## ZENER DIODES <br> 1 W 2 PIN POWER MINI MOLD

## DESCRIPTION

Type RD2.0FM to RD120FM series are 2 pin power mini mold package zener diodes possessing an allowable power dissipation of 1 W .

## QUALITY GRADE

Standard.
Please refer to "Quality Grades On NEC Semiconductor Devices" (Document number C11531E) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

## FEATURES

- Sharp breakdown characteristics
- Vz: Applied E24 standard


## PACKAGE DIMENSIONS

(Unit: mm)



## APPLICATIONS

Circuits for, constant voltage, constant current, waveform clipper, surge absorber, etc.

## ABSOLUTE MAXIMUM RATINGS ( $\mathrm{T}_{\mathrm{A}}=\mathbf{2 5}{ }^{\circ} \mathrm{C}$ )

| Power Dissipation | P | 1 | W |
| :--- | :---: | :---: | :---: |
| Forward Current | $\mathrm{IF}_{\mathrm{F}}$ | 200 | mA |
| Junction Temperature | $\mathrm{T}_{\mathrm{j}}$ | 150 | ${ }^{\circ} \mathrm{C}$ |
| Storage Temperature | $\mathrm{T}_{\mathrm{stg}}$ | -55 to +150 | ${ }^{\circ} \mathrm{C}$ |

[^0]ELECTRICAL CHARACTERISTICS ( $\mathrm{TA}_{\mathrm{A}}=25 \pm 2^{\circ} \mathrm{C}$ )
(1/2)

| Type Number | Class | Zener Voltage$\mathrm{V}_{\mathrm{z}}(\mathrm{~V}){ }^{\text {Note1 } 1}$ |  |  | Dynamic Impedance$\mathrm{Zz}_{\mathrm{z}}(\Omega){ }^{\text {Note2 }}$ |  | Reverse Current$\operatorname{IR}(\mu \mathrm{A})$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | MIN. | MAX. | $\mathrm{lz}(\mathrm{mA})$ | MAX. | $\mathrm{lz}(\mathrm{mA})$ | MAX. | $\mathrm{V}_{\mathrm{R}}(\mathrm{V})$ |
| 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 | 2 | 55 | 2 | 10 | 17 |
| RD24FM | B | 22.8 | 25.6 | 2 | 70 | 2 | 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. $\mathrm{V}_{z}$ is tested with pulsed ( 40 ms ).
2. Zz is measured at Iz by given a very small A.C. signal.

ELECTRICAL CHARACTERISTICS ( $\mathrm{T}_{\mathrm{A}}=\mathbf{2 5} \pm 2^{\circ} \mathrm{C}$ )
(2/2)

| Type Number | Class | Zener Voltage$\mathrm{Vz}(\mathrm{~V}){ }^{\text {Note1 }}$ |  |  | Dynamic Impedance$\mathrm{Zz}(\Omega)^{\text {Note2 }}$ |  | Reverse Current$\operatorname{IR}(\mu \mathrm{A})$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | MIN. | MAX. | $\mathrm{lz}(\mathrm{mA})$ | MAX. | $\mathrm{lz}(\mathrm{mA})$ | MAX. | $\mathrm{V}_{\mathrm{R}}(\mathrm{V})$ |
| 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. Vz is tested with pulsed ( 40 ms ).
2. $Z z$ is measured at $l z$ by given a very small A.C. signal.

## TYPICAL CHARACTERISTICS $\left(\mathrm{T}_{\mathrm{A}}=\mathbf{2 5}{ }^{\circ} \mathrm{C}\right)$

Fig. 1 P - TA RATING


Fig. $2 \mathrm{lz}-\mathrm{Vz}$ CHARACTERISTICS (a to f)


(c)

(e)

(d)

(f)

Fig. $3 \gamma z-$ Vz CHARACTERISTICS


Fig. 4 Zz - Iz CHARACTERISTICS


Fig. 5 TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS


Fig. 6 SURGE REVERSE POWER RATINGS


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