

ZENER DIODES
RD2.0FM to RD120FM

ZENER DIODES
1 W PLANAR TYPE 2 PIN POWER MINI MOLD

DESCRIPTION

These products are zener diodes with an allowable power dissipation of 1 W and a planar type 2 pin power mini mold package.

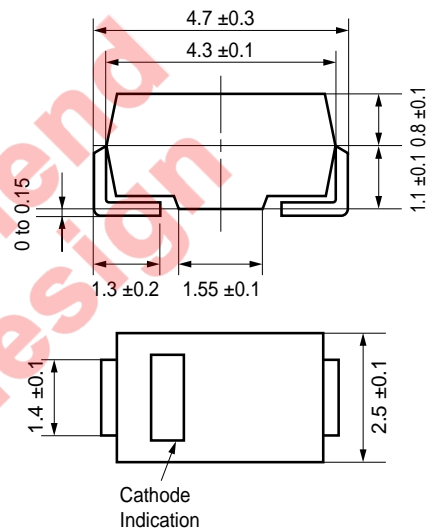
<R> **FEATURES**

- Suitable for high-density mounting because the mounting area is reduced to about 65% compared with that of the 3-pin power mini mold RD**P, which has been conventionally used until now.
- Achieves flat-surface mounting with a two-pin structure, while having the same Zener voltage classification as that for RD**Ps.

APPLICATIONS

- Zener voltage and constant-current circuit
- Waveform clipper circuit and limiter circuit
- Surge absorption circuit

PACKAGE DIMENSION
 (Unit: mm)



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

| Parameter | Symbol | Ratings | Unit | Remarks |
|----------------------|------------------|-------------|------|--------------------|
| Power dissipation | P | 1.0 | W | Refer to Figure 1. |
| Forward current | I _F | 200 | mA | |
| Surge reverse power | P _{RSM} | 400 | W | t = 10 μs |
| Junction temperature | T _j | 150 | °C | |
| Storage temperature | T _{stg} | -55 to +150 | °C | |

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 Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

ELECTRICAL CHARACTERISTICS (T_A = 25 ±2°C)

(1/2)

