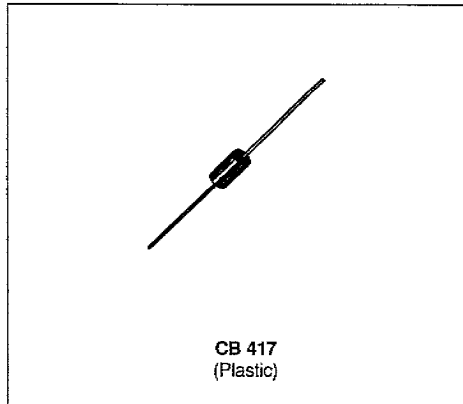


ZENER DIODES

- VOLTAGE RANGE : 3.3V TO 200V
- HERMETICALLY SEALED PLASTIC CASE
- HIGH SURGE CAPABILITY (up to 180W @ 8.3ms)



**DESCRIPTION**

5W silicon Zener diodes.

**ABSOLUTE RATINGS** (limiting values)

| Symbol             | Parameter   |                         | Value                      | Unit        |
|--------------------|---|-------------------------|----------------------------|-------------|
| $P_{tot}$          | Power Dissipation*  | $T_{amb} = 75^{\circ}C$ | 5                          | W           |
| $I_{zM}$           | Continuous Reverse Current*                                   | $T_{amb} = 75^{\circ}C$ | See page 2                 | A           |
| $I_{zSM}$          | Peak Reverse Current  | $T_{amb} = 25^{\circ}C$ | See page 2                 | A           |
| $T_{stg}$<br>$T_J$ | Storage and Junction Temperature Range                        |                         | - 65 to 175<br>- 65 to 200 | $^{\circ}C$ |
| $T_L$              | Maximum Temperature for Soldering during 10s at 4mm from case |                         | 230                        | $^{\circ}C$ |

**THERMAL RESISTANCE**

| Symbol        | Parameter         | Value | Unit          |
|---------------|-------------------|-------|---------------|
| $R_{th(j-a)}$ | Junction-ambient* | 25    | $^{\circ}C/W$ |

\* On infinite heatsink with 10mm lead length.

ELECTRICAL CHARACTERISTICS (T<sub>amb</sub> = 25°C unless otherwise specified)

