

HZM-N Series

Silicon Epitaxial Planar Zener Diode for Stabilizer

R07DS0358EJ0600

Rev.6.00

May 19, 2011

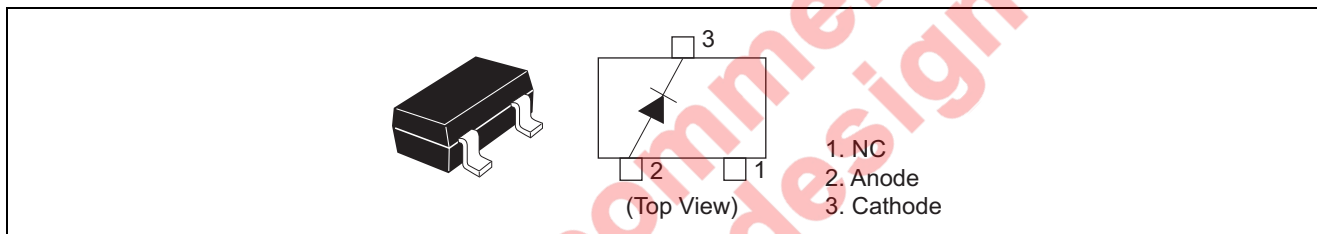
Features

- Wide spectrum from 1.9 V through 38 V of zener voltage provide flexible application.
- MPAK Package is suitable for high density surface mounting and high speed assembly.

Ordering Information

| Part No | Laser Mark | Package Name | Package Code | Taping Abbreviation (Quantity) |
|------------------------------------|------------------|--------------|--------------|--|
| HZM-N Series TL HZM-N Series TR | Let to Mark Code | MPAK | PLSP0003ZC-A | TL (3,000pcs / reel) TR (3,000pcs / reel) |

Pin Arrangement



Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Value | Unit |
|----------------------|------------|-------------|------|
| Power dissipation | P_d^{*1} | 200 | mW |
| Junction temperature | T_j | 150 | °C |
| Storage temperature | T_{stg} | -55 to +150 | °C |

Note: 1. See Fig. 3.

Electrical Characteristics

(Ta = 25°C)

| Type | Grade | Zener Voltage | | Reverse Current | | Dynamic Resistance | |
|---------|-------|-------------------------|------|-----------------|------------|--------------------|------------|
| | | V_Z (V)* ¹ | | Test Condition | I_R (μA) | Test Condition | r_d (Ω) |
| | | Min | Max | I_Z (mA) | Max | V_R (V) | I_Z (mA) |
| HZM2.0N | B | 1.90 | 2.20 | 5 | 120 | 0.5 | 100 |
| HZM2.2N | B | 2.10 | 2.40 | 5 | 120 | 0.7 | 100 |
| HZM2.4N | B | 2.30 | 2.60 | 5 | 120 | 1.0 | 100 |
| HZM2.7N | B1 | 2.50 | 2.75 | 5 | 120 | 1.0 | 110 |
| | B2 | 2.65 | 2.90 | | | | |
| HZM3.0N | B1 | 2.80 | 3.05 | 5 | 50 | 1.0 | 120 |
| | B2 | 2.95 | 3.20 | | | | |
| HZM3.3N | B1 | 3.10 | 3.35 | 5 | 20 | 1.0 | 130 |
| | B2 | 3.25 | 3.50 | | | | |
| HZM3.6N | B1 | 3.40 | 3.65 | 5 | 10 | 1.0 | 130 |
| | B2 | 3.55 | 3.80 | | | | |
| HZM3.9N | B1 | 3.70 | 3.97 | 5 | 10 | 1.0 | 130 |
| | B2 | 3.87 | 4.10 | | | | |
| HZM4.3N | B1 | 4.01 | 4.21 | 5 | 10 | 1.0 | 130 |
| | B2 | 4.15 | 4.34 | | | | |
| | B3 | 4.28 | 4.48 | | | | |
| HZM4.7N | B1 | 4.42 | 4.61 | 5 | 10 | 1.0 | 130 |
| | B2 | 4.55 | 4.75 | | | | |
| | B3 | 4.69 | 4.90 | | | | |
| HZM5.1N | B1 | 4.84 | 5.04 | 5 | 5 | 1.5 | 130 |
| | B2 | 4.98 | 5.20 | | | | |
| | B3 | 5.14 | 5.37 | | | | |
| HZM5.6N | B1 | 5.31 | 5.55 | 5 | 5 | 2.5 | 80 |
| | B2 | 5.49 | 5.73 | | | | |
| | B3 | 5.67 | 5.92 | | | | |
| HZM6.2N | B1 | 5.86 | 6.12 | 5 | 2 | 3.0 | 50 |
| | B2 | 6.06 | 6.33 | | | | |
| | B3 | 6.26 | 6.53 | | | | |
| HZM6.8N | B1 | 6.47 | 6.73 | 5 | 2 | 3.5 | 30 |
| | B2 | 6.65 | 6.93 | | | | |
| | B3 | 6.86 | 7.14 | | | | |
| HZM7.5N | B1 | 7.06 | 7.36 | 5 | 2 | 4.0 | 30 |
| | B2 | 7.28 | 7.60 | | | | |
| | B3 | 7.52 | 7.84 | | | | |