| Type Number | Class | Zener Voltage V _Z (V) ^{Note1} | | | Dynamic Impedance Z _Z (Ω) ^{Note2} | | Reverse Current I _R (μA) | |
|-------------|-------|------------------------------------------------------|------|---------------------|----------------------------------------------------------|---------------------|----------------------------------------|--------------------|
| | | MIN. | MAX. | I _Z (mA) | MAX. | I _Z (mA) | MAX. | V _R (V) |
| RD2.0FM | B | 1.9 | 2.2 | 5 | 140 | 5 | 200 | 0.5 |
| RD2.2FM | B | 2.1 | 2.4 | 5 | 140 | 5 | 200 | 0.7 |
| RD2.4FM | B | 2.3 | 2.6 | 5 | 140 | 5 | 200 | 1.0 |
| RD2.7FM | B | 2.5 | 2.9 | 5 | 140 | 5 | 150 | 1.0 |
| RD3.0FM | B | 2.8 | 3.2 | 5 | 140 | 5 | 100 | 1.0 |
| RD3.3FM | B | 3.1 | 3.5 | 5 | 140 | 5 | 80 | 1.0 |
| RD3.6FM | B | 3.4 | 3.8 | 5 | 140 | 5 | 60 | 1.0 |
| RD3.9FM | B | 3.7 | 4.1 | 5 | 140 | 5 | 40 | 1.0 |
| RD4.3FM | B | 4.0 | 4.5 | 5 | 140 | 5 | 20 | 1.0 |
| RD4.7FM | B | 4.4 | 4.9 | 5 | 100 | 5 | 20 | 1.0 |
| RD5.1FM | B | 4.8 | 5.4 | 5 | 100 | 5 | 20 | 1.0 |
| RD5.6FM | B | 5.3 | 6.0 | 5 | 70 | 5 | 20 | 1.5 |
| RD6.2FM | B | 5.8 | 6.6 | 5 | 40 | 5 | 20 | 3.0 |
| RD6.8FM | B | 6.4 | 7.2 | 5 | 25 | 5 | 20 | 3.5 |
| RD7.5FM | B | 7.0 | 7.9 | 5 | 25 | 5 | 20 | 4.0 |
| RD8.2FM | B | 7.7 | 8.7 | 5 | 25 | 5 | 20 | 5.0 |
| RD9.1FM | B | 8.5 | 9.6 | 5 | 25 | 5 | 20 | 6.0 |
| RD10FM | B | 9.4 | 10.6 | 5 | 20 | 5 | 10 | 7.0 |
| RD11FM | B | 10.4 | 11.6 | 5 | 20 | 5 | 10 | 8.0 |
| RD12FM | B | 11.4 | 12.6 | 5 | 25 | 5 | 10 | 9.0 |
| RD13FM | B | 12.4 | 14.1 | 5 | 30 | 5 | 10 | 10 |
| RD15FM | B | 13.8 | 15.6 | 5 | 30 | 5 | 10 | 11 |
| RD16FM | B | 15.3 | 17.1 | 5 | 40 | 5 | 10 | 12 |
| RD18FM | B | 16.8 | 19.1 | 5 | 45 | 5 | 10 | 13 |
| RD20FM | B | 18.8 | 21.2 | 5 | 55 | 5 | 10 | 15 |
| RD22FM | B | 20.8 | 23.3 | 5 | 55 | 5 | 10 | 17 |
| RD24FM | B | 22.8 | 25.6 | 5 | 70 | 5 | 10 | 19 |
| RD27FM | B | 25.1 | 28.9 | 2 | 80 | 2 | 10 | 21 |
| RD30FM | B | 28.0 | 32.0 | 2 | 80 | 2 | 10 | 23 |
| RD33FM | B | 31.0 | 35.0 | 2 | 80 | 2 | 10 | 25 |
| RD36FM | B | 34.0 | 38.0 | 2 | 90 | 2 | 10 | 27 |
| RD39FM | B | 37.0 | 41.0 | 2 | 130 | 2 | 10 | 30 |
| RD43FM | B | 40.0 | 45.0 | 2 | 150 | 2 | 5 | 33 |
| RD47FM | B | 44.0 | 49.0 | 2 | 170 | 2 | 5 | 36 |
| RD51FM | B | 48.0 | 54.0 | 2 | 220 | 2 | 5 | 39 |
| RD56FM | B | 53.0 | 60.0 | 2 | 220 | 2 | 5 | 43 |
| RD62FM | B | 58.0 | 66.0 | 2 | 220 | 2 | 5 | 47 |
| RD68FM | B | 64.0 | 72.0 | 2 | 230 | 2 | 5 | 52 |

Note 1. V_Z is tested with pulsed (40 ms).

2. Z_Z is measured at I_Z by given a very small A.C. signal.

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ELECTRICAL CHARACTERISTICS (T_A = 25 ±2°C)

(2/2)

| Type Number | Class | Zener Voltage V _Z (V) ^{Note1} | | | Dynamic Impedance Z _Z (Ω) ^{Note2} | | Reverse Current I _R (μA) | |
|-------------|-------|------------------------------------------------------|-------|---------------------|----------------------------------------------------------|---------------------|----------------------------------------|--------------------|
| | | MIN. | MAX. | I _Z (mA) | MAX. | I _Z (mA) | MAX. | V _R (V) |
| RD75FM | B | 70.0 | 79.0 | 2 | 250 | 2 | 5 | 57 |
| RD82FM | B | 77.0 | 87.0 | 2 | 270 | 2 | 5 | 63 |
| RD91FM | B | 85.0 | 96.0 | 2 | 340 | 2 | 5 | 69 |
| RD100FM | B | 94.0 | 106.0 | 2 | 430 | 2 | 5 | 76 |
| RD110FM | B | 104.0 | 116.0 | 2 | 530 | 2 | 5 | 84 |
| RD120FM | B | 114.0 | 126.0 | 2 | 620 | 2 | 5 | 91 |

Note 1. V_Z is tested with pulsed (40 ms).

