

400W Transient Voltage Suppressor



SMD Diodes Specialist

P4KE-G Series

Stand-off Voltage: 6.8 ~ 600V

Power Dissipation: 400 Watts

RoHS Device

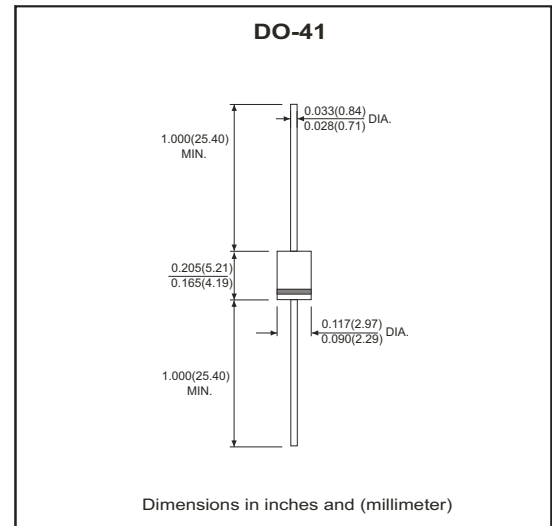


Features

- Glass passivated chip
- Low leakage
- Uni and Bidirection unit
- Excellent clamping capability
- The plastic material has UL recognition 94V-0
- Fast response time: typically less than 1.0pS from 0 volts to BV min

Mechanical Data

- Case: Molded plastic DO-41
- Polarity: By cathode band denotes unidirectional device none cathode band denoted bi-directional device
- Weight: 0.34 gram



Maximum Ratings and Electrical Characteristics

Rating at 25 °C ambient unless otherwise specified.

Single phase, half wave, 60Hz, resistive or inductive load.

For capacitive load, derate current by 20%.

| Parameter | Symbol | Value | Unit |
|---|-----------------------------------|----------------|------|
| Peak power dissipation a 10/1000µs waveform (Note 1) | PPP | 400 | W |
| Peak pulse current with a 10/1000µs waveform (Note 1) | IPP | See Next Table | A |
| Power dissipation on infinite heatsink at T _L =75°C | PD | 1.0 | W |
| Peak forward surge current, 8.3ms single half sine-wave unidirectional only(Note 2) | IFSM | 40 | A |
| Maximum instantaneous forward voltage at 25A for unidirectional only (Note 3) | V _F | 3.5/5.0 | V |
| Operating junction and storage temperature range | T _J , T _{STG} | -55 to +150 | °C |

NTOES:

(1) Non-repetitive current pulse, per fig.5 and derated above T_A=25 °C per fig. 1.

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

(3) V_F<3.5V for devices of V_{BR}<200V and V_F<5.0V for devices of V_{BR}>201V.

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RATING AND CHARACTERISTIC (P4KE-G Series)

