

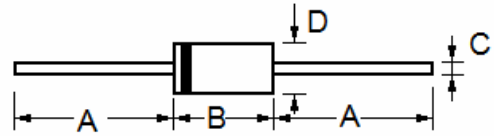


SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSORS

1.5KE6.8 - 1.5KE180A

FEATURES

- Peak power dissipation 1500W @10 x 1000 us Pulse
- Excellent clamping capability.
- Fast response time: typically less than 1 ns.
- Typical IR less than 1uA above 10V.
- Plastic material has UL flammability classification 94V-0
- RoHS compliant in lead-free versions



DO-201

MECHANICAL CHARACTERISTICS

- CASE: JEDEC DO-201 Molded Plastic over glass passivated junction.
- Mounting Position: Any
- Polarity: by cathode band denotes uni-directional device.
- Terminal: Solder plated, solderable per MIL-STD-750, Method 2026

| Dim | Millimeters | | Inches | |
|-----|-------------|------|--------|-------|
| | Min | Max | Min | Max |
| A | 25.4 | --- | 1.000 | --- |
| B | 7.2 | 9.5 | 0.285 | 0.375 |
| C | 0.96 | 1.07 | 0.038 | 0.042 |
| D | 4.8 | 5.3 | 0.188 | 0.210 |

MAXIMUM RATINGS AND CHARACTERISTICS

| Parameter | Symbol | Value | Units |
|--|------------------|-------------|-------|
| Peak Pulse Power Dissipation on 10/1000 us Waveform (Note 1, 2, FIG.1) | P _{PPM} | Min 1500 | W |
| Peak Pulse Current of on 10/1000us Waveform (Note 1, FIG.3) | I _{PPM} | See Table 1 | Amps |
| Peak Forward Surge Current, 8.3ms Single Half Sine-wave Superimposed on Rated Load, (JEDEC Method) (Note 2. 3) | I _{FSM} | 200 | Amps |
| Operating Junction Temperature Range | T _J | -55 to 150 | °C |
| Storage Temperature Range | T _{STG} | -55 to 150 | °C |

Notes

1. Non-repetitive current pulse, per Fig.3 and derated above T_A=25°C per Fig.2.
2. Mounted on 5.0mm² (0.03mm thick) Copper Pads to each terminal.
3. 8.3 ms single half sine-wave, or equivalent square wave, Duty cycle=4 pluses per minute maximum.



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ELECTRICAL SPECIFICATION $T_A=25\text{ }^\circ\text{C}$

