

# 1.5KE SERIES

**GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSOR PEAK PULSE POWER 1500 Watts**

**BREAK DOWN VOLTAGE**

**6.8 to 440 Volts**

**DO-201AE**

Unit: inch(mm)



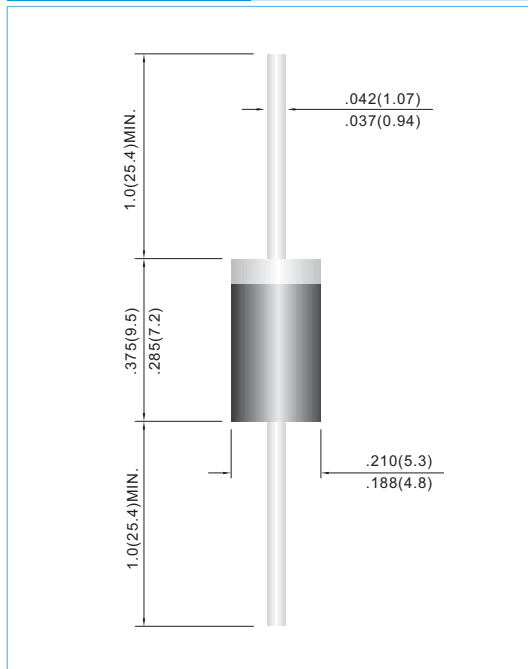
**Recognized File # E210467**

## FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94V-O
- Glass passivated chip junction in DO-201AE package
- 1500W surge capability at 1.0ms
- Excellent clamping capability
- Low zener impedance
- Fast response time: typically less than 1.0 ps from 0 volts to BV min
- Typical IR less than 1μA above 10V
- High temperature soldering guaranteed: 260°C/10 seconds/.375" (9.5mm) lead length/5lbs., (2.3kg) tension
- In compliance with EU RoHS 2002/95/EC directives

## MECHANICAL DATA

- Case: JEDEC DO-201AE molded plastic
- Terminals: Axial leads, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denoted cathode except Bipolar
- Mounting Position: Any
- Weight: 0.0395 ounce, 1.122 gram



## 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 $T_A=25^\circ\text{C}$ , $T_p=1\text{ms}$ (Note 1)                               | $P_{PK}$        | 1500        | Watts                       |
| Typical Thermal Resistance Junction to Air Lead Lengths .375", (9.5mm) (Note 2)                            | $R_{\theta JA}$ | 30          | $^\circ\text{C} / \text{W}$ |
| Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method) (Note 3) | $I_{FSM}$       | 200         | Amps                        |
| 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.



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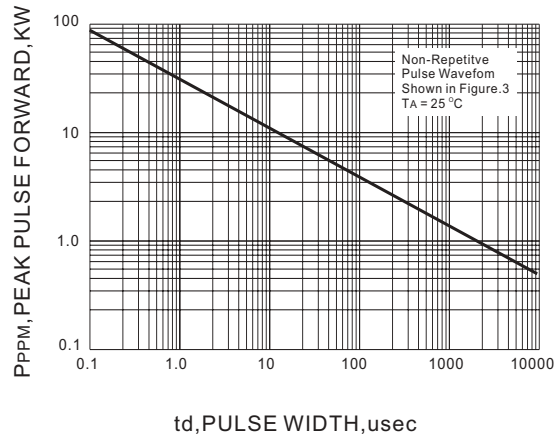
| Part Number                               | Part Number | V <sub>RRM</sub> | V <sub>BR</sub> @ I <sub>T</sub> |      |                | I <sub>R</sub> @ V <sub>RRM</sub> |      | V <sub>C</sub> @ I <sub>PP</sub> |      | Marking Code |            |
|-------------------------------------------|-------------|------------------|----------------------------------|------|----------------|-----------------------------------|------|----------------------------------|------|--------------|------------|
|                                           |             |                  | Min.                             | Max. | I <sub>T</sub> | UNI-                              | BI-  |                                  |      |              |            |
| UNI-                                      | BI-         | V                | V                                | V    | mA             | μA                                | μA   | V                                | A    | UNI-         | BI-        |
| <b>1500W Transient Voltage Suppressor</b> |             |                  |                                  |      |                |                                   |      |                                  |      |              |            |
| 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   |