Note: 1. Tested with pulse ($P_w = 40$ ms)

| Type | Grade | Zener Voltage | | Test Condition I _Z (mA) | Reverse Current | | Dynamic Resistance | |
|---------|-------|----------------------------------|-------|---------------------------------------|---------------------|--------------------|--------------------|---------------------|
| | | V _Z (V)* ¹ | | | I _R (μA) | Test Condition | r _d (Ω) | Test Condition |
| | | Min | Max | | Max | V _R (V) | Max | I _Z (mA) |
| HZM8.2N | B1 | 7.76 | 8.10 | 5 | 2 | 5.0 | 30 | 5 |
| | B2 | 8.02 | 8.36 | | | | | |
| | B3 | 8.28 | 8.64 | | | | | |
| HZM9.1N | B1 | 8.56 | 8.93 | 5 | 2 | 6.0 | 30 | 5 |
| | B2 | 8.85 | 9.23 | | | | | |
| | B3 | 9.15 | 9.55 | | | | | |
| HZM10N | B1 | 9.45 | 9.87 | 5 | 2 | 7.0 | 30 | 5 |
| | B2 | 9.77 | 10.21 | | | | | |
| | B3 | 10.11 | 10.55 | | | | | |
| HZM11N | B1 | 10.44 | 10.88 | 5 | 2 | 8.0 | 30 | 5 |
| | B2 | 10.76 | 11.22 | | | | | |
| | B3 | 11.10 | 11.56 | | | | | |
| HZM12N | B1 | 11.42 | 11.90 | 5 | 2 | 9.0 | 35 | 5 |
| | B2 | 11.74 | 12.24 | | | | | |
| | B3 | 12.08 | 12.60 | | | | | |
| HZM13N | B1 | 12.47 | 13.03 | 5 | 2 | 10.0 | 35 | 5 |
| | B2 | 12.91 | 13.49 | | | | | |
| | B3 | 13.37 | 13.96 | | | | | |
| HZM15N | B1 | 13.84 | 14.46 | 5 | 2 | 11.0 | 40 | 5 |
| | B2 | 14.34 | 14.98 | | | | | |
| | B3 | 14.85 | 15.52 | | | | | |
| HZM16N | B1 | 15.37 | 16.01 | 5 | 2 | 12.0 | 40 | 5 |
| | B2 | 15.85 | 16.51 | | | | | |
| | B3 | 16.35 | 17.09 | | | | | |
| HZM18N | B1 | 16.94 | 17.70 | 5 | 2 | 13.0 | 45 | 5 |
| | B2 | 17.56 | 18.35 | | | | | |
| | B3 | 18.21 | 19.03 | | | | | |
| HZM20N | B1 | 18.86 | 19.70 | 5 | 2 | 15.0 | 50 | 5 |
| | B2 | 19.52 | 20.39 | | | | | |
| | B3 | 20.21 | 21.08 | | | | | |
| HZM22N | B1 | 20.88 | 21.77 | 5 | 2 | 17.0 | 55 | 5 |
| | B2 | 21.54 | 22.47 | | | | | |
| | B3 | 22.23 | 23.17 | | | | | |
| HZM24N | B1 | 22.93 | 23.96 | 5 | 2 | 19.0 | 60 | 5 |
| | B2 | 23.72 | 24.78 | | | | | |
| | B3 | 24.54 | 25.57 | | | | | |
| HZM27N | B | 25.10 | 28.90 | 2 | 2 | 21.0 | 70 | 2 |
| HZM30N | B | 28.00 | 32.00 | 2 | 2 | 23.0 | 80 | 2 |
| HZM33N | B | 31.00 | 35.00 | 2 | 2 | 25.0 | 80 | 2 |
| HZM36N | B | 34.00 | 38.00 | 2 | 2 | 27.0 | 90 | 2 |