2. Z_Z is measured at I_Z by given a very small A.C. signal.

Not recommend
for new design

TYPICAL CHARACTERISTICS (T_A = 25°C)

Fig.1 P - T_A RATING

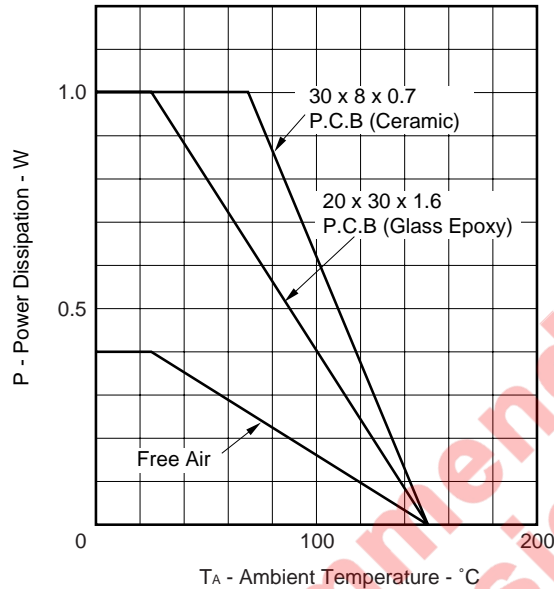
