



*DC COMPONENTS CO., LTD.*

RECTIFIER SPECIALISTS

1.5KE6.8  
THRU  
1.5KE440CA

**TECHNICAL SPECIFICATIONS OF TRANSIENT VOLTAGE SUPPRESSOR**  
**VOLTAGE RANGE - 6.8 to 440Volts    PEAK PULAE POWER - 1500 Watts**

**FEATURES**

- \* Glass passivated junction
- \* 1500 Watts Peak Pulse Power capability on 10/1000  $\mu$ s waveform
- \* Excellent clamping capability
- \* Low zener impedance
- \* Fast response time

**MECHANICAL DATA**

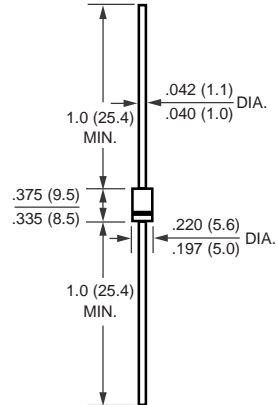
- \* Case: Molded plastic
- \* Epoxy: UL 94V-0 rate flame retardant
- \* Lead: MIL-STD-202E, Method 208 guaranteed
- \* Polarity: Color band denotes positive end (cathode) except bidirectional types
- \* Mounting position: Any
- \* Weight: 1.2 gram

**MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS**

Ratings at 25°C ambient temperature unless otherwise specified.  
 Single phase, half wave, 60 Hz, resistive or inductive load,  
 For capacitive load, derate current by 20%.



DO-201AE



**DEVICES FOR BIPOLAR APPLICATIONS**

For Bidirectional use C or CA suffix (e.g. 1.5KE6.8C, 1.5KE440CA).

Electrical characteristics apply in both directions

|   | SYMBOL                            | VALUE        | UNITS |
|---|-----------------------------------|--------------|-------|
| Peak Pulse Power Dissipation on 10/1000 $\mu$ s waveform (Note1, FIG.1)                                   | PPPM                              | Minimum 1500 | Watts |
| Steady State Power Dissipation at T = 75°C<br>Lead Lengths .375"(9.5mm) (Note 2)                          | P <sub>M(AV)</sub>                | 5.0          | Watts |
| Peak Forward Surge Current, 8.3ms single half sine-wave superimposed on rated load(JEDEC Method) (Note 3) | I <sub>FSM</sub>                  | 200          | Amps  |
| Maximum Instantaneous Forward Voltage at 50A for Unidirectional only (Note 4)                             | V <sub>F</sub>                    | 3.5/5.0      | Volts |
| Operating and Storage Temperature Range   | T <sub>J</sub> , T <sub>STG</sub> | -55 to + 175 | °C    |

- NOTES : 1. Non-repetitive current pulse, per Fig.3 and derated above TA = 25°C per Fig. 2.  
 2. Mounted on Copper Leaf area of 1.6 X 1.6" ( 40 X 40mm ) per Fig. 5  
 3. 8.3ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.  
 4. V<sub>F</sub> = 3.5V max. for devices of V<sub>(BR)</sub>  $\leq$  200V max. and V<sub>F</sub> = 5.0V max. for devices of V<sub>(BR)</sub> > 200V.