| Type Number | | Reverse Stand-Off Voltage | Breakdown Voltage Min. @ I_T | Breakdown Voltage Max. @ I_T | Test Current | Maximum Clamping Voltage @ I_{PP} | Peak Pulse Current | Reverse Leakage @ V_{RMW} |
|-------------|------------|---------------------------|--------------------------------|--------------------------------|--------------|-------------------------------------|--------------------|-----------------------------|
| (Uni) | (Bi) | $V_{RMW}(V)$ | $V_{BR\ MIN}(V)$ | $V_{BR\ MAX}(V)$ | $I_T\ (mA)$ | $V_C(V)$ | $I_{PP}(A)$ | $I_R(\mu A)$ |
| 1.5KE6.8 | 1.5KE6.8C | 5.50 | 6.12 | 7.48 | 10 | 10.8 | 140.7 | 1000.0 |
| 1.5KE6.8A | 1.5KE6.8CA | 5.80 | 6.45 | 7.14 | 10 | 10.5 | 144.8 | 1000.0 |
| 1.5KE7.5 | 1.5KE7.5C | 6.05 | 6.75 | 8.25 | 10 | 11.7 | 129.9 | 500.0 |
| 1.5KE7.5A | 1.5KE7.5CA | 6.40 | 7.13 | 7.88 | 10 | 11.3 | 134.5 | 500.0 |
| 1.5KE8.2 | 1.5KE8.2C | 6.63 | 7.38 | 9.02 | 10 | 12.5 | 121.6 | 200.0 |
| 1.5KE8.2A | 1.5KE8.2CA | 7.02 | 7.79 | 8.61 | 10 | 12.1 | 125.6 | 200.0 |
| 1.5KE9.1 | 1.5KE9.1C | 7.37 | 8.19 | 10.0 | 1.0 | 13.8 | 110.1 | 50.0 |
| 1.5KE9.1A | 1.5KE9.1CA | 7.78 | 8.65 | 9.55 | 1.0 | 13.4 | 113.4 | 50.0 |
| 1.5KE10 | 1.5KE10C | 8.10 | 9.00 | 11.0 | 1.0 | 15.0 | 101.3 | 10.0 |
| 1.5KE10A | 1.5KE10CA | 8.55 | 9.50 | 10.5 | 1.0 | 14.5 | 104.8 | 10.0 |
| 1.5KE11 | 1.5KE11C | 8.92 | 9.90 | 12.1 | 1.0 | 16.2 | 93.8 | 5.0 |
| 1.5KE11A | 1.5KE11CA | 9.40 | 10.5 | 11.6 | 1.0 | 15.6 | 97.4 | 5.0 |
| 1.5KE12 | 1.5KE12C | 9.72 | 10.8 | 13.2 | 1.0 | 17.3 | 87.9 | 5.0 |
| 1.5KE12A | 1.5KE12CA | 10.2 | 11.4 | 12.6 | 1.0 | 16.7 | 91.0 | 5.0 |
| 1.5KE13 | 1.5KE13C | 10.5 | 11.7 | 14.3 | 1.0 | 19.0 | 80.0 | 5.0 |
| 1.5KE13A | 1.5KE13CA | 11.1 | 12.4 | 13.7 | 1.0 | 18.2 | 83.5 | 5.0 |
| 1.5KE15 | 1.5KE15C | 12.1 | 13.5 | 16.5 | 1.0 | 22.0 | 69.1 | 5.0 |
| 1.5KE15A | 1.5KE15CA | 12.8 | 14.3 | 15.8 | 1.0 | 21.2 | 71.7 | 5.0 |
| 1.5KE16 | 1.5KE16C | 12.9 | 14.4 | 17.6 | 1.0 | 23.5 | 64.7 | 5.0 |
| 1.5KE16A | 1.5KE16CA | 13.6 | 15.2 | 16.8 | 1.0 | 22.5 | 67.6 | 5.0 |
| 1.5KE18 | 1.5KE18C | 14.5 | 16.2 | 19.8 | 1.0 | 26.5 | 57.4 | 5.0 |
| 1.5KE18A | 1.5KE18CA | 15.3 | 17.1 | 18.9 | 1.0 | 25.2 | 60.3 | 5.0 |
| 1.5KE20 | 1.5KE20C | 16.2 | 18.0 | 22.0 | 1.0 | 29.1 | 52.2 | 5.0 |
| 1.5KE20A | 1.5KE20CA | 17.1 | 19.0 | 21.0 | 1.0 | 27.7 | 54.9 | 5.0 |
| 1.5KE22 | 1.5KE22C | 17.8 | 19.8 | 24.2 | 1.0 | 31.9 | 47.6 | 5.0 |
| 1.5KE22A | 1.5KE22CA | 18.8 | 20.9 | 23.1 | 1.0 | 30.6 | 49.7 | 5.0 |
| 1.5KE24 | 1.5KE24C | 19.4 | 21.6 | 26.4 | 1.0 | 34.7 | 43.8 | 5.0 |
| 1.5KE24A | 1.5KE24CA | 20.5 | 22.8 | 25.2 | 1.0 | 33.2 | 45.8 | 5.0 |
| 1.5KE27 | 1.5KE27C | 21.8 | 24.3 | 29.7 | 1.0 | 39.1 | 38.9 | 5.0 |
| 1.5KE27A | 1.5KE27CA | 23.1 | 25.7 | 28.4 | 1.0 | 37.5 | 40.5 | 5.0 |
| 1.5KE30 | 1.5KE30C | 24.3 | 27.0 | 33.0 | 1.0 | 43.5 | 34.9 | 5.0 |
| 1.5KE30A | 1.5KE30CA | 25.6 | 28.5 | 31.5 | 1.0 | 41.4 | 36.7 | 5.0 |
| 1.5KE33 | 1.5KE33C | 26.8 | 29.7 | 36.3 | 1.0 | 47.7 | 31.9 | 5.0 |
| 1.5KE33A | 1.5KE33CA | 28.2 | 31.4 | 34.7 | 1.0 | 45.7 | 33.3 | 5.0 |
| 1.5KE36 | 1.5KE36C | 29.1 | 32.4 | 39.6 | 1.0 | 52.0 | 29.2 | 5.0 |
| 1.5KE36A | 1.5KE36CA | 30.8 | 34.2 | 37.8 | 1.0 | 49.9 | 30.5 | 5.0 |

