



**1.5KE6V8A/440A**  
**1.5KE6V8CA/440CA**

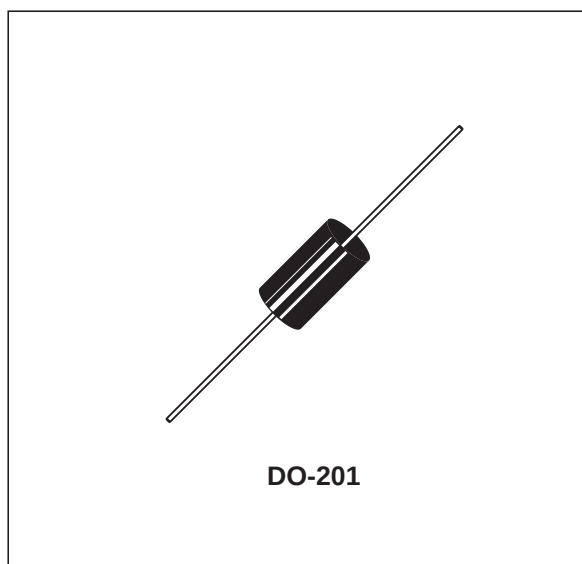
TRANSIL™

## FEATURES

- PEAK PULSE POWER : 1500 W (10/1000μs)
- BREAKDOWN VOLTAGE RANGE :  
From 6.8V to 440 V
- UNI AND BIDIRECTIONAL TYPES
- LOW CLAMPING FACTOR
- FAST RESPONSE TIME
- UL RECOGNIZED

## DESCRIPTION

Transil diodes provide high overvoltage protection by clamping action. Their instantaneous response to transient overvoltages makes them particularly suited to protect voltage sensitive devices such as MOS Technology and low voltage supplied IC's.



## ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25^{\circ}\text{C}$ )

| Symbol             | Parameter                                                          |                                                        | Value                | Unit                                     |
|--------------------|--------------------------------------------------------------------|--------------------------------------------------------|----------------------|------------------------------------------|
| $P_{PP}$           | Peak pulse power dissipation (see note 1)                          | $T_j \text{ initial} = T_{amb}$                        | 1500                 | W                                        |
| P                  | Power dissipation on infinite heatsink                             | $T_{amb} = 75^{\circ}\text{C}$                         | 5                    | W                                        |
| $I_{FSM}$          | Non repetitive surge peak forward current for unidirectional types | $t_p = 10\text{ms}$<br>$T_j \text{ initial} = T_{amb}$ | 200                  | A                                        |
| $T_{stg}$<br>$T_j$ | Storage temperature range<br>Maximum junction temperature          |                                                        | - 65 to + 175<br>175 | $^{\circ}\text{C}$<br>$^{\circ}\text{C}$ |
| $T_L$              | Maximum lead temperature for soldering during 10s at 5mm from case |                                                        | 230                  | $^{\circ}\text{C}$                       |

**Note 1** : For a surge greater than the maximum values, the diode will fail in short-circuit.

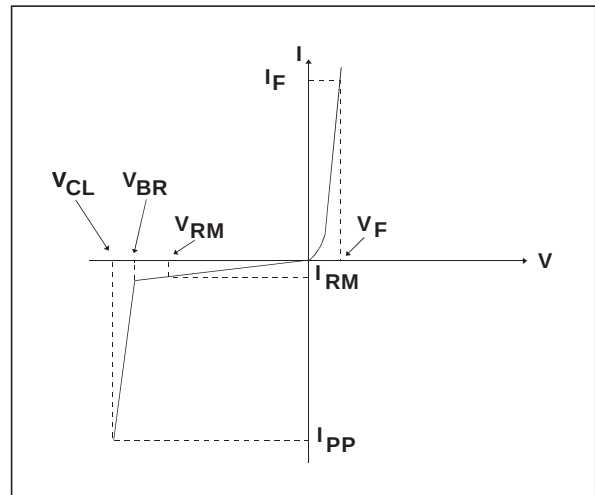
## THERMAL RESISTANCES

| Symbol        | Parameter                                                         | Value | Unit                 |
|---------------|-------------------------------------------------------------------|-------|----------------------|
| $R_{th(j-l)}$ | Junction to leads                                                 | 20    | $^{\circ}\text{C/W}$ |
| $R_{th(j-a)}$ | Junction to ambient on printed circuit. $L_{lead} = 10\text{ mm}$ | 75    | $^{\circ}\text{C/W}$ |

