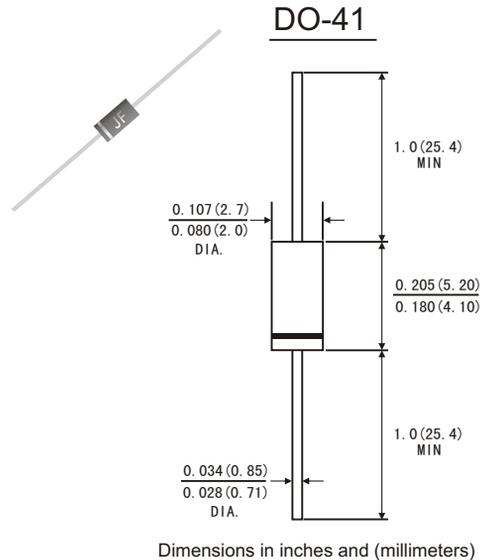


## FEATURES

- Glass passivated junction
- 400 Watts Pulse capability on 10/1000  $\mu$ s wave form
- Excellent clamping capability
- Low zener impedance
- Fast response time
- High temperature soldering guaranteed: 260°C/10 seconds at terminals
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

## MECHANICAL DATA

- *Case*: JEDEC DO-41 molded plastic body
- *Terminals*: Plated axial leads, solderable per MIL-STD-750, method 2026
- *Polarity*: Color band denotes cathode end
- *Weight*: 0.012ounce, 0.33 gram



## DEVICES FOR BIDIRECTIONAL APPLICATIONS

1. For bi-directional use C or CA suffix for Types P4KE6.8 thru Types P4KE440.
2. Electrical characteristics apply in both directions.

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

(Rating at 25 °C ambient temperature unless otherwise specified)

|   | Symbols        | Value       | Units            |
|---|----------------|-------------|------------------|
| Peak power dissipation at $T_A=25^\circ\text{C}$ , $T_P=1\text{ms}$ (Note 1.)                             | $P_{PK}$       | Min. 400    | Watts            |
| Steady state power dissipation at $T_J=75^\circ\text{C}$ lead length 0.375"(9.5mm) (Note 2.)              | $P_D$          | 1.0         | Watts            |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load(JEDEC method)(Note 3.) | $I_{FSM}$      | 40.0        | Amps             |
| Maximum instantaneous forward voltage at 25.0A for unidirectional only(Note 4.)                           | $V_F$          | 3.5/6.5     | Volts            |
| Operating and storage temperature range   | $T_J, T_{STG}$ | -55 to +175 | $^\circ\text{C}$ |

*Note*: 1.Non repetitive current pulse and derated above  $T_A=25^\circ\text{C}$

2.Mounted on copper pads area of 1.6X1.6"(40X40mm)

3.Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum

4. $V_F=3.5$  Volts max. for devices of  $V_{(BR)}\leq 200\text{V}$ , and  $V_F=6.5$ Volts max. for devices of  $V_{(BR)}>200\text{V}$ .

