

# 500mW Zener Leadless Diode

## RLZ Series

### ●Applications

Constant voltage control

### ●Features

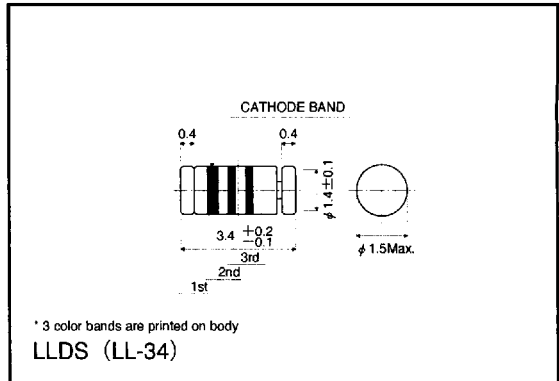
- 1) Designed for mounting on small surface areas (LLDS (LL-34) )
- 2) High reliability

### ●Construction

Silicon epitaxial planar

### ●Cathode band colors

### ●External dimensions (Units: mm)



| Type    | 1st Color Band | 2nd Color Band | 3rd Color Band  | Type   | 1st Color Band | 2nd Color Band | 3rd Color Band  |
|---------|----------------|----------------|---|--------|----------------|----------------|---|
| RLZ 2.0 | Black          | Brown          | *<br>A : Yellow<br>B : Green<br>C : Blue<br>D : White | RLZ 13 | Red            | Brown          | *<br>A : Yellow<br>B : Green<br>C : Blue<br>D : White |
| RLZ 2.2 | Black          | Red            |   | RLZ 15 | Red            | Red            |   |
| RLZ 2.4 | Black          | Orange         |   | RLZ 16 | Red            | Orange         |   |
| RLZ 2.7 | Black          | Yellow         |   | RLZ 18 | Red            | Yellow         |   |
| RLZ 3.0 | Black          | Green          |   | RLZ 20 | Red            | Green          |   |
| RLZ 3.3 | Black          | Blue           |   | RLZ 22 | Red            | Blue           |   |
| RLZ 3.6 | Black          | Purple         |   | RLZ 24 | Red            | Purple         |   |
| RLZ 3.9 | Black          | Gray           |   | RLZ 27 | Red            | Gray           |   |
| RLZ 4.3 | Black          | White          |   | RLZ 30 | Red            | White          |   |
| RLZ 4.7 | Brown          | Black          |   | RLZ 33 | Orange         | Black          |   |
| RLZ 5.1 | Brown          | Brown          |   | RLZ 36 | Orange         | Brown          |   |
| RLZ 5.6 | Brown          | Red            |   | RLZ 39 | Orange         | Red            |   |
| RLZ 6.2 | Brown          | Orange         | RLZ 39 E  | Yellow | White          | Yellow         |   |
| RLZ 6.8 | Brown          | Yellow         | RLZ 39 F  | Yellow | White          | Green          |   |
| RLZ 7.5 | Brown          | Green          | RLZ 39 G  | Yellow | White          | Blue           |   |
| RLZ 8.2 | Brown          | Blue           | RLZ 43  | Orange | Orange         | —              |   |
| RLZ 9.1 | Brown          | Purple         | RLZ 47  | Orange | Yellow         | —              |   |
| RLZ 10  | Brown          | Gray           | RLZ 51  | Orange | Green          | —              |   |
| RLZ 11  | Brown          | White          | RLZ 56  | Orange | Blue           | —              |   |
| RLZ 12  | Red            | Black          |   |        |                |                |   |

※Products are grouped into colors A, B, C, and D, and listed in order within each group.  
For RLZ2.0A, 3rd color band is yellow.

