



# 1.5KE SERIES

## GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSOR PEAK PULSE POWER 1500 Watt

### BREAKDOWN VOLTAGE

6.8 to 440 Volt

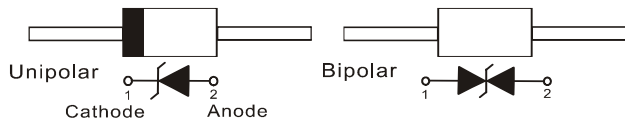
**Recongized File # E210467 (1.5KE6.8~1.5KE300CA)**

### FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94V-O
- Glass passivated chip junction in DO-201AE package
- 1500W surge capability at 1ms
- Excellent clamping capability
- Low zener impedance
- Fast response time: typically less than 1ps from 0 volts to BV min
- High temperature soldering guaranteed: 260°C/10 seconds/0.375" ,(9.5mm) lead length/5lbs., (2.3kg) tension
- ESD IEC-61000-4-2 Air  $\pm$  30kV, Contact  $\pm$  30kV
- Lead free in ccompliance with EU RoHS 2.0

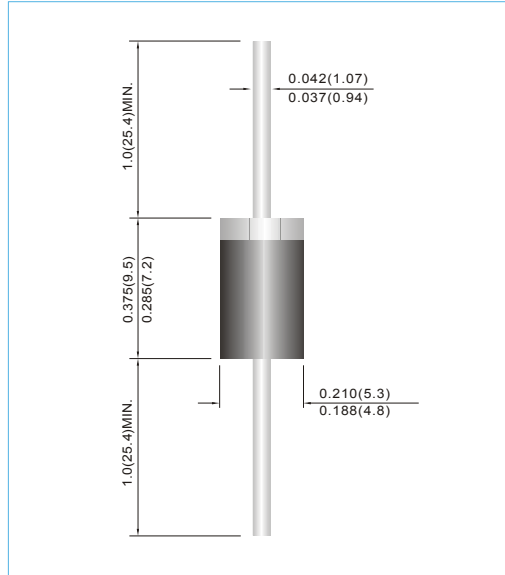
### MECHANICAL DATA

- Case: JEDEC DO-201AE molded plastic
- Terminals: Axial leads, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode end
- Approx. Weight: 0.04 ounce, 1.12 gram



### DO-201AE

Unit : inch(mm)



### DEVICES FOR BIPOLAR APPLICATIONS

For Bidirectional use C or CA Suffix for types 1.5KE6.8 thru types 1.5KE440.  
Electrical characteristics apply in both directions.

### MAXIMUM RATINGS AND CHARACTERISTICS

Rating at 25°C ambient temperature unless otherwise specified.

| Rating   | Symbol          | Value                | Units                       |
|--|-----------------|----------------------|-----------------------------|
| Peak Power Dissipation at $T_A=25^\circ\text{C}$ , $t_p=1\text{ms}$ (Notes 1)                | $P_{PP}$        | 1500                 | Watts                       |
| Typical Thermal Resistance Junction to Air Lead Lengths 0.375", (9.5mm) (Notes 2)            | $R_{\theta JA}$ | 30                   | $^\circ\text{C} / \text{W}$ |
| Peak Pulse Current on $t_p=10/1000\mu\text{s}$ waveform (Notes 1)                            | $I_{PPM}$       | see Table            | Amps                        |
| Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load (Notes 3) | $I_{FSM}$       | 200                  | Amps                        |
| ESD IEC-61000-4-2 (Air)<br>ESD IEC-61000-4-2 (Contact)                                       | $V_{ESD}$       | $\pm 30$<br>$\pm 30$ | kV                          |
| Operating Junction and Storage Temperature Range   | $T_J, T_{STG}$  | -65 to +175          | $^\circ\text{C}$            |

#### NOTES :

1. Non-repetitive current pulse, per Fig. 3 and derated above  $T_A=25^\circ\text{C}$  per Fig. 2.
2. Mounted on Copper Leaf area of  $0.79 \text{ in}^2(20\text{mm}^2)$ .
3. 8.3ms single half sine-wave, duty cycle= 4 pulses per minutes maximum.
4. A transient suppressor is selected according to the working peak reverse voltage ( $V_{RWM}$ ), which should be equal to or greater than the DC or continuous peak operating voltage level.