## 1.5KExx

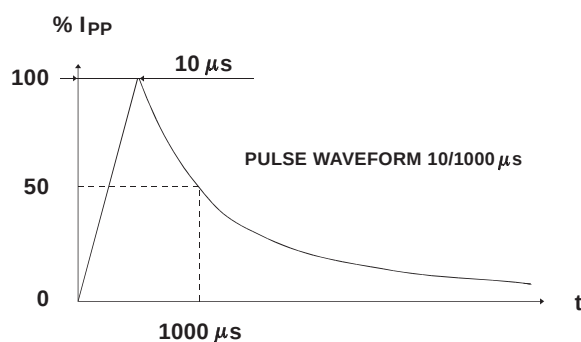
### ELECTRICAL CHARACTERISTICS ( $T_{amb} = 25^{\circ}\text{C}$ )

| Symbol     | Parameter                       |
|------------|---------------------------------|
| $V_{RM}$   | Stand-off voltage               |
| $V_{BR}$   | Breakdown voltage               |
| $V_{CL}$   | Clamping voltage                |
| $I_{RM}$   | Leakage current @ $V_{RM}$      |
| $I_{PP}$   | Peak pulse current              |
| $\alpha T$ | Voltage temperature coefficient |
| $V_F$      | Forward voltage drop            |



| Types          |               | $I_{RM} @ V_{RM}$<br>max |      | $V_{BR} @ I_R$<br>min nom max<br>note2 |     |      |    | $V_{CL} @ I_{PP}$<br>max<br>10/1000 $\mu$ s |      | $V_{CL} @ I_{PP}$<br>max<br>8/20 $\mu$ s |      | $\alpha T$<br>max<br>note3 | C<br>typ<br>note4 |
|----------------|---------------|--------------------------|------|----------------------------------------|-----|------|----|---------------------------------------------|------|------------------------------------------|------|----------------------------|-------------------|
| Unidirectional | Bidirectional | $\mu$ A                  | V    | V                                      | V   | V    | mA | V                                           | A    | V                                        | A    | $10^{-4}/^{\circ}\text{C}$ | pF                |
| 1.5KE6V8A      | 1.5KE6V8CA    | 1000                     | 5.8  | 6.45                                   | 6.8 | 7.14 | 10 | 10.5                                        | 143  | 13.4                                     | 746  | 5.7                        | 9500              |
| 1.5KE7V5A      | 1.5KE7V5CA    | 500                      | 6.4  | 7.13                                   | 7.5 | 7.88 | 10 | 11.3                                        | 132  | 14.5                                     | 690  | 6.1                        | 8500              |
| 1.5KE10A       | 1.5KE10CA     | 10                       | 8.55 | 9.5                                    | 10  | 10.5 | 1  | 14.5                                        | 100  | 18.6                                     | 538  | 7.3                        | 7000              |
| 1.5KE12A       | 1.5KE12CA     | 5                        | 10.2 | 11.4                                   | 12  | 12.6 | 1  | 16.7                                        | 90   | 21.7                                     | 461  | 7.8                        | 6000              |
| 1.5KE15A       | 1.5KE15CA     | 1                        | 12.8 | 14.3                                   | 15  | 15.8 | 1  | 21.2                                        | 71   | 27.2                                     | 368  | 8.4                        | 5000              |
| 1.5KE18A       | 1.5KE18CA     | 1                        | 15.3 | 17.1                                   | 18  | 18.9 | 1  | 25.2                                        | 59.5 | 32.5                                     | 308  | 8.8                        | 4300              |
| 1.5KE22A       | 1.5KE22CA     | 1                        | 18.8 | 20.9                                   | 22  | 23.1 | 1  | 30.6                                        | 49   | 39.3                                     | 254  | 9.2                        | 3700              |
| 1.5KE24A       | 1.5KE24CA     | 1                        | 20.5 | 22.8                                   | 24  | 25.2 | 1  | 33.2                                        | 45   | 42.8                                     | 234  | 9.4                        | 3500              |
| 1.5KE27A       | 1.5KE27CA     | 1                        | 23.1 | 25.7                                   | 27  | 28.4 | 1  | 37.5                                        | 40   | 48.3                                     | 207  | 9.6                        | 3200              |
| 1.5KE30A       | 1.5KE30CA     | 1                        | 25.6 | 28.5                                   | 30  | 31.5 | 1  | 41.5                                        | 36   | 53.5                                     | 187  | 9.7                        | 2900              |
| 1.5KE33A       | 1.5KE33CA     | 1                        | 28.2 | 31.4                                   | 33  | 34.7 | 1  | 45.7                                        | 33   | 59.0                                     | 169  | 9.8                        | 2700              |
| 1.5KE36A       | 1.5KE36CA     | 1                        | 30.8 | 34.2                                   | 36  | 37.8 | 1  | 49.9                                        | 30   | 64.3                                     | 156  | 9.9                        | 2500              |
| 1.5KE39A       | 1.5KE39CA     | 1                        | 33.3 | 37.1                                   | 39  | 41.0 | 1  | 53.9                                        | 28   | 69.7                                     | 143  | 10.0                       | 2400              |
| 1.5KE47A       | 1.5KE47CA     | 1                        | 40.2 | 44.7                                   | 47  | 49.4 | 1  | 64.8                                        | 23.2 | 84                                       | 119  | 10.1                       | 2050              |
| 1.5KE56A       | 1.5KE56CA     | 1                        | 47.8 | 53.2                                   | 56  | 58.8 | 1  | 77                                          | 19.5 | 100                                      | 100  | 10.3                       | 1800              |
| 1.5KE62A       | 1.5KE62CA     | 1                        | 53.0 | 58.9                                   | 62  | 65.1 | 1  | 85                                          | 17.7 | 111                                      | 90   | 10.4                       | 1700              |
| 1.5KE68A       | 1.5KE68CA     | 1                        | 58.1 | 64.6                                   | 68  | 71.4 | 1  | 92                                          | 16.3 | 121                                      | 83   | 10.4                       | 1550              |
| 1.5KE82A       | 1.5KE82CA     | 1                        | 70.1 | 77.9                                   | 82  | 86.1 | 1  | 113                                         | 13.3 | 146                                      | 69   | 10.5                       | 1350              |
| 1.5KE100A      | 1.5KE100CA    | 1                        | 85.5 | 95.0                                   | 100 | 105  | 1  | 137                                         | 11   | 178                                      | 56   | 10.6                       | 1150              |
| 1.5KE120A      | 1.5KE120CA    | 1                        | 102  | 114                                    | 120 | 126  | 1  | 165                                         | 9.1  | 212                                      | 47   | 10.7                       | 1000              |
| 1.5KE150A      | 1.5KE150CA    | 1                        | 128  | 143                                    | 150 | 158  | 1  | 207                                         | 7.2  | 265                                      | 38   | 10.8                       | 850               |
| 1.5KE180A      | 1.5KE180CA    | 1                        | 154  | 171                                    | 180 | 189  | 1  | 246                                         | 6.1  | 317                                      | 31.5 | 10.8                       | 725               |