# RATING AND CHARACTERISTIC CURVES (1.5KE6.8 THRU 1.5KE440CA)

FIG. 1 - PEAK PULSE POWER RATING CURVE

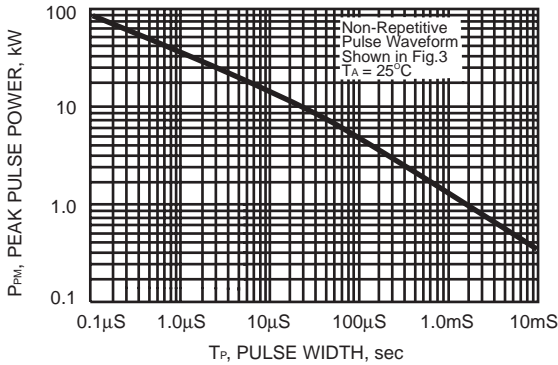


FIG. 2 - PULSE DERATING CURVE

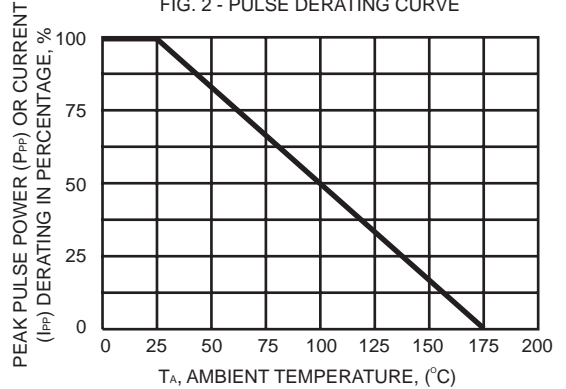


FIG. 3 - PULSE WAVEFORM

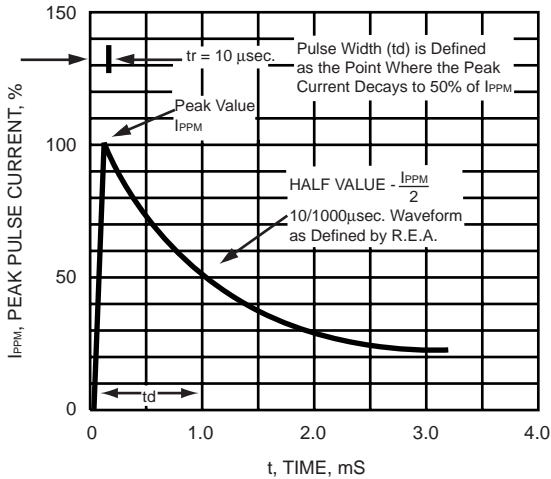


FIG. 4 - TYPICAL JUNCTION CAPACITANCE

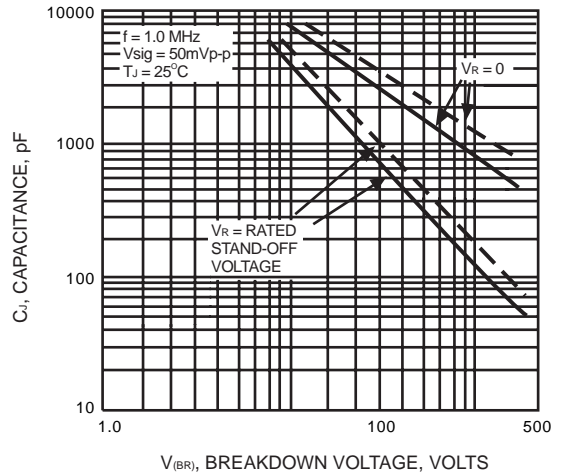


FIG. 5 - STEADY STATE POWER DERTING CURVE

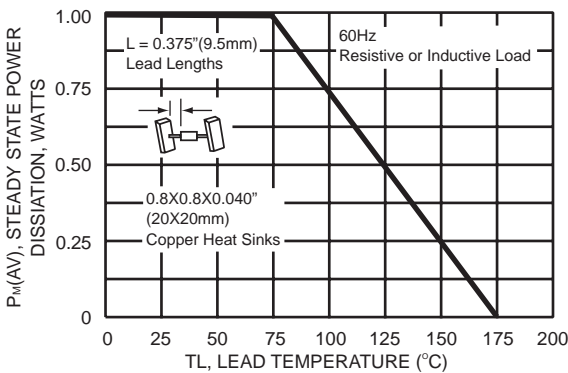
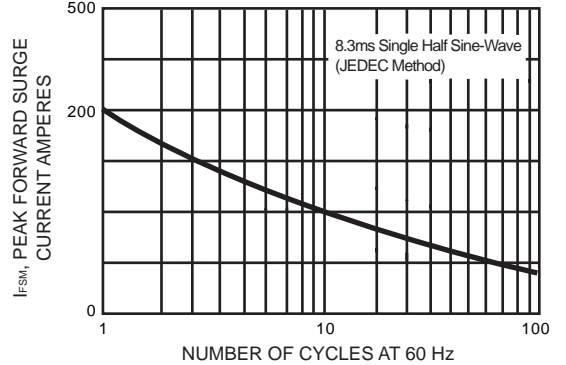


FIG. 6 - MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL



DC COMPONENTS CO., LTD.

