

# ZENER DIODES

## RD2.0FS to RD120FS

### ZENER DIODES

#### 1.0 W PLANAR TYPE 2-PIN SMALL POWER MINI MOLD

#### DESCRIPTION

Type RD2.0FS to RD120FS series are 2-pin small power mini mold package Zener diodes possessing an allowable power dissipation of 1.0 W.

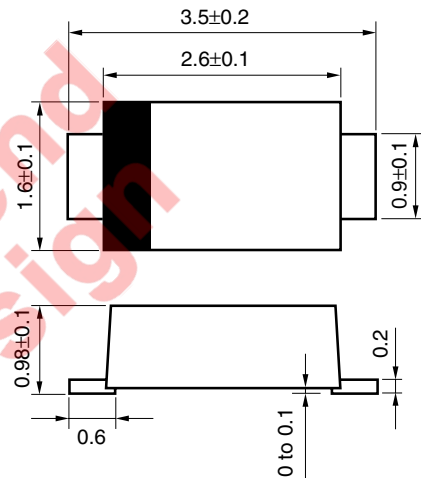
#### FEATURES

- Approximately 50% reduction in surface mount area (compared to existing RD\*\*FM)
- Lineup of a wide variety of zener voltage, from 2.0 to 120 V
- High surge rating, high power dissipation

#### APPLICATIONS

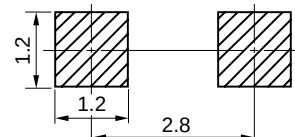
- Surge absorption application
- Constant-voltage and constant-current circuits
- Waveform clippers and limiter circuits

#### PACKAGE DIMENSION (Unit: mm)



#### MOUNTING PAD

#### REFERENCE EXAMPLE (Unit: mm)



#### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C)

| Parameter            | Symbol           | Ratings     | Unit | Remarks                                                                       |
|----------------------|------------------|-------------|------|-------------------------------------------------------------------------------|
| Power dissipation    | P                | 1.0         | W    | When surface mounting on 50 mm x 50 mm x 1.6 mm P.C.B. (Glass Epoxy, Cu 100%) |
| Forward current      | I <sub>F</sub>   | 200         | mA   |                                                                               |
| Surge reverse power  | P <sub>RS</sub>  | 400         | W    | t = 10 μs, 1 pulse                                                            |
| Junction temperature | T <sub>j</sub>   | 150         | °C   |                                                                               |
| Storage temperature  | T <sub>stg</sub> | -55 to +150 | °C   |                                                                               |

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**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**