Note: 1. Tested with pulse ($P_W = 40$ ms)

Mark Code

| Type | Grade | Mark No. |
|---------|-------|----------|
| HZM2.0N | B | 2 0 – |
| HZM2.2N | B | 2 2 – |
| HZM2.4N | B | 2 4 – |
| HZM2.7N | B1 | 2 7 1 |
| | B2 | 2 7 2 |
| HZM3.0N | B1 | 3 0 1 |
| | B2 | 3 0 2 |
| HZM3.3N | B1 | 3 3 1 |
| | B2 | 3 3 2 |
| HZM3.6N | B1 | 3 6 1 |
| | B2 | 3 6 2 |
| HZM3.9N | B1 | 3 9 1 |
| | B2 | 3 9 2 |
| HZM4.3N | B1 | 4 3 1 |
| | B2 | 4 3 2 |
| | B3 | 4 3 3 |
| HZM4.7N | B1 | 4 7 1 |
| | B2 | 4 7 2 |
| | B3 | 4 7 3 |
| HZM5.1N | B1 | 5 1 1 |
| | B2 | 5 1 2 |
| | B3 | 5 1 3 |
| HZM5.6N | B1 | 5 6 1 |
| | B2 | 5 6 2 |
| | B3 | 5 6 3 |

| Type | Grade | Mark No. |
|---------|-------|--------------|
| HZM6.2N | B1 | 6 2 1 |
| | B2 | 6 2 2 |
| | B3 | 6 2 3 |
| HZM6.8N | B1 | 6 8 1 |
| | B2 | 6 8 2 |
| | B3 | 6 8 3 |
| HZM7.5N | B1 | 7 5 1 |
| | B2 | 7 5 2 |
| | B3 | 7 5 3 |
| HZM8.2N | B1 | 8 2 1 |
| | B2 | 8 2 2 |
| | B3 | 8 2 3 |
| HZM9.1N | B1 | 9 1 1 |
| | B2 | 9 1 2 |
| | B3 | 9 1 3 |
| HZM10N | B1 | <u>1</u> 0 1 |
| | B2 | <u>1</u> 0 2 |
| | B3 | <u>1</u> 0 3 |
| HZM11N | B1 | <u>1</u> 1 1 |
| | B2 | <u>1</u> 1 2 |
| | B3 | <u>1</u> 1 3 |
| HZM12N | B1 | <u>1</u> 2 1 |
| | B2 | <u>1</u> 2 2 |
| | B3 | <u>1</u> 2 3 |

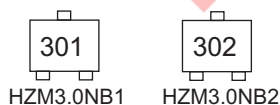
| Type | Grade | Mark No. |
|--------|-------|--------------|
| HZM13N | B1 | <u>1</u> 3 1 |
| | B2 | <u>1</u> 3 2 |
| | B3 | <u>1</u> 3 3 |
| HZM15N | B1 | <u>1</u> 5 1 |
| | B2 | <u>1</u> 5 2 |
| | B3 | <u>1</u> 5 3 |
| HZM16N | B1 | <u>1</u> 6 1 |
| | B2 | <u>1</u> 6 2 |
| | B3 | <u>1</u> 6 3 |
| HZM18N | B1 | <u>1</u> 8 1 |
| | B2 | <u>1</u> 8 2 |
| | B3 | <u>1</u> 8 3 |
| HZM20N | B1 | <u>2</u> 0 1 |
| | B2 | <u>2</u> 0 2 |
| | B3 | <u>2</u> 0 3 |
| HZM22N | B1 | <u>2</u> 2 1 |
| | B2 | <u>2</u> 2 2 |
| | B3 | <u>2</u> 2 3 |
| HZM24N | B1 | <u>2</u> 4 1 |
| | B2 | <u>2</u> 4 2 |
| | B3 | <u>2</u> 4 3 |
| HZM27N | B | <u>2</u> 7 – |
| HZM30N | B | <u>3</u> 0 – |
| HZM33N | B | <u>3</u> 3 – |
| HZM36N | B | <u>3</u> 6 – |

Example of Marking

1. One grade type (grade type B)



2. Two grade type (B1, B2)



3. Three grade type (B1, B2, B3)



Notes: 1. Ordering P/N HZM-N series are delivered taped (TL/TR).