# 1.5KE (1500W) SERIES TRANSIENT VOLTAGE SUPPRESSORS

| TYPE      | Reverse Stand-off Voltage | Breakdown Voltage @ I <sub>T</sub> |      | Test Current         | Maximum Reverse Leakage @ V <sub>RWM</sub> |      | Maximum Clamping Voltage @ I <sub>PP</sub> | Maximum Peak Pulse Current |
|-----------|---------------------------|------------------------------------|------|----------------------|--|------|--|----------------------------|
|           | V <sub>RWM</sub><br>V     | V <sub>BR</sub>                    |      | I <sub>T</sub><br>mA | I <sub>R</sub>                             |      | V <sub>c</sub><br>V                        | I <sub>PP</sub><br>A       |
|           |                           | Min.                               | Max. |                      | UNI-                                       | BI-  |  |                            |
|           |                           | V                                  | V    |                      | μA   | μA   |  |                            |
| 1.5KE6.8  | 5.50                      | 6.12                               | 7.48 | 10                   | 1000                                       | 2000 | 10.8                                       | 139                        |
| 1.5KE6.8A | 5.80                      | 6.45                               | 7.14 | 10                   | 1000                                       | 2000 | 10.5                                       | 143                        |
| 1.5KE7.5  | 6.05                      | 6.75                               | 8.25 | 10                   | 500  | 1000 | 11.7                                       | 128                        |
| 1.5KE7.5A | 6.40                      | 7.13                               | 7.88 | 10                   | 500  | 1000 | 11.3                                       | 132                        |
| 1.5KE8.2  | 6.63                      | 7.38                               | 9.02 | 10                   | 200  | 400  | 12.5                                       | 120                        |
| 1.5KE8.2A | 7.02                      | 7.79                               | 8.61 | 10                   | 200  | 400  | 12.1                                       | 124                        |
| 1.5KE9.1  | 7.37                      | 8.19                               | 10.0 | 1                    | 50   | 100  | 13.8                                       | 109                        |
| 1.5KE9.1A | 7.78                      | 8.65                               | 9.50 | 1                    | 50   | 100  | 13.4                                       | 112                        |
| 1.5KE10   | 8.10                      | 9.00                               | 11.0 | 1                    | 10   | 20   | 15.0                                       | 100                        |
| 1.5KE10A  | 8.55                      | 9.50                               | 10.5 | 1                    | 10   | 20   | 14.5                                       | 103                        |
| 1.5KE11   | 8.92                      | 9.90                               | 12.1 | 1                    | 5  | 10   | 16.2                                       | 93                         |
| 1.5KE11A  | 9.40                      | 10.5                               | 11.6 | 1                    | 5  | 10   | 15.6                                       | 96                         |
| 1.5KE12   | 9.72                      | 10.8                               | 13.2 | 1                    | 5  |      | 17.3                                       | 87                         |
| 1.5KE12A  | 10.2                      | 11.4                               | 12.6 | 1                    | 5  |      | 16.7                                       | 90                         |
| 1.5KE13   | 10.5                      | 11.7                               | 14.3 | 1                    | 5  |      | 19.0                                       | 79                         |
| 1.5KE13A  | 11.1                      | 12.4                               | 13.7 | 1                    | 5  |      | 18.2                                       | 82                         |
| 1.5KE15   | 12.1                      | 13.5                               | 16.5 | 1                    | 5  |      | 22.0                                       | 68                         |
| 1.5KE15A  | 12.8                      | 14.3                               | 15.8 | 1                    | 5  |      | 21.2                                       | 71                         |