| Type Number | Class | Zener Voltage<br>V <sub>Z</sub> (V)<br><small>Note1</small> |      |                     | Dynamic Impedance<br>Z <sub>Z</sub> (Ω)<br><small>Note2</small> |                     | Reverse Current<br>I <sub>R</sub> (μA) |                    |
|-------------|-------|-------------------------------------------------------------|------|---------------------|-----------------------------------------------------------------|---------------------|----------------------------------------|--------------------|
|             |       | MIN.                                                        | MAX. | I <sub>Z</sub> (mA) | MAX.                                                            | I <sub>Z</sub> (mA) | MAX.                                   | V <sub>R</sub> (V) |
| RD2.0FS     | B     | 1.9                                                         | 2.2  | 5                   | 140                                                             | 5                   | 200                                    | 0.5                |
| RD2.2FS     | B     | 2.1                                                         | 2.4  | 5                   | 140                                                             | 5                   | 200                                    | 0.7                |
| RD2.4FS     | B     | 2.3                                                         | 2.6  | 5                   | 140                                                             | 5                   | 200                                    | 1.0                |
| RD2.7FS     | B     | 2.5                                                         | 2.9  | 5                   | 140                                                             | 5                   | 150                                    | 1.0                |
| RD3.0FS     | B     | 2.8                                                         | 3.2  | 5                   | 140                                                             | 5                   | 100                                    | 1.0                |
| RD3.3FS     | B     | 3.1                                                         | 3.5  | 5                   | 140                                                             | 5                   | 80                                     | 1.0                |
| RD3.6FS     | B     | 3.4                                                         | 3.8  | 5                   | 140                                                             | 5                   | 60                                     | 1.0                |
| RD3.9FS     | B     | 3.7                                                         | 4.1  | 5                   | 120                                                             | 5                   | 40                                     | 1.0                |
| RD4.3FS     | B     | 4.0                                                         | 4.5  | 5                   | 120                                                             | 5                   | 20                                     | 1.0                |
| RD4.7FS     | B     | 4.4                                                         | 4.9  | 5                   | 100                                                             | 5                   | 20                                     | 1.0                |
| RD5.1FS     | B     | 4.8                                                         | 5.4  | 5                   | 100                                                             | 5                   | 20                                     | 1.0                |
| RD5.6FS     | B     | 5.3                                                         | 6.0  | 5                   | 70                                                              | 5                   | 20                                     | 1.5                |
| RD6.2FS     | B     | 5.8                                                         | 6.6  | 5                   | 40                                                              | 5                   | 20                                     | 3.0                |
| RD6.8FS     | B     | 6.4                                                         | 7.2  | 5                   | 25                                                              | 5                   | 20                                     | 3.5                |
| RD7.5FS     | B     | 7.0                                                         | 7.9  | 5                   | 25                                                              | 5                   | 20                                     | 4.0                |
| RD8.2FS     | B     | 7.7                                                         | 8.7  | 5                   | 25                                                              | 5                   | 20                                     | 5.0                |
| RD9.1FS     | B     | 8.5                                                         | 9.6  | 5                   | 25                                                              | 5                   | 20                                     | 6.0                |
| RD10FS      | B     | 9.4                                                         | 10.6 | 5                   | 20                                                              | 5                   | 10                                     | 7.0                |
| RD11FS      | B     | 10.4                                                        | 11.6 | 5                   | 20                                                              | 5                   | 10                                     | 8.0                |
| RD12FS      | B     | 11.4                                                        | 12.6 | 5                   | 25                                                              | 5                   | 10                                     | 9.0                |
| RD13FS      | B     | 12.4                                                        | 14.1 | 5                   | 30                                                              | 5                   | 10                                     | 10                 |
| RD15FS      | B     | 13.8                                                        | 15.6 | 5                   | 30                                                              | 5                   | 10                                     | 11                 |
| RD16FS      | B     | 15.3                                                        | 17.1 | 5                   | 40                                                              | 5                   | 10                                     | 12                 |
| RD18FS      | B     | 16.8                                                        | 19.1 | 5                   | 45                                                              | 5                   | 10                                     | 13                 |
| RD20FS      | B     | 18.8                                                        | 21.2 | 5                   | 55                                                              | 5                   | 10                                     | 15                 |
| RD22FS      | B     | 20.8                                                        | 23.3 | 5                   | 55                                                              | 5                   | 10                                     | 17                 |
| RD24FS      | B     | 22.8                                                        | 25.6 | 5                   | 70                                                              | 5                   | 10                                     | 19                 |
| RD27FS      | B     | 25.1                                                        | 28.9 | 2                   | 80                                                              | 2                   | 10                                     | 21                 |
| RD30FS      | B     | 28.0                                                        | 32.0 | 2                   | 80                                                              | 2                   | 10                                     | 23                 |
| RD33FS      | B     | 31.0                                                        | 35.0 | 2                   | 80                                                              | 2                   | 10                                     | 25                 |
| RD36FS      | B     | 34.0                                                        | 38.0 | 2                   | 90                                                              | 2                   | 10                                     | 27                 |
| RD39FS      | B     | 37.0                                                        | 41.0 | 2                   | 130                                                             | 2                   | 10                                     | 30                 |
| RD43FS      | B     | 40.0                                                        | 45.0 | 2                   | 150                                                             | 2                   | 5                                      | 33                 |
| RD47FS      | B     | 44.0                                                        | 49.0 | 2                   | 170                                                             | 2                   | 5                                      | 36                 |
| RD51FS      | B     | 48.0                                                        | 54.0 | 2                   | 220                                                             | 2                   | 5                                      | 39                 |
| RD56FS      | B     | 53                                                          | 60   | 2                   | 220                                                             | 2                   | 5                                      | 43                 |
| RD62FS      | B     | 58                                                          | 66   | 2                   | 220                                                             | 2                   | 5                                      | 47                 |
| RD68FS      | B     | 64                                                          | 72   | 2                   | 230                                                             | 2                   | 5                                      | 52                 |
| RD75FS      | B     | 70                                                          | 79   | 2                   | 250                                                             | 2                   | 5                                      | 57                 |
| RD82FS      | B     | 77                                                          | 87   | 2                   | 270                                                             | 2                   | 5                                      | 63                 |
| RD91FS      | B     | 85                                                          | 96   | 2                   | 340                                                             | 2                   | 5                                      | 69                 |
| RD100FS     | B     | 94                                                          | 106  | 2                   | 430                                                             | 2                   | 5                                      | 76                 |
| RD110FS     | B     | 104                                                         | 116  | 2                   | 530                                                             | 2                   | 5                                      | 84                 |
| RD120FS     | B     | 114                                                         | 126  | 2                   | 620                                                             | 2                   | 5                                      | 91                 |