| Types       | V <sub>ZT</sub> /I <sub>ZT</sub> *<br>nom. | I <sub>ZT</sub> * | r <sub>ZT</sub> /I <sub>ZT</sub> *<br>max. | r <sub>ZK</sub> /I <sub>ZK</sub><br>max. | I <sub>R</sub> / V <sub>R</sub><br>max. |      | ∞VZ<br>typ.            | I <sub>ZM</sub><br>max.               | ΔV <sub>Z</sub><br>max. | I <sub>ZSM</sub><br>max. |
|-------------|--|-------------------|--|--|---|------|------------------------|---------------------------------------|-------------------------|--------------------------|
|             | (V)<br>(1)                                 | (mA)<br>(1)       | (Ω)<br>(1)                                 | 1.0mA<br>(Ω)                             | (μA)                                    | (V)  | (10 <sup>-4</sup> /°C) | T <sub>amb</sub> =75°C<br>(mA)<br>(2) | (V)<br>(3)              | (A)<br>(4)               |
| 1N 5333 B   | 3,3  | 380               | 3,0  | 400                                      | 300                                     | 1,0  | - 6                    | 1440                                  | 0,85                    | 22,2                     |
| 1N 5334 B   | 3,6  | 350               | 2,5  | 500                                      | 150                                     | 1,0  | - 5,5                  | 1320                                  | 0,80                    | 20,4                     |
| 1N 5335 B   | 3,9  | 320               | 2,0  | 500                                      | 50                                      | 1,0  | - 5                    | 1220                                  | 0,54                    | 18,8                     |
| 1N 5336 B   | 4,3  | 290               | 2,0  | 500                                      | 10                                      | 1,0  | - 4                    | 1100                                  | 0,49                    | 17,0                     |
| 1N 5337 B   | 4,7  | 260               | 2,0  | 450                                      | 5,0                                     | 1,0  | - 2                    | 1010                                  | 0,44                    | 15,6                     |
| P 1N 5338 B | 5,1  | 240               | 1,5  | 400                                      | 1,0                                     | 1,0  | 1                      | 930                                   | 0,39                    | 14,4                     |
| P 1N 5339 B | 5,6  | 220               | 1,0  | 400                                      | 1,0                                     | 2,0  | 2,5                    | 865                                   | 0,25                    | 13,1                     |
| 1N 5340 B   | 6,0  | 200               | 1,0  | 300                                      | 1,0                                     | 3,0  | 2,8                    | 790                                   | 0,19                    | 12,2                     |
| P 1N 5341 B | 6,2  | 200               | 1,0  | 200                                      | 1,0                                     | 3,0  | 3,2                    | 765                                   | 0,10                    | 11,8                     |
| P 1N 5342 B | 6,8  | 175               | 1,0  | 200                                      | 10                                      | 5,2  | 4                      | 700                                   | 0,15                    | 10,8                     |
| 1N 5343 B   | 7,5  | 175               | 1,5  | 200                                      | 10                                      | 5,7  | 4,5                    | 630                                   | 0,15                    | 9,8                      |
| 1N 5344 B   | 8,2  | 150               | 1,5  | 200                                      | 10                                      | 6,2  | 4,8                    | 580                                   | 0,20                    | 8,9                      |
| 1N 5345 B   | 8,7  | 150               | 2,0  | 200                                      | 10                                      | 6,6  | 4,9                    | 545                                   | 0,20                    | 8,4                      |
| 1N 5346 B   | 9,1  | 150               | 2,0  | 150                                      | 7,5                                     | 6,9  | 5,1                    | 520                                   | 0,22                    | 8,1                      |
| 1N 5347 B   | 10   | 125               | 2,0  | 125                                      | 5,0                                     | 7,6  | 5,5                    | 475                                   | 0,22                    | 7,3                      |
| 1N 5348 B   | 11   | 125               | 2,5  | 125                                      | 5,0                                     | 8,4  | 6                      | 430                                   | 0,25                    | 11,0                     |
| P 1N 5349 B | 12   | 100               | 2,5  | 125                                      | 2,0                                     | 9,1  | 6,5                    | 395                                   | 0,25                    | 10,1                     |
| 1N 5350 B   | 13   | 100               | 2,5  | 100                                      | 1,0                                     | 9,9  | 6,5                    | 365                                   | 0,25                    | 9,3                      |
| 1N 5351 B   | 14   | 100               | 2,5  | 75                                       | 1,0                                     | 10,6 | 7                      | 340                                   | 0,25                    | 8,6                      |
| P 1N 5352 B | 15   | 75                | 2,5  | 75                                       | 1,0                                     | 11,5 | 7                      | 315                                   | 0,25                    | 8,1                      |
| P 1N 5353 B | 16   | 75                | 2,5  | 75                                       | 1,0                                     | 12,2 | 7                      | 295                                   | 0,30                    | 7,6                      |
| 1N 5354 B   | 17   | 70                | 2,5  | 75                                       | 0,5                                     | 12,9 | 7                      | 280                                   | 0,36                    | 7,1                      |
| P 1N 5355 B | 18   | 65                | 2,5  | 75                                       | 0,5                                     | 13,7 | 7,5                    | 264                                   | 0,40                    | 6,7                      |