| 1.5KE16   | 12.9                      | 14.4                               | 17.6 | 1                    | 5  |      | 23.5                                       | 64                         |
| 1.5KE16A  | 13.6                      | 15.2                               | 16.8 | 1                    | 5  |      | 22.5                                       | 67                         |
| 1.5KE18   | 14.5                      | 16.2                               | 19.8 | 1                    | 5  |      | 26.5                                       | 56.5                       |
| 1.5KE18A  | 15.3                      | 17.1                               | 18.9 | 1                    | 5  |      | 25.2                                       | 59.5                       |
| 1.5KE20   | 16.2                      | 18.0                               | 22.0 | 1                    | 5  |      | 29.1                                       | 51.5                       |
| 1.5KE20A  | 17.1                      | 19.0                               | 21.0 | 1                    | 5  |      | 27.7                                       | 54                         |
| 1.5KE22   | 17.8                      | 19.8                               | 24.2 | 1                    | 5  |      | 31.9                                       | 47                         |
| 1.5KE22A  | 18.8                      | 20.9                               | 23.1 | 1                    | 5  |      | 30.6                                       | 49                         |
| 1.5KE24   | 19.4                      | 21.6                               | 26.4 | 1                    | 5  |      | 34.7                                       | 43                         |
| 1.5KE24A  | 20.5                      | 22.8                               | 25.2 | 1                    | 5  |      | 33.2                                       | 45                         |
| 1.5KE27   | 21.8                      | 24.3                               | 29.7 | 1                    | 5  |      | 39.1                                       | 38.5                       |
| 1.5KE27A  | 23.1                      | 25.7                               | 28.4 | 1                    | 5  |      | 37.5                                       | 40                         |
| 1.5KE30   | 24.3                      | 27.0                               | 33.0 | 1                    | 5  |      | 43.5                                       | 34.5                       |
| 1.5KE30A  | 25.6                      | 28.5                               | 31.5 | 1                    | 5  |      | 41.4                                       | 36                         |
| 1.5KE33   | 26.8                      | 29.7                               | 36.3 | 1                    | 5  |      | 47.7                                       | 31.5                       |
| 1.5KE33A  | 28.2                      | 31.4                               | 34.7 | 1                    | 5  |      | 45.7                                       | 33                         |
| 1.5KE36   | 29.1                      | 32.4                               | 39.6 | 1                    | 5  |      | 52.0                                       | 29                         |
| 1.5KE36A  | 30.8                      | 34.2                               | 37.8 | 1                    | 5  |      | 49.9                                       | 30                         |
| 1.5KE39   | 31.6                      | 35.1                               | 42.9 | 1                    | 5  |      | 56.4                                       | 26.5                       |
| 1.5KE39A  | 33.3                      | 37.1                               | 41.0 | 1                    | 5  |      | 53.9                                       | 28                         |
| 1.5KE43   | 34.8                      | 38.7                               | 47.3 | 1                    | 5  |      | 61.9                                       | 24                         |
| 1.5KE43A  | 36.8                      | 40.9                               | 45.2 | 1                    | 5  |      | 59.3                                       | 25.3                       |
| 1.5KE47   | 38.1                      | 42.3                               | 51.7 | 1                    | 5  |      | 67.8                                       | 22.2                       |
| 1.5KE47A  | 40.2                      | 44.7                               | 49.4 | 1                    | 5  |      | 64.8                                       | 23.2                       |