**Notes 1.** V<sub>Z</sub> is tested with pulsed (40 ms).

**2.** Z<sub>Z</sub> is measured at I<sub>Z</sub> by given a very small A.C. signal.

TYPICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

Fig.1 P –  $T_A$  RATING

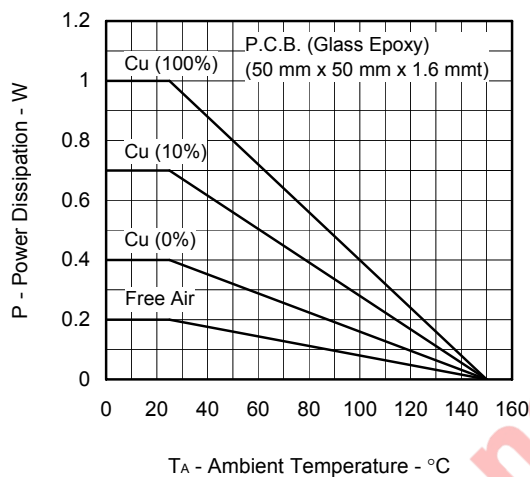


Fig.2  $I_Z$  –  $V_Z$  CHARACTERISTICS (1/3)

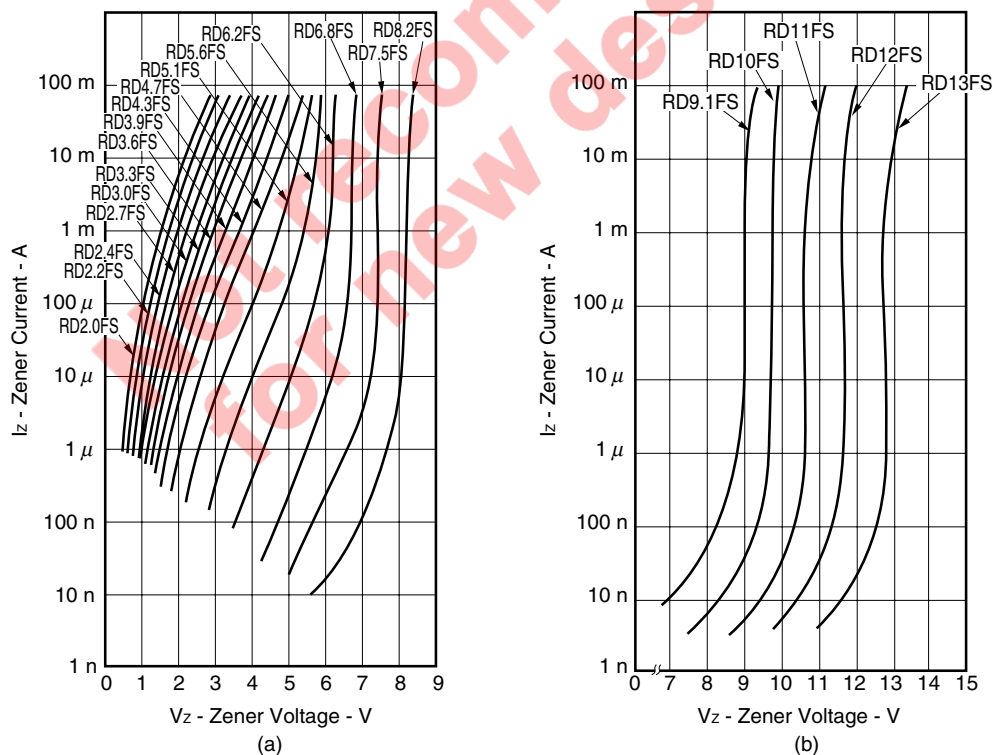


Fig.2  $I_z - V_z$  CHARACTERISTICS (2/3)