| Part No. | | Absolute Maximum Rating (Ta=25 °C) | | | | | Electrical Characteristics (Ta=25 °C) | | | Marking Code. | |
|------------|-------------|------------------------------------|----------------------|----------------------|----------------|------------------|---------------------------------------|----------------------|---------------------------------------|---------------|-----------|
| Uni | Bi | V _{RWM} | V _{BR} Min. | V _{BR} Max. | I _T | I _{FSM} | Max. Vc @I _{PPM} | | Max. I _R @V _{RWM} | Uni | Bi |
| | | (V) | (V) | (V) | (mA) | (A)@8.3mS | (V) | I _{PPM} (A) | uA | | |
| P4KE6.8-G | P4KE6.8C-G | 5.5 | 6.12 | 7.48 | 10 | 40 | 10.8 | 37.04 | 1000 | P4KE6.8 | P4KE6.8C |
| P4KE6.8A-G | P4KE6.8CA-G | 5.8 | 6.46 | 7.14 | 10 | 40 | 10.5 | 38.10 | 1000 | P4KE6.8A | P4KE6.8CA |
| P4KE7.5-G | P4KE7.5C-G | 6.1 | 6.75 | 8.25 | 10 | 40 | 11.7 | 34.19 | 500 | P4KE7.5 | P4KE7.5C |
| P4KE7.5A-G | P4KE7.5CA-G | 6.4 | 7.13 | 7.88 | 10 | 40 | 11.3 | 35.40 | 500 | P4KE7.5A | P4KE7.5CA |
| P4KE8.2-G | P4KE8.2C-G | 6.6 | 7.38 | 9.02 | 10 | 40 | 12.5 | 32.00 | 200 | P4KE8.2 | P4KE8.2C |
| P4KE8.2A-G | P4KE8.2CA-G | 7.0 | 7.79 | 8.61 | 10 | 40 | 12.1 | 33.06 | 200 | P4KE8.2A | P4KE8.2CA |
| P4KE9.1-G | P4KE9.1C-G | 7.4 | 8.19 | 10.0 | 1 | 40 | 13.8 | 28.99 | 50 | P4KE9.1 | P4KE9.1C |
| P4KE9.1A-G | P4KE9.1CA-G | 7.8 | 8.65 | 9.56 | 1 | 40 | 13.4 | 29.85 | 50 | P4KE9.1 | P4KE9.1CA |
| P4KE10-G | P4KE10C-G | 8.1 | 9.00 | 11.00 | 1 | 40 | 15.0 | 26.67 | 10 | P4KE10 | P4KE10C |
| P4KE10A-G | P4KE10CA-G | 8.6 | 9.50 | 10.50 | 1 | 40 | 14.5 | 27.59 | 10 | P4KE10A | P4KE10CA |
| P4KE11-G | P4KE11C-G | 8.9 | 9.90 | 12.10 | 1 | 40 | 16.2 | 24.69 | 5 | P4KE11 | P4KE11C |
| P4KE11A-G | P4KE11CA-G | 9.4 | 10.45 | 11.55 | 1 | 40 | 15.6 | 25.64 | 5 | P4KE11A | P4KE11CA |
| P4KE12-G | P4KE12C-G | 9.7 | 10.80 | 13.20 | 1 | 40 | 17.3 | 23.12 | 5 | P4KE12 | P4KE12C |
| P4KE12A-G | P4KE12CA-G | 10.2 | 11.40 | 12.60 | 1 | 40 | 16.7 | 23.95 | 5 | P4KE12A | P4KE12CA |
| P4KE13-G | P4KE13C-G | 10.5 | 11.70 | 14.30 | 1 | 40 | 19.0 | 21.05 | 5 | P4KE13 | P4KE13C |
| P4KE13A-G | P4KE13CA-G | 11.1 | 12.35 | 13.65 | 1 | 40 | 18.2 | 21.98 | 5 | P4KE13A | P4KE13CA |
| P4KE15-G | P4KE15C-G | 12.1 | 13.50 | 16.50 | 1 | 40 | 22.0 | 18.18 | 5 | P4KE15 | P4KE15C |
| P4KE15A-G | P4KE15CA-G | 12.8 | 14.25 | 15.75 | 1 | 40 | 21.2 | 18.87 | 5 | P4KE15A | P4KE15CA |
| P4KE16-G | P4KE16C-G | 12.9 | 14.40 | 17.60 | 1 | 40 | 23.5 | 17.02 | 5 | P4KE16 | P4KE16C |