2. Choose one taping code and adhere to parts No.

Example: HZM2.0NBTL (or TR), HZM2.2NBTL (or TR), HZM36NBTL (or TR).

(Grade B type)

HZM2.7NB1TL (or TR), HZM2.7NB2TL (or TR), HZM24NB3TL (or TR).

(Grade B1, B2, B3 type)

Main Characteristics

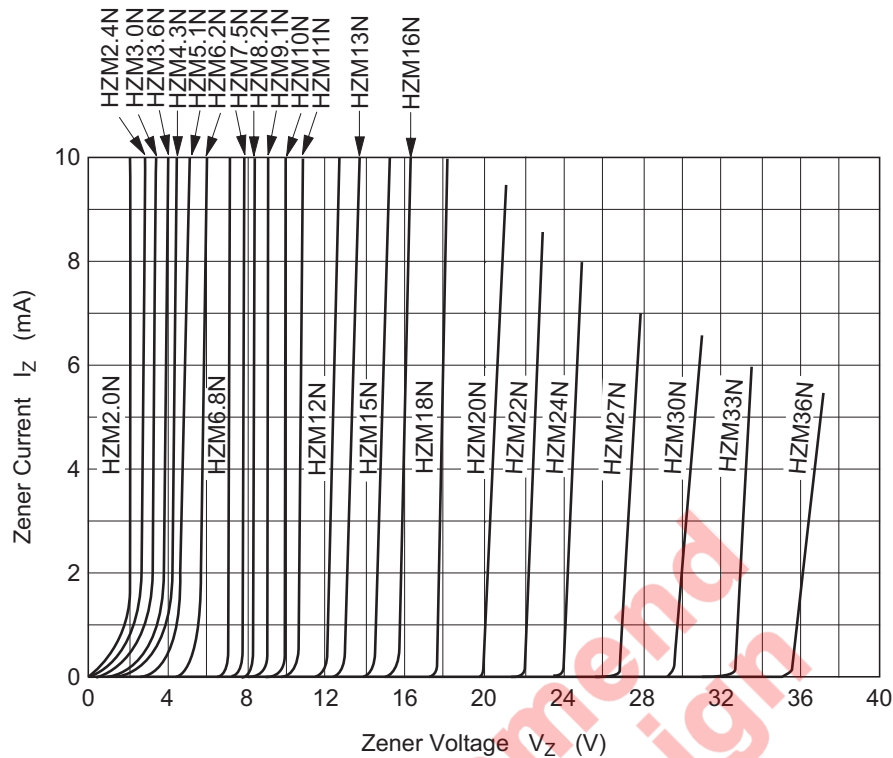


Fig.1 Zener current vs. Zener voltage