| Types          |               | $I_{RM}$ @ $V_{RM}$<br>max |     | $V_{BR}$ @ $I_R$<br>min nom max<br>note2 |     |     |    | $V_{CL}$ @ $I_{PP}$<br>max<br>10/1000 $\mu$ s |     | $V_{CL}$ @ $I_{PP}$<br>max<br>8/20 $\mu$ s |    | $\alpha T$<br>max<br>note3 | C<br>typ<br>note4 |
|----------------|---------------|----------------------------|-----|------------------------------------------|-----|-----|----|-----------------------------------------------|-----|--------------------------------------------|----|----------------------------|-------------------|
| Unidirectional | Bidirectional | $\mu$ A                    | V   | V                                        | V   | V   | mA | V                                             | A   | V                                          | A  | 10 <sup>-4</sup> /°C       | pF                |
| 1.5KE200A      | 1.5KE200CA    | 1                          | 171 | 190                                      | 200 | 210 | 1  | 274                                           | 5.5 | 353                                        | 28 | 10.8                       | 675               |
| 1.5KE220A      | 1.5KE220CA    | 1                          | 188 | 209                                      | 220 | 231 | 1  | 328                                           | 4.6 | 388                                        | 26 | 10.8                       | 625               |
| 1.5KE250A      | 1.5KE250CA    | 1                          | 213 | 237                                      | 250 | 263 | 1  | 344                                           | 5.0 | 442                                        | 23 | 11                         | 560               |
| 1.5KE300A      | 1.5KE300CA    | 1                          | 256 | 285                                      | 300 | 315 | 1  | 414                                           | 5.0 | 529                                        | 19 | 11                         | 500               |
| 1.5KE350A      | 1.5KE350CA    | 1                          | 299 | 332                                      | 350 | 368 | 1  | 482                                           | 4.0 | 618                                        | 16 | 11                         | 430               |
| 1.5KE400A      | 1.5KE400CA    | 1                          | 342 | 380                                      | 400 | 420 | 1  | 548                                           | 4.0 | 706                                        | 14 | 11                         | 390               |
| 1.5KE440A      | 1.5KE440CA    | 1                          | 376 | 418                                      | 440 | 462 | 1  | 603                                           | 3.5 | 776                                        | 13 | 11                         | 360               |