# 1.5KE SERIES

| Part Number                        |            | Reverse Stand-off Voltage  | Breakdown Voltage                |      | Test Current   | Reverse Leakage                   |      | Max. Clamp Voltage 10/1000µs     | Peak Pulse Current 10/1000µs | Marking Code |            |
|------------------------------------|------------|----------------------------|----------------------------------|------|----------------|-----------------------------------|------|----------------------------------|------------------------------|--------------|------------|
|                                    |            | V <sub>RWM</sub> (Notes 4) | V <sub>BR</sub> @ I <sub>r</sub> |      | I <sub>r</sub> | I <sub>R</sub> @ V <sub>RWM</sub> |      | V <sub>C</sub> @ I <sub>PP</sub> | I <sub>PP</sub>              |              |            |
|                                    |            |                            | Min.                             | Max. |                | UNI                               | BI   |                                  |                              |              |            |
| UNI                                | BI         | V                          | V                                | V    | mA             | µA                                | µA   | V                                | A                            | UNI          | BI         |
| 1500W Transient Voltage Suppressor |            |                            |                                  |      |                |                                   |      |                                  |                              |              |            |
| 1.5KE6.8                           | 1.5KE6.8C  | 5.5                        | 6.12                             | 7.48 | 10             | 1000                              | 2000 | 10.8                             | 139                          | 1.5KE6.8     | 1.5KE6.8C  |
| 1.5KE6.8A                          | 1.5KE6.8CA | 5.8                        | 6.45                             | 7.14 | 10             | 1000                              | 2000 | 10.5                             | 143                          | 1.5KE6.8A    | 1.5KE6.8CA |
| 1.5KE7.5                           | 1.5KE7.5C  | 6.05                       | 6.75                             | 8.25 | 10             | 500                               | 1000 | 11.7                             | 128                          | 1.5KE7.5     | 1.5KE7.5C  |
| 1.5KE7.5A                          | 1.5KE7.5CA | 6.4                        | 7.13                             | 7.88 | 10             | 500                               | 1000 | 11.3                             | 132                          | 1.5KE7.5A    | 1.5KE7.5CA |
| 1.5KE8.2                           | 1.5KE8.2C  | 6.63                       | 7.38                             | 9.02 | 10             | 200                               | 400  | 12.5                             | 120                          | 1.5KE8.2     | 1.5KE8.2C  |
| 1.5KE8.2A                          | 1.5KE8.2CA | 7.02                       | 7.79                             | 8.61 | 10             | 200                               | 400  | 12.1                             | 124                          | 1.5KE8.2A    | 1.5KE8.2CA |
| 1.5KE9.1                           | 1.5KE9.1C  | 7.37                       | 8.19                             | 10   | 1              | 50                                | 100  | 13.8                             | 109                          | 1.5KE9.1     | 1.5KE9.1C  |
| 1.5KE9.1A                          | 1.5KE9.1CA | 7.78                       | 8.65                             | 9.5  | 1              | 50                                | 100  | 13.4                             | 112                          | 1.5KE9.1A    | 1.5KE9.1CA |
| 1.5KE10                            | 1.5KE10C   | 8.1                        | 9                                | 11   | 1              | 10                                | 20   | 15                               | 100                          | 1.5KE10      | 1.5KE10C   |
| 1.5KE10A                           | 1.5KE10CA  | 8.55                       | 9.5                              | 10.5 | 1              | 10                                | 20   | 14.5                             | 103                          | 1.5KE10A     | 1.5KE10CA  |
