

FEATURES

- | Plastic package
- | Glass passivated chip junction in DO-41 Package
- | 400W peak pulse power capability on 10/1000us waveform
- | Excellent clamping capability
- | Low zener impedance
- | Fast response time: typically less than 1.0ps from 0 Volts to V_{BR} Min
- | Typical IR less than 1uA above 12V
- | Polarity: Color band denoted cathode except bidirectional
- | Mounting Position: Any



DO-41



Bi-directional



Uni-directional

Schematic Symbol

APPROVALS

| | |
|-------------|------------------------------------|
| RoHS | Compliance with 2011/65/EU |
| HF | Compliance with IEC61249-2-21:2003 |

MAXIMUM RATINGS AND CHARACTERISTICS ($T_A=25^{\circ}\text{C}$)

| Parameter | Symbol | Value | Unit |
|---|-----------------|-------------|-----------------------------|
| Peak pulse power dissipation at 10/1000 μ s waveform | P_{PP} | 400 | W |
| Steady state power dissipation at $T_L=75^{\circ}\text{C}$ | P_D | 1.5 | |
| Peak Pulse Current of on 10/1000us waveform(Note1) | I_{PPM} | See Table | A |
| Peak forward surge current, 8.3ms single half sine-wave for unidirectional only | I_{FSM} | 40 | |
| Typical thermal resistance, junction to ambient | $R_{\theta JA}$ | 100 | $^{\circ}\text{C}/\text{W}$ |
| Operating junction and storage temperature range | T_J, T_{STG} | -55 to +150 | $^{\circ}\text{C}$ |

ELECTRICAL CHARACTERISTICS (T_A=25°C)

| Part Number | | Marking Code | | V _R | V _{BR} @I _T | | I _T | V _C @I _{PP} | I _{PP} ^① | I _R @V _R |
|-------------|-----------|--------------|-----------|----------------|---------------------------------|---------|----------------|---------------------------------|------------------------------|--------------------------------|
| Uni-Polar | Bi-Polar | Uni-Polar | Bi-Polar | V | Min(V) | Max (V) | mA | V | A | Max(μA) |
| P4KE6.8A | P4KE6.8CA | P4KE6.8A | P4KE6.8CA | 5.8 | 6.45 | 7.14 | 10.0 | 10.5 | 39.0 | 1000.0 |
| P4KE7.5A | P4KE7.5CA | P4KE7.5A | P4KE7.5CA | 6.4 | 7.13 | 7.88 | 10.0 | 11.3 | 36.3 | 500.0 |
