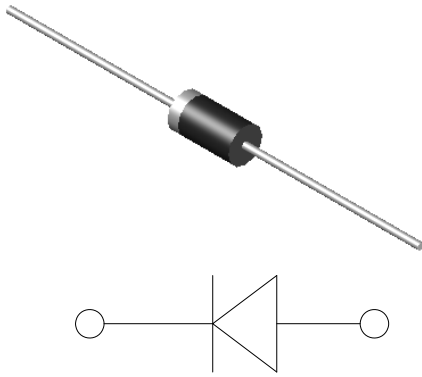


## Transient Voltage Suppressor Diodes



### Features

- Excellent clamping capability
- Low dynamic impedance
- Solder dip 275 °C max. 7 s, per JESD 22-B106

### Mechanical Data

- **Package:** DO-201AE  
Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** Color band denotes cathode end

### ■ Maximum Ratings (Ta=25°C Unless otherwise specified)

| PARAMETER   | SYMBOL                            | UNIT | Max            |
|---|-----------------------------------|------|----------------|
| Peak power dissipation, with a 10/1000us waveform <sup>(1)</sup>                            | P <sub>PPM</sub>                  | W    | 1500           |
| Peak pulse current, with a 10/1000us waveform <sup>(1)</sup>                                | I <sub>PPM</sub>                  | A    | See Next Table |
| Power dissipation, on infinite heat sink at TL=75°C   | P <sub>D</sub>                    | W    | 6.5            |
| Peak forward surge current, 8.3 ms single half sine-wave unidirectional only <sup>(2)</sup> | I <sub>FSM</sub>                  | A    | 200            |
| Operating junction and storage temperature range  | T <sub>J</sub> , T <sub>STG</sub> | °C   | -55 to +150    |

### ■ Electrical Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

| PARAMETER   | SYMBOL          | UNIT | VALUE   |
|---|-----------------|------|---------|
| Maximum instantaneous forward voltage at 25A for unidirectional only <sup>(3)</sup> | V <sub>FM</sub> | V    | 3.5/5.0 |

### ■ Thermal Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

| PARAMETER                   | SYMBOL           | UNIT | Conditions          | VALUE |
|-----------------------------|------------------|------|---------------------|-------|
| Thermal Resistance(Typical) | R <sub>θJA</sub> | °C/W | junction to ambient | 75    |
|                             | R <sub>θJL</sub> | °C/W | junction to lead    | 15.4  |

Notes:

- (1) 1. Non-repetitive current pulse, per Fig. 3 and derated above T<sub>A</sub> = 25°C per Fig.2.
- (2) Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum.
- (3) VF=3.5V Max for devices of VBR≤220v, and VF=5.0v Max for devices of VBR>220v.

### ■ Ordering Information (Example)

| PREFERRED P/N | PACKAGE CODE | UNIT WEIGHT(g)   | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|--------------|------------------|----------------------|-------------------------|----------------------------|---------------|
| 1.5KE SERIES  | D1           | Approximate 0.95 | 1250                 | 1250                    | 12500                      | Tape          |
| 1.5KE SERIES  | C1           | Approximate 0.95 | 250                  | 250                     | 12500                      | Bulk          |



