

The electrical characteristics above is for reference only.

FIG. 1-PEAK PULSE POWER RATING CURVE



FIG. 2-PULSE DERATING CURVE

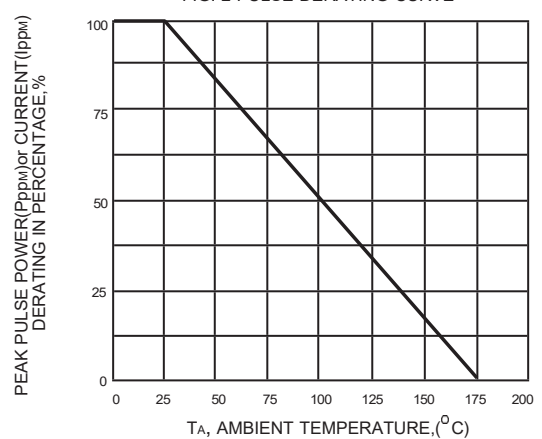


FIG.3-PULSE WAVEFORM



FIG. 4-TYPICAL JUNCTIONAL CAPACITANCE UNIDIRECTIONAL

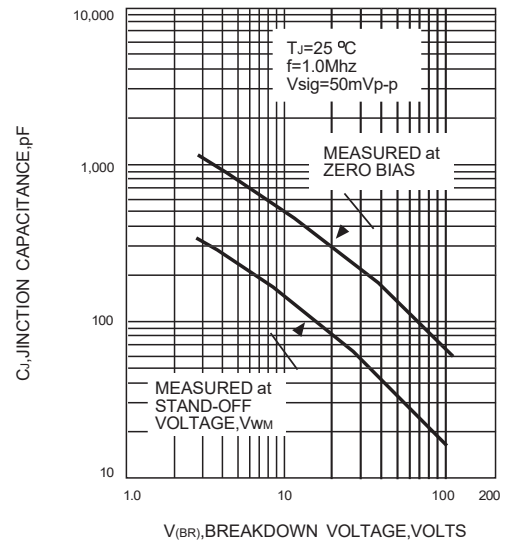


FIG.5-STEADY STATE POWER DERATING CURVE



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

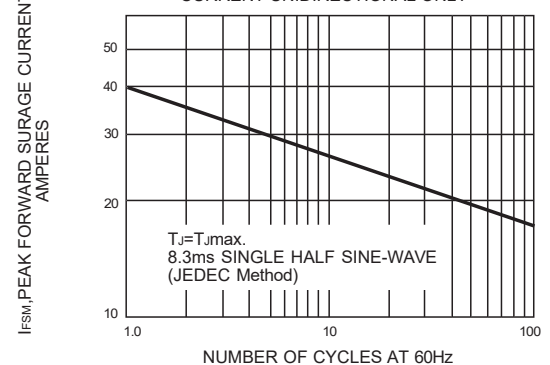
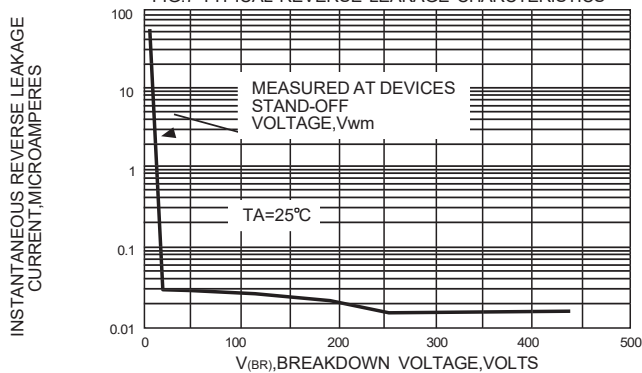


FIG.7-TYPICAL REVERSE LEAKAGE CHARACTERISTICS



The curve characteristics above is for reference only.