| P4KE8.2A | P4KE8.2CA | P4KE8.2A | P4KE8.2CA | 7.02 | 7.79 | 8.61 | 10.0 | 12.1 | 33.9 | 200.0 |
| P4KE9.1A | P4KE9.1CA | P4KE9.1A | P4KE9.1CA | 7.78 | 8.65 | 9.55 | 1.0 | 13.4 | 30.6 | 50.0 |
| P4KE10A | P4KE10CA | P4KE10A | P4KE10CA | 8.55 | 9.5 | 10.5 | 1.0 | 14.5 | 28.3 | 10.0 |
| P4KE11A | P4KE11CA | P4KE11A | P4KE11CA | 9.4 | 10.5 | 11.6 | 1.0 | 15.6 | 26.3 | 5.0 |
| P4KE12A | P4KE12CA | P4KE12A | P4KE12CA | 10.2 | 11.4 | 12.6 | 1.0 | 16.7 | 24.6 | 5.0 |
| P4KE13A | P4KE13CA | P4KE13A | P4KE13CA | 11.1 | 12.4 | 13.7 | 1.0 | 18.2 | 22.5 | 1.0 |
| P4KE15A | P4KE15CA | P4KE15A | P4KE15CA | 12.8 | 14.3 | 15.8 | 1.0 | 21.2 | 19.3 | 1.0 |
| P4KE16A | P4KE16CA | P4KE16A | P4KE16CA | 13.6 | 15.2 | 16.8 | 1.0 | 22.5 | 18.2 | 1.0 |
| P4KE18A | P4KE18CA | P4KE18A | P4KE18CA | 15.3 | 17.1 | 18.9 | 1.0 | 25.5 | 16.1 | 1.0 |
| P4KE20A | P4KE20CA | P4KE20A | P4KE20CA | 17.1 | 19.0 | 21.0 | 1.0 | 27.7 | 14.8 | 1.0 |
| P4KE22A | P4KE22CA | P4KE22A | P4KE22CA | 18.8 | 20.9 | 23.1 | 1.0 | 30.6 | 13.4 | 1.0 |
| P4KE24A | P4KE24CA | P4KE24A | P4KE24CA | 20.5 | 22.8 | 25.2 | 1.0 | 33.2 | 12.3 | 1.0 |
| P4KE27A | P4KE27CA | P4KE27A | P4KE27CA | 23.1 | 25.7 | 28.4 | 1.0 | 37.5 | 10.9 | 1.0 |
| P4KE30A | P4KE30CA | P4KE30A | P4KE30CA | 25.6 | 28.5 | 31.5 | 1.0 | 41.4 | 9.9 | 1.0 |
| P4KE33A | P4KE33CA | P4KE33A | P4KE33CA | 28.2 | 31.4 | 34.7 | 1.0 | 45.7 | 9.0 | 1.0 |
| P4KE36A | P4KE36CA | P4KE36A | P4KE36CA | 30.8 | 34.2 | 37.8 | 1.0 | 49.9 | 8.2 | 1.0 |
| P4KE39A | P4KE39CA | P4KE39A | P4KE39CA | 33.3 | 37.1 | 41.0 | 1.0 | 53.9 | 7.6 | 1.0 |
| P4KE43A | P4KE43CA | P4KE43A | P4KE43CA | 36.8 | 40.9 | 45.2 | 1.0 | 59.3 | 6.9 | 1.0 |
| P4KE47A | P4KE47CA | P4KE47A | P4KE47CA | 40.2 | 44.7 | 49.4 | 1.0 | 64.8 | 6.3 | 1.0 |
| P4KE51A | P4KE51CA | P4KE51A | P4KE51CA | 43.6 | 48.5 | 53.6 | 1.0 | 70.1 | 5.8 | 1.0 |
| P4KE56A | P4KE56CA | P4KE56A | P4KE56CA | 47.8 | 53.2 | 58.8 | 1.0 | 77.0 | 5.3 | 1.0 |
| P4KE62A | P4KE62CA | P4KE62A | P4KE62CA | 53.0 | 58.9 | 65.1 | 1.0 | 85.0 | 4.8 | 1.0 |