# 1.5KE SERIES

## ■Electrical Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

| Part Number<br>(Uni) | Part Number<br>(Bi) | Breakdown Voltage V <sub>BR</sub> @I <sub>T</sub> |         |                        | Maximum<br>Reverse<br>Leakage I <sub>R</sub> @<br>V <sub>WM</sub><br>(μA) | Working Peak<br>Reverse Voltage<br>V <sub>RWM</sub> (V) | Maximum<br>Reverse Surge<br>Current I <sub>PP</sub><br>(A) | Maximum<br>Clamping<br>Voltage V <sub>c</sub><br>@ I <sub>PP</sub><br>(V) |
|----------------------|---------------------|---|---------|------------------------|---|---|--|---|
|                      |                     | Min<br>(V)  | Max (V) | I <sub>T</sub><br>(mA) |   |   |  |   |
| 1.5KE6.8             | 1.5KE6.8C           | 6.12  | 7.48    | 10                     | 1000  | 5.50  | 139  | 10.8  |
| 1.5KE6.8A            | 1.5KE6.8CA          | 6.45  | 7.14    | 10                     | 1000  | 5.80  | 143  | 10.5  |
| 1.5KE7.5             | 1.5KE7.5C           | 6.75  | 8.25    | 10                     | 500   | 6.05  | 128  | 11.7  |
| 1.5KE7.5A            | 1.5KE7.5CA          | 7.13  | 7.88    | 10                     | 500   | 6.40  | 133  | 11.3  |
| 1.5KE8.2             | 1.5KE8.2C           | 7.38  | 9.02    | 10                     | 200   | 6.63  | 120  | 12.5  |
| 1.5KE8.2A            | 1.5KE8.2CA          | 7.79  | 8.61    | 10                     | 200   | 7.02  | 124  | 12.1  |
| 1.5KE9.1             | 1.5KE9.1C           | 8.19  | 10.0    | 1.0                    | 50  | 7.37  | 109  | 13.8  |
| 1.5KE9.1A            | 1.5KE9.1CA          | 8.65  | 9.55    | 1.0                    | 50  | 7.78  | 112  | 13.4  |
| 1.5KE10              | 1.5KE10C            | 9.00  | 11.0    | 1.0                    | 10  | 8.10  | 100  | 15.0  |
| 1.5KE10A             | 1.5KE10CA           | 9.50  | 10.5    | 1.0                    | 10  | 8.55  | 103  | 14.5  |
| 1.5KE11              | 1.5KE11C            | 9.90  | 12.1    | 1.0                    | 5.0   | 8.92  | 92.6   | 16.2  |
| 1.5KE11A             | 1.5KE11CA           | 10.5  | 11.6    | 1.0                    | 5.0   | 9.40  | 96.2   | 15.6  |
| 1.5KE12              | 1.5KE12C            | 10.8  | 13.2    | 1.0                    | 5.0   | 9.72  | 86.7   | 17.3  |
| 1.5KE12A             | 1.5KE12CA           | 11.4  | 12.6    | 1.0                    | 5.0   | 10.2  | 89.8   | 16.7  |
| 1.5KE13              | 1.5KE13C            | 11.7  | 14.3    | 1.0                    | 5.0   | 10.5  | 78.9   | 19.0  |
