

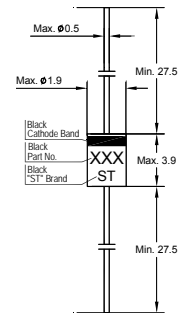
# HZ Series

## Silicon Epitaxial Planar Zener Diodes

for stabilized power supply

### Features

- Low leakage, low zener impedance and maximum power dissipation of 500 mW are ideally suited for stabilized power supply, etc.
- Wide spectrum from 1.8 V through 38 V of zener voltage provide flexible application.



Glass Case DO-35  
Dimensions in mm

### Absolute Maximum Ratings ( $T_a = 25\text{ }^\circ\text{C}$ )

| Parameter                 | Symbol           | Value         | Unit             |
|---------------------------|------------------|---------------|------------------|
| Power Dissipation         | $P_{\text{tot}}$ | 500           | mW               |
| Junction Temperature      | $T_j$            | 175           | $^\circ\text{C}$ |
| Storage Temperature Range | $T_{\text{stg}}$ | - 55 to + 175 | $^\circ\text{C}$ |

### Characteristics at $T_a = 25\text{ }^\circ\text{C}$ ( $V_F = 1\text{ V Max. at } I_F = 100\text{ mA}$ )

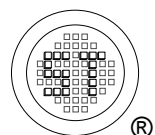
| Type  | Zener Voltage <sup>1)</sup> |          | Reverse Leakage Current |                                 |                 | Dynamic Resistance            |                     |
|-------|-----------------------------|----------|-------------------------|---------------------------------|-----------------|-------------------------------|---------------------|
|       | $V_Z$                       |          | at $I_{ZT}$<br>(mA)     | $I_R$<br>Max. ( $\mu\text{A}$ ) | at $V_R$<br>(V) | $Z_{ZT}$<br>Max. ( $\Omega$ ) | at $I_{ZT}$<br>(mA) |
|       | Min. (V)                    | Max. (V) |                         |                                 |                 |                               |                     |
| HZ2A3 | 1.8                         | 2        | 5                       | 25                              | 0.5             | 100                           | 5                   |
| HZ2B1 | 1.9                         | 2.1      | 5                       | 5                               | 0.5             | 100                           | 5                   |
| HZ2B2 | 2                           | 2.2      | 5                       | 5                               | 0.5             | 100                           | 5                   |
| HZ2B3 | 2.1                         | 2.3      | 5                       | 5                               | 0.5             | 100                           | 5                   |
| HZ2C1 | 2.2                         | 2.4      | 5                       | 5                               | 0.5             | 100                           | 5                   |
| HZ2C2 | 2.3                         | 2.5      | 5                       | 5                               | 0.5             | 100                           | 5                   |
| HZ2C3 | 2.4                         | 2.6      | 5                       | 5                               | 0.5             | 100                           | 5                   |
| HZ3A1 | 2.5                         | 2.7      | 5                       | 5                               | 0.5             | 100                           | 5                   |
| HZ3A2 | 2.6                         | 2.8      | 5                       | 5                               | 0.5             | 100                           | 5                   |
| HZ3A3 | 2.7                         | 2.9      | 5                       | 5                               | 0.5             | 100                           | 5                   |
| HZ3B1 | 2.8                         | 3        | 5                       | 5                               | 0.5             | 100                           | 5                   |
| HZ3B2 | 2.9                         | 3.1      | 5                       | 5                               | 0.5             | 100                           | 5                   |
| HZ3B3 | 3                           | 3.2      | 5                       | 5                               | 0.5             | 100                           | 5                   |
| HZ3C1 | 3.1                         | 3.3      | 5                       | 5                               | 0.5             | 100                           | 5                   |
| HZ3C2 | 3.2                         | 3.4      | 5                       | 5                               | 0.5             | 100                           | 5                   |
| HZ3C3 | 3.3                         | 3.5      | 5                       | 5                               | 0.5             | 100                           | 5                   |
| HZ4A1 | 3.4                         | 3.6      | 5                       | 5                               | 1               | 100                           | 5                   |
| HZ4A2 | 3.5                         | 3.7      | 5                       | 5                               | 1               | 100                           | 5                   |
| HZ4A3 | 3.6                         | 3.8      | 5                       | 5                               | 1               | 100                           | 5                   |
| HZ4B1 | 3.7                         | 3.9      | 5                       | 5                               | 1               | 100                           | 5                   |
| HZ4B2 | 3.8                         | 4        | 5                       | 5                               | 1               | 100                           | 5                   |
| HZ4B3 | 3.9                         | 4.1      | 5                       | 5                               | 1               | 100                           | 5                   |
| HZ4C1 | 4                           | 4.2      | 5                       | 5                               | 1               | 100                           | 5                   |
| HZ4C2 | 4.1                         | 4.3      | 5                       | 5                               | 1               | 100                           | 5                   |