| Part Number | | Marking Code | | V_R | $V_{BR}@I_T$ | | I_T | $V_C@I_{PP}$ | $I_{PP}^{①}$ | $I_R@V_R$ |
|-------------|-----------|--------------|-----------|-------|--------------|---------|-------|--------------|--------------|-----------|
| Uni-Polar | Bi-Polar | Uni-Polar | Bi-Polar | V | Min(V) | Max (V) | mA | V | A | Max(μA) |
| P4KE68A | P4KE68CA | P4KE68A | P4KE68CA | 58.1 | 64.6 | 71.4 | 1.0 | 92.0 | 4.5 | 1.0 |
| P4KE75A | P4KE75CA | P4KE75A | P4KE75CA | 64.1 | 71.3 | 78.8 | 1.0 | 103.0 | 4.0 | 1.0 |
| P4KE82A | P4KE82CA | P4KE82A | P4KE82CA | 70.1 | 77.9 | 86.1 | 1.0 | 113.0 | 3.6 | 1.0 |
| P4KE91A | P4KE91CA | P4KE91A | P4KE91CA | 77.8 | 86.5 | 95.5 | 1.0 | 125.0 | 3.3 | 1.0 |
| P4KE100A | P4KE100CA | P4KE100A | P4KE100CA | 85.5 | 95.0 | 105.0 | 1.0 | 137.0 | 3.0 | 1.0 |
| P4KE110A | P4KE110CA | P4KE110A | P4KE110CA | 94.0 | 105.0 | 116.0 | 1.0 | 152.0 | 2.7 | 1.0 |
| P4KE120A | P4KE120CA | P4KE120A | P4KE120CA | 102.0 | 114.0 | 126.0 | 1.0 | 165.0 | 2.5 | 1.0 |
| P4KE130A | P4KE130CA | P4KE130A | P4KE130CA | 111.0 | 124.0 | 137.0 | 1.0 | 179.0 | 2.3 | 1.0 |
| P4KE150A | P4KE150CA | P4KE150A | P4KE150CA | 128.0 | 143.0 | 158.0 | 1.0 | 207.0 | 2.0 | 1.0 |
| P4KE160A | P4KE160CA | P4KE160A | P4KE160CA | 136.0 | 152.0 | 168.0 | 1.0 | 219.0 | 1.9 | 1.0 |
| P4KE170A | P4KE170CA | P4KE170A | P4KE170CA | 145.0 | 162.0 | 179.0 | 1.0 | 234.0 | 1.8 | 1.0 |
| P4KE180A | P4KE180CA | P4KE180A | P4KE180CA | 154.0 | 171.0 | 189.0 | 1.0 | 246.0 | 1.7 | 1.0 |
| P4KE200A | P4KE200CA | P4KE200A | P4KE200CA | 171.0 | 190.0 | 210.0 | 1.0 | 274.0 | 1.5 | 1.0 |
| P4KE220A | P4KE220CA | P4KE220A | P4KE220CA | 185.0 | 209.0 | 231.0 | 1.0 | 328.0 | 1.3 | 1.0 |
| P4KE250A | P4KE250CA | P4KE250A | P4KE250CA | 214.0 | 237.0 | 263.0 | 1.0 | 344.0 | 1.2 | 1.0 |
| P4KE300A | P4KE300CA | P4KE300A | P4KE300CA | 256.0 | 285.0 | 315.0 | 1.0 | 414.0 | 1.0 | 1.0 |
| P4KE350A | P4KE350CA | P4KE350A | P4KE350CA | 300.0 | 332.0 | 368.0 | 1.0 | 482.0 | 0.85 | 1.0 |
| P4KE400A | P4KE400CA | P4KE400A | P4KE400CA | 342.0 | 380.0 | 420.0 | 1.0 | 548.0 | 0.75 | 1.0 |
| P4KE440A | P4KE440CA | P4KE440A | P4KE440CA | 376.0 | 418.0 | 462.0 | 1.0 | 602.0 | 0.68 | 1.0 |
| P4KE480A | P4KE480CA | P4KE480A | P4KE480CA | 408.0 | 456.0 | 504.0 | 1.0 | 658.0 | 0.61 | 1.0 |
| P4KE510A | P4KE510CA | P4KE510A | P4KE510CA | 434.0 | 485.0 | 535.0 | 1.0 | 698.0 | 0.57 | 1.0 |
| P4KE530A | P4KE530CA | P4KE530A | P4KE530CA | 451.0 | 503.5 | 556.5 | 1.0 | 725.0 | 0.55 | 1.0 |
| P4KE540A | P4KE540CA | P4KE540A | P4KE540CA | 459.0 | 513.0 | 567.0 | 1.0 | 740.0 | 0.54 | 1.0 |
| P4KE550A | P4KE550CA | P4KE550A | P4KE550CA | 467.0 | 522.5 | 577.5 | 1.0 | 760.0 | 0.52 | 1.0 |
| P4KE600A | P4KE600CA | P4KE600A | P4KE600CA | 510.0 | 570.0 | 630.0 | 1.0 | 828.0 | 0.48 | 1.0 |