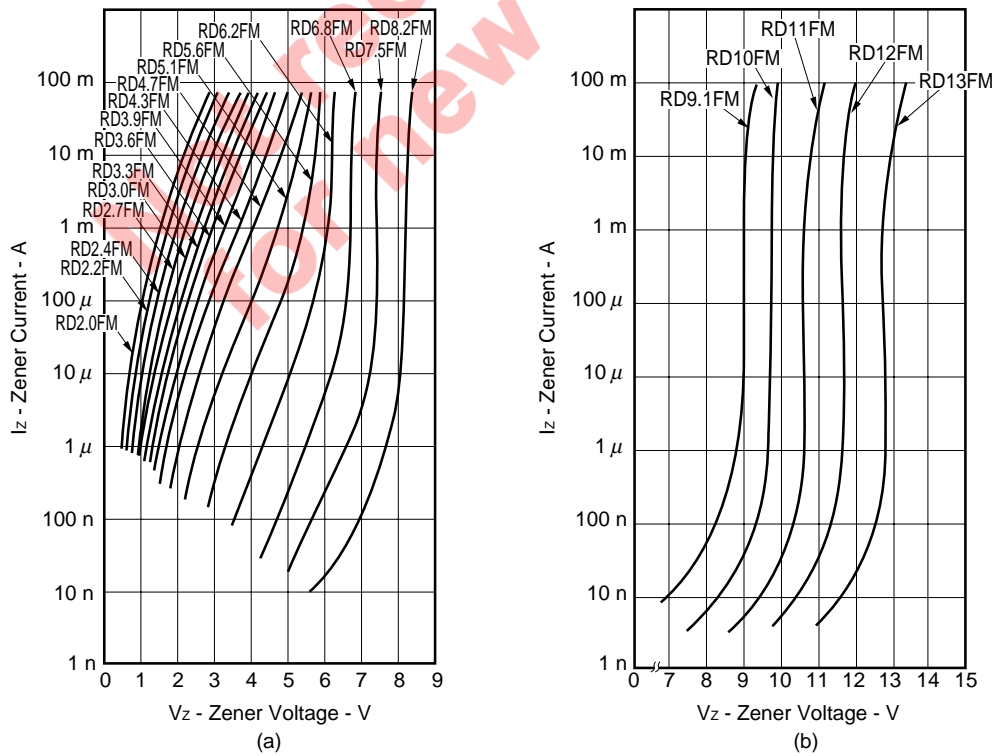
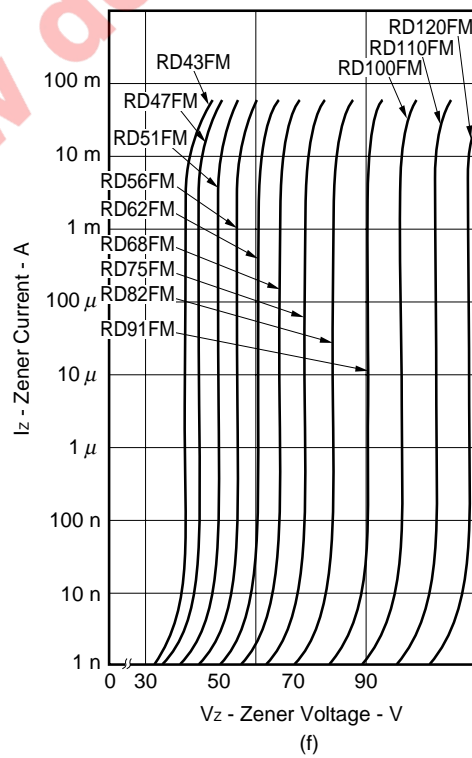
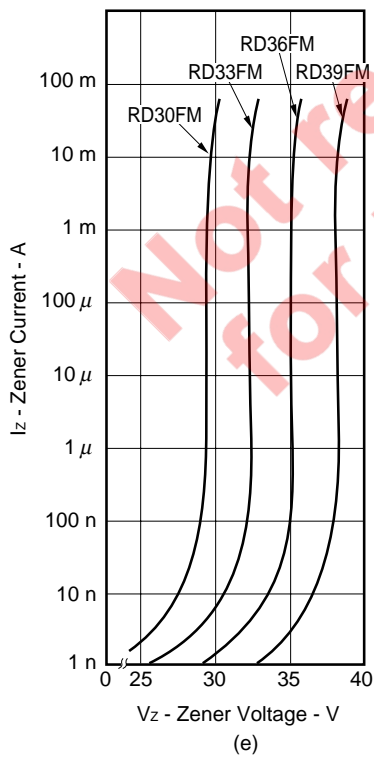
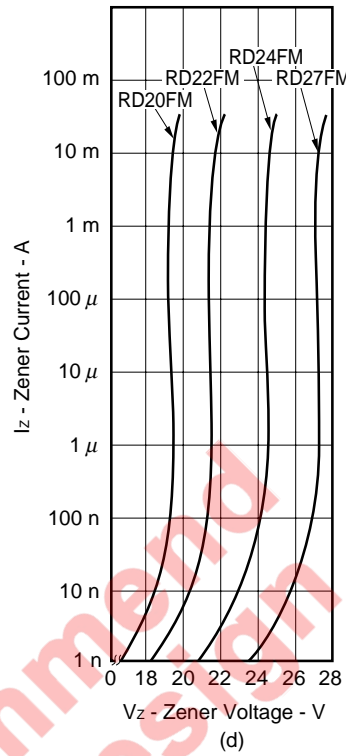
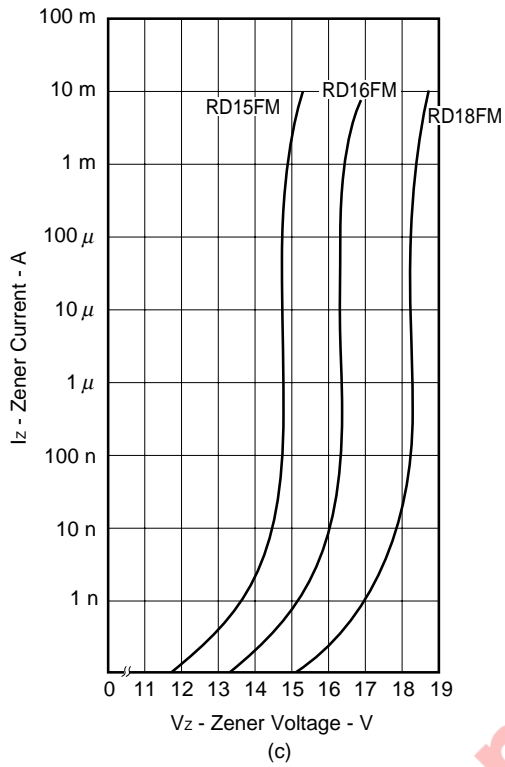