| TYPE      | Breakdown Voltage<br>V <sub>(BR)</sub> (Volts) |      | Test<br>Current<br>I <sub>T</sub><br>(mA) | Reverse<br>Stand off<br>Voltage<br>V <sub>WM</sub> (Volts) | Maximum<br>Reverse<br>Leadage<br>At V <sub>WM</sub><br>I <sub>D</sub> (μA) | Maximum<br>Peak Pulse<br>Current<br>I <sub>ppm</sub><br>(Amps) | Maximum<br>Clamping<br>Voltage<br>At 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  |   |  |  |  |   |   |
| *P4KE6.8  | 6.12   | 7.48 | 10.0                                      | 5.50   | 1,000.0  | 38.0   | 10.8  | 0.057   |
| *P4KE6.8A | 6.45   | 7.14 | 10.0                                      | 5.80   | 1,000.0  | 40.0   | 10.5  | 0.057   |
| P4KE7.5   | 6.75   | 8.25 | 10.0                                      | 6.05   | 500.0  | 35.0   | 11.7  | 0.061   |
| P4KE7.5A  | 7.13   | 7.88 | 10.0                                      | 6.40   | 500.0  | 37.0   | 11.3  | 0.061   |
| P4KE8.2   | 7.38   | 9.02 | 10.0                                      | 6.63   | 200.0  | 33.0   | 12.5  | 0.065   |
| P4KE8.2A  | 7.79   | 8.61 | 10.0                                      | 7.02   | 200.0  | 34.0   | 12.1  | 0.065   |
| P4KE9.1   | 8.19   | 10.0 | 1.0                                       | 7.37   | 50.0   | 30.0   | 13.8  | 0.068   |
| P4KE9.1A  | 8.65   | 9.55 | 1.0                                       | 7.78   | 50.0   | 31.0   | 13.4  | 0.068   |
| P4KE10    | 9.00   | 11.0 | 1.0                                       | 8.10   | 10.0   | 28.0   | 15.0  | 0.073   |
| P4KE10A   | 9.50   | 10.5 | 1.0                                       | 8.55   | 10.0   | 29.0   | 14.5  | 0.073   |
| P4KE11    | 9.90   | 12.1 | 1.0                                       | 8.92   | 5.0  | 26.0   | 16.2  | 0.075   |
| P4KE11A   | 10.5   | 11.6 | 1.0                                       | 9.40   | 5.0  | 27.0   | 15.6  | 0.075   |
| P4KE12    | 10.8   | 13.2 | 1.0                                       | 9.72   | 5.0  | 24.0   | 17.3  | 0.078   |
| P4KE12A   | 11.4   | 12.6 | 1.0                                       | 10.2   | 5.0  | 25.0   | 16.7  | 0.078   |
| P4KE13    | 11.7   | 14.3 | 1.0                                       | 10.5   | 5.0  | 22.0   | 19.0  | 0.081   |
| P4KE13A   | 12.4   | 13.7 | 1.0                                       | 11.1   | 5.0  | 23.0   | 18.2  | 0.081   |
| P4KE15    | 13.5   | 16.5 | 1.0                                       | 12.1   | 5.0  | 19.0   | 22.0  | 0.084   |
| P4KE15A   | 14.3   | 15.8 | 1.0                                       | 12.8   | 5.0  | 20.0   | 21.2  | 0.084   |
| P4KE16    | 14.4   | 17.6 | 1.0                                       | 12.9   | 5.0  | 17.8   | 23.5  | 0.086   |
| P4KE16A   | 15.2   | 16.8 | 1.0                                       | 13.6   | 5.0  | 18.6   | 22.5  | 0.086   |
| P4KE18    | 16.2   | 19.8 | 1.0                                       | 14.5   | 5.0  | 16.0   | 26.5  | 0.088   |