Note:

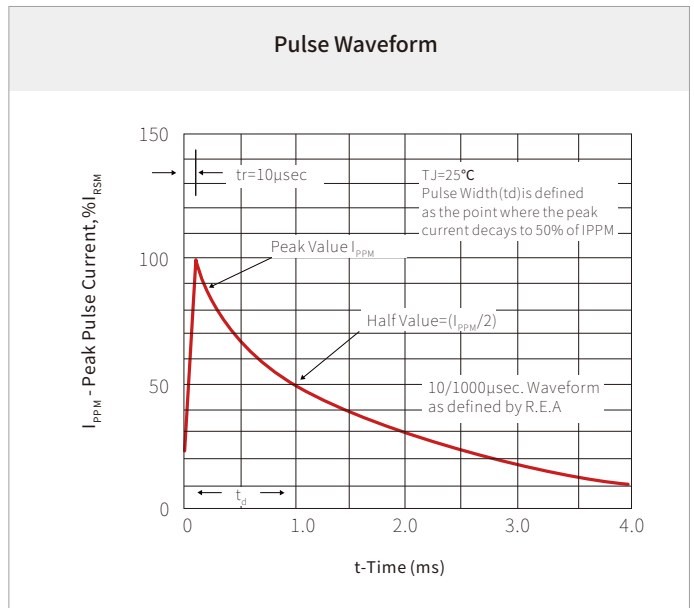
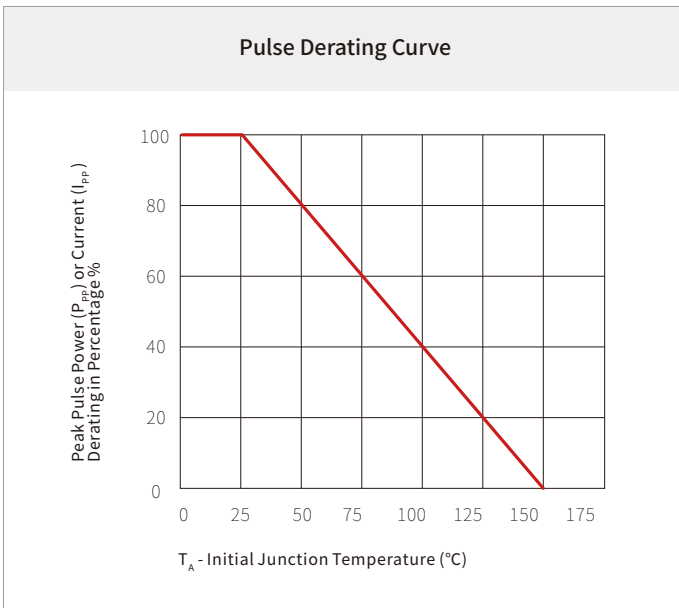
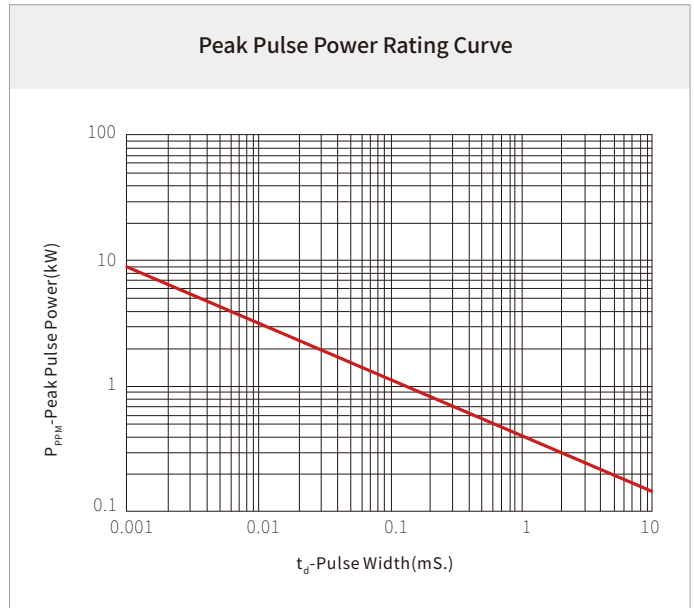
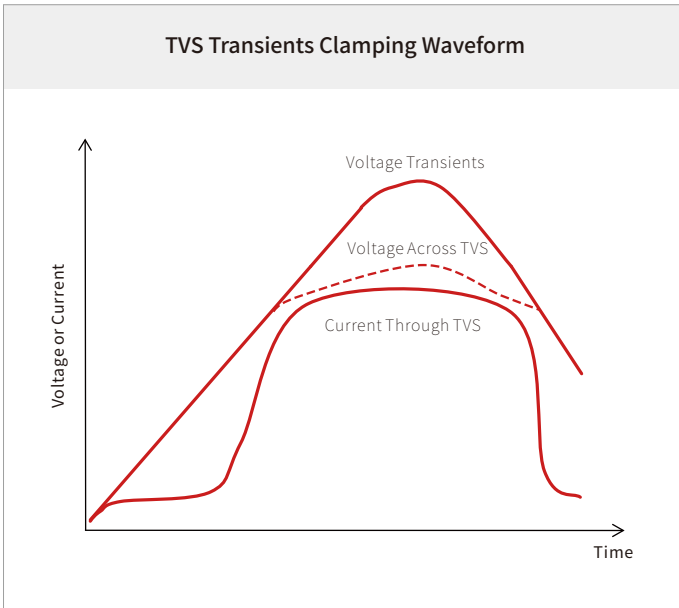
① Surge waveform: 10/1000μs