| P4KE16A-G | P4KE16CA-G | 13.6 | 15.20 | 16.90 | 1 | 40 | 22.5 | 17.78 | 5 | P4KE16A | P4KE16CA |
| P4KE18-G | P4KE18C-G | 14.5 | 16.20 | 19.80 | 1 | 40 | 26.5 | 15.09 | 5 | P4KE18 | P4KE18C |
| P4KE18A-G | P4KE18CA-G | 15.3 | 17.10 | 18.90 | 1 | 40 | 25.2 | 15.87 | 5 | P4KE18A | P4KE18CA |
| P4KE20-G | P4KE20C-G | 16.2 | 18.00 | 22.00 | 1 | 40 | 29.1 | 13.75 | 5 | P4KE20 | P4KE20C |
| P4KE20A-G | P4KE20CA-G | 17.1 | 19.00 | 21.00 | 1 | 40 | 27.7 | 14.44 | 5 | P4KE20A | P4KE20CA |
| P4KE22-G | P4KE22C-G | 17.8 | 19.80 | 24.20 | 1 | 40 | 31.9 | 12.54 | 5 | P4KE22 | P4KE22C |
| P4KE22A-G | P4KE22CA-G | 18.8 | 20.90 | 23.10 | 1 | 40 | 30.6 | 13.07 | 5 | P4KE22A | P4KE22CA |
| P4KE24-G | P4KE24C-G | 19.4 | 21.60 | 26.40 | 1 | 40 | 34.7 | 11.53 | 5 | P4KE24 | P4KE24C |
| P4KE24A-G | P4KE24CA-G | 20.5 | 22.80 | 25.20 | 1 | 40 | 33.2 | 12.05 | 5 | P4KE24A | P4KE24CA |
| P4KE27-G | P4KE27C-G | 21.8 | 24.30 | 29.70 | 1 | 40 | 39.1 | 10.23 | 5 | P4KE27 | P4KE27C |
| P4KE27A-G | P4KE27CA-G | 23.1 | 25.65 | 28.35 | 1 | 40 | 37.5 | 10.67 | 5 | P4KE27A | P4KE27CA |
| P4KE30-G | P4KE30C-G | 24.3 | 27.00 | 33.00 | 1 | 40 | 43.5 | 9.20 | 5 | P4KE30 | P4KE30C |
| P4KE30A-G | P4KE30CA-G | 25.6 | 28.50 | 31.50 | 1 | 40 | 41.4 | 9.66 | 5 | P4KE30A | P4KE30CA |
| P4KE33-G | P4KE33C-G | 26.8 | 29.70 | 36.30 | 1 | 40 | 47.7 | 8.39 | 5 | P4KE33 | P4KE33C |
| P4KE33A-G | P4KE33CA-G | 28.2 | 31.35 | 34.65 | 1 | 40 | 45.7 | 8.75 | 5 | P4KE33A | P4KE33CA |
| P4KE36-G | P4KE36C-G | 29.1 | 32.40 | 39.60 | 1 | 40 | 52.0 | 7.69 | 5 | P4KE36 | P4KE36C |
| P4KE36A-G | P4KE36CA-G | 30.8 | 34.20 | 37.80 | 1 | 40 | 49.9 | 8.02 | 5 | P4KE36A | P4KE36CA |
| P4KE39-G | P4KE39C-G | 31.6 | 35.10 | 42.90 | 1 | 40 | 56.4 | 7.09 | 5 | P4KE39 | P4KE39C |
| P4KE39A-G | P4KE39CA-G | 33.3 | 37.05 | 40.95 | 1 | 40 | 53.9 | 7.42 | 5 | P4KE39A | P4KE39CA |
| P4KE43-G | P4KE43C-G | 34.8 | 38.70 | 47.30 | 1 | 40 | 61.9 | 6.46 | 5 | P4KE43 | P4KE43C |
| P4KE43A-G | P4KE43CA-G | 36.8 | 40.85 | 45.15 | 1 | 40 | 59.3 | 6.75 | 5 | P4KE43A | P4KE43CA |
| P4KE47-G | P4KE47C-G | 38.1 | 42.30 | 51.70 | 1 | 40 | 67.8 | 5.90 | 5 | P4KE47 | P4KE47C |
| P4KE47A-G | P4KE47CA-G | 40.2 | 44.65 | 49.35 | 1 | 40 | 64.8 | 6.17 | 5 | P4KE47A | P4KE47CA |
| P4KE51-G | P4KE51C-G | 41.3 | 45.90 | 56.10 | 1 | 40 | 73.5 | 5.44 | 5 | P4KE51 | P4KE51C |
| P4KE51A-G | P4KE51CA-G | 43.6 | 48.45 | 53.55 | 1 | 40 | 70.1 | 5.71 | 5 | P4KE51A | P4KE51CA |