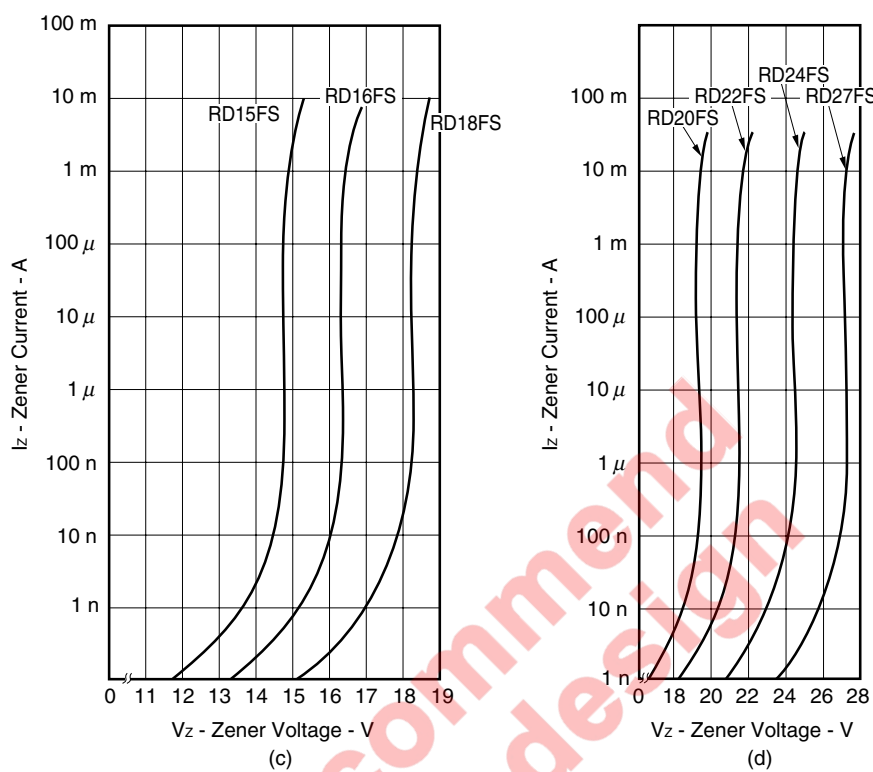


Fig.2  $I_z - V_z$  CHARACTERISTICS (3/3)

