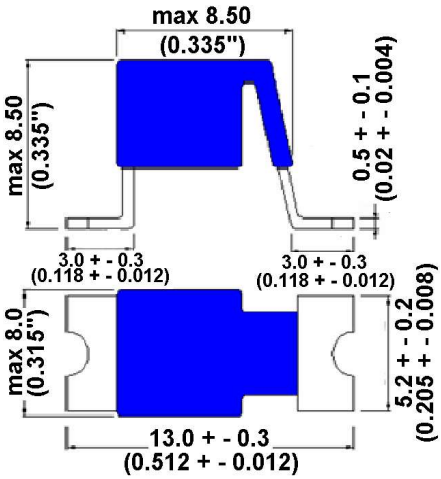
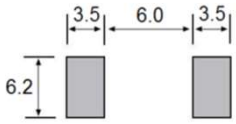
# SMD15KPA SERIES

## GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSOR
## STAND-OFF VOLTAGE-17 TO 280 Volts
## 15000 Watt Peak Pulse Power




*Dimensions in millimeters and ( inches)*




Recommended mounting footprint(mm)

### FEATURES

◎ RoHS compliant E4
◎ Typical maximum temperature coefficient △VBR=0.1%xVBR@25℃x△T
◎ 15000W peak pulse power capability on 10/1000us waveform
◎ Excellent clamping capability
◎ Repetition rate(duty cycle) : 0.05%
◎ Low incremental surge resistance
◎ Fast response time: typically less than 1.0ps from 0 Volts to BV, Bidirectonal less than 10 ns
◎ Silver plated Lead

### MECHANICAL DATA

**Case**: Epoxy powder over glass passivated junction
**Terminal**: Solderable per MIL-STD-750, Method 2026
**Polarity**: Color band denotes positive end (cathode) except Bipolar
**Mounting Position**: Any
**Weight**: 0.033 ounce, 1.2 grams

### DEVICES FOR BIPOLAR APPLICATION

For Bidirectional use C or CA Suffix for types SMD15KPA17A thru types SMD15KPA280A (e.g. SMD15KPA17CA , SMD15KPA130CA)
Electrical characteristics apply in both directions

### MAXIMUM RATINGS AND CHARACTERISTICS

Ratings at 25℃ ambient temperature unless otherwise specified.

| RATING | SYMBOL | VALUE | UNITS |
|---|---|---|---|
| Peak Pulse Power Dissipation on 10/1000 μs waveform | $P_{PPM}$ | Minimum 15000 | Watts |
| Peak Pulse Current of on 10/1000 μs waveform | $I_{PPM}$ | SEE TABLE 1 | Amps |
| Peak Forward Surge Current,1/20 second / 25℃ (JEDEC Method) | $I_{FSM}$ | 400 | Amps |
| Operating junction and Storage Temperature Range | $T_J$ , $T_{STG}$ | -55 to + 150 | ℃ |