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|------------|-------------|------------------------------------|----------------------|----------------------|----------------|------------------|---------------------------------------|----------------------|---------------------------------------|---------------|-----------|
| Uni | Bi | V _{RWM} | V _{BR} Min. | V _{BR} Max. | I _T | I _{FSM} | Max. V _c @I _{PPM} | | Max. I _R @V _{RWM} | Uni | Bi |
| | | (V) | (V) | (V) | (mA) | (A)@8.3mS | (V) | I _{PPM} (A) | uA | | |
| P4KE56-G | P4KE56C-G | 45.4 | 50.40 | 61.60 | 1 | 40 | 10.8 | 80.5 | 1000 | P4KE56 | P4KE56C |
| P4KE56A-G | P4KE56CA-G | 47.8 | 53.20 | 58.80 | 1 | 40 | 10.5 | 77.0 | 1000 | P4KE56A | P4KE56CA |
| P4KE62-G | P4KE62C-G | 50.2 | 55.80 | 68.20 | 1 | 40 | 11.7 | 89.0 | 500 | P4KE62 | P4KE62C |
| P4KE62A-G | P4KE62CA-G | 53.0 | 58.90 | 65.10 | 1 | 40 | 11.3 | 85.0 | 500 | P4KE62A | P4KE62CA |
| P4KE68-G | P4KE68C-G | 55.1 | 61.20 | 74.80 | 1 | 40 | 12.5 | 98.0 | 200 | P4KE68 | P4KE68C |
| P4KE68A-G | P4KE68CA-G | 58.1 | 64.60 | 74.40 | 1 | 40 | 12.1 | 92.0 | 200 | P4KE68A | P4KE68CA |
| P4KE75-G | P4KE75C-G | 60.7 | 67.50 | 82.50 | 1 | 40 | 13.8 | 108.0 | 50 | P4KE75 | P4KE75C |
| P4KE75A-G | P4KE75CA-G | 64.1 | 71.25 | 78.75 | 1 | 40 | 13.4 | 103.0 | 50 | P4KE75A | P4KE75CA |
| P4KE82-G | P4KE82C-G | 66.4 | 73.80 | 90.20 | 1 | 40 | 15.0 | 118.0 | 10 | P4KE82 | P4KE82C |
| P4KE82A-G | P4KE82CA-G | 70.1 | 77.90 | 86.10 | 1 | 40 | 14.5 | 113.0 | 10 | P4KE82A | P4KE82CA |
| P4KE91-G | P4KE91C-G | 73.7 | 81.90 | 100.10 | 1 | 40 | 16.2 | 131.0 | 5 | P4KE91 | P4KE91C |
| P4KE91A-G | P4KE91CA-G | 77.8 | 86.45 | 95.55 | 1 | 40 | 15.6 | 125.0 | 5 | P4KE91A | P4KE91CA |
| P4KE100-G | P4KE100C-G | 81.0 | 90.00 | 110.00 | 1 | 40 | 17.3 | 144.0 | 5 | P4KE100 | P4KE100C |
| P4KE100A-G | P4KE100CA-G | 85.5 | 95.00 | 105.00 | 1 | 40 | 16.7 | 137.0 | 5 | P4KE100A | P4KE100CA |
| P4KE110-G | P4KE110C-G | 89.2 | 99.00 | 121.00 | 1 | 40 | 19.0 | 158.0 | 5 | P4KE110 | P4KE110C |
| P4KE110A-G | P4KE110CA-G | 94.0 | 104.5 | 115.50 | 1 | 40 | 18.2 | 152.0 | 5 | P4KE110A | P4KE110CA |
| P4KE120-G | P4KE120C-G | 97.2 | 108.00 | 132.00 | 1 | 40 | 22.0 | 173.0 | 5 | P4KE120 | P4KE120C |
| P4KE120A-G | P4KE120CA-G | 102.0 | 114.00 | 126.00 | 1 | 40 | 21.2 | 165.0 | 5 | P4KE120A | P4KE120CA |
| P4KE130-G | P4KE130C-G | 105.0 | 117.00 | 143.00 | 1 | 40 | 23.5 | 187.0 | 5 | P4KE130 | P4KE130C |
| P4KE130A-G | P4KE130CA-G | 111.0 | 123.50 | 136.50 | 1 | 40 | 22.5 | 179.0 | 5 | P4KE130A | P4KE130CA |