# HZ Series

Characteristics at  $T_a = 25\text{ }^\circ\text{C}$  ( $V_F = 1\text{ V Max. at } I_F = 100\text{ mA}$ )

| Type   | Zener Voltage <sup>1)</sup> |          |             | Reverse Leakage Current |          | Dynamic Resistance |             |
|--------|-----------------------------|----------|-------------|-------------------------|----------|--------------------|-------------|
|        | $V_Z$                       |          | at $I_{ZT}$ | $I_R$                   | at $V_R$ | $Z_{ZT}$           | at $I_{ZT}$ |
|        | Min. (V)                    | Max. (V) | (mA)        | Max. ( $\mu\text{A}$ )  | (V)      | Max. ( $\Omega$ )  | (mA)        |
| HZ4C3  | 4.2                         | 4.4      | 5           | 5                       | 1        | 100                | 5           |
| HZ5A1  | 4.3                         | 4.5      | 5           | 5                       | 1.5      | 100                | 5           |
| HZ5A2  | 4.4                         | 4.6      | 5           | 5                       | 1.5      | 100                | 5           |
| HZ5A3  | 4.5                         | 4.7      | 5           | 5                       | 1.5      | 100                | 5           |
| HZ5B1  | 4.6                         | 4.8      | 5           | 5                       | 1.5      | 100                | 5           |
| HZ5B2  | 4.7                         | 4.9      | 5           | 5                       | 1.5      | 100                | 5           |
| HZ5B3  | 4.8                         | 5        | 5           | 5                       | 1.5      | 100                | 5           |
| HZ5C1  | 4.9                         | 5.1      | 5           | 5                       | 1.5      | 100                | 5           |
| HZ5C2  | 5                           | 5.2      | 5           | 5                       | 1.5      | 100                | 5           |
| HZ5C3  | 5.1                         | 5.3      | 5           | 5                       | 1.5      | 100                | 5           |
| HZ6A1  | 5.2                         | 5.5      | 5           | 5                       | 2        | 40                 | 5           |
| HZ6A2  | 5.3                         | 5.6      | 5           | 5                       | 2        | 40                 | 5           |
| HZ6A3  | 5.4                         | 5.7      | 5           | 5                       | 2        | 40                 | 5           |
| HZ6B1  | 5.5                         | 5.8      | 5           | 5                       | 2        | 40                 | 5           |
| HZ6B2  | 5.6                         | 5.9      | 5           | 5                       | 2        | 40                 | 5           |
| HZ6B3  | 5.7                         | 6        | 5           | 5                       | 2        | 40                 | 5           |
| HZ6C1  | 5.8                         | 6.1      | 5           | 5                       | 2        | 40                 | 5           |
| HZ6C2  | 6                           | 6.3      | 5           | 5                       | 2        | 40                 | 5           |
| HZ6C3  | 6.1                         | 6.4      | 5           | 5                       | 2        | 40                 | 5           |
| HZ7A1  | 6.3                         | 6.6      | 5           | 1                       | 3.5      | 15                 | 5           |
| HZ7A2  | 6.4                         | 6.7      | 5           | 1                       | 3.5      | 15                 | 5           |