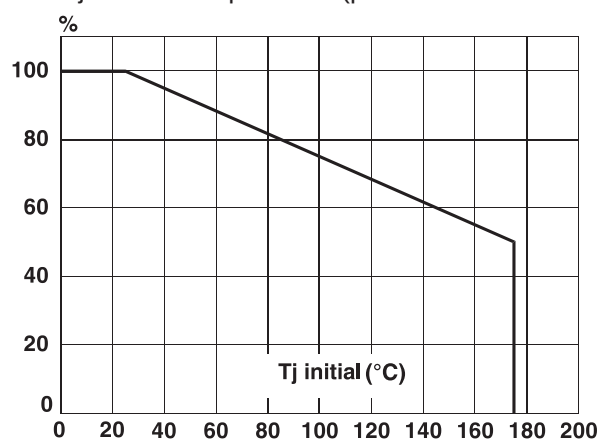


**Note 2 :** Pulse test:  $t_p < 50$  ms.

**Note 3 :**  $\Delta V_{BR} = \alpha T * (T_{amb} - 25) * V_{BR}(25^\circ\text{C})$ .

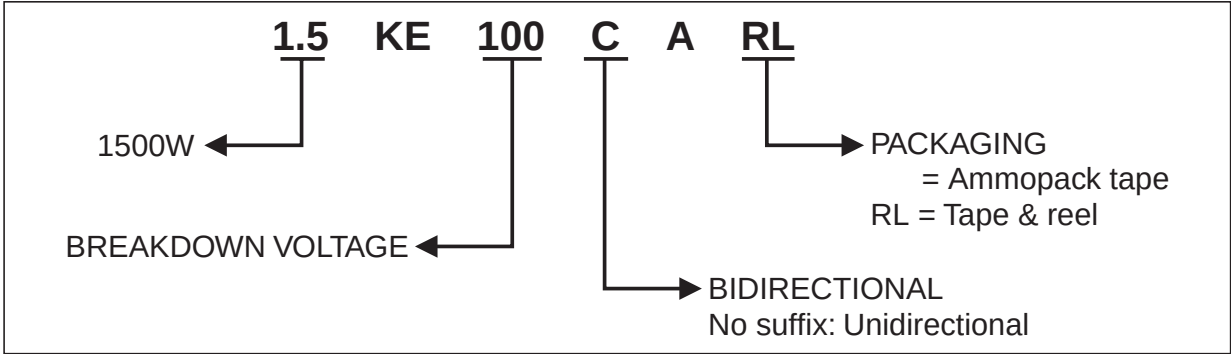
**Note 4 :**  $V_R = 0$  V,  $F = 1$  MHz. For bidirectional types, capacitance value is divided by 2.

**Fig. 1:** Peak pulse power dissipation versus initial junction temperature (printed circuit



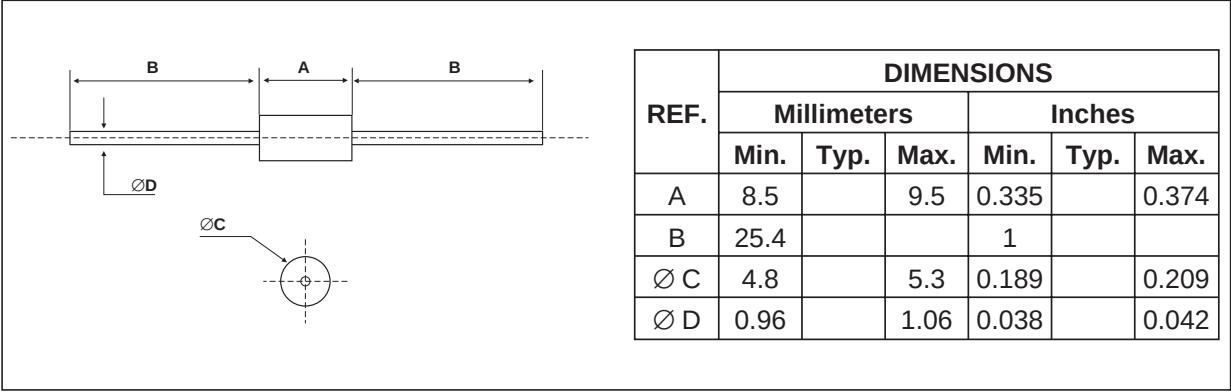
1.5KExx

ORDER CODE



**MARKING** : Logo, Date Code, Type Code, Cathode Band (for unidirectional types only).

**PACKAGE MECHANICAL DATA**  
DO-201 (Plastic)



**Packaging** : standard packaging is in tape and reel.

**Weight** = 0.876 g.