 V_R : Stand-off voltage -- Maximum voltage that can be applied

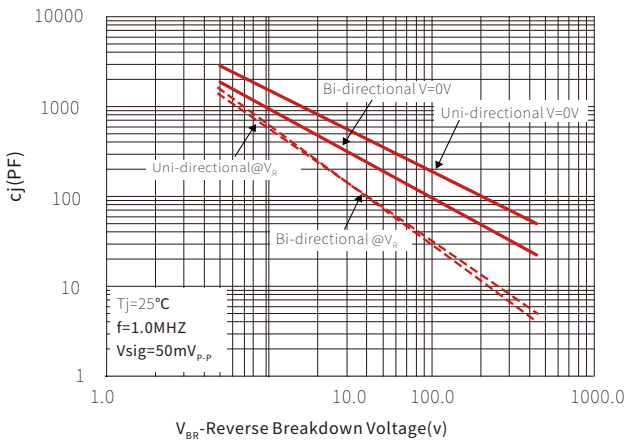
 V_{BR} : Breakdown voltage

 V_C : Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{PP}
 I_R : Reverse leakage current

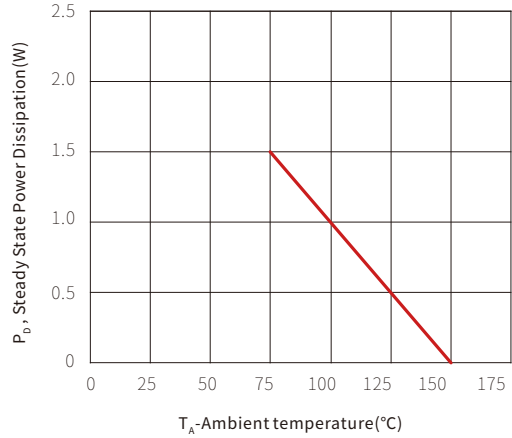
CHARACTERISTIC CURVES



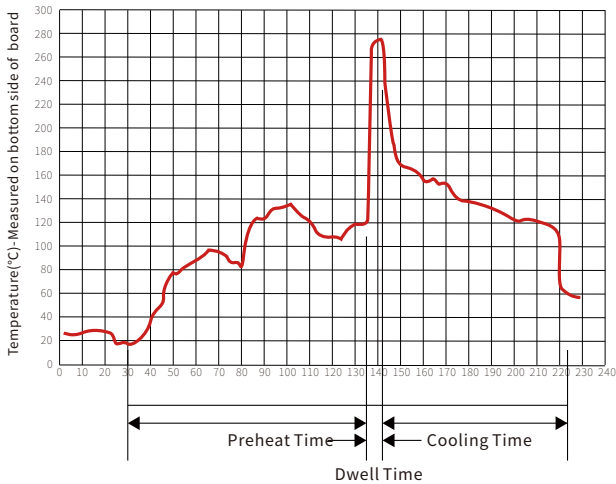
Typical Junction Capacitance



Steady State Power Dissipation Derating Curve

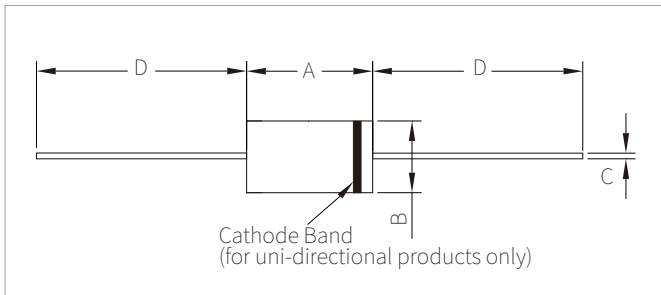


WAVE SOLDERING



| Wave Parameter | | Lead-free assembly |
|------------------------|------------------|--------------------|
| Pre Heat | Temperature Min | 100°C |
| | Temperature Max | 150°C |
| | Time(min to max) | 60 – 180 secs |
| Solder pot Temperature | | 280°C Max |
| Solder Dwell Time | | 2-5 seconds |

DO-41 PACKAGE INFORMATION



| Ref. | Millimeters | | Inches | |
|------|-------------|------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.10 | 5.20 | 0.160 | 0.205 |
| B | 2.00 | 2.70 | 0.080 | 0.107 |
| C | 0.71 | 0.86 | 0.028 | 0.034 |
| D | 25.40 | - | 1.000 | - |

ORDERING INFORMATION

| Part Number | Component Package | Per Carton | Description |
|-------------|-------------------|------------|-------------|
| P4KExxA/CA | DO-41 | 5000pcs | Box |

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