| 1.5KE13A             | 1.5KE13CA           | 12.4  | 13.7    | 1.0                    | 5.0   | 11.1  | 82.4   | 18.2  |
| 1.5KE15              | 1.5KE15C            | 13.5  | 16.5    | 1.0                    | 5.0   | 12.1  | 68.2   | 22.0  |
| 1.5KE15A             | 1.5KE15CA           | 14.3  | 15.8    | 1.0                    | 5.0   | 12.8  | 70.8   | 21.2  |
| 1.5KE16              | 1.5KE16C            | 14.4  | 17.6    | 1.0                    | 5.0   | 12.9  | 63.8   | 23.5  |
| 1.5KE16A             | 1.5KE16CA           | 15.2  | 16.8    | 1.0                    | 5.0   | 13.6  | 66.7   | 22.5  |
| 1.5KE18              | 1.5KE18C            | 16.2  | 19.8    | 1.0                    | 5.0   | 14.5  | 56.6   | 26.5  |
| 1.5KE18A             | 1.5KE18CA           | 17.1  | 18.9    | 1.0                    | 5.0   | 15.3  | 59.5   | 25.2  |
| 1.5KE20              | 1.5KE20C            | 18.0  | 22.0    | 1.0                    | 5.0   | 16.2  | 51.5   | 29.1  |
| 1.5KE20A             | 1.5KE20CA           | 19.0  | 21.0    | 1.0                    | 5.0   | 17.1  | 54.2   | 27.7  |
| 1.5KE22              | 1.5KE22C            | 19.8  | 24.2    | 1.0                    | 5.0   | 17.8  | 47.0   | 31.9  |
| 1.5KE22A             | 1.5KE22CA           | 20.9  | 23.1    | 1.0                    | 5.0   | 18.8  | 49.0   | 30.6  |
| 1.5KE24              | 1.5KE24C            | 21.6  | 26.4    | 1.0                    | 5.0   | 19.4  | 43.2   | 34.7  |
| 1.5KE24A             | 1.5KE24CA           | 22.8  | 25.2    | 1.0                    | 5.0   | 20.5  | 45.2   | 33.2  |
| 1.5KE27              | 1.5KE27C            | 24.3  | 29.7    | 1.0                    | 5.0   | 21.8  | 38.4   | 39.1  |
| 1.5KE27A             | 1.5KE27CA           | 25.7  | 28.4    | 1.0                    | 5.0   | 23.1  | 40.0   | 37.5  |
| 1.5KE30              | 1.5KE30C            | 27.0  | 33.0    | 1.0                    | 5.0   | 24.3  | 34.5   | 43.5  |
| 1.5KE30A             | 1.5KE30CA           | 28.5  | 31.5    | 1.0                    | 5.0   | 25.6  | 36.2   | 41.4  |
| 1.5KE33              | 1.5KE33C            | 29.7  | 36.3    | 1.0                    | 5.0   | 26.8  | 31.4   | 47.7  |
| 1.5KE33A             | 1.5KE33CA           | 31.4  | 34.7    | 1.0                    | 5.0   | 28.2  | 32.8   | 45.7  |
| 1.5KE36              | 1.5KE36C            | 32.4  | 39.6    | 1.0                    | 5.0   | 29.1  | 28.8   | 52.0  |
| 1.5KE36A             | 1.5KE36CA           | 34.2  | 37.8    | 1.0                    | 5.0   | 30.8  | 30.1   | 49.9  |