For Bi-directional type having VRWM of 10 Volts and less, the IR limit is double



SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSORS

1.5KE6.8 - 1.5KE180A

| Type Number | | Reverse Stand-Off Voltage | Breakdown Voltage Min. @I _T | Breakdown Voltage Max. @ I _T | Test Current | Maximum Clamping Voltage @I _{PP} | Peak Pulse Current | Reverse Leakage @V _{RMW} |
|-------------|------------|---------------------------|--|---|---------------------|---|---------------------|-----------------------------------|
| (Uni) | (Bi) | V _{RMW} (V) | V _{BR MIN} (V) | V _{BR MAX} (V) | I _T (mA) | V _C (V) | I _{PP} (A) | I _R (uA) |
| 1.5KE39 | 1.5KE39C | 31.6 | 35.1 | 42.9 | 1.0 | 56.4 | 27.0 | 5.0 |
| 1.5KE39A | 1.5KE39CA | 33.3 | 37.1 | 41.0 | 1.0 | 53.9 | 28.2 | 5.0 |
| 1.5KE43 | 1.5KE43C | 34.8 | 38.7 | 47.3 | 1.0 | 61.9 | 24.6 | 5.0 |
| 1.5KE43A | 1.5KE43CA | 36.8 | 40.9 | 45.2 | 1.0 | 59.3 | 25.6 | 5.0 |
| 1.5KE47 | 1.5KE47C | 38.1 | 42.3 | 51.7 | 1.0 | 67.8 | 22.4 | 5.0 |
| 1.5KE47A | 1.5KE47CA | 40.2 | 44.7 | 49.4 | 1.0 | 64.8 | 23.5 | 5.0 |
| 1.5KE51 | 1.5KE51C | 41.3 | 45.9 | 56.1 | 1.0 | 73.5 | 20.7 | 5.0 |
| 1.5KE51A | 1.5KE51CA | 43.6 | 48.5 | 53.6 | 1.0 | 70.1 | 21.7 | 5.0 |
| 1.5KE56 | 1.5KE56C | 45.4 | 50.4 | 61.6 | 1.0 | 80.5 | 18.9 | 5.0 |
| 1.5KE56A | 1.5KE56CA | 47.8 | 53.2 | 58.8 | 1.0 | 77.0 | 19.7 | 5.0 |
| 1.5KE62 | 1.5KE62C | 50.2 | 55.8 | 68.2 | 1.0 | 89.0 | 17.1 | 5.0 |
| 1.5KE62A | 1.5KE62CA | 53.0 | 58.9 | 65.1 | 1.0 | 85.0 | 17.9 | 5.0 |
| 1.5KE68 | 1.5KE68C | 55.1 | 61.2 | 74.8 | 1.0 | 98.0 | 13.5 | 5.0 |
| 1.5KE68A | 1.5KE68CA | 58.1 | 64.6 | 71.4 | 1.0 | 92.0 | 16.5 | 5.0 |
| 1.5KE75 | 1.5KE75C | 60.7 | 67.5 | 82.5 | 1.0 | 108 | 14.1 | 5.0 |
| 1.5KE75A | 1.5KE75CA | 64.1 | 71.3 | 78.8 | 1.0 | 103 | 14.8 | 5.0 |
| 1.5KE82 | 1.5KE82C | 66.4 | 73.8 | 90.2 | 1.0 | 118 | 12.9 | 5.0 |
| 1.5KE82A | 1.5KE82CA | 70.1 | 77.9 | 86.1 | 1.0 | 113 | 13.5 | 5.0 |
| 1.5KE91 | 1.5KE91C | 73.7 | 81.9 | 100 | 1.0 | 131 | 11.6 | 5.0 |
| 1.5KE91A | 1.5KE91CA | 77.8 | 86.5 | 95.5 | 1.0 | 125 | 12.2 | 5.0 |
| 1.5KE100 | 1.5KE100C | 81.0 | 90.0 | 110 | 1.0 | 144 | 10.6 | 5.0 |
| 1.5KE100A | 1.5KE100CA | 85.5 | 95.0 | 105 | 1.0 | 137 | 11.1 | 5.0 |
| 1.5KE110 | 1.5KE110C | 89.2 | 99.0 | 121 | 1.0 | 158 | 9.6 | 5.0 |
| 1.5KE110A | 1.5KE110CA | 94.0 | 105 | 116 | 1.0 | 152 | 10.0 | 5.0 |
| 1.5KE120 | 1.5KE120C | 97.2 | 108 | 132 | 1.0 | 173 | 8.7 | 5.0 |
| 1.5KE120A | 1.5KE120CA | 102 | 114 | 126 | 1.0 | 165 | 9.2 | 5.0 |
| 1.5KE130 | 1.5KE130C | 105 | 117 | 143 | 1.0 | 187 | 8.1 | 5.0 |
| 1.5KE130A | 1.5KE130CA | 111 | 124 | 137 | 1.0 | 179 | 8.5 | 5.0 |
| 1.5KE150 | 1.5KE150C | 121 | 135 | 165 | 1.0 | 215 | 7.1 | 5.0 |
| 1.5KE150A | 1.5KE150CA | 128 | 143 | 158 | 1.0 | 207 | 7.3 | 5.0 |
| 1.5KE160 | 1.5KE160C | 130 | 144 | 176 | 1.0 | 230 | 6.6 | 5.0 |
| 1.5KE160A | 1.5KE160CA | 136 | 152 | 168 | 1.0 | 219 | 6.9 | 5.0 |
| 1.5KE170 | 1.5KE170C | 138 | 153 | 187 | 1.0 | 244 | 6.2 | 5.0 |
| 1.5KE170A | 1.5KE170CA | 145 | 162 | 179 | 1.0 | 234 | 6.5 | 5.0 |
| 1.5KE180 | 1.5KE180C | 146 | 162 | 198 | 1.0 | 258 | 5.9 | 5.0 |
| 1.5KE180A | 1.5KE180CA | 154 | 171 | 189 | 1.0 | 246 | 6.2 | 5.0 |