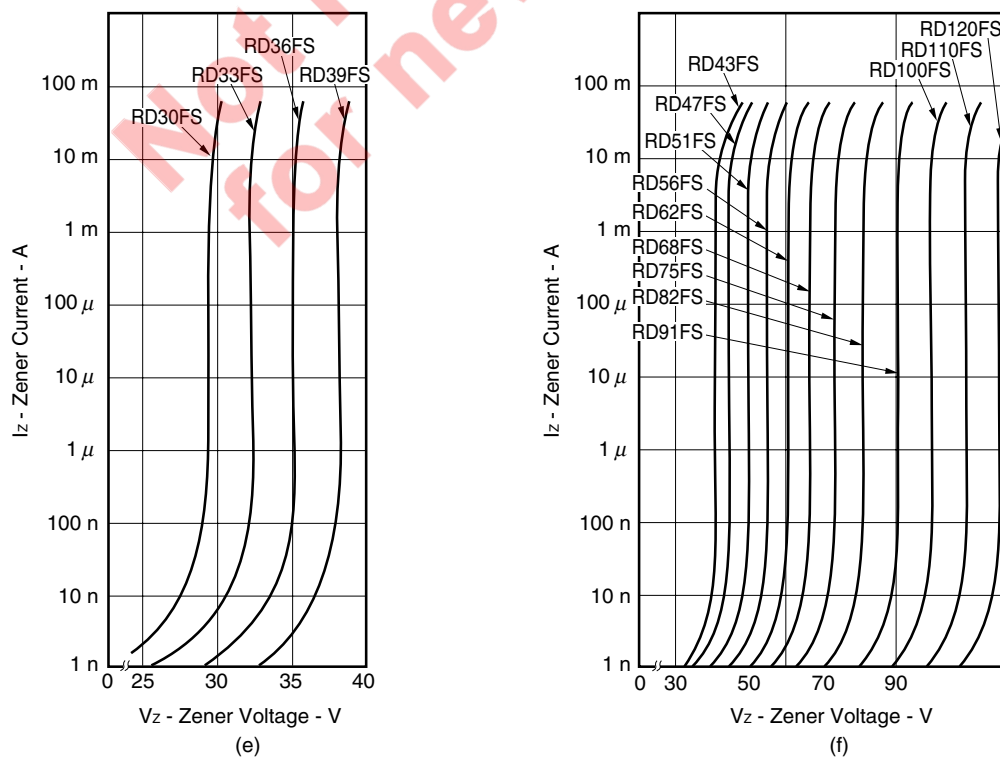


Fig.3  $\gamma_z - V_z$  CHARACTERISTICS

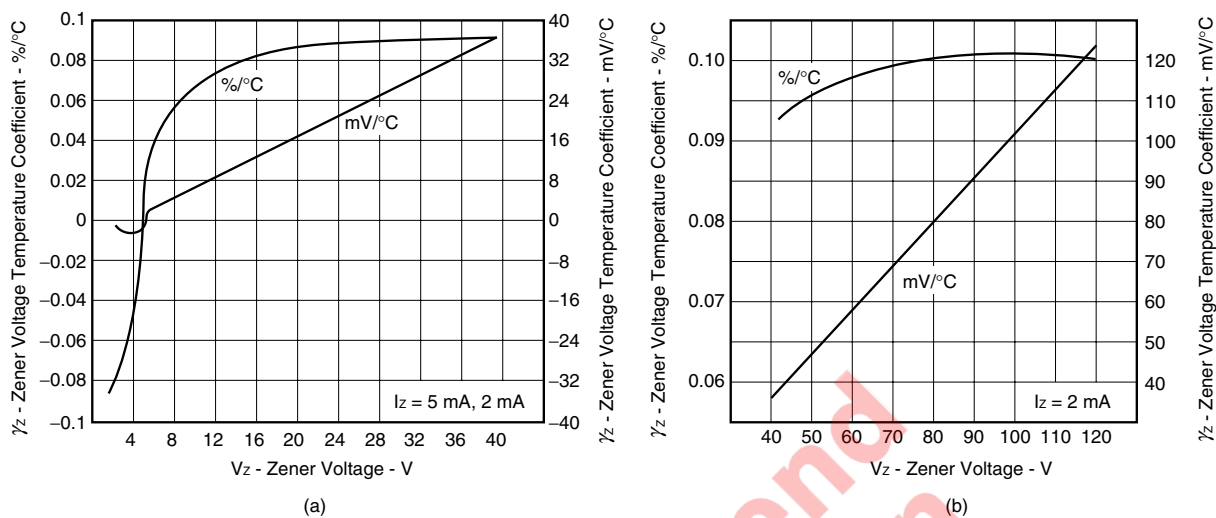


Fig.4  $Z_z - I_z$  CHARACTERISTICS

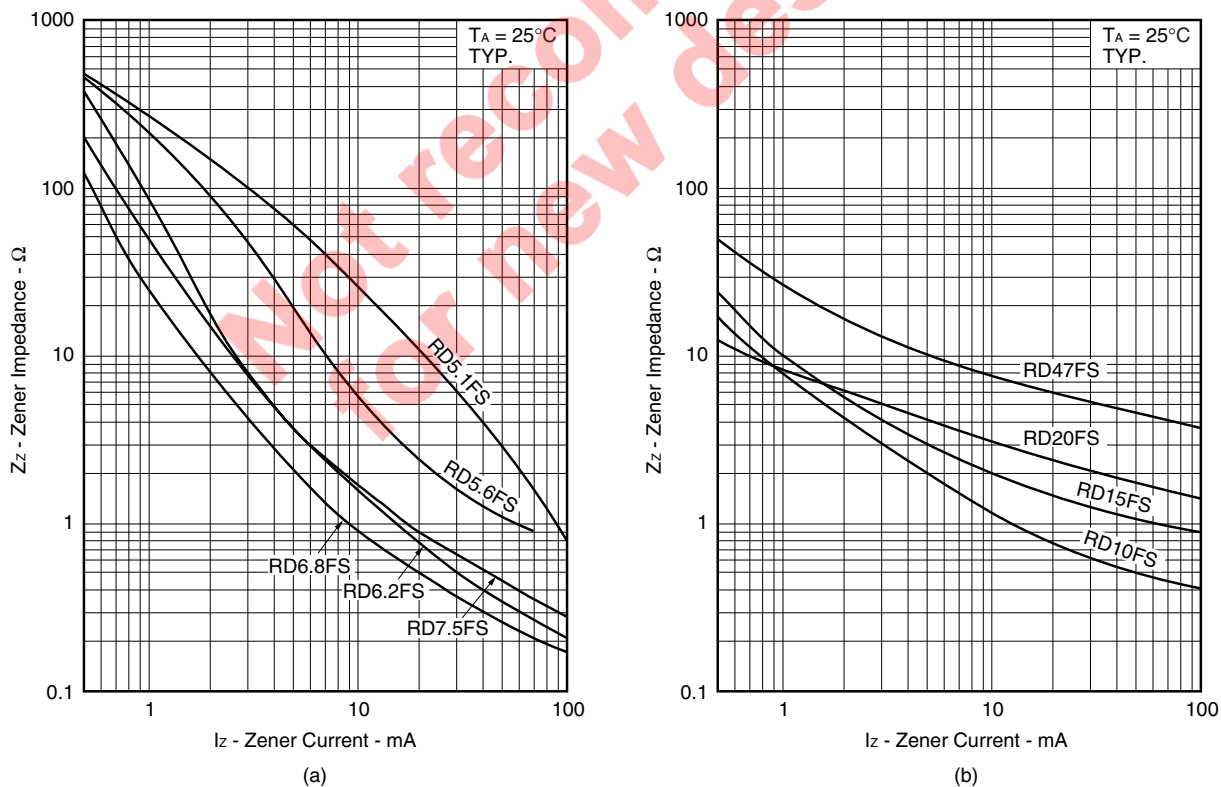