| HZ7A3  | 6.6                         | 6.9      | 5           | 1                       | 3.5      | 15                 | 5           |
| HZ7B1  | 6.7                         | 7        | 5           | 1                       | 3.5      | 15                 | 5           |
| HZ7B2  | 6.9                         | 7.2      | 5           | 1                       | 3.5      | 15                 | 5           |
| HZ7B3  | 7                           | 7.3      | 5           | 1                       | 3.5      | 15                 | 5           |
| HZ7C1  | 7.2                         | 7.6      | 5           | 1                       | 3.5      | 15                 | 5           |
| HZ7C2  | 7.3                         | 7.7      | 5           | 1                       | 3.5      | 15                 | 5           |
| HZ7C3  | 7.5                         | 7.9      | 5           | 1                       | 3.5      | 15                 | 5           |
| HZ9A1  | 7.7                         | 8.1      | 5           | 1                       | 5        | 20                 | 5           |
| HZ9A2  | 7.9                         | 8.3      | 5           | 1                       | 5        | 20                 | 5           |
| HZ9A3  | 8.1                         | 8.5      | 5           | 1                       | 5        | 20                 | 5           |
| HZ9B1  | 8.3                         | 8.7      | 5           | 1                       | 5        | 20                 | 5           |
| HZ9B2  | 8.5                         | 8.9      | 5           | 1                       | 5        | 20                 | 5           |
| HZ9B3  | 8.7                         | 9.1      | 5           | 1                       | 5        | 20                 | 5           |
| HZ9C1  | 8.9                         | 9.3      | 5           | 1                       | 5        | 20                 | 5           |
| HZ9C2  | 9.1                         | 9.5      | 5           | 1                       | 5        | 20                 | 5           |
| HZ9C3  | 9.3                         | 9.7      | 5           | 1                       | 5        | 20                 | 5           |
| HZ11A1 | 9.5                         | 9.9      | 5           | 1                       | 7.5      | 25                 | 5           |
| HZ11A2 | 9.7                         | 10.1     | 5           | 1                       | 7.5      | 25                 | 5           |
| HZ11A3 | 9.9                         | 10.3     | 5           | 1                       | 7.5      | 25                 | 5           |
| HZ11B1 | 10.2                        | 10.6     | 5           | 1                       | 7.5      | 25                 | 5           |
| HZ11B2 | 10.4                        | 10.8     | 5           | 1                       | 7.5      | 25                 | 5           |
| HZ11B3 | 10.7                        | 11.1     | 5           | 1                       | 7.5      | 25                 | 5           |
| HZ11C1 | 10.9                        | 11.3     | 5           | 1                       | 7.5      | 25                 | 5           |
| HZ11C2 | 11.1                        | 11.6     | 5           | 1                       | 7.5      | 25                 | 5           |
| HZ11C3 | 11.4                        | 11.9     | 5           | 1                       | 7.5      | 25                 | 5           |



# HZ Series

Characteristics at  $T_a = 25\text{ °C}$  ( $V_F = 1\text{ V Max. at } I_F = 100\text{ mA}$ )