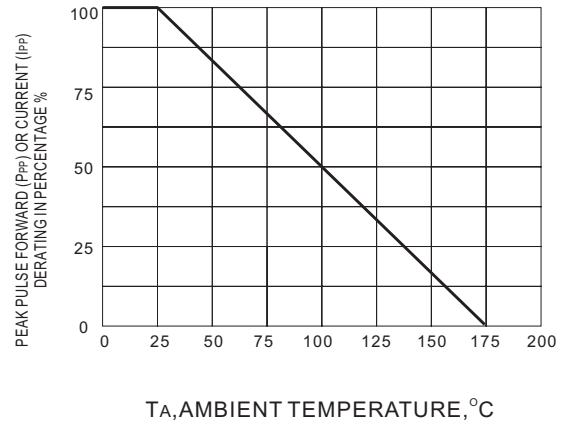
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| Part Number                               | Part Number | V <sub>RWM</sub> | V <sub>BR</sub> @ I <sub>T</sub> |      |                | I <sub>R</sub> @ V <sub>RWM</sub> |     | V <sub>C</sub> @ I <sub>PP</sub> |      | Marking Code |            |
|-------------------------------------------|-------------|------------------|----------------------------------|------|----------------|-----------------------------------|-----|----------------------------------|------|--------------|------------|
|                                           |             |                  | Min.                             | Max. | I <sub>T</sub> | UNI-                              | BI- |                                  |      | UNI-         | BI-        |
| UNI-                                      | BI-         | V                | V                                | V    | mA             | μA                                | μA  | V                                | A    | UNI-         | BI-        |
| <b>1500W Transient Voltage Suppressor</b> |             |                  |                                  |      |                |                                   |     |                                  |      |              |            |
| 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 |

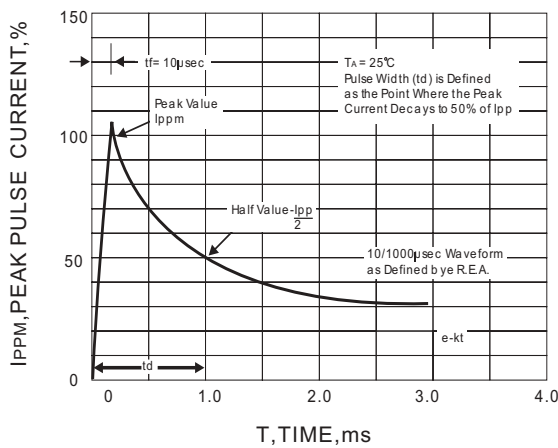
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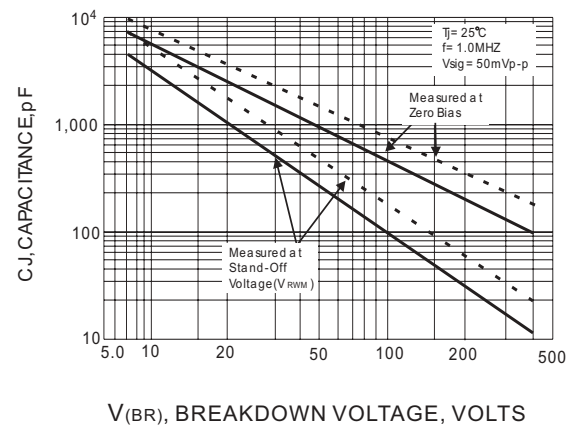
**Fig.1 PEAK PULSE POWER RATING VERSUS PULSE TIME CURVE**



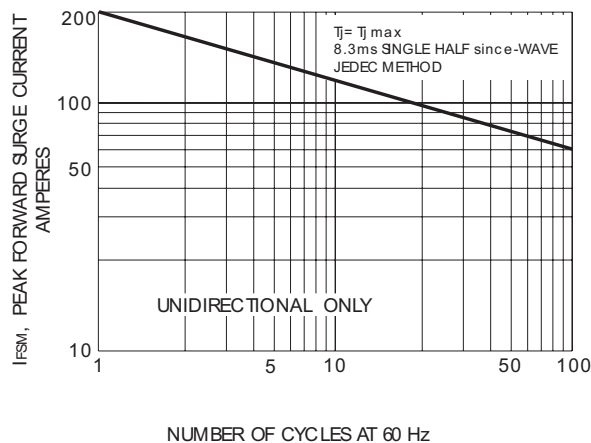
**Fig.2 PULSE DERATING CURVE**



**Fig.3 PULSE WAVEFORM**



**Fig.4 TYPICAL JUNCTION CAPACITANCE**



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