Fig.2 I_Z - V_Z CHARACTERISTICS (a to f)





<R> Fig.3 $\gamma_z - V_z$ CHARACTERISTICS

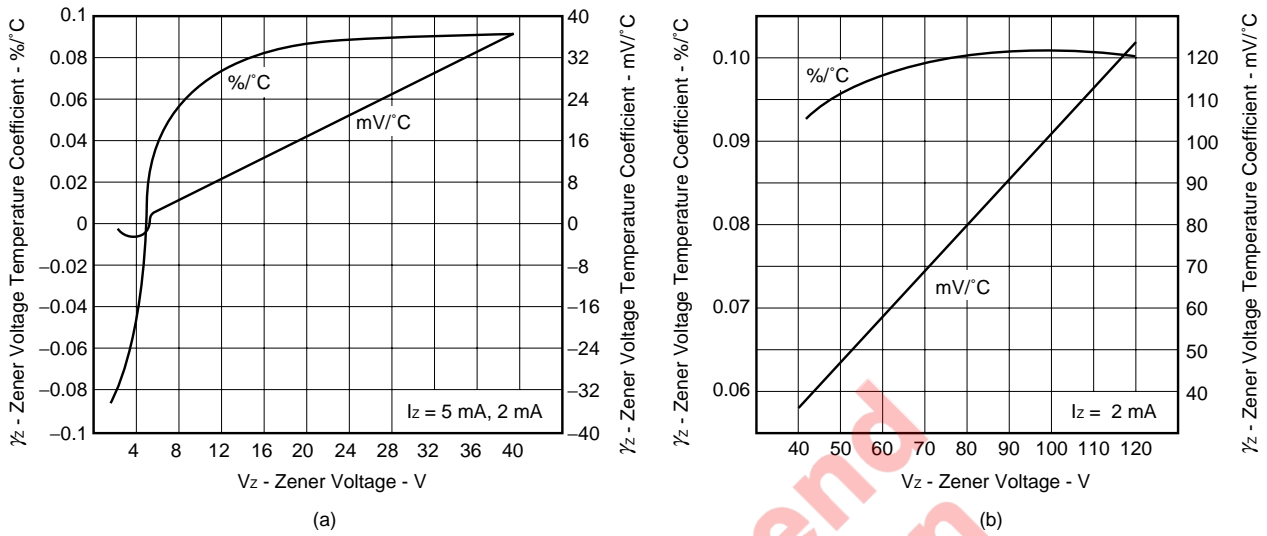


Fig.4 $Z_z - I_z$ CHARACTERISTICS

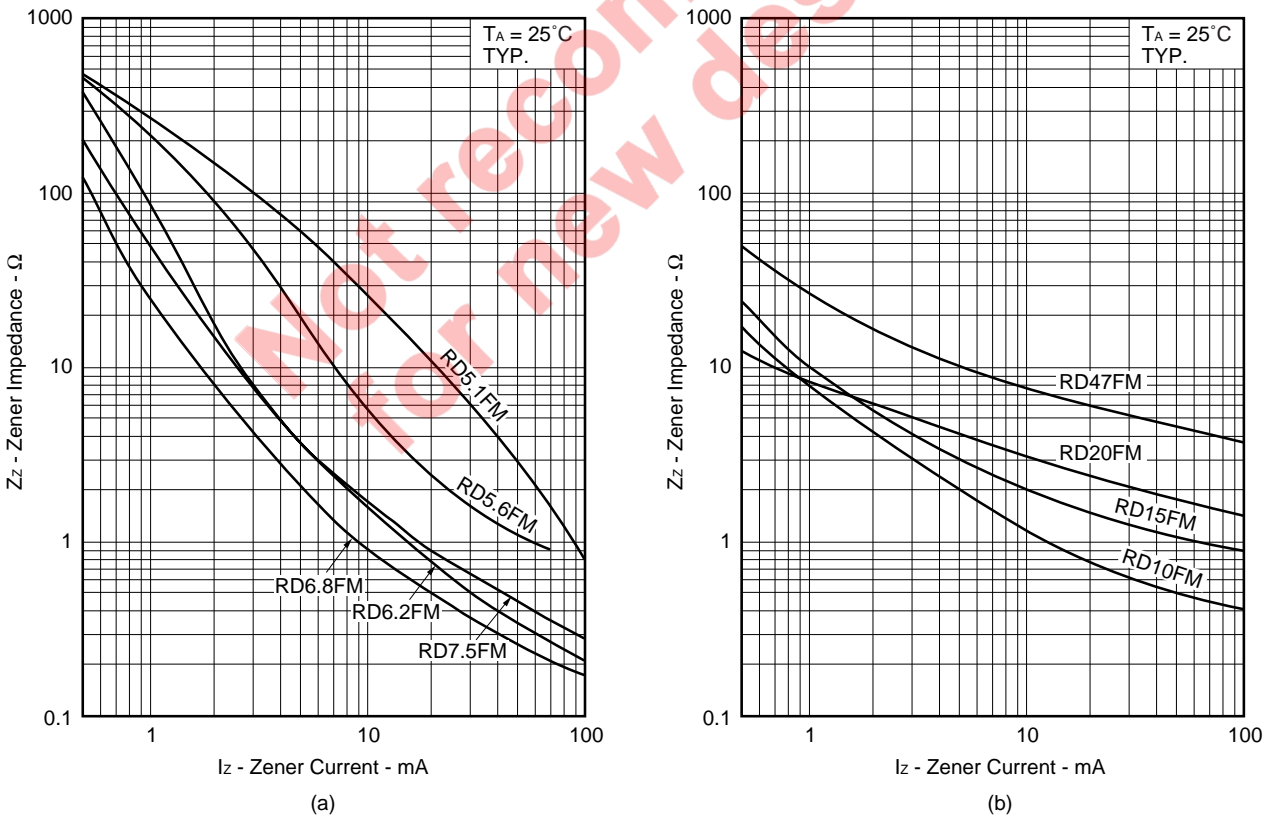