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| SMDSMD15KPA PART NUMBER | | Marking Code | | REVERSE STAND- OFF VOLTAGE $V_{RWM}$(V) | BREAKDOWN VOLTAGE $V_{BR}$(V) MIN. @$I_T$ | TEST CURRENT $I_T$ (mA) | PEAK PULSE CURRENT Ipp (A) | REVERSE LEAKAGE @ $V_{RWM}$ $I_R$( $\mu$ A) | MAXIMUN CLAMPING VOLTAGE @$I_{PP}$ $V_C$ (V) |
|---|---|---|---|---|---|---|---|---|---|
| UNI-POLAR | BI-POLAR | Uni | Bi | | | | | | |
| SMD15KPA17A | SMD15KPA17CA | UA | BA | 17 | 18.99 | 50 | 515.4 | 5000 | 29.3 |
| SMD15KPA18A | SMD15KPA18CA | UB | BB | 18 | 20.11 | 50 | 488.7 | 5000 | 30.9 |
| SMD15KPA20A | SMD15KPA20CA | UC | BC | 20 | 22.34 | 20 | 440.2 | 1500 | 34.3 |
| SMD15KPA22A | SMD15KPA22CA | UD | BD | 22 | 24.57 | 10 | 407.0 | 500 | 37.1 |
| SMD15KPA24A | SMD15KPA24CA | UE | BE | 24 | 26.81 | 5 | 371.0 | 150 | 40.7 |
| SMD15KPA26A | SMD15KPA26CA | UF | BF | 26 | 29.04 | 5 | 343.2 | 50 | 44.0 |
| SMD15KPA28A | SMD15KPA28CA | UG | BG | 28 | 31.28 | 5 | 317.9 | 25 | 47.5 |
| SMD15KPA30A | SMD15KPA30CA | UH | BH | 30 | 33.51 | 5 | 297.8 | 15 | 50.7 |
| SMD15KPA33A | SMD15KPA33CA | UJ | BJ | 33 | 36.9 | 5 | 276.1 | 10 | 54.7 |
| SMD15KPA36A | SMD15KPA36CA | UK | BK | 36 | 40.2 | 5 | 252.5 | 10 | 59.8 |
| SMD15KPA40A | SMD15KPA40CA | UL | BL | 40 | 44.7 | 5 | 229.5 | 10 | 65.8 |
| SMD15KPA43A | SMD15KPA43CA | UM | BM | 43 | 48.0 | 5 | 216.3 | 10 | 69.8 |
| SMD15KPA45A | SMD15KPA45CA | UN | BN | 45 | 50.3 | 5 | 206.3 | 10 | 73.2 |
| SMD15KPA48A | SMD15KPA48CA | UP | BP | 48 | 53.6 | 5 | 194.3 | 10 | 77.7 |
| SMD15KPA51A | SMD15KPA51CA | UQ | BQ | 51 | 57.0 | 5 | 182.1 | 10 | 82.9 |
| SMD15KPA54A | SMD15KPA54CA | UR | BR | 54 | 60.3 | 5 | 172.2 | 10 | 87.7 |
| SMD15KPA58A | SMD15KPA58CA | US | BS | 58 | 64.8 | 5 | 161.0 | 10 | 93.8 |
| SMD15KPA60A | SMD15KPA60CA | UT | BT | 60 | 67.0 | 5 | 155.0 | 10 | 97.4 |
| SMD15KPA64A | SMD15KPA64CA | UU | BU | 64 | 71.5 | 5 | 144.9 | 10 | 104.2 |
| SMD15KPA70A | SMD15KPA70CA | UV | BV | 70 | 78.2 | 5 | 132.9 | 10 | 113.6 |
| SMD15KPA75A | SMD15KPA75CA | UW | BW | 75 | 83.8 | 5 | 123.8 | 10 | 122.0 |
| SMD15KPA78A | SMD15KPA78CA | UX | BX | 78 | 87.1 | 5 | 119.7 | 10 | 126.1 |
| SMD15KPA85A | SMD15KPA85CA | UY | BY | 85 | 94.9 | 5 | 109.7 | 10 | 137.6 |
| SMD15KPA90A | SMD15KPA90CA | UZ | BZ | 90 | 100.5 | 5 | 103.7 | 10 | 145.6 |
| SMD15KPA100A | SMD15KPA100CA | DA | CA | 100 | 111.7 | 5 | 93.6 | 10 | 161.3 |
| SMD15KPA110A | SMD15KPA110CA | DB | CB | 110 | 122.9 | 5 | 84.5 | 10 | 178.6 |
| SMD15KPA120A | SMD15KPA120CA | DC | CC | 120 | 134.0 | 5 | 78.5 | 10 | 192.3 |
| SMD15KPA130A | SMD15KPA130CA | DD | CD | 130 | 145.2 | 5 | 72.5 | 10 | 208.3 |
| SMD15KPA150A | | DE | | 150 | 167.6 | 5 | 62.4 | 10 | 241.9 |
| SMD15KPA160A | | DF | | 160 | 178.7 | 5 | 58.4 | 10 | 258.6 |
| SMD15KPA170A | | DG | | 170 | 189.9 | 5 | 55.4 | 10 | 272.7 |
| SMD15KPA180A | | DH | | 180 | 201.1 | 5 | 52.3 | 10 | 288.5 |
| SMD15KPA200A | | DJ | | 200 | 223.4 | 5 | 47.3 | 10 | 319.1 |
| SMD15KPA220A | | DK | | 220 | 245.7 | 5 | 42.4 | 10 | 356.0 |
| SMD15KPA240A | | DL | | 240 | 268.1 | 5 | 39.3 | 10 | 384.6 |
| SMD15KPA260A | | DM | | 260 | 290.4 | 5 | 36.2 | 10 | 416.7 |
| SMD15KPA280A | | DN | | 280 | 312.8 | 5 | 33.2 | 10 | 454.5 |