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| Type Number | | Reverse Stand-Off Voltage | Breakdown Voltage Min. @I _T | Breakdown Voltage Max. @ I _T | Test Current | Maximum Clamping Voltage @I _{PP} | Peak Pulse Current | Reverse Leakage @V _{RMW} |
|-------------|------------|---------------------------|--|---|---------------------|---|---------------------|-----------------------------------|
| (Uni) | (Bi) | V _{RMW} (V) | V _{BR MIN} (V) | V _{BR MAX} (V) | I _T (mA) | V _C (V) | I _{PP} (A) | I _R (uA) |
| 1.5KE200 | 1.5KE200C | 162 | 180 | 220 | 1.0 | 287 | 5.3 | 5.0 |
| 1.5KE200A | 1.5KE200CA | 171 | 190 | 210 | 1.0 | 274 | 5.5 | 5.0 |
| 1.5KE220 | 1.5KE220C | 175 | 198 | 242 | 1.0 | 344 | 4.4 | 5.0 |
| 1.5KE220A | 1.5KE220CA | 185 | 209 | 231 | 1.0 | 328 | 4.6 | 5.0 |
| 1.5KE250 | 1.5KE250C | 202 | 225 | 275 | 1.0 | 360 | 4.2 | 5.0 |
| 1.5KE250A | 1.5KE250CA | 214 | 237 | 263 | 1.0 | 344 | 4.4 | 5.0 |
| 1.5KE300 | 1.5KE300C | 243 | 270 | 330 | 1.0 | 430 | 3.5 | 5.0 |
| 1.5KE300A | 1.5KE300CA | 256 | 285 | 315 | 1.0 | 414 | 3.7 | 5.0 |
| 1.5KE350 | 1.5KE350C | 284 | 315 | 385 | 1.0 | 504 | 3.0 | 5.0 |
| 1.5KE350A | 1.5KE350CA | 300 | 333 | 368 | 1.0 | 482 | 3.2 | 5.0 |
| 1.5KE400 | 1.5KE400C | 324 | 360 | 440 | 1.0 | 574 | 2.6 | 5.0 |
| 1.5KE400A | 1.5KE400CA | 342 | 380 | 420 | 1.0 | 548 | 2.8 | 5.0 |
| 1.5KE440 | 1.5KE440C | 356 | 396 | 484 | 1.0 | 631 | 2.4 | 5.0 |
| 1.5KE440A | 1.5KE440CA | 376 | 418 | 462 | 1.0 | 600 | 2.5 | 5.0 |