| 1.5KE11                            | 1.5KE11C   | 8.92                       | 9.9                              | 12.1 | 1              | 5                                 | 10   | 16.2                             | 93                           | 1.5KE11      | 1.5KE11C   |
| 1.5KE11A                           | 1.5KE11CA  | 9.4                        | 10.5                             | 11.6 | 1              | 5                                 | 10   | 15.6                             | 96                           | 1.5KE11A     | 1.5KE11CA  |
| 1.5KE12                            | 1.5KE12C   | 9.72                       | 10.8                             | 13.2 | 1              | 5                                 | 5    | 17.3                             | 87                           | 1.5KE12      | 1.5KE12C   |
| 1.5KE12A                           | 1.5KE12CA  | 10.2                       | 11.4                             | 12.6 | 1              | 5                                 | 5    | 16.7                             | 90                           | 1.5KE12A     | 1.5KE12CA  |
| 1.5KE13                            | 1.5KE13C   | 10.5                       | 11.7                             | 14.3 | 1              | 1                                 | 1    | 19                               | 79                           | 1.5KE13      | 1.5KE13C   |
| 1.5KE13A                           | 1.5KE13CA  | 11.1                       | 12.4                             | 13.7 | 1              | 1                                 | 1    | 18.2                             | 82                           | 1.5KE13A     | 1.5KE13CA  |
| 1.5KE15                            | 1.5KE15C   | 12.1                       | 13.5                             | 16.5 | 1              | 1                                 | 1    | 22                               | 68                           | 1.5KE15      | 1.5KE15C   |
| 1.5KE15A                           | 1.5KE15CA  | 12.8                       | 14.3                             | 15.8 | 1              | 1                                 | 1    | 21.2                             | 71                           | 1.5KE15A     | 1.5KE15CA  |
| 1.5KE16                            | 1.5KE16C   | 12.9                       | 14.4                             | 17.6 | 1              | 1                                 | 1    | 23.5                             | 64                           | 1.5KE16      | 1.5KE16C   |
| 1.5KE16A                           | 1.5KE16CA  | 13.6                       | 15.2                             | 16.8 | 1              | 1                                 | 1    | 22.5                             | 67                           | 1.5KE16A     | 1.5KE16CA  |
| 1.5KE18                            | 1.5KE18C   | 14.5                       | 16.2                             | 19.8 | 1              | 1                                 | 1    | 26.5                             | 56.5                         | 1.5KE18      | 1.5KE18C   |
| 1.5KE18A                           | 1.5KE18CA  | 15.3                       | 17.1                             | 18.9 | 1              | 1                                 | 1    | 25.2                             | 59.5                         | 1.5KE18A     | 1.5KE18CA  |
| 1.5KE20                            | 1.5KE20C   | 16.2                       | 18                               | 22   | 1              | 1                                 | 1    | 29.1                             | 51.5                         | 1.5KE20      | 1.5KE20C   |
| 1.5KE20A                           | 1.5KE20CA  | 17.1                       | 19                               | 21   | 1              | 1                                 | 1    | 27.7                             | 54                           | 1.5KE20A     | 1.5KE20CA  |
| 1.5KE22                            | 1.5KE22C   | 17.8                       | 19.8                             | 24.2 | 1              | 1                                 | 1    | 31.9                             | 47                           | 1.5KE22      | 1.5KE22C   |
| 1.5KE22A                           | 1.5KE22CA  | 18.8                       | 20.9                             | 23.1 | 1              | 1                                 | 1    | 30.6                             | 49                           | 1.5KE22A     | 1.5KE22CA  |
| 1.5KE24                            | 1.5KE24C   | 19.4                       | 21.6                             | 26.4 | 1              | 1                                 | 1    | 34.7                             | 43                           | 1.5KE24      | 1.5KE24C   |