| P4KE150-G | P4KE150C-G | 121.0 | 135.00 | 165.00 | 1 | 40 | 26.5 | 215.0 | 5 | P4KE150 | P4KE150C |
| P4KE150A-G | P4KE150CA-G | 128.0 | 142.50 | 157.50 | 1 | 40 | 25.5 | 207.0 | 5 | P4KE150A | P4KE150CA |
| P4KE160-G | P4KE160C-G | 130.0 | 144.00 | 176.00 | 1 | 40 | 29.1 | 230.0 | 5 | P4KE160 | P4KE160C |
| P4KE160A-G | P4KE160CA-G | 136.0 | 152.00 | 168.00 | 1 | 40 | 27.7 | 219.0 | 5 | P4KE160A | P4KE160CA |
| P4KE170-G | P4KE170C-G | 138.0 | 153.00 | 187.00 | 1 | 40 | 31.9 | 244.0 | 5 | P4KE170 | P4KE170C |
| P4KE170A-G | P4KE170CA-G | 145.0 | 161.50 | 178.50 | 1 | 40 | 30.6 | 234.0 | 5 | P4KE170A | P4KE170CA |
| P4KE180-G | P4KE180C-G | 146.0 | 162.00 | 198.00 | 1 | 40 | 34.7 | 258.0 | 5 | P4KE180 | P4KE180C |
| P4KE180A-G | P4KE180CA-G | 154.0 | 171.00 | 189.00 | 1 | 40 | 33.2 | 246.0 | 5 | P4KE180A | P4KE180CA |
| P4KE200-G | P4KE200C-G | 162.0 | 180.00 | 220.00 | 1 | 40 | 39.1 | 287.0 | 5 | P4KE200 | P4KE200C |
| P4KE200A-G | P4KE200CA-G | 171.0 | 190.00 | 210.00 | 1 | 40 | 37.5 | 274.0 | 5 | P4KE200A | P4KE200CA |
| P4KE220-G | P4KE220C-G | 175.0 | 198.00 | 242.00 | 1 | 40 | 43.5 | 344.0 | 5 | P4KE220 | P4KE220C |
| P4KE220A-G | P4KE220CA-G | 185.0 | 209.00 | 231.00 | 1 | 40 | 41.4 | 328.0 | 5 | P4KE220A | P4KE220CA |
| P4KE250-G | P4KE250C-G | 202.0 | 225.00 | 275.00 | 1 | 40 | 47.4 | 360.0 | 5 | P4KE250 | P4KE250C |
| P4KE250A-G | P4KE250CA-G | 214.0 | 237.50 | 262.50 | 1 | 40 | 45.7 | 344.0 | 5 | P4KE250A | P4KE250CA |
| P4KE300-G | P4KE300C-G | 243.0 | 270.00 | 330.00 | 1 | 40 | 52.0 | 430.0 | 5 | P4KE300 | P4KE300C |
| P4KE300A-G | P4KE300CA-G | 256.0 | 285.00 | 315.00 | 1 | 40 | 49.9 | 414.0 | 5 | P4KE300A | P4KE300CA |
| P4KE350-G | P4KE350C-G | 284.2 | 315.00 | 385.00 | 1 | 40 | 56.4 | 504.0 | 5 | P4KE350 | P4KE350C |
| P4KE350A-G | P4KE350CA-G | 299.3 | 332.50 | 367.50 | 1 | 40 | 53.9 | 482.0 | 5 | P4KE350A | P4KE350CA |
| P4KE380-G | P4KE380C-G | 308.6 | 342.00 | 418.00 | 1 | 40 | 61.9 | 547.2 | 5 | P4KE380 | P4KE380C |
| P4KE380A-G | P4KE380CA-G | 324.9 | 361.00 | 399.00 | 1 | 40 | 59.3 | 524.4 | 5 | P4KE380A | P4KE380CA |
| P4KE400-G | P4KE400C-G | 324.8 | 360.00 | 440.00 | 1 | 40 | 67.8 | 576.0 | 5 | P4KE400 | P4KE400C |
| P4KE400A-G | P4KE400CA-G | 342.0 | 380.00 | 420.00 | 1 | 40 | 64.8 | 552.0 | 5 | P4KE400A | P4KE400CA |
| P4KE440-G | P4KE440C-G | 357.3 | 396.00 | 484.00 | 1 | 40 | 73.5 | 633.6 | 5 | P4KE440 | P4KE440C |
| P4KE440A-G | P4KE440CA-G | 376.2 | 418.00 | 462.00 | 1 | 40 | 70.1 | 607.2 | 5 | P4KE440A | P4KE440CA |