| 1N 5356 B   | 19   | 65                | 3,0  | 75                                       | 0,5                                     | 14,4 | 7,5                    | 250                                   | 0,40                    | 6,4                      |
| 1N 5357 B   | 20   | 65                | 3,0  | 75                                       | 0,5                                     | 15,2 | 7,5                    | 237                                   | 0,40                    | 6,0                      |
| P 1N 5358 B | 22   | 50                | 3,5  | 75                                       | 0,5                                     | 16,7 | 9                      | 216                                   | 0,45                    | 5,5                      |
| P 1N 5359 B | 24   | 50                | 3,5  | 100                                      | 0,5                                     | 18,2 | 8                      | 198                                   | 0,55                    | 5,0                      |
| 1N 5360 B   | 25   | 50                | 4,0  | 110                                      | 0,5                                     | 19,0 | 8                      | 190                                   | 0,55                    | 4,8                      |
| P 1N 5361 B | 27   | 50                | 5,0  | 120                                      | 0,5                                     | 20,6 | 8,5                    | 176                                   | 0,60                    | 4,5                      |
| 1N 5362 B   | 28   | 50                | 6,0  | 130                                      | 0,5                                     | 21,2 | 8,5                    | 170                                   | 0,60                    | 4,3                      |
| P 1N 5363 B | 30   | 40                | 8,0  | 140                                      | 0,5                                     | 22,8 | 8,5                    | 158                                   | 0,60                    | 4,0                      |
| 1N 5364 B   | 33   | 40                | 10   | 150                                      | 0,5                                     | 25,1 | 8,5                    | 144                                   | 0,60                    | 3,7                      |
| P 1N 5365 B | 36   | 30                | 11   | 160                                      | 0,5                                     | 27,4 | 9                      | 132                                   | 0,65                    | 3,4                      |
| 1N 5366 B   | 39   | 30                | 14   | 170                                      | 0,5                                     | 29,7 | 9                      | 122                                   | 0,65                    | 3,1                      |
| 1N 5367 B   | 43   | 30                | 20   | 190                                      | 0,5                                     | 32,7 | 9                      | 110                                   | 0,70                    | 2,8                      |
| 1N 5368 B   | 47   | 25                | 25   | 210                                      | 0,5                                     | 35,8 | 9                      | 100                                   | 0,80                    | 2,6                      |
| 1N 5369 B   | 51   | 25                | 27   | 230                                      | 0,5                                     | 38,8 | 9                      | 93                                    | 0,90                    | 2,4                      |
| 1N 5370 B   | 56   | 20                | 35   | 280                                      | 0,5                                     | 42,6 | 9                      | 86                                    | 1,00                    | 2,2                      |
| 1N 5371 B   | 60   | 20                | 40   | 350                                      | 0,5                                     | 45,5 | 9                      | 79                                    | 1,20                    | 2,0                      |
| P 1N 5372 B | 62   | 20                | 42   | 400                                      | 0,5                                     | 47,1 | 9                      | 76                                    | 1,35                    | 1,9                      |
| 1N 5373 B   | 68   | 20                | 44   | 500                                      | 0,5                                     | 51,7 | 9                      | 70                                    | 1,50                    | 1,8                      |
| 1N 5374 B   | 75   | 20                | 45   | 620                                      | 0,5                                     | 56,0 | 9                      | 63                                    | 1,60                    | 1,6                      |
| 1N 5375 B   | 82   | 15                | 65   | 720                                      | 0,5                                     | 62,2 | 9                      | 58                                    | 1,80                    | 1,5                      |
| 1N 5376 B   | 87   | 15                | 75   | 760                                      | 0,5                                     | 66,0 | 9                      | 54,5                                  | 2,00                    | 1,4                      |
| 1N 5377 B   | 91   | 15                | 75   | 760                                      | 0,5                                     | 69,2 | 9                      | 52,5                                  | 2,20                    | 1,3                      |
| P 1N 5378 B | 100  | 12                | 90   | 800                                      | 0,5                                     | 76,0 | 9,5                    | 47,5                                  | 2,50                    | 1,2                      |
| 1N 5379 B   | 110  | 12                | 125  | 1000                                     | 0,5                                     | 83,6 | 9,5                    | 43                                    | 2,50                    | 1,1                      |
| 1N 5380 B   | 120  | 10                | 170  | 1150                                     | 0,5                                     | 91,2 | 9,5                    | 39,5                                  | 2,50                    | 1,0                      |
| 1N 5381 B   | 130  | 10                | 190  | 1250                                     | 0,5                                     | 98,8 | 9,5                    | 36,5                                  | 2,50                    | 0,93                     |
| 1N 5382 B   | 140  | 8,0               | 230  | 1500                                     | 0,5                                     | 106  | 9,5                    | 34                                    | 2,50                    | 0,86                     |