Fig.5 TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS

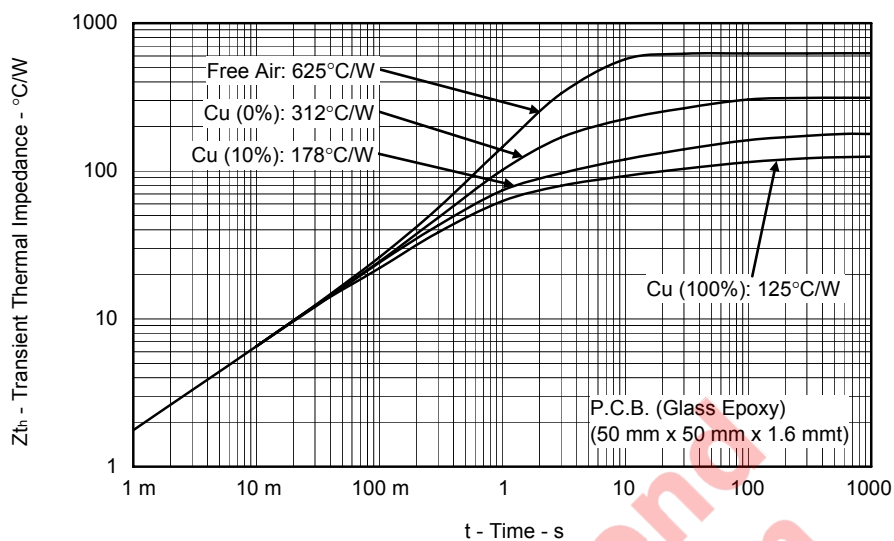
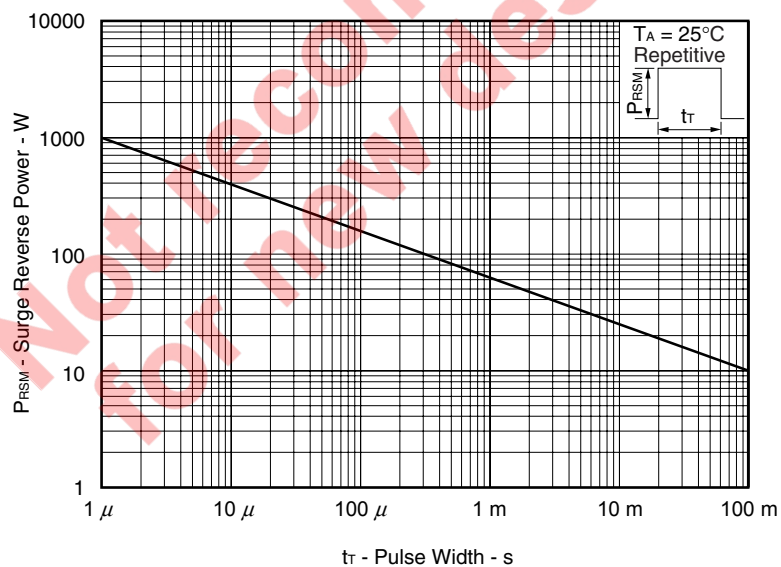


Fig.6 SURGE REVERSE POWER RATINGS



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