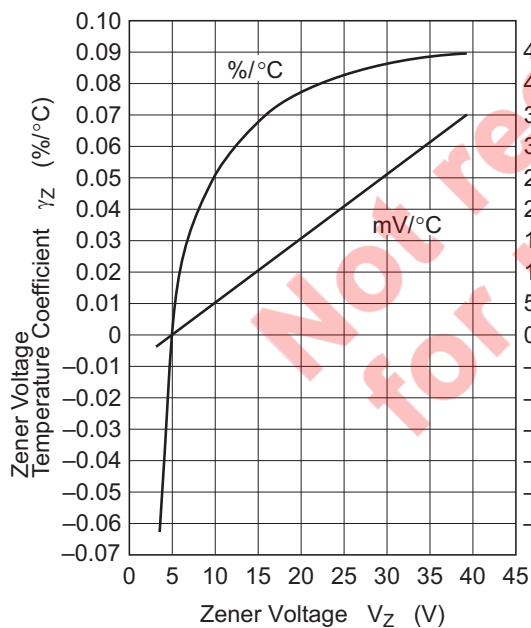


Fig.2 Temperature Coefficient vs. Zener voltage

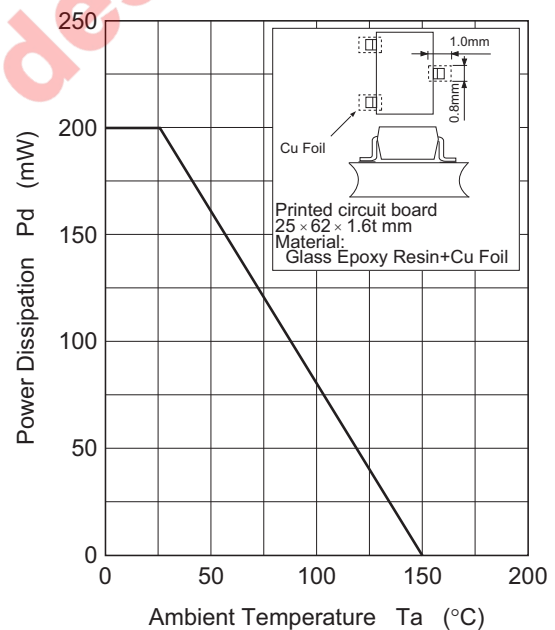
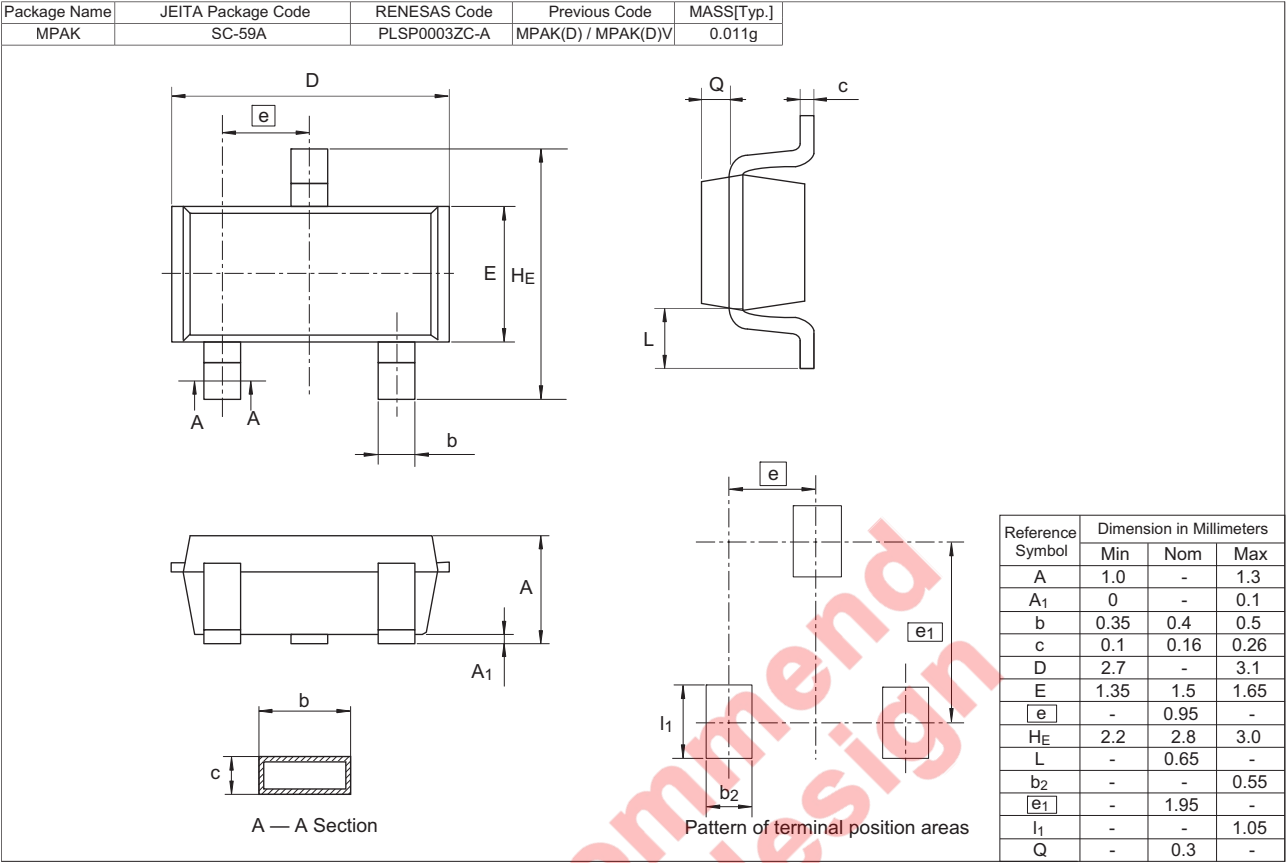


Fig.3 Power Dissipation vs. Ambient Temperature

Package Dimensions



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