| P4KE18A   | 17.1   | 18.9 | 1.0                                       | 15.3   | 5.0  | 16.5   | 25.5  | 0.088   |
| P4KE20    | 18.0   | 22.0 | 1.0                                       | 16.2   | 5.0  | 14.0   | 29.1  | 0.090   |
| P4KE20A   | 19.0   | 21.0 | 1.0                                       | 17.1   | 5.0  | 15.0   | 27.7  | 0.090   |
| P4KE22    | 19.8   | 24.2 | 1.0                                       | 17.8   | 5.0  | 13.0   | 31.9  | 0.092   |
| P4KE22A   | 20.9   | 23.1 | 1.0                                       | 18.8   | 5.0  | 13.7   | 30.6  | 0.092   |
| P4KE24    | 21.6   | 26.4 | 1.0                                       | 19.4   | 5.0  | 12.0   | 34.7  | 0.094   |
| P4KE24A   | 22.8   | 25.2 | 1.0                                       | 20.5   | 5.0  | 12.6   | 33.2  | 0.094   |
| P4KE27    | 24.3   | 29.7 | 1.0                                       | 21.8   | 5.0  | 10.7   | 39.1  | 0.096   |
| P4KE27A   | 25.7   | 28.4 | 1.0                                       | 23.1   | 5.0  | 11.0   | 37.5  | 0.096   |
| P4KE30    | 27.0   | 33.0 | 1.0                                       | 24.3   | 5.0  | 9.6  | 43.5  | 0.097   |
| P4KE30A   | 28.5   | 31.5 | 1.0                                       | 25.6   | 5.0  | 10.0   | 41.4  | 0.097   |
| P4KE33    | 29.7   | 36.3 | 1.0                                       | 26.8   | 5.0  | 8.8  | 47.7  | 0.098   |
| P4KE33A   | 31.4   | 34.7 | 1.0                                       | 28.2   | 5.0  | 9.0  | 45.7  | 0.098   |
| P4KE36    | 32.4   | 39.6 | 1.0                                       | 29.1   | 5.0  | 8.0  | 52.0  | 0.099   |
| P4KE36A   | 34.2   | 37.8 | 1.0                                       | 30.8   | 5.0  | 8.4  | 49.9  | 0.099   |
| P4KE39    | 35.1   | 42.9 | 1.0                                       | 31.6   | 5.0  | 7.4  | 56.4  | 0.100   |
| P4KE39A   | 37.1   | 41.0 | 1.0                                       | 33.3   | 5.0  | 7.7  | 53.9  | 0.100   |
| P4KE43    | 38.7   | 47.3 | 1.0                                       | 34.8   | 5.0  | 6.7  | 61.9  | 0.101   |
| P4KE43A   | 40.9   | 45.2 | 1.0                                       | 36.8   | 5.0  | 7.0  | 59.3  | 0.101   |
| P4KE47    | 42.3   | 51.7 | 1.0                                       | 38.1   | 5.0  | 6.2  | 67.8  | 0.101   |
| P4KE47A   | 44.7   | 49.4 | 1.0                                       | 40.2   | 5.0  | 6.4  | 64.8  | 0.101   |
| P4KE51    | 45.9   | 56.1 | 1.0                                       | 41.3   | 5.0  | 5.7  | 73.5  | 0.102   |
| P4KE51A   | 48.5   | 53.6 | 1.0                                       | 43.6   | 5.0  | 6.0  | 70.1  | 0.102   |
| P4KE56    | 50.4   | 61.6 | 1.0                                       | 45.4   | 5.0  | 5.2  | 80.5  | 0.103   |
| P4KE56A   | 53.2   | 58.8 | 1.0                                       | 47.8   | 5.0  | 5.4  | 77.0  | 0.103   |