(1) Pulse test : t<sub>p</sub> ≤ 50ms δ < 2%

(2) On infinite heatsink : d = 10mm

(3) Measured between 10% and 50% of I<sub>ZM</sub>.

(4) Rectangular waveform (t<sub>p</sub> = 10ms).

Tolerance on nominal V<sub>ZT</sub> : ± 5%.

P : Preferred voltages.

Forward voltage drop : V<sub>F</sub> ≤ 1.2V (T<sub>amb</sub> = 25°C, I<sub>F</sub> = 1A)

ELECTRICAL CHARACTERISTICS (continued)

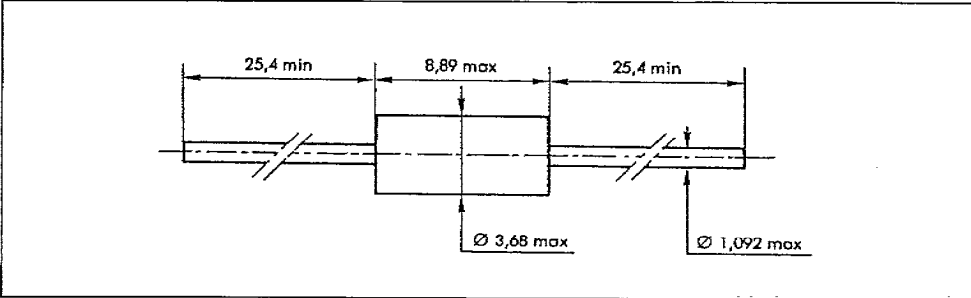
| Types       | $V_{ZT}/I_{ZT}^*$<br>nom. | $I_{ZT}^*$  | $r_{ZT}/I_{ZT}^*$<br>max. | $r_{ZK}/I_{ZK}$<br>max. | $I_R / V_R$<br>max. |     | $\approx V_Z$<br>typ.   | $I_{ZM}$<br>max.                     | $\Delta V_Z$<br>max. | $I_{ZSM}$<br>max. |
|-------------|---------------------------|-------------|---------------------------|-------------------------|---------------------|-----|-------------------------|--------------------------------------|----------------------|-------------------|
|             | (V)<br>(1)                | (mA)<br>(1) | ( $\Omega$ )<br>(1)       | 1.0mA<br>( $\Omega$ )   | ( $\mu A$ )         | (V) | ( $10^{-4}/^{\circ}C$ ) | $T_{amb}=75^{\circ}C$<br>(mA)<br>(2) | (V)<br>(3)           | (A)<br>(4)        |
| P 1N 5383 B | 150                       | 8.0         | 330                       | 1500                    | 0.5                 | 114 | 9.5                     | 31.6                                 | 3.00                 | 0.81              |
| 1N 5384 B   | 160                       | 8.0         | 350                       | 1650                    | 0.5                 | 122 | 9.5                     | 29.4                                 | 3.00                 | 0.76              |
| 1N 5385 B   | 170                       | 8.0         | 380                       | 1750                    | 0.5                 | 129 | 9.5                     | 28                                   | 3.00                 | 0.71              |
| P 1N 5386 B | 180                       | 5.0         | 430                       | 1750                    | 0.5                 | 137 | 9.5                     | 26.4                                 | 4.00                 | 0.67              |
| 1N 5387 B   | 190                       | 5.0         | 450                       | 1850                    | 0.5                 | 144 | 9.5                     | 25                                   | 5.00                 | 0.64              |
| P 1N 5388 B | 200                       | 5.0         | 480                       | 1850                    | 0.5                 | 152 | 10                      | 23.6                                 | 5.00                 | 0.60              |

- (1) Pulse test :  $t_p \leq 50ms$   $\delta < 2\%$
- (2) On infinite heatsink :  $d = 10mm$
- (3) Measured between 10% and 50% of  $I_{ZM}$ .
- (4) Rectangular waveform ( $t_p = 10ms$ ).

Tolerance on nominal  $V_{ZT}$  :  $\pm 5\%$ .  
 P : Preferred voltages.  
 Forward voltage drop :  $V_F \leq 1.2V$  ( $T_{amb} = 25^{\circ}C$ ,  $I_F = 1A$ )

PACKAGE MECHANICAL DATA

CB-417 Plastic



Cooling method : by convection (method A)  
 Marking : clear, ring at cathode end.  
 Weight : 0.6g

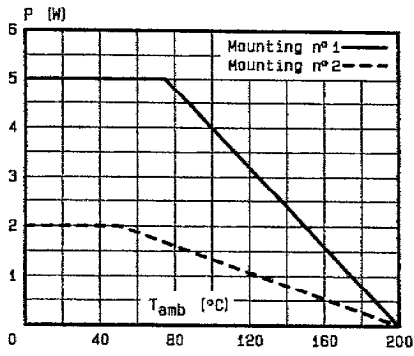


Fig.1 - Power dissipation versus ambient temperature.