### ●Absolute maximum ratings (Ta=25°C)

| Parameter            | Symbol           | Limite  | Unit |
|----------------------|------------------|---------|------|
| Power dissipation    | P                | 500     | mW   |
| Junction temperature | T <sub>j</sub>   | 175     | °C   |
| Storage temperature  | T <sub>stg</sub> | -65~175 | °C   |

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ROHM

## ●Electrical characteristics (Ta=25°C)

| Type    | Zener voltage |        |       | Operating resistance |      | Rising operating resistance |      | Reverse current           |      |                    |
|---------|---------------|--------|-------|----------------------|------|-----------------------------|------|---------------------------|------|--------------------|
|         | Rank          | Vz (V) |       | Zz ( $\Omega$ )      |      | Zzk ( $\Omega$ )            |      | I <sub>R</sub> ( $\mu$ A) |      |                    |
|         |               | Min.   | Max.  | I <sub>Z</sub> (mA)  | Max. | I <sub>Z</sub> (mA)         | Max. | I <sub>Z</sub> (mA)       | Max. | V <sub>R</sub> (V) |
| RLZ 2.0 | A             | 1.880  | 2.100 | 20                   | 140  | 20                          | 2000 | 1                         | 120  | 0.5                |
|         | B             | 2.020  | 2.200 |                      |      |                             |      |                           |      |                    |
| RLZ 2.2 | A             | 2.120  | 2.300 | 20                   | 120  | 20                          | 2000 | 1                         | 120  | 0.7                |
|         | B             | 2.220  | 2.410 |                      |      |                             |      |                           |      |                    |
| RLZ 2.4 | A             | 2.330  | 2.520 | 20                   | 100  | 20                          | 2000 | 1                         | 120  | 1.0                |
|         | B             | 2.430  | 2.630 |                      |      |                             |      |                           |      |                    |
| RLZ 2.7 | A             | 2.540  | 2.750 | 20                   | 100  | 20                          | 1000 | 1                         | 100  | 1.0                |
|         | B             | 2.690  | 2.910 |                      |      |                             |      |                           |      |                    |
| RLZ 3.0 | A             | 2.850  | 3.070 | 20                   | 80   | 20                          | 1000 | 1                         | 50   | 1.0                |
|         | B             | 3.010  | 3.220 |                      |      |                             |      |                           |      |                    |
| RLZ 3.3 | A             | 3.160  | 3.380 | 20                   | 70   | 20                          | 1000 | 1                         | 20   | 1.0                |
|         | B             | 3.320  | 3.530 |                      |      |                             |      |                           |      |                    |
| RLZ 3.6 | A             | 3.455  | 3.695 | 20                   | 60   | 20                          | 1000 | 1                         | 10   | 1.0                |
|         | B             | 3.600  | 3.845 |                      |      |                             |      |                           |      |                    |
| RLZ 3.9 | A             | 3.74   | 4.01  | 20                   | 50   | 20                          | 1000 | 1                         | 5    | 1.0                |
|         | B             | 3.89   | 4.16  |                      |      |                             |      |                           |      |                    |
| RLZ 4.3 | A             | 4.04   | 4.29  | 20                   | 40   | 20                          | 1000 | 1                         | 5    | 1.0                |
|         | B             | 4.17   | 4.43  |                      |      |                             |      |                           |      |                    |
|         | C             | 4.30   | 4.57  |                      |      |                             |      |                           |      |                    |
| RLZ 4.7 | A             | 4.44   | 4.68  | 20                   | 25   | 20                          | 900  | 1                         | 5    | 1.0                |
|         | B             | 4.55   | 4.80  |                      |      |                             |      |                           |      |                    |
|         | C             | 4.68   | 4.93  |                      |      |                             |      |                           |      |                    |
| RLZ 5.1 | A             | 4.81   | 5.07  | 20                   | 20   | 20                          | 800  | 1                         | 5    | 1.5                |
|         | B             | 4.94   | 5.20  |                      |      |                             |      |                           |      |                    |
|         | C             | 5.09   | 5.37  |                      |      |                             |      |                           |      |                    |