For Bi-directional type having VRWM of 10 Volts and less, the IR limit is double

SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSORS

1.5KE6.8 - 1.5KE180A

RATINGS AND CHARACTERISTIC CURVES $T_A=25^\circ\text{C}$ UNLESS OTHERWISE NOTED

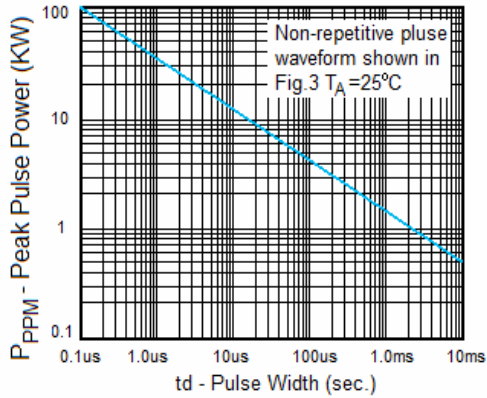


Fig. 1 Peak Pulse Power Rating

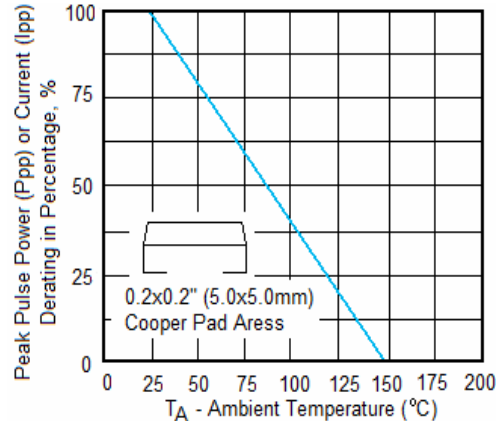


Fig. 2 Pulse Derating Curve

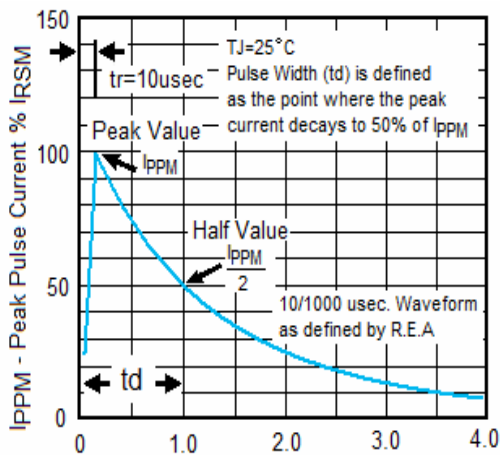


Fig. 3 Pulse Waveform

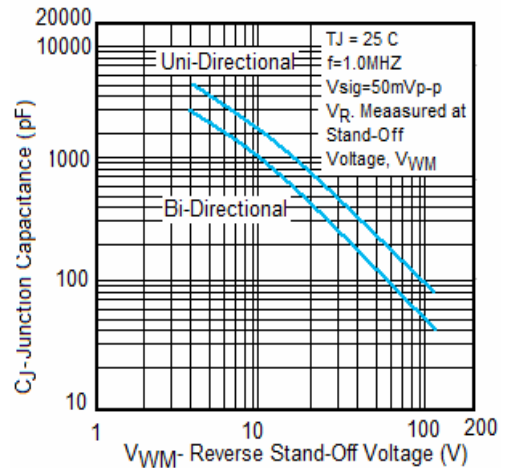


Fig. 4- Typical Junction Capacitance