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| TYPE      | Reverse Stand-off Voltage | Breakdown Voltage @ I <sub>T</sub> |      | Test Current         | Maximum Reverse Leakage @ V <sub>RWM</sub> |           | Maximum Clamping Voltage @ I <sub>PP</sub> | Maximum Peak Pulse Current |
|-----------|---------------------------|------------------------------------|------|----------------------|--|-----------|--|----------------------------|
|           | V <sub>RWM</sub><br>V     | V <sub>BR</sub>                    |      | I <sub>T</sub><br>mA | I <sub>R</sub>                             |           | V <sub>c</sub><br>V                        | I <sub>PP</sub><br>A       |
|           |                           | Min.                               | Max. |                      | UNI-<br>μA                                 | BI-<br>μA |  |                            |
|           |                           | V                                  | V    |                      |  |           |  |                            |
| 1.5KE51   | 41.3                      | 45.9                               | 56.1 | 1                    | 5  | 73.5      | 20.4                                       |                            |
| 1.5KE51A  | 43.6                      | 48.5                               | 53.6 | 1                    | 5  | 70.1      | 21.4                                       |                            |
| 1.5KE56   | 45.6                      | 50.4                               | 61.6 | 1                    | 5  | 80.5      | 18.6                                       |                            |
| 1.5KE56A  | 47.8                      | 53.2                               | 58.8 | 1                    | 5  | 77.0      | 19.5                                       |                            |
| 1.5KE62   | 50.2                      | 55.8                               | 68.2 | 1                    | 5  | 89.0      | 16.9                                       |                            |
| 1.5KE62A  | 53.0                      | 58.9                               | 65.1 | 1                    | 5  | 85.0      | 17.7                                       |                            |
| 1.5KE68   | 55.1                      | 61.2                               | 74.8 | 1                    | 5  | 98.0      | 15.3                                       |                            |
| 1.5KE68A  | 58.1                      | 64.6                               | 71.4 | 1                    | 5  | 92.0      | 16.3                                       |                            |
| 1.5KE75   | 60.7                      | 67.5                               | 82.5 | 1                    | 5  | 108       | 13.9                                       |                            |
| 1.5KE75A  | 54.1                      | 71.3                               | 78.8 | 1                    | 5  | 103       | 14.6                                       |                            |
| 1.5KE82   | 66.4                      | 73.8                               | 90.2 | 1                    | 5  | 118       | 12.7                                       |                            |
| 1.5KE82A  | 70.1                      | 77.9                               | 86.1 | 1                    | 5  | 113       | 13.3                                       |                            |
| 1.5KE91   | 73.7                      | 81.9                               | 100  | 1                    | 5  | 131       | 11.4                                       |                            |
| 1.5KE91A  | 77.8                      | 86.5                               | 95.5 | 1                    | 5  | 125       | 12   |                            |
| 1.5KE100  | 81.0                      | 90.0                               | 110  | 1                    | 5  | 144       | 10.4                                       |                            |
| 1.5KE100A | 85.5                      | 95.0                               | 105  | 1                    | 5  | 137       | 11   |                            |
| 1.5KE110  | 89.2                      | 99.0                               | 121  | 1                    | 5  | 158       | 9.5  |                            |
| 1.5KE110A | 94.0                      | 105                                | 116  | 1                    | 5  | 152       | 9.9  |                            |
| 1.5KE120  | 97.2                      | 108                                | 132  | 1                    | 5  | 173       | 8.7  |                            |
| 1.5KE120A | 102                       | 114                                | 126  | 1                    | 5  | 165       | 9.1  |                            |
| 1.5KE130  | 105                       | 117                                | 143  | 1                    | 5  | 187       | 8.0  |                            |
| 1.5KE130A | 111                       | 124                                | 137  | 1                    | 5  | 179       | 8.4  |                            |
| 1.5KE150  | 121                       | 135                                | 165  | 1                    | 5  | 215       | 7  |                            |
| 1.5KE150A | 128                       | 143                                | 158  | 1                    | 5  | 207       | 7.2  |                            |
| 1.5KE160  | 130                       | 144                                | 176  | 1                    | 5  | 230       | 6.5  |                            |
| 1.5KE160A | 136                       | 152                                | 168  | 1                    | 5  | 219       | 6.8  |                            |
| 1.5KE170  | 138                       | 153                                | 187  | 1                    | 5  | 244       | 6.2  |                            |
| 1.5KE170A | 145                       | 162                                | 179  | 1                    | 5  | 234       | 6.4  |                            |
| 1.5KE180  | 146                       | 162                                | 198  | 1                    | 5  | 258       | 5.8  |                            |
| 1.5KE180A | 154                       | 171                                | 189  | 1                    | 5  | 246       | 6.1  |                            |
| 1.5KE200  | 162                       | 180                                | 220  | 1                    | 5  | 287       | 5.2  |                            |
| 1.5KE200A | 171                       | 190                                | 210  | 1                    | 5  | 274       | 5.5  |                            |
| 1.5KE220  | 175                       | 198                                | 242  | 1                    | 5  | 344       | 4.3  |                            |
| 1.5KE220A | 185                       | 209                                | 231  | 1                    | 5  | 328       | 4.6  |                            |
| 1.5KE250  | 202                       | 225                                | 275  | 1                    | 5  | 360       | 4.3  |                            |
| 1.5KE250A | 214                       | 237                                | 263  | 1                    | 5  | 344       | 4.5  |                            |
| 1.5KE300  | 243                       | 270                                | 330  | 1                    | 5  | 430       | 3.6  |                            |
| 1.5KE300A | 256                       | 285                                | 315  | 1                    | 5  | 414       | 3.8  |                            |
| 1.5KE350  | 284                       | 315                                | 385  | 1                    | 5  | 504       | 3.1  |                            |
| 1.5KE350A | 300                       | 332                                | 368  | 1                    | 5  | 482       | 3.2  |                            |
| 1.5KE400  | 324                       | 360                                | 440  | 1                    | 5  | 574       | 2.7  |                            |
| 1.5KE400A | 342                       | 380                                | 420  | 1                    | 5  | 548       | 2.8  |                            |
| 1.5KE440  | 356                       | 396                                | 484  | 1                    | 5  | 631       | 2.4  |                            |
| 1.5KE440A | 376                       | 418                                | 462  | 1                    | 5  | 602       | 2.6  |                            |

NOTES: 1. V<sub>BR</sub> measured after I<sub>T</sub> applied for 300μs. I<sub>T</sub> = Square Wave Pulse or equivalent.

2. For Bidirectional use "C" or "CA" Suffix for all types (e.g.: 1.5KE6.8C, 1.5KE6.8CA, 1.5KE440C, 1.5KE440CA).  
Electrical characteristics apply in both directions.

3. For bidirectional types having V<sub>RWM</sub> of 10 volts and less, the I<sub>D</sub> limit is doubled.



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