| 1.5KE24A                           | 1.5KE24CA  | 20.5                       | 22.8                             | 25.2 | 1              | 1                                 | 1    | 33.2                             | 45                           | 1.5KE24A     | 1.5KE24CA  |
| 1.5KE27                            | 1.5KE27C   | 21.8                       | 24.3                             | 29.7 | 1              | 1                                 | 1    | 39.1                             | 38.5                         | 1.5KE27      | 1.5KE27C   |
| 1.5KE27A                           | 1.5KE27CA  | 23.1                       | 25.7                             | 28.4 | 1              | 1                                 | 1    | 37.5                             | 40                           | 1.5KE27A     | 1.5KE27CA  |
| 1.5KE30                            | 1.5KE30C   | 24.3                       | 27                               | 33   | 1              | 1                                 | 1    | 43.5                             | 34.5                         | 1.5KE30      | 1.5KE30C   |
| 1.5KE30A                           | 1.5KE30CA  | 25.6                       | 28.5                             | 31.5 | 1              | 1                                 | 1    | 41.4                             | 36                           | 1.5KE30A     | 1.5KE30CA  |
| 1.5KE33                            | 1.5KE33C   | 26.8                       | 29.7                             | 36.3 | 1              | 1                                 | 1    | 47.7                             | 31.5                         | 1.5KE33      | 1.5KE33C   |
| 1.5KE33A                           | 1.5KE33CA  | 28.2                       | 31.4                             | 34.7 | 1              | 1                                 | 1    | 45.7                             | 33                           | 1.5KE33A     | 1.5KE33CA  |
| 1.5KE36                            | 1.5KE36C   | 29.1                       | 32.4                             | 39.6 | 1              | 1                                 | 1    | 52                               | 29                           | 1.5KE36      | 1.5KE36C   |
| 1.5KE36A                           | 1.5KE36CA  | 30.8                       | 34.2                             | 37.8 | 1              | 1                                 | 1    | 49.9                             | 30                           | 1.5KE36A     | 1.5KE36CA  |
| 1.5KE39                            | 1.5KE39C   | 31.6                       | 35.1                             | 42.9 | 1              | 1                                 | 1    | 56.4                             | 26.5                         | 1.5KE39      | 1.5KE39C   |
| 1.5KE39A                           | 1.5KE39CA  | 33.3                       | 37.1                             | 41   | 1              | 1                                 | 1    | 53.9                             | 28                           | 1.5KE39A     | 1.5KE39CA  |
| 1.5KE43                            | 1.5KE43C   | 34.8                       | 38.7                             | 47.3 | 1              | 1                                 | 1    | 61.9                             | 24                           | 1.5KE43      | 1.5KE43C   |
| 1.5KE43A                           | 1.5KE43CA  | 36.8                       | 40.9                             | 45.2 | 1              | 1                                 | 1    | 59.3                             | 25.3                         | 1.5KE43A     | 1.5KE43CA  |
| 1.5KE47                            | 1.5KE47C   | 38.1                       | 42.3                             | 51.7 | 1              | 1                                 | 1    | 67.8                             | 22.2                         | 1.5KE47      | 1.5KE47C   |
| 1.5KE47A                           | 1.5KE47CA  | 40.2                       | 44.7                             | 49.4 | 1              | 1                                 | 1    | 64.8                             | 23.2                         | 1.5KE47A     | 1.5KE47CA  |
| 1.5KE51                            | 1.5KE51C   | 41.3                       | 45.9                             | 56.1 | 1              | 1                                 | 1    | 73.5                             | 20.4                         | 1.5KE51      | 1.5KE51C   |