| Type   | Zener Voltage <sup>1)</sup> |          |             | Reverse Leakage Current |          | Dynamic Resistance |             |
|--------|-----------------------------|----------|-------------|-------------------------|----------|--------------------|-------------|
|        | $V_Z$                       |          | at $I_{ZT}$ | $I_R$                   | at $V_R$ | $Z_{ZT}$           | at $I_{ZT}$ |
|        | Min. (V)                    | Max. (V) | (mA)        | Max. ( $\mu\text{A}$ )  | (V)      | Max. ( $\Omega$ )  | (mA)        |
| HZ12A1 | 11.6                        | 12.1     | 5           | 1                       | 9.5      | 35                 | 5           |
| HZ12A2 | 11.9                        | 12.4     | 5           | 1                       | 9.5      | 35                 | 5           |
| HZ12A3 | 12.2                        | 12.7     | 5           | 1                       | 9.5      | 35                 | 5           |
| HZ12B1 | 12.4                        | 12.9     | 5           | 1                       | 9.5      | 35                 | 5           |
| HZ12B2 | 12.6                        | 13.1     | 5           | 1                       | 9.5      | 35                 | 5           |
| HZ12B3 | 12.9                        | 13.4     | 5           | 1                       | 9.5      | 35                 | 5           |
| HZ12C1 | 13.2                        | 13.7     | 5           | 1                       | 9.5      | 35                 | 5           |
| HZ12C2 | 13.5                        | 14       | 5           | 1                       | 9.5      | 35                 | 5           |
| HZ12C3 | 13.8                        | 14.3     | 5           | 1                       | 9.5      | 35                 | 5           |
| HZ15-1 | 14.1                        | 14.7     | 5           | 1                       | 11       | 40                 | 5           |
| HZ15-2 | 14.5                        | 15.1     | 5           | 1                       | 11       | 40                 | 5           |
| HZ15-3 | 14.9                        | 15.5     | 5           | 1                       | 11       | 40                 | 5           |
| HZ16-1 | 15.3                        | 15.9     | 5           | 1                       | 12       | 45                 | 5           |
| HZ16-2 | 15.7                        | 16.5     | 5           | 1                       | 12       | 45                 | 5           |
| HZ16-3 | 16.3                        | 17.1     | 5           | 1                       | 12       | 45                 | 5           |
| HZ18-1 | 16.9                        | 17.7     | 5           | 1                       | 13       | 55                 | 5           |
| HZ18-2 | 17.5                        | 18.3     | 5           | 1                       | 13       | 55                 | 5           |
| HZ18-3 | 18.1                        | 19       | 5           | 1                       | 13       | 55                 | 5           |
| HZ20-1 | 18.8                        | 19.7     | 2           | 1                       | 15       | 60                 | 2           |
| HZ20-2 | 19.5                        | 20.4     | 2           | 1                       | 15       | 60                 | 2           |
| HZ20-3 | 20.2                        | 21.1     | 2           | 1                       | 15       | 60                 | 2           |
| HZ22-1 | 20.9                        | 21.9     | 2           | 1                       | 17       | 65                 | 2           |
| HZ22-2 | 21.6                        | 22.6     | 2           | 1                       | 17       | 65                 | 2           |
| HZ22-3 | 22.3                        | 23.3     | 2           | 1                       | 17       | 65                 | 2           |
| HZ24-1 | 22.9                        | 24       | 2           | 1                       | 19       | 70                 | 2           |
| HZ24-2 | 23.6                        | 24.7     | 2           | 1                       | 19       | 70                 | 2           |
| HZ24-3 | 24.3                        | 25.5     | 2           | 1                       | 19       | 70                 | 2           |
| HZ27-1 | 25.2                        | 26.6     | 2           | 1                       | 21       | 80                 | 2           |
| HZ27-2 | 26.2                        | 27.6     | 2           | 1                       | 21       | 80                 | 2           |
| HZ27-3 | 27.2                        | 28.6     | 2           | 1                       | 21       | 80                 | 2           |
| HZ30-1 | 28.2                        | 29.6     | 2           | 1                       | 23       | 100                | 2           |
| HZ30-2 | 29.2                        | 30.6     | 2           | 1                       | 23       | 100                | 2           |
| HZ30-3 | 30.2                        | 31.6     | 2           | 1                       | 23       | 100                | 2           |
| HZ33-1 | 31.2                        | 32.6     | 2           | 1                       | 25       | 120                | 2           |
| HZ33-2 | 32.2                        | 33.6     | 2           | 1                       | 25       | 120                | 2           |
| HZ33-3 | 33.2                        | 34.6     | 2           | 1                       | 25       | 120                | 2           |
| HZ36-1 | 34.2                        | 35.7     | 2           | 1                       | 27       | 140                | 2           |
| HZ36-2 | 35.3                        | 36.8     | 2           | 1                       | 27       | 140                | 2           |
| HZ36-3 | 36.4                        | 38       | 2           | 1                       | 27       | 140                | 2           |

<sup>1)</sup> Tested with pulses  $t_p = 20\text{ ms}$ .