# 1.5KE SERIES

## ■Electrical Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

| Part Number<br>(Uni) | Part Number<br>(Bi) | Breakdown Voltage V <sub>BR</sub> @I <sub>T</sub> |         |                        | Maximum<br>Reverse<br>Leakage I <sub>R</sub> @<br>V <sub>WM</sub><br>(μA) | Working Peak<br>Reverse<br>Voltage<br>V <sub>RWM</sub> (V) | Maximum<br>Reverse Surge<br>Current I <sub>PP</sub><br>(A) | Maximum<br>Clamping<br>Voltage V <sub>c</sub><br>@ I <sub>PP</sub><br>(V) |
|----------------------|---------------------|---|---------|------------------------|---|--|--|---|
|                      |                     | Min<br>(V)  | Max (V) | I <sub>T</sub><br>(mA) |   |  |  |   |
| 1.5KE39              | 1.5KE39C            | 35.1  | 42.9    | 1.0                    | 5.0   | 31.6   | 26.6   | 56.4  |
| 1.5KE39A             | 1.5KE39CA           | 37.1  | 41.0    | 1.0                    | 5.0   | 33.3   | 27.8   | 53.9  |
| 1.5KE43              | 1.5KE43C            | 38.7  | 47.3    | 1.0                    | 5.0   | 34.8   | 24.2   | 61.9  |
| 1.5KE43A             | 1.5KE43CA           | 40.9  | 45.2    | 1.0                    | 5.0   | 36.8   | 25.3   | 59.3  |
| 1.5KE47              | 1.5KE47C            | 42.3  | 51.7    | 1.0                    | 5.0   | 38.1   | 22.1   | 67.8  |
| 1.5KE47A             | 1.5KE47CA           | 44.7  | 49.4    | 1.0                    | 5.0   | 40.2   | 23.1   | 64.8  |
| 1.5KE51              | 1.5KE51C            | 45.9  | 56.1    | 1.0                    | 5.0   | 41.3   | 20.4   | 73.5  |
| 1.5KE51A             | 1.5KE51CA           | 48.5  | 53.6    | 1.0                    | 5.0   | 43.6   | 21.4   | 70.1  |
| 1.5KE56              | 1.5KE56C            | 50.4  | 61.8    | 1.0                    | 5.0   | 45.4   | 18.6   | 80.5  |
| 1.5KE56A             | 1.5KE56CA           | 53.2  | 58.8    | 1.0                    | 5.0   | 47.8   | 19.5   | 77.0  |
| 1.5KE62              | 1.5KE62C            | 55.8  | 68.2    | 1.0                    | 5.0   | 50.2   | 16.9   | 89.0  |
| 1.5KE62A             | 1.5KE62CA           | 58.9  | 65.1    | 1.0                    | 5.0   | 53.0   | 17.6   | 85.0  |
| 1.5KE68              | 1.5KE68C            | 61.2  | 74.8    | 1.0                    | 5.0   | 55.1   | 15.3   | 98.0  |
| 1.5KE68A             | 1.5KE68CA           | 64.6  | 71.4    | 1.0                    | 5.0   | 58.1   | 16.3   | 92.0  |
| 1.5KE75              | 1.5KE75C            | 67.5  | 82.5    | 1.0                    | 5.0   | 60.7   | 13.9   | 109   |
| 1.5KE75A             | 1.5KE75CA           | 71.3  | 78.8    | 1.0                    | 5.0   | 64.1   | 14.6   | 104   |
| 1.5KE82              | 1.5KE82C            | 73.8  | 90.2    | 1.0                    | 5.0   | 66.4   | 12.7   | 118   |
| 1.5KE82A             | 1.5KE82CA           | 77.9  | 86.1    | 1.0                    | 5.0   | 70.1   | 13.3   | 113   |
| 1.5KE91              | 1.5KE91C            | 81.9  | 100.0   | 1.0                    | 5.0   | 73.7   | 11.5   | 131   |
| 1.5KE91A             | 1.5KE91CA           | 86.5  | 95.5    | 1.0                    | 5.0   | 77.8   | 12.0   | 125   |
| 1.5KE100             | 1.5KE100C           | 90.0  | 110     | 1.0                    | 5.0   | 81.0   | 10.4   | 144   |
| 1.5KE100A            | 1.5KE100CA          | 95.0  | 105     | 1.0                    | 5.0   | 85.5   | 10.9   | 137   |
| 1.5KE110             | 1.5KE110C           | 99.0  | 121     | 1.0                    | 5.0   | 89.2   | 9.5  | 158   |
| 1.5KE110A            | 1.5KE110CA          | 105   | 116     | 1.0                    | 5.0   | 94.0   | 9.9  | 152   |
| 1.5KE120             | 1.5KE120C           | 108   | 132     | 1.0                    | 5.0   | 97.2   | 8.7  | 173   |
| 1.5KE120A            | 1.5KE120CA          | 114   | 126     | 1.0                    | 5.0   | 102  | 9.1  | 165   |
| 1.5KE130             | 1.5KE130C           | 117   | 143     | 1.0                    | 5.0   | 105  | 8.0  | 187   |
| 1.5KE130A            | 1.5KE130CA          | 124   | 137     | 1.0                    | 5.0   | 111  | 8.4  | 179   |
| 1.5KE150             | 1.5KE150C           | 136   | 165     | 1.0                    | 5.0   | 121  | 7.0  | 215   |
| 1.5KE150A            | 1.5KE150CA          | 143   | 158     | 1.0                    | 5.0   | 128  | 7.2  | 207   |
| 1.5KE160             | 1.5KE160C           | 144   | 176     | 1.0                    | 5.0   | 130  | 6.5  | 230   |
| 1.5KE160A            | 1.5KE160CA          | 152   | 168     | 1.0                    | 5.0   | 136  | 6.8  | 219   |
| 1.5KE170             | 1.5KE170C           | 153   | 187     | 1.0                    | 5.0   | 138  | 6.1  | 244   |
| 1.5KE170A            | 1.5KE170CA          | 162   | 179     | 1.0                    | 5.0   | 145  | 6.4  | 234   |
| 1.5KE180             | 1.5KE180C           | 162   | 198     | 1.0                    | 5.0   | 146  | 5.8  | 258   |
| 1.5KE180A            | 1.5KE180CA          | 171   | 189     | 1.0                    | 5.0   | 154  | 6.1  | 246   |