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| Part Number                        |            | Reverse Stand-off Voltage     | Breakdown Voltage                |      | Test Current   | Reverse Leakage                   |    | Max. Clamp Voltage<br>10/1000µs  | Peak Pulse Current<br>10/1000µs | Marking Code |            |
|------------------------------------|------------|-------------------------------|----------------------------------|------|----------------|-----------------------------------|----|----------------------------------|---------------------------------|--------------|------------|
|                                    |            | V <sub>RWM</sub><br>(Notes 4) | V <sub>BR</sub> @ I <sub>T</sub> |      | I <sub>T</sub> | I <sub>R</sub> @ V <sub>RWM</sub> |    | V <sub>C</sub> @ I <sub>PP</sub> | I <sub>PP</sub>                 |              |            |
|                                    |            |                               | Min.                             | Max. |                | UNI                               | BI |                                  |                                 |              |            |
| UNI                                | BI         | V                             | V                                | V    | mA             | µA                                | µA | V                                | A                               | UNI          | BI         |
| 1500W Transient Voltage Suppressor |            |                               |                                  |      |                |                                   |    |                                  |                                 |              |            |
| 1.5KE51A                           | 1.5KE51CA  | 43.6                          | 48.5                             | 53.6 | 1              | 1                                 | 1  | 70.1                             | 21.4                            | 1.5KE51A     | 1.5KE51CA  |
| 1.5KE56                            | 1.5KE56C   | 45.6                          | 50.4                             | 61.6 | 1              | 1                                 | 1  | 80.5                             | 18.6                            | 1.5KE56      | 1.5KE56C   |
| 1.5KE56A                           | 1.5KE56CA  | 47.8                          | 53.2                             | 58.8 | 1              | 1                                 | 1  | 77                               | 19.5                            | 1.5KE56A     | 1.5KE56CA  |
| 1.5KE62                            | 1.5KE62C   | 50.2                          | 55.8                             | 68.2 | 1              | 1                                 | 1  | 89                               | 16.9                            | 1.5KE62      | 1.5KE62C   |
| 1.5KE62A                           | 1.5KE62CA  | 53                            | 58.9                             | 65.1 | 1              | 1                                 | 1  | 85                               | 17.7                            | 1.5KE62A     | 1.5KE62CA  |
| 1.5KE68                            | 1.5KE68C   | 55.1                          | 61.2                             | 74.8 | 1              | 1                                 | 1  | 98                               | 15.3                            | 1.5KE68      | 1.5KE68C   |
| 1.5KE68A                           | 1.5KE68CA  | 58.1                          | 64.6                             | 71.4 | 1              | 1                                 | 1  | 92                               | 16.3                            | 1.5KE68A     | 1.5KE68CA  |
| 1.5KE75                            | 1.5KE75C   | 60.7                          | 67.5                             | 82.5 | 1              | 1                                 | 1  | 108                              | 13.9                            | 1.5KE75      | 1.5KE75C   |
| 1.5KE75A                           | 1.5KE75CA  | 64.1                          | 71.3                             | 78.8 | 1              | 1                                 | 1  | 103                              | 14.6                            | 1.5KE75A     | 1.5KE75CA  |
| 1.5KE82                            | 1.5KE82C   | 66.4                          | 73.8                             | 90.2 | 1              | 1                                 | 1  | 118                              | 12.7                            | 1.5KE82      | 1.5KE82C   |
| 1.5KE82A                           | 1.5KE82CA  | 70.1                          | 77.9                             | 86.1 | 1              | 1                                 | 1  | 113                              | 13.3                            | 1.5KE82A     | 1.5KE82CA  |
| 1.5KE91                            | 1.5KE91C   | 73.7                          | 81.9                             | 100  | 1              | 1                                 | 1  | 131                              | 11.4                            | 1.5KE91      | 1.5KE91C   |
| 1.5KE91A                           | 1.5KE91CA  | 77.8                          | 86.5                             | 95.5 | 1              | 1                                 | 1  | 125                              | 12                              | 1.5KE91A     | 1.5KE91CA  |
| 1.5KE100                           | 1.5KE100C  | 81                            | 90                               | 110  | 1              | 1                                 | 1  | 144                              | 10.4                            | 1.5KE100     | 1.5KE100C  |
| 1.5KE100A                          | 1.5KE100CA | 85.5                          | 95                               | 105  | 1              | 1                                 | 1  | 137                              | 11                              | 1.5KE100A    | 1.5KE100CA |
| 1.5KE110                           | 1.5KE110C  | 89.2                          | 99                               | 121  | 1              | 1                                 | 1  | 158                              | 9.5                             | 1.5KE110     | 1.5KE110C  |
| 1.5KE110A                          | 1.5KE110CA | 94                            | 105                              | 116  | 1              | 1                                 | 1  | 152                              | 9.9                             | 1.5KE110A    | 1.5KE110CA |
| 1.5KE120                           | 1.5KE120C  | 97.2                          | 108                              | 132  | 1              | 1                                 | 1  | 173                              | 8.7                             | 1.5KE120     | 1.5KE120C  |