REV:B

400W Transient Voltage Suppressor



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RATING AND CHARACTERISTIC (P4KE-G Series)

| Part No. | | Absolute Maximum Rating (Ta=25 °C) | | | | | Electrical Characteristics (Ta=25 °C) | | | Marking Code. | |
|------------|-------------|------------------------------------|----------------------|----------------------|----------------|------------------|---------------------------------------|----------------------|---------------------------------------|---------------|-----------|
| Uni | Bi | V _{RWM} | V _{BR} Min. | V _{BR} Max. | I _T | I _{FSM} | Max. V _C @I _{PPM} | | Max. I _R @V _{RWM} | Uni | Bi |
| | | (V) | (V) | (V) | (mA) | (A)@8.3mS | (V) | I _{PPM} (A) | uA | | |
| P4KE500-G | P4KE500C-G | 406.0 | 450.00 | 550.00 | 1 | 40 | 720.0 | 0.56 | 5 | P4KE500 | P4KE500C |
| P4KE500A-G | P4KE500CA-G | 427.5 | 475.00 | 525.00 | 1 | 40 | 690.0 | 0.58 | 5 | P4KE500A | P4KE500CA |
| P4KE520-G | P4KE520C-G | 422.2 | 468.00 | 572.00 | 1 | 40 | 748.8 | 0.53 | 5 | P4KE520 | P4KE520C |
| P4KE520A-G | P4KE520CA-G | 444.6 | 494.00 | 546.00 | 1 | 40 | 717.6 | 0.56 | 5 | P4KE520A | P4KE520CA |
| P4KE550-G | P4KE550C-G | 444.6 | 495.00 | 605.00 | 1 | 40 | 792.0 | 0.51 | 5 | P4KE550 | P4KE550C |
| P4KE550A-G | P4KE550CA-G | 470.3 | 522.50 | 577.50 | 1 | 40 | 759.0 | 0.53 | 5 | P4KE550A | P4KE550CA |
| P4KE600-G | P4KE600C-G | 487.2 | 540.00 | 660.00 | 1 | 40 | 864.0 | 0.46 | 5 | P4KE600 | P4KE600C |
| P4KE600A-G | P4KE600CA-G | 513.0 | 570.00 | 630.00 | 1 | 40 | 828.0 | 0.48 | 5 | P4KE600A | P4KE600CA |

NOTES:

1. Suffix 'A' denotes 5% tolerance device. Without 'A' denotes 10% tolerance device
2. Add suffix 'C' or 'CA' after part number to specify Bi-directional devices
3. For Bi-Directional devices having V_R of 10 Volts and under, the I_R Limit is double

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RATING AND CHARACTERISTIC CURVES (P4KE-G Series)