# 1.5KE SERIES

## ■Electrical Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

| Part Number<br>(Uni) | Part Number<br>(Bi) | Breakdown Voltage V <sub>BR</sub> @I <sub>T</sub> |         |            | Maximum<br>Reverse<br>Leakage I <sub>R</sub> @<br>V <sub>WM</sub><br>(μA) | Working Peak<br>Reverse<br>Voltage<br>V <sub>RWM</sub> (V) | Maximum<br>Reverse Surge<br>Current IPP<br>(A) | Maximum<br>Clamping<br>Voltage Vc<br>@ I <sub>PP</sub><br>(V) |
|----------------------|---------------------|---|---------|------------|---|--|--|---|
|                      |                     | Min<br>(V)  | Max (V) | IT<br>(mA) |   |  |  |   |
| 1.5KE200             | 1.5KE200C           | 180   | 220     | 1.0        | 5.0   | 162  | 5.2  | 287   |
| 1.5KE200A            | 1.5KE200CA          | 190   | 210     | 1.0        | 5.0   | 171  | 5.5  | 274   |
| 1.5KE220             | 1.5KE220C           | 198   | 242     | 1.0        | 5.0   | 175  | 4.4  | 344   |
| 1.5KE220A            | 1.5KE220CA          | 209   | 231     | 1.0        | 5.0   | 185  | 4.6  | 328   |
| 1.5KE250             | 1.5KE250C           | 225   | 275     | 1.0        | 5.0   | 202  | 4.2  | 360   |
| 1.5KE250A            | 1.5KE250CA          | 237   | 263     | 1.0        | 5.0   | 214  | 4.4  | 344   |
| 1.5KE300             | 1.5KE300C           | 270   | 330     | 1.0        | 5.0   | 243  | 3.5  | 430   |
| 1.5KE300A            | 1.5KE300CA          | 285   | 315     | 1.0        | 5.0   | 256  | 3.6  | 414   |
| 1.5KE350             | 1.5KE350C           | 315   | 385     | 1.0        | 5.0   | 284  | 3.0  | 504   |
| 1.5KE350A            | 1.5KE350CA          | 333   | 368     | 1.0        | 5.0   | 300  | 3.1  | 482   |
| 1.5KE400             | 1.5KE400C           | 360   | 440     | 1.0        | 5.0   | 324  | 2.6  | 574   |
| 1.5KE400A            | 1.5KE400CA          | 380   | 420     | 1.0        | 5.0   | 342  | 2.7  | 548   |
| 1.5KE440             | 1.5KE440C           | 396   | 484     | 1.0        | 5.0   | 356  | 2.4  | 631   |
| 1.5KE440A            | 1.5KE440CA          | 418   | 462     | 1.0        | 5.0   | 376  | 2.5  | 602   |
| 1.5KE480             | 1.5KE480C           | 432   | 528     | 1.0        | 5.0   | 389  | 2.19   | 686   |
| 1.5KE480A            | 1.5KE480CA          | 456   | 504     | 1.0        | 5.0   | 408  | 2.28   | 658   |
| 1.5KE500             | 1.5KE500C           | 450   | 550     | 1.0        | 5.0   | 406  | 2.08   | 720   |
| 1.5KE500A            | 1.5KE500CA          | 475   | 525     | 1.0        | 5.0   | 427.5  | 2.17   | 690   |
| 1.5KE510             | 1.5KE510C           | 459   | 561     | 1.0        | 5.0   | 413  | 2.06   | 729   |
| 1.5KE510A            | 1.5KE510CA          | 485   | 535     | 1.0        | 5.0   | 434  | 2.15   | 698   |
| 1.5KE520             | 1.5KE520C           | 468   | 572     | 1.0        | 5.0   | 422.2  | 2.0  | 748.8   |
| 1.5KE520A            | 1.5KE520CA          | 494   | 546     | 1.0        | 5.0   | 444.6  | 2.09   | 717.6   |
| 1.5KE540             | 1.5KE540C           | 486   | 594     | 1.0        | 5.0   | 437  | 1.94   | 772   |
| 1.5KE540A            | 1.5KE540CA          | 513   | 567     | 1.0        | 5.0   | 459  | 2.03   | 740   |
| 1.5KE550             | 1.5KE550C           | 495   | 605     | 1.0        | 5.0   | 446.6  | 1.89   | 792   |
| 1.5KE550A            | 1.5KE550CA          | 522.5   | 577.5   | 1.0        | 5.0   | 470.3  | 1.98   | 759   |
| 1.5KE600             | 1.5KE600C           | 540   | 660     | 1.0        | 5.0   | 487.2  | 1.74   | 864   |
| 1.5KE600A            | 1.5KE600CA          | 570   | 630     | 1.0        | 5.0   | 513  | 1.81   | 828   |

Notes:

For bi-directional types having VWM of 10V and less, the I<sub>R</sub> limit is doubled.