# HZ Series

Fig.1- Zener current versus zener voltage

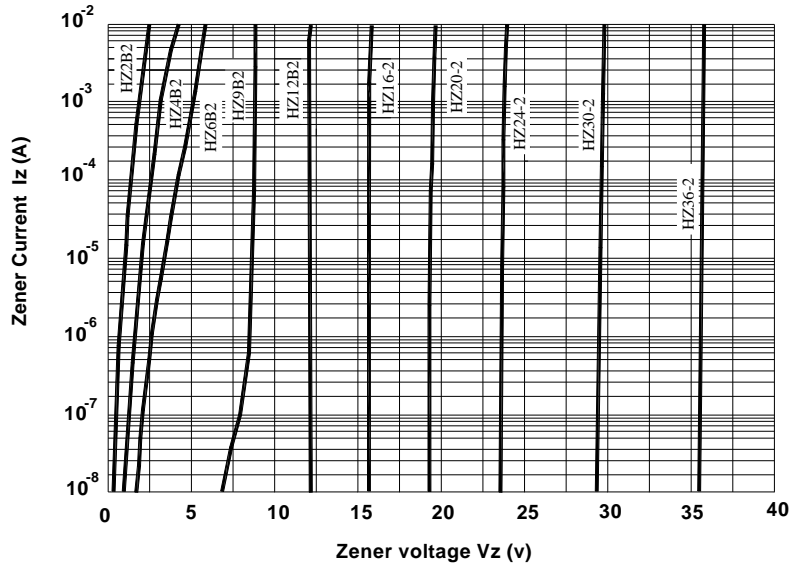


Fig.2 Temperature Coefficient Vs. Zener voltage

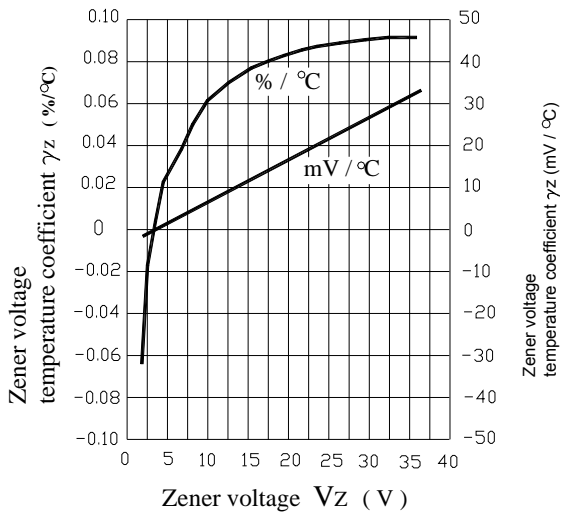
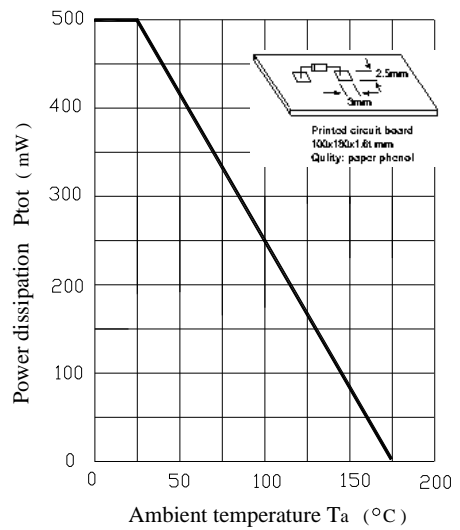


Fig. 3 Power dissipation Vs. Ambient temperature



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