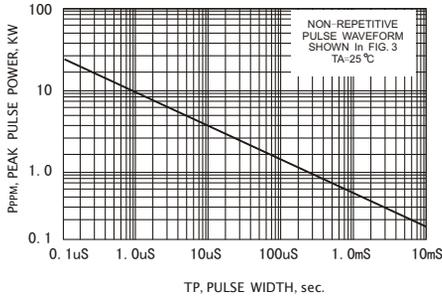
| TYPE     | Breakdown Voltage<br>V <sub>(BR)</sub> (Volts) |      | Test<br>Current<br>I <sub>T</sub><br>(mA) | Reverse<br>Stand off<br>Voltage<br>V <sub>WM</sub> (Volts) | Maximum<br>Reverse<br>Leadage<br>At V <sub>WM</sub><br>I <sub>D</sub> (μA) | Maximum<br>Peak Pulse<br>Current<br>I <sub>ppm</sub><br>(Amps) | Maximum<br>Clamping<br>Voltage<br>At 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  |   |  |  |  |   |   |
| P4KE62   | 55.8   | 68.2 | 1.0                                       | 50.2   | 5.0  | 4.7  | 89.0  | 0.104   |
| P4KE62A  | 58.9   | 65.1 | 1.0                                       | 53.0   | 5.0  | 5.0  | 85.0  | 0.104   |
| P4KE68   | 61.2   | 74.8 | 1.0                                       | 55.1   | 5.0  | 4.2  | 98.0  | 0.104   |
| P4KE68A  | 64.6   | 71.4 | 1.0                                       | 58.1   | 5.0  | 4.5  | 92.0  | 0.104   |
| P4KE75   | 67.5   | 82.5 | 1.0                                       | 60.7   | 5.0  | 3.8  | 108.0   | 0.105   |
| P4KE75A  | 71.3   | 78.8 | 1.0                                       | 64.1   | 5.0  | 4.0  | 103.0   | 0.105   |
| P4KE82   | 73.8   | 90.2 | 1.0                                       | 66.4   | 5.0  | 3.5  | 118.0   | 0.105   |
| P4KE82A  | 77.9   | 86.1 | 1.0                                       | 70.1   | 5.0  | 3.7  | 113.0   | 0.105   |
| P4KE91   | 81.9   | 100  | 1.0                                       | 73.7   | 5.0  | 3.2  | 131.0   | 0.106   |
| P4KE91A  | 86.5   | 95.5 | 1.0                                       | 77.8   | 5.0  | 3.3  | 125.0   | 0.106   |
| P4KE100  | 90.0   | 110  | 1.0                                       | 81.0   | 5.0  | 2.9  | 144.0   | 0.106   |
| P4KE100A | 95.0   | 105  | 1.0                                       | 85.5   | 5.0  | 3.0  | 137.0   | 0.106   |
| P4KE110  | 99.0   | 121  | 1.0                                       | 89.2   | 5.0  | 2.6  | 158.0   | 0.107   |
| P4KE110A | 105  | 116  | 1.0                                       | 94.0   | 5.0  | 2.7  | 152.0   | 0.107   |
| P4KE120  | 108  | 132  | 1.0                                       | 97.2   | 5.0  | 2.4  | 173.0   | 0.107   |
| P4KE120A | 114  | 126  | 1.0                                       | 102  | 5.0  | 2.5  | 165.0   | 0.107   |
| P4KE130  | 117  | 143  | 1.0                                       | 105  | 5.0  | 2.2  | 187.0   | 0.107   |
| P4KE130A | 124  | 137  | 1.0                                       | 111  | 5.0  | 2.3  | 179.0   | 0.107   |
| P4KE150  | 135  | 165  | 1.0                                       | 121  | 5.0  | 1.9  | 215.0   | 0.108   |
| P4KE150A | 143  | 158  | 1.0                                       | 128  | 5.0  | 2.0  | 207.0   | 0.108   |
| P4KE160  | 144  | 176  | 1.0                                       | 130  | 5.0  | 1.8  | 230.0   | 0.108   |
| P4KE160A | 152  | 168  | 1.0                                       | 136  | 5.0  | 1.9  | 219.0   | 0.108   |
| P4KE170  | 153  | 187  | 1.0                                       | 138  | 5.0  | 1.7  | 244.0   | 0.108   |
| P4KE170A | 162  | 179  | 1.0                                       | 145  | 5.0  | 1.8  | 234.0   | 0.108   |
| P4KE180  | 162  | 198  | 1.0                                       | 146  | 5.0  | 1.6  | 258.0   | 0.108   |
| P4KE180A | 171  | 189  | 1.0                                       | 154  | 5.0  | 1.7  | 246.0   | 0.108   |
| P4KE200  | 180  | 220  | 1.0                                       | 162  | 5.0  | 1.4  | 287.0   | 0.108   |
| P4KE200A | 190  | 210  | 1.0                                       | 171  | 5.0  | 1.51   | 274.0   | 0.108   |
| P4KE220  | 198  | 242  | 1.0                                       | 175  | 5.0  | 1.2  | 344.0   | 0.108   |
| P4KE220A | 209  | 231  | 1.0                                       | 185  | 5.0  | 1.3  | 328.0   | 0.108   |
| P4KE250  | 225  | 275  | 1.0                                       | 202  | 5.0  | 1.1  | 360.0   | 0.110   |
| P4KE250A | 237  | 263  | 1.0                                       | 214  | 5.0  | 1.2  | 344.0   | 0.110   |
| P4KE300  | 270  | 330  | 1.0                                       | 243  | 5.0  | 0.97   | 430.0   | 0.110   |
| P4KE300A | 285  | 315  | 1.0                                       | 256  | 5.0  | 1.0  | 414.0   | 0.110   |
| P4KE350  | 315  | 385  | 1.0                                       | 284  | 5.0  | 0.83   | 504.0   | 0.110   |
| P4KE350A | 332  | 368  | 1.0                                       | 300  | 5.0  | 0.87   | 482.0   | 0.110   |
| P4KE400  | 360  | 440  | 1.0                                       | 324  | 5.0  | 0.73   | 574.0   | 0.110   |
| P4KE400A | 380  | 420  | 1.0                                       | 342  | 5.0  | 0.76   | 548.0   | 0.110   |
| P4KE440  | 396  | 484  | 1.0                                       | 356  | 5.0  | 0.66   | 631.0   | 0.110   |
| P4KE440A | 418  | 462  | 1.0                                       | 376  | 5.0  | 0.69   | 602.0   | 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.