Fig.1 Pulse Derating Curve

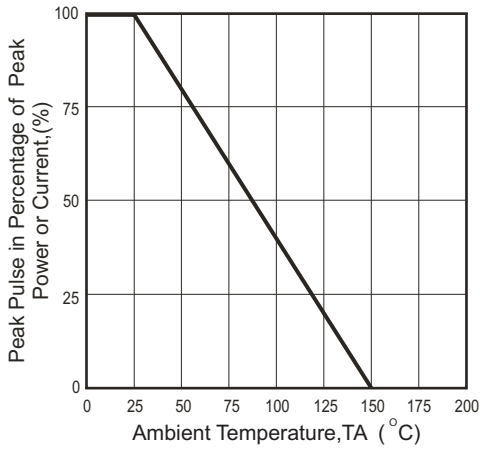


Fig.2 Typical Reverse Characteristics

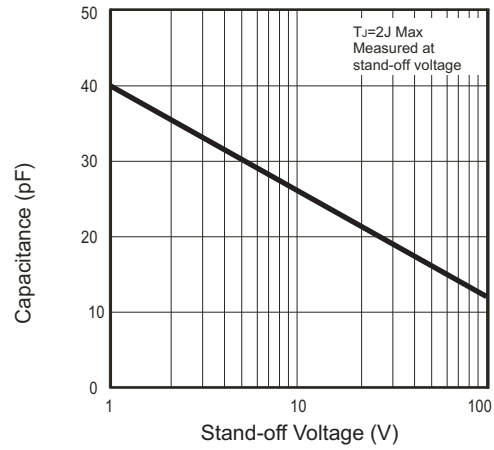


Fig.3 Steady State Power Derating Curve

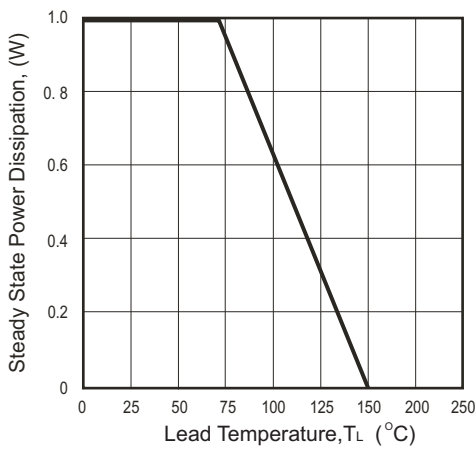


Fig.4 Peak Pulse Power Rating Curve

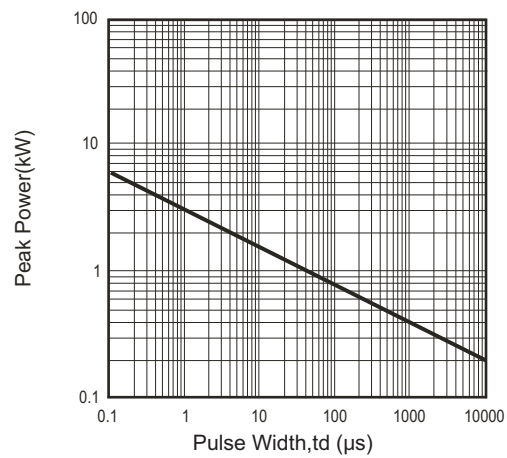


Fig.5 Pulse Waveform

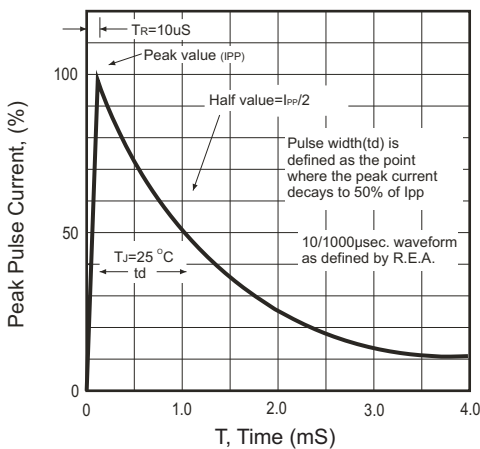


Fig.6 Typical Junction Capacitance