| RLZ 5.6 | A             | 5.28   | 5.55  | 20                   | 13   | 20                          | 500  | 1                         | 5    | 2.5                |
|         | B             | 5.45   | 5.73  |                      |      |                             |      |                           |      |                    |
|         | C             | 5.61   | 5.91  |                      |      |                             |      |                           |      |                    |
| RLZ 6.2 | A             | 5.78   | 6.09  | 20                   | 10   | 20                          | 300  | 1                         | 5    | 3.0                |
|         | B             | 5.96   | 6.27  |                      |      |                             |      |                           |      |                    |
|         | C             | 6.12   | 6.44  |                      |      |                             |      |                           |      |                    |
| RLZ 6.8 | A             | 6.29   | 6.63  | 20                   | 8    | 20                          | 150  | 0.5                       | 2    | 3.5                |
|         | B             | 6.49   | 6.83  |                      |      |                             |      |                           |      |                    |
|         | C             | 6.66   | 7.01  |                      |      |                             |      |                           |      |                    |
| RLZ 7.5 | A             | 6.85   | 7.22  | 20                   | 8    | 20                          | 120  | 0.5                       | 0.5  | 4.0                |
|         | B             | 7.07   | 7.45  |                      |      |                             |      |                           |      |                    |
|         | C             | 7.29   | 7.67  |                      |      |                             |      |                           |      |                    |
| RLZ 8.2 | A             | 7.53   | 7.92  | 20                   | 8    | 20                          | 120  | 0.5                       | 0.5  | 5.0                |
|         | B             | 7.78   | 8.19  |                      |      |                             |      |                           |      |                    |
|         | C             | 8.03   | 8.45  |                      |      |                             |      |                           |      |                    |
| RLZ 9.1 | A             | 8.29   | 8.73  | 20                   | 8    | 20                          | 120  | 0.5                       | 0.5  | 6.0                |
|         | B             | 8.57   | 9.01  |                      |      |                             |      |                           |      |                    |
|         | C             | 8.83   | 9.30  |                      |      |                             |      |                           |      |                    |
| RLZ 10  | A             | 9.12   | 9.59  | 20                   | 8    | 20                          | 120  | 0.5                       | 0.2  | 7.0                |
|         | B             | 9.41   | 9.90  |                      |      |                             |      |                           |      |                    |
|         | C             | 9.70   | 10.20 |                      |      |                             |      |                           |      |                    |
|         | D             | 9.94   | 10.44 |                      |      |                             |      |                           |      |                    |
| RLZ 11  | A             | 10.18  | 10.71 | 10                   | 10   | 10                          | 120  | 0.5                       | 0.2  | 8.0                |
|         | B             | 10.50  | 11.05 |                      |      |                             |      |                           |      |                    |
|         | C             | 10.82  | 11.38 |                      |      |                             |      |                           |      |                    |
| RLZ 12  | A             | 11.13  | 11.71 | 10                   | 12   | 10                          | 110  | 0.5                       | 0.2  | 9.0                |
|         | B             | 11.44  | 12.03 |                      |      |                             |      |                           |      |                    |
|         | C             | 11.74  | 12.35 |                      |      |                             |      |                           |      |                    |
| RLZ 13  | A             | 12.11  | 12.75 | 10                   | 14   | 10                          | 110  | 0.5                       | 0.2  | 10                 |
|         | B             | 12.55  | 13.21 |                      |      |                             |      |                           |      |                    |
|         | C             | 12.99  | 13.66 |                      |      |                             |      |                           |      |                    |