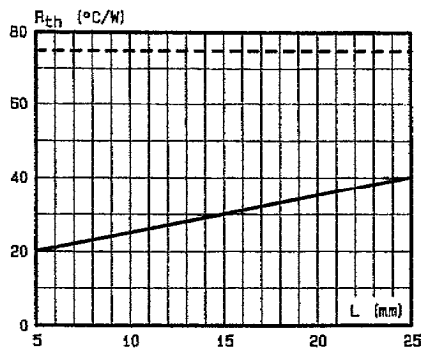


Fig.2 - Thermal resistance versus lead length.

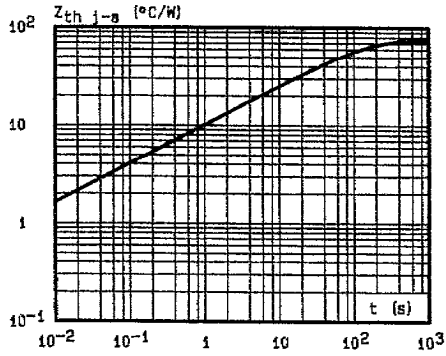


Fig.3 - Transient thermal impedance junction-ambient for mounting n°2 versus pulse duration (L = 10 mm).

Mounting n°1 INFINITE HEATSINK  
Mounting n°2 PRINTED CIRCUIT

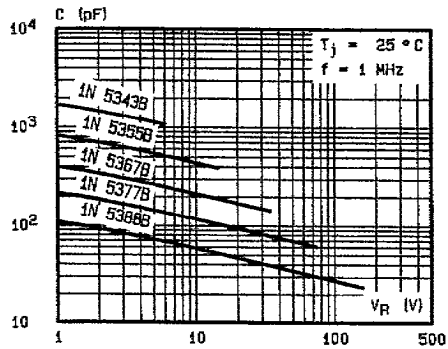
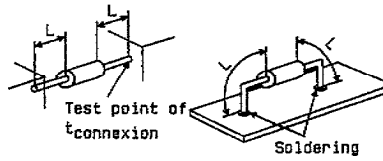


Fig.4 - Capacitance versus reverse applied voltage.

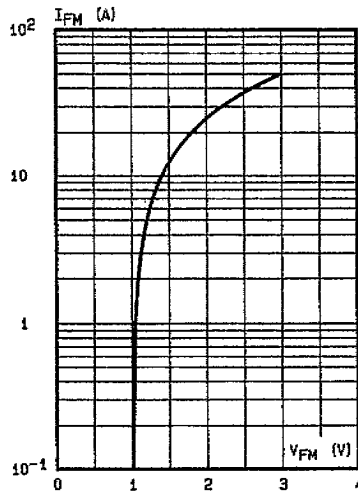


Fig.5 - Peak forward current versus peak forward voltage drop (typical values).

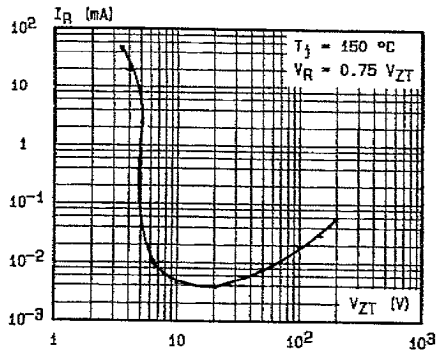


Fig.8 - Reverse current versus regulation voltage (typical values).

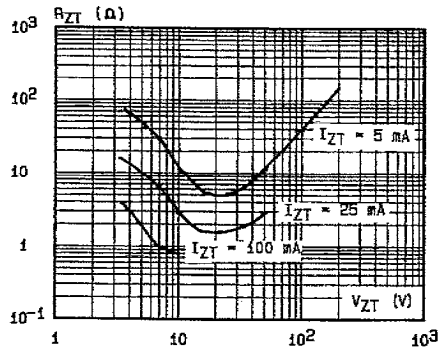


Fig.7 - Differential resistance versus regulation voltage (typical values).

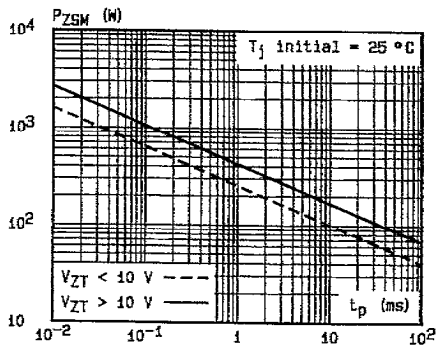


Fig.8 - Peak pulse power versus pulse duration (rectangular wave form) (maximum values).

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