Fig.5 TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS

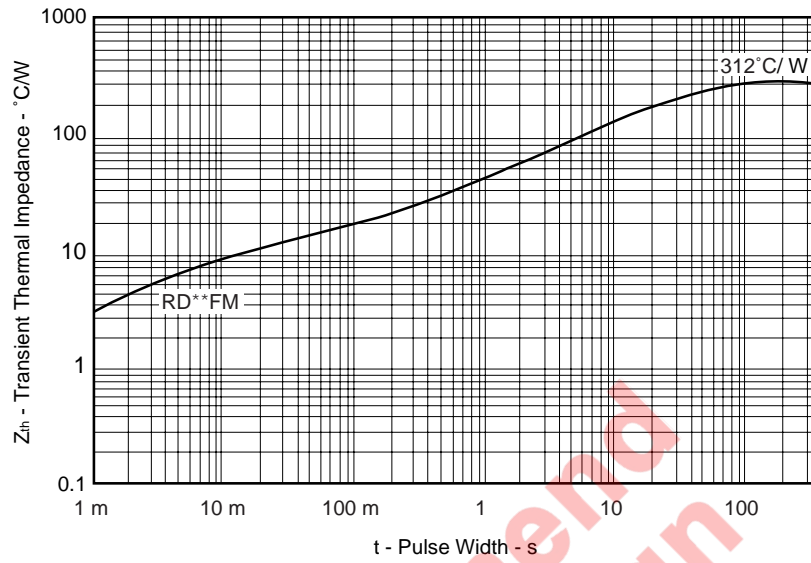
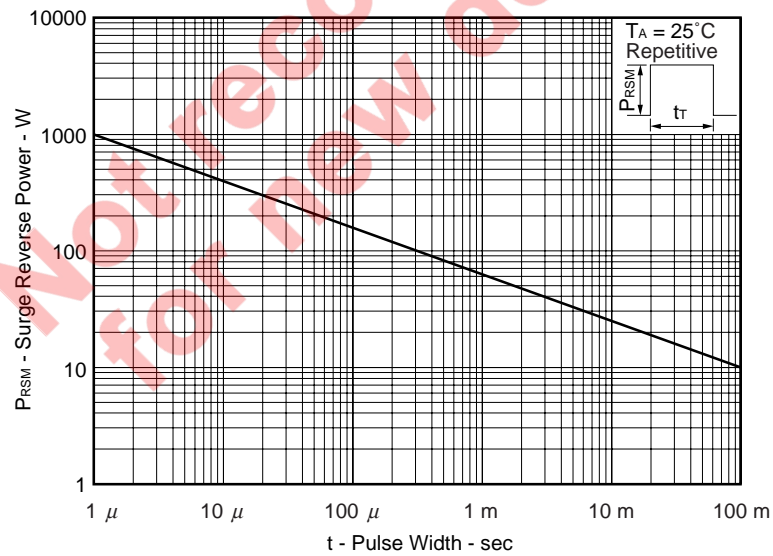


Fig.6 SURGE REVERSE POWER RATINGS



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