| 1.5KE120A                          | 1.5KE120CA | 102                           | 114                              | 126  | 1              | 1                                 | 1  | 165                              | 9.1                             | 1.5KE120A    | 1.5KE120CA |
| 1.5KE130                           | 1.5KE130C  | 105                           | 117                              | 143  | 1              | 1                                 | 1  | 187                              | 8                               | 1.5KE130     | 1.5KE130C  |
| 1.5KE130A                          | 1.5KE130CA | 111                           | 124                              | 137  | 1              | 1                                 | 1  | 179                              | 8.4                             | 1.5KE130A    | 1.5KE130CA |
| 1.5KE150                           | 1.5KE150C  | 121                           | 135                              | 165  | 1              | 1                                 | 1  | 215                              | 7                               | 1.5KE150     | 1.5KE150C  |
| 1.5KE150A                          | 1.5KE150CA | 128                           | 143                              | 158  | 1              | 1                                 | 1  | 207                              | 7.2                             | 1.5KE150A    | 1.5KE150CA |
| 1.5KE160                           | 1.5KE160C  | 130                           | 144                              | 176  | 1              | 1                                 | 1  | 230                              | 6.5                             | 1.5KE160     | 1.5KE160C  |
| 1.5KE160A                          | 1.5KE160CA | 136                           | 152                              | 168  | 1              | 1                                 | 1  | 219                              | 6.8                             | 1.5KE160A    | 1.5KE160CA |
| 1.5KE170                           | 1.5KE170C  | 138                           | 153                              | 187  | 1              | 1                                 | 1  | 244                              | 6.2                             | 1.5KE170     | 1.5KE170C  |
| 1.5KE170A                          | 1.5KE170CA | 145                           | 162                              | 179  | 1              | 1                                 | 1  | 234                              | 6.4                             | 1.5KE170A    | 1.5KE170CA |
| 1.5KE180                           | 1.5KE180C  | 146                           | 162                              | 198  | 1              | 1                                 | 1  | 258                              | 5.8                             | 1.5KE180     | 1.5KE180C  |
| 1.5KE180A                          | 1.5KE180CA | 154                           | 171                              | 189  | 1              | 1                                 | 1  | 246                              | 6.1                             | 1.5KE180A    | 1.5KE180CA |
| 1.5KE200                           | 1.5KE200C  | 162                           | 180                              | 220  | 1              | 1                                 | 1  | 287                              | 5.2                             | 1.5KE200     | 1.5KE200C  |
| 1.5KE200A                          | 1.5KE200CA | 171                           | 190                              | 210  | 1              | 1                                 | 1  | 274                              | 5.5                             | 1.5KE200A    | 1.5KE200CA |
| 1.5KE220                           | 1.5KE220C  | 175                           | 198                              | 242  | 1              | 1                                 | 1  | 344                              | 4.3                             | 1.5KE220     | 1.5KE220C  |
| 1.5KE220A                          | 1.5KE220CA | 185                           | 209                              | 231  | 1              | 1                                 | 1  | 328                              | 4.6                             | 1.5KE220A    | 1.5KE220CA |
| 1.5KE250                           | 1.5KE250C  | 202                           | 225                              | 275  | 1              | 1                                 | 1  | 360                              | 4.3                             | 1.5KE250     | 1.5KE250C  |
| 1.5KE250A                          | 1.5KE250CA | 214                           | 237                              | 263  | 1              | 1                                 | 1  | 344                              | 4.5                             | 1.5KE250A    | 1.5KE250CA |
| 1.5KE300                           | 1.5KE300C  | 243                           | 270                              | 330  | 1              | 1                                 | 1  | 430                              | 3.6                             | 1.5KE300     | 1.5KE300C  |
| 1.5KE300A                          | 1.5KE300CA | 256                           | 285                              | 315  | 1              | 1                                 | 1  | 414                              | 3.8                             | 1.5KE300A    | 1.5KE300CA |
| 1.5KE350                           | 1.5KE350C  | 284                           | 315                              | 385  | 1              | 1                                 | 1  | 504                              | 3.1                             | 1.5KE350     | 1.5KE350C  |
| 1.5KE350A                          | 1.5KE350CA | 300                           | 332                              | 368  | 1              | 1                                 | 1  | 482                              | 3.2                             | 1.5KE350A    | 1.5KE350CA |
| 1.5KE400                           | 1.5KE400C  | 324                           | 360                              | 440  | 1              | 1                                 | 1  | 574                              | 2.7                             | 1.5KE400     | 1.5KE400C  |
| 1.5KE400A                          | 1.5KE400CA | 342                           | 380                              | 420  | 1              | 1                                 | 1  | 548                              | 2.8                             | 1.5KE400A    | 1.5KE400CA |
| 1.5KE440                           | 1.5KE440C  | 356                           | 396                              | 484  | 1              | 1                                 | 1  | 631                              | 2.4                             | 1.5KE440     | 1.5KE440C  |
| 1.5KE440A                          | 1.5KE440CA | 376                           | 418                              | 462  | 1              | 1                                 | 1  | 600                              | 2.6                             | 1.5KE440A    | 1.5KE440CA |