## ●Electrical characteristics (Ta=25°C)

| Type              | Zener voltage |        |       | Operating resistance |      | Rising operating resistance |      | Reverse current     |      |                    |
|-------------------|---------------|--------|-------|----------------------|------|-----------------------------|------|---------------------|------|--------------------|
|                   | Rank          | Vz (V) |       | Zz (Ω)               |      | Zzk (Ω)                     |      | I <sub>R</sub> (μA) |      |                    |
|                   |               | Min.   | Max.  | I <sub>Z</sub> (mA)  | Max. | I <sub>Z</sub> (mA)         | Max. | I <sub>Z</sub> (mA) | Max. | V <sub>R</sub> (V) |
| RLZ 15            | A             | 13.44  | 14.13 | 10                   | 16   | 10                          | 110  | 0.5                 | 0.2  | 11                 |
|                   | B             | 13.89  | 14.62 |                      |      |                             |      |                     |      |                    |
|                   | C             | 14.35  | 15.09 |                      |      |                             |      |                     |      |                    |
| RLZ 16            | A             | 14.80  | 15.57 | 10                   | 18   | 10                          | 150  | 0.5                 | 0.2  | 12                 |
|                   | B             | 15.25  | 16.04 |                      |      |                             |      |                     |      |                    |
|                   | C             | 15.69  | 16.51 |                      |      |                             |      |                     |      |                    |
| RLZ 18            | A             | 16.22  | 17.06 | 10                   | 23   | 10                          | 150  | 0.5                 | 0.2  | 13                 |
|                   | B             | 16.82  | 17.70 |                      |      |                             |      |                     |      |                    |
|                   | C             | 17.42  | 18.33 |                      |      |                             |      |                     |      |                    |
| RLZ 20            | A             | 18.02  | 18.96 | 10                   | 28   | 10                          | 200  | 0.5                 | 0.2  | 15                 |
|                   | B             | 18.63  | 19.59 |                      |      |                             |      |                     |      |                    |
|                   | C             | 19.23  | 20.22 |                      |      |                             |      |                     |      |                    |
|                   | D             | 19.72  | 20.72 |                      |      |                             |      |                     |      |                    |
| RLZ 22            | A             | 20.15  | 21.20 | 5                    | 30   | 5                           | 200  | 0.5                 | 0.2  | 17                 |
|                   | B             | 20.64  | 21.71 |                      |      |                             |      |                     |      |                    |
|                   | C             | 21.08  | 22.17 |                      |      |                             |      |                     |      |                    |
|                   | D             | 21.52  | 22.63 |                      |      |                             |      |                     |      |                    |
| RLZ 24            | A             | 22.05  | 23.18 | 5                    | 35   | 5                           | 200  | 0.5                 | 0.2  | 19                 |
|                   | B             | 22.61  | 23.77 |                      |      |                             |      |                     |      |                    |
|                   | C             | 23.12  | 24.31 |                      |      |                             |      |                     |      |                    |
|                   | D             | 23.63  | 24.85 |                      |      |                             |      |                     |      |                    |
| RLZ 27            | A             | 24.26  | 25.52 | 5                    | 45   | 5                           | 250  | 0.5                 | 0.2  | 21                 |
|                   | B             | 24.97  | 26.26 |                      |      |                             |      |                     |      |                    |
|                   | C             | 25.63  | 26.95 |                      |      |                             |      |                     |      |                    |
|                   | D             | 26.29  | 27.64 |                      |      |                             |      |                     |      |                    |
| RLZ 30            | A             | 26.99  | 28.39 | 5                    | 55   | 5                           | 250  | 0.5                 | 0.2  | 23                 |
|                   | B             | 27.70  | 29.13 |                      |      |                             |      |                     |      |                    |
|                   | C             | 28.36  | 29.82 |                      |      |                             |      |                     |      |                    |
|                   | D             | 29.02  | 30.51 |                      |      |                             |      |                     |      |                    |
| RLZ 33            | A             | 29.68  | 31.22 | 5                    | 65   | 5                           | 250  | 0.5                 | 0.2  | 25                 |
|                   | B             | 30.32  | 31.88 |                      |      |                             |      |                     |      |                    |
|                   | C             | 30.90  | 32.50 |                      |      |                             |      |                     |      |                    |
|                   | D             | 31.49  | 33.11 |                      |      |                             |      |                     |      |                    |
| RLZ 36            | A             | 32.14  | 33.79 | 5                    | 75   | 5                           | 250  | 0.5                 | 0.2  | 27                 |
|                   | B             | 32.79  | 34.49 |                      |      |                             |      |                     |      |                    |
|                   | C             | 33.40  | 35.13 |                      |      |                             |      |                     |      |                    |
|                   | D             | 34.01  | 35.77 |                      |      |                             |      |                     |      |                    |
| RLZ 39<br>Note(3) | A             | 34.68  | 36.47 | 5                    | 85   | 5                           | 250  | 0.5                 | 0.2  | 30                 |
|                   | B             | 35.36  | 37.19 |                      |      |                             |      |                     |      |                    |
|                   | C             | 36.00  | 37.85 |                      |      |                             |      |                     |      |                    |
|                   | D             | 36.63  | 38.52 |                      |      |                             |      |                     |      |                    |
|                   | E             | 37.36  | 39.29 |                      |      |                             |      |                     |      |                    |
|                   | F             | 38.14  | 40.11 |                      |      |                             |      |                     |      |                    |
|                   | G             | 38.94  | 40.80 |                      |      |                             |      |                     |      |                    |
| RLZ 43            | —             | 40.00  | 45.00 | 5                    | 90   | 5                           | —    | —                   | 0.2  | 33                 |
| RLZ 47            | —             | 44.00  | 49.00 | 5                    | 90   | 5                           | —    | —                   | 0.2  | 36                 |
| RLZ 51            | —             | 48.00  | 54.00 | 5                    | 100  | 5                           | —    | —                   | 0.2  | 39                 |
| RLZ 56            | —             | 53.00  | 60.00 | 5                    | 110  | 5                           | —    | —                   | 0.2  | 43                 |