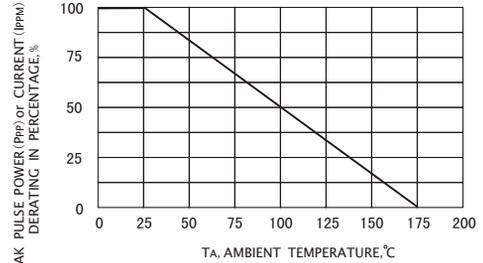
2. For bidirectional types having V<sub>WM</sub> of 10 Volts and less, The I<sub>D</sub> limit is doubled.



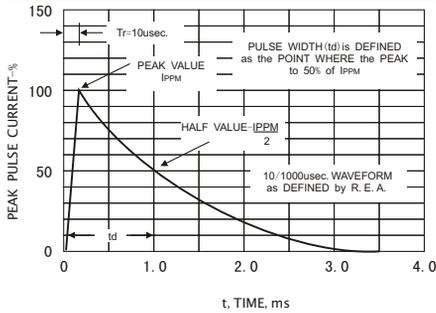
### FIG. 1-PEAK PULSE POWER CURVE



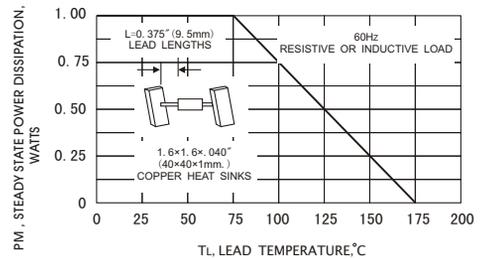
### FIG. 2-PULSE DERATING CURVE



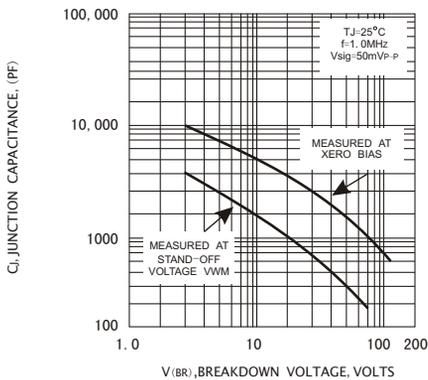
### FIG. 3-PULSE WAVEFORM



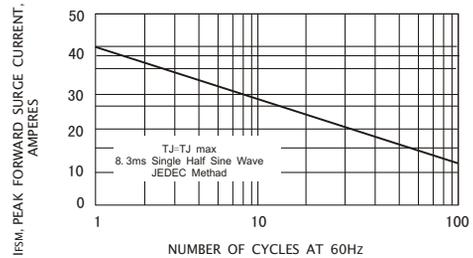
### FIG. 4-STeady State Power Derating Curve



### FIG. 5-TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL



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



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