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**Fig.1 PEAK PULSE POWER RATING VERSUS PULSE TIME CURVE**



**Fig.2 PULSE DERATING CURVE**



**Fig.3 PULSE WAVEFORM**



**Fig.4 TYPICAL JUNCTION CAPACITANCE**



**Fig.5 MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT UNIDIRECTIONAL**



# 1.5KE SERIES

**Part No.\_packing code\_Version**

- 1.5KE6.8\_AY\_00001
- 1.5KE6.8\_AY\_10001
- 1.5KE6.8\_B0\_00001
- 1.5KE6.8\_B0\_10001
- 1.5KE6.8\_R2\_00001
- 1.5KE6.8\_R2\_10001

For example :

**RB500V-40\_R2\_00001**



| Packing Code <b>XX</b>               |                      |                                  |                      | Version Code <b>XXXXXX</b> |                      |                                       |
|--------------------------------------|----------------------|----------------------------------|----------------------|----------------------------|----------------------|---------------------------------------|
| Packing type                         | 1 <sup>st</sup> Code | Packing size code                | 2 <sup>nd</sup> Code | HF or RoHS                 | 1 <sup>st</sup> Code | 2 <sup>nd</sup> ~5 <sup>th</sup> Code |
| Tape and Ammunition Box (T/B)        | <b>A</b>             | N/A                              | <b>0</b>             | <b>HF</b>                  | <b>0</b>             | serial number                         |
| Tape and Reel (T/R)                  | <b>R</b>             | 7"                               | <b>1</b>             | <b>RoHS</b>                | <b>1</b>             | serial number                         |
| Bulk Packing (B/P)                   | <b>B</b>             | 13"                              | <b>2</b>             |                            |                      |                                       |
| Tube Packing (T/P)                   | <b>T</b>             | 26mm                             | <b>X</b>             |                            |                      |                                       |
| Tape and Reel (Right Oriented) (TRR) | <b>S</b>             | 52mm                             | <b>Y</b>             |                            |                      |                                       |
| Tape and Reel (Left Oriented) (TRL)  | <b>L</b>             | PANASERT T/B CATHODE UP (PBCU)   | <b>U</b>             |                            |                      |                                       |
| FORMING                              | <b>F</b>             | PANASERT T/B CATHODE DOWN (PBCD) | <b>D</b>             |                            |                      |                                       |