- Note (1) The Zener voltage is measured 40 ms after power is supplied.  
(2) For the Zener voltage subdivisions, the free ranks (A, B, or C) or recommended when ordering.  
(3) Zener voltages between 43 and 56 are grouped together in no particular order. 39E and above are available only on special order.

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● Zener characteristic curves

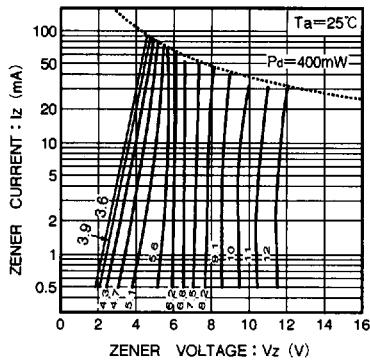


Fig. 1 RLZ3.9 ~ RLZ12 Zener characteristic

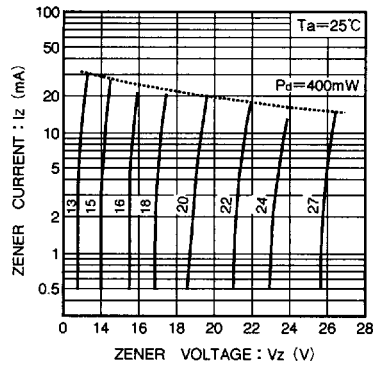


Fig. 2 RLZ13 ~ RLZ27 Zener characteristic

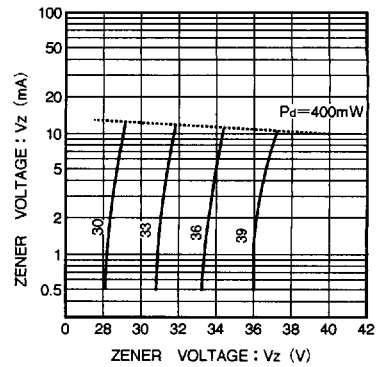


Fig. 3 RLZ30 ~ RLZ39 Zener characteristic

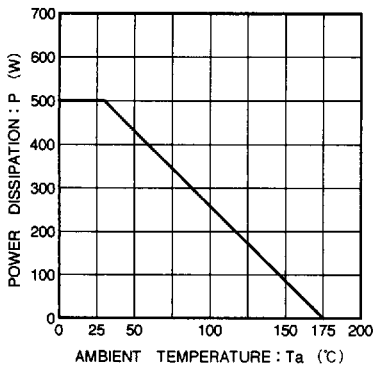


Fig. 4 Derating curve