# 1.5KE SERIES

## ■ Characteristics (Typical)

FIG1: Peak Pulse Power Rating Curve

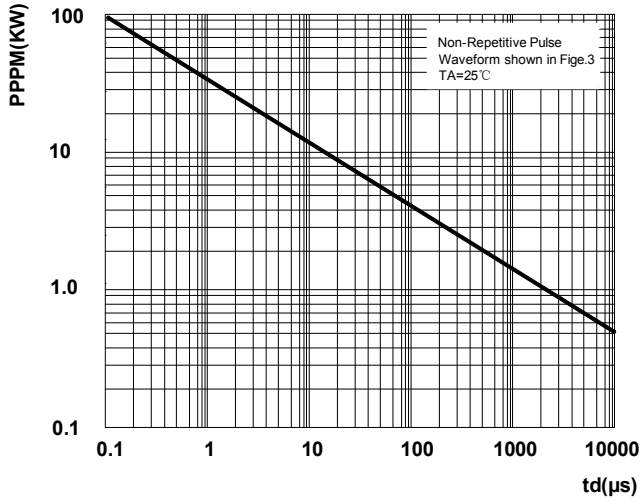


FIG2: Pulse Power or Current vs Initial Junction Temperature

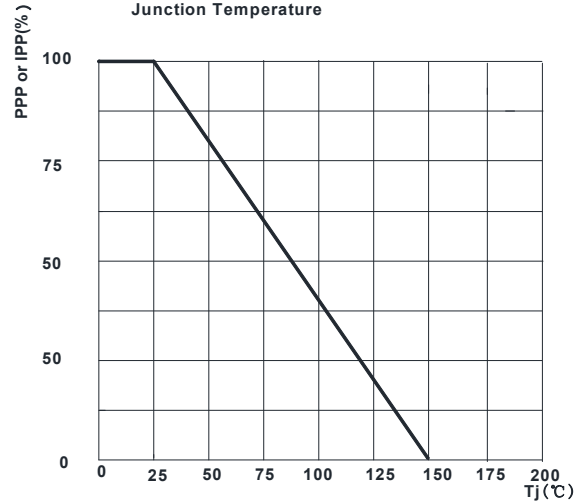


FIG3: Pulse Waveform

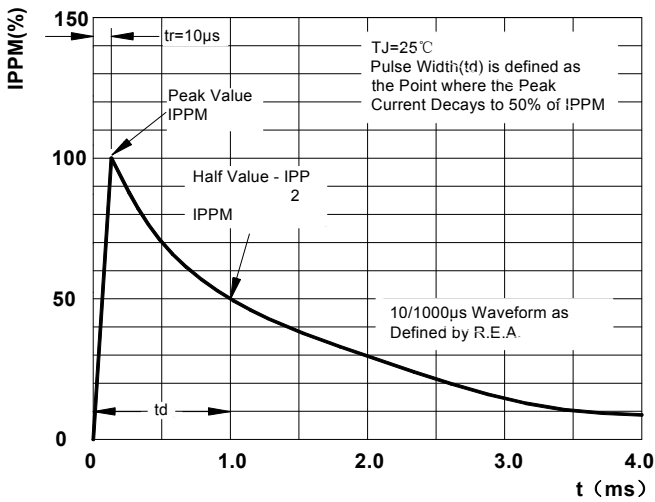


FIG4: Power Derating Curve

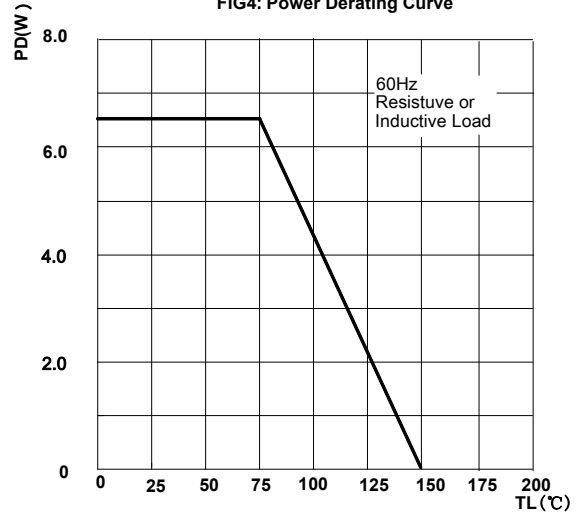


FIG5: Maximum Non-Repetitive Surge Current

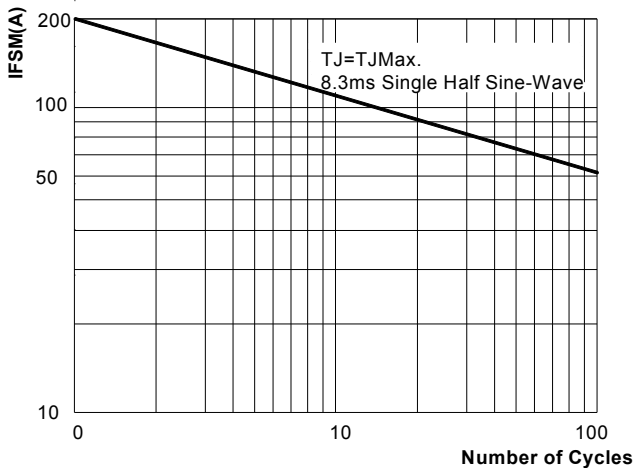
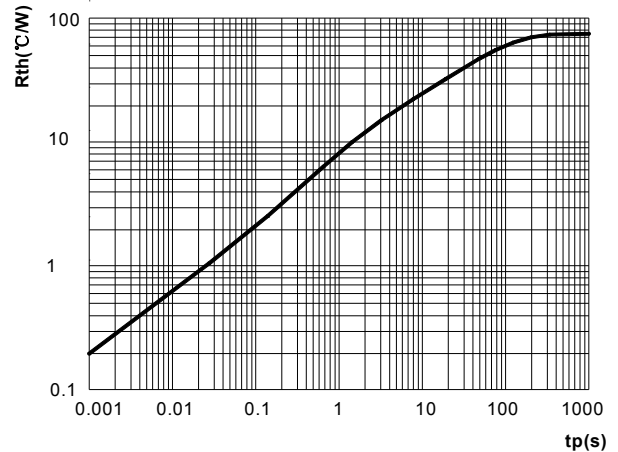


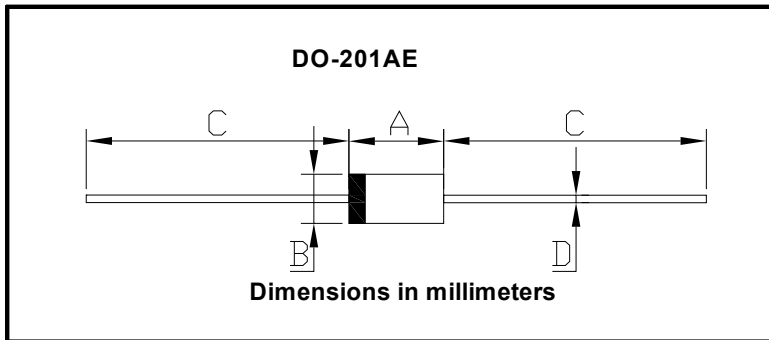
FIG6: Typical Transient Thermal Impedance





# 1.5KE SERIES

## ■ Outline Dimensions



| <b>DO-201AE</b> |      |      |
|-----------------|------|------|
| Dim             | Min  | Max  |
| A               | 8.50 | 9.50 |
| B               | 5.00 | 5.60 |
| C               | 25.4 | /    |
| D               | 0.96 | 1.07 |



## 1.5KE SERIES

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### Disclaimer

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The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

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