**For bidirectional type having Vrwm of 30 volts and less, the IR limit is double.**

**For parts without A , the $V_{BR}$ is $\pm$ 10%**

## RATINGS AND CHARACTERISTIC CURVES

**Ratings and Characteristic Curves** ($T_A$=25℃ unless otherwise noted)

**Fig. 1 - Peak Pulse Power Rating**

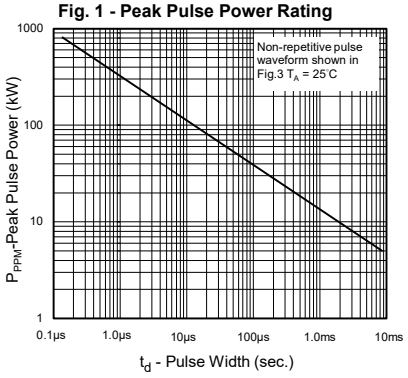



**Fig.2 - Pulse Derating Curve**

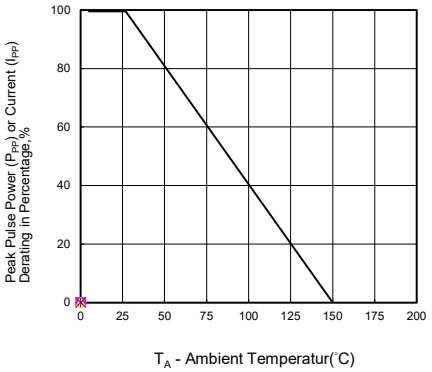



**Fig.3 - Test Pulse Waveform**

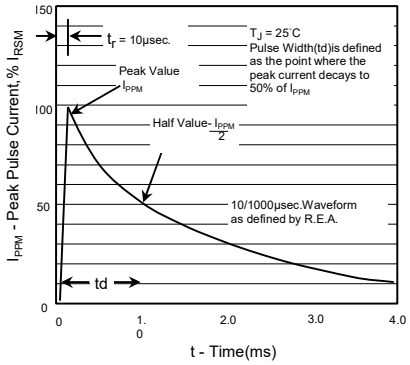



**Fig. 4 - Typical Junction Capacitance**

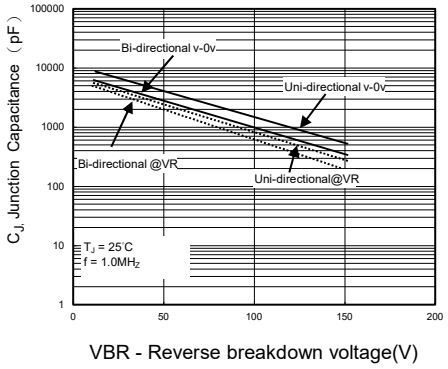



**Fig. 5 - Steady State Power Derating Curve**

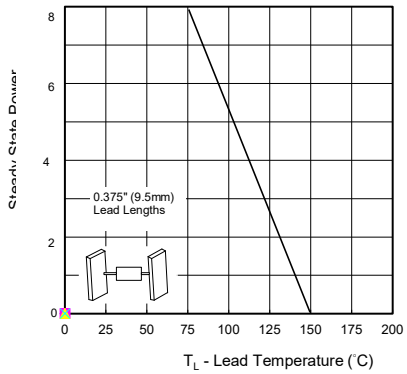
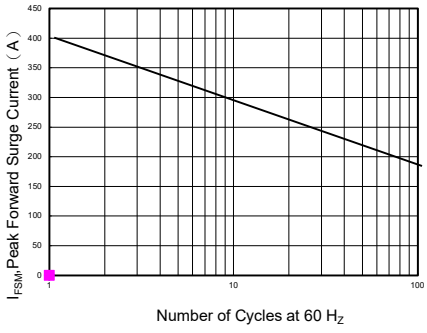



**Fig.6 - Maximum Non-repetitive Forward Surge current**



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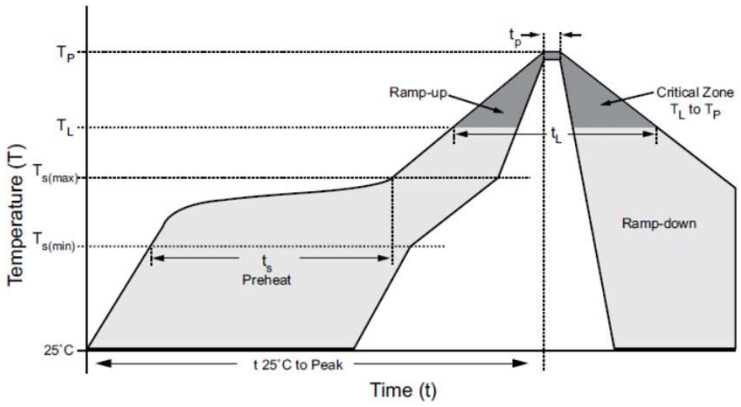
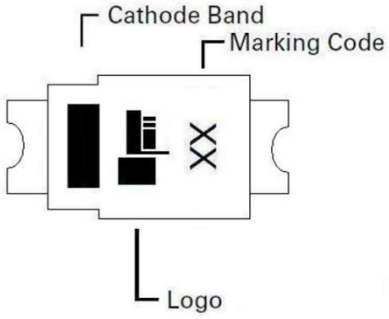
### Soldering Parameters

| Reflow Condition | | Lead-free assembly |
|---|---|---|
| Pre Heat | -Temperature Min ($T_{s(min)}$) | 150℃ |
| | -Temperature Max ($T_{s(max)}$) | 200℃ |
| | -Time (min to max) ($t_s$) | 60 -120 secs |
| Average ramp up rate(Liquidus Temp($T_L$) to peak | | 3℃/second max |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate | | 3℃/second max |
| Reflow | -Temperature Min ($T_L$) | 217℃ |
| | Time ($t_L$) maintained above $T_L$ | 60 - 150 seconds |
| Peak temperature($T_P$) | | 245 $^{+0/-5}$℃ |
| Time within 5℃ of actual peak Temperature($t_p$) | | 20 - 40 seconds |
| Ramp-down Rate | | 6℃/second max |
| Time 2 5℃ to peak Temperature($T_p$) | | 8 minutes Max. |

### Soldering Profile




### Part Marking System




### Packing

| Part number | Quantity | Remark |
|---|---|---|
| SMD15KPAxxx | 20 | Bulk packing |