

HITACHI/(OPTOELECTRONICS)

## Appendix E 1W Zener Diodes 1N4728 through 1N4753

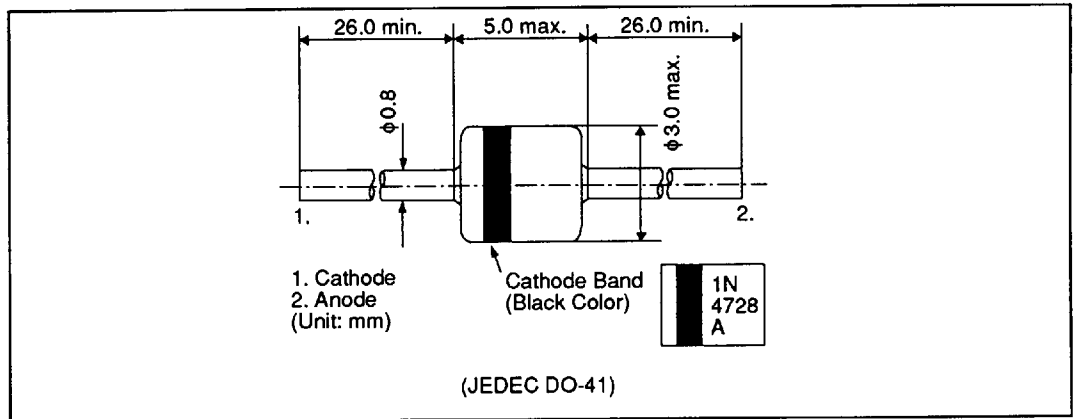
### E.1 General Description

Hitachi 1W zener diode series 1N4728 through 1N4753 are specially designed for stabilized power supply, clipper, limiter, and surge absorber applications.

These devices are available in modified DO-41 glass packages, and assure high reliability.

**Table E-1 Maximum Ratings ( $T_a = 25^\circ\text{C}$ )**

| Item                         | Symbol     | Rating                         | Unit             |
|------------------------------|------------|--------------------------------|------------------|
| Power Dissipation            | $P_d$      | 1.0                            | W                |
| Maximum Junction Temperature | $T_j$      | 175                            | $^\circ\text{C}$ |
| Operating Temperature        | $T_{oper}$ | -55 to +175                    | $^\circ\text{C}$ |
| Storage Temperature          | $T_{stg}$  | -55 to +175                    | $^\circ\text{C}$ |
| Continuous Reverse Current   | $I_{zM}$   | See Electrical Characteristics |                  |



HITACHI/(OPTOELECTRONICS)

Table E-2 Electrical Characteristics ( $T_a = 25^\circ\text{C}$ )

| Type   | Nominal Zener Voltage $V_Z$ (V) | Test Current $I_{ZT}$ (mA) | Maximum Reverse Leakage |           | Maximum Zener Impedance          |               |                                  | $I_{ZM}$ (mA) | $I_{ZSM}$ $T_p = 10$ ms (mA) |
|--------|---------------------------------|----------------------------|-------------------------|-----------|----------------------------------|---------------|----------------------------------|---------------|------------------------------|
|        |                                 |                            | $I_R$ ( $\mu\text{A}$ ) | $V_R$ (V) | $Z_{ZT}$ @ $I_{ZT}$ ( $\Omega$ ) | $I_{ZK}$ (mA) | $Z_{ZK}$ @ $I_{ZK}$ ( $\Omega$ ) |               |                              |
| 1N4728 | 3.3                             | 76                         | 100                     | 1         | 10                               | 1             | 400                              | 276           | 2800                         |
| 1N4729 | 3.6                             | 69                         | 100                     | 1         | 10                               | 1             | 400                              | 252           | 2660                         |
| 1N4730 | 3.9                             | 64                         | 50                      | 1         | 9                                | 1             | 400                              | 234           | 2540                         |
| 1N4731 | 4.3                             | 58                         | 10                      | 1         | 9                                | 1             | 400                              | 217           | 2440                         |
| 1N4732 | 4.7                             | 53                         | 10                      | 1         | 8                                | 1             | 500                              | 193           | 2320                         |
| 1N4733 | 5.1                             | 49                         | 10                      | 1         | 7                                | 1             | 550                              | 178           | 2200                         |
| 1N4734 | 5.6                             | 45                         | 10                      | 2         | 5                                | 1             | 600                              | 162           | 2080                         |
| 1N4735 | 6.2                             | 41                         | 10                      | 3         | 2                                | 1             | 700                              | 146           | 1960                         |
| 1N4736 | 6.8                             | 37                         | 10                      | 4         | 3.5                              | 1             | 700                              | 133           | 1800                         |
| 1N4737 | 7.5                             | 34                         | 10                      | 5         | 4                                | 0.5           | 700                              | 121           | 1620                         |
| 1N4738 | 8.2                             | 31                         | 10                      | 6         | 4.5                              | 0.5           | 700                              | 110           | 1520                         |
| 1N4739 | 9.1                             | 28                         | 10                      | 7         | 5                                | 0.5           | 700                              | 100           | 1340                         |
| 1N4740 | 10                              | 25                         | 10                      | 7.6       | 7                                | 0.25          | 700                              | 91            | 1200                         |
| 1N4741 | 11                              | 23                         | 5                       | 8.4       | 8                                | 0.25          | 700                              | 83            | 1100                         |
| 1N4742 | 12                              | 21                         | 5                       | 9.1       | 9                                | 0.25          | 700                              | 76            | 1000                         |
| 1N4743 | 13                              | 19                         | 5                       | 9.9       | 10                               | 0.25          | 700                              | 69            | 900                          |
| 1N4744 | 15                              | 17                         | 5                       | 11.4      | 14                               | 0.25          | 700                              | 61            | 760                          |
| 1N4745 | 16                              | 15.5                       | 5                       | 12.2      | 16                               | 0.25          | 700                              | 57            | 700                          |
| 1N4746 | 18                              | 14.0                       | 5                       | 13.7      | 20                               | 0.25          | 750                              | 50            | 600                          |
| 1N4747 | 20                              | 12.5                       | 5                       | 15.2      | 22                               | 0.25          | 750                              | 45            | 540                          |
| 1N4748 | 22                              | 11.5                       | 5                       | 16.7      | 23                               | 0.25          | 750                              | 41            | 500                          |
| 1N4749 | 24                              | 10.5                       | 5                       | 18.2      | 25                               | 0.25          | 750                              | 38            | 450                          |
| 1N4750 | 27                              | 9.5                        | 5                       | 20.6      | 35                               | 0.25          | 750                              | 34            | 400                          |
| 1N4751 | 30                              | 8.5                        | 5                       | 22.8      | 40                               | 0.25          | 1000                             | 30            | 380                          |

HITACHI/(OPTOELECTRONICS)

Table E-2 Electrical Characteristics ( $T_a = 25^\circ\text{C}$ ) (cont)

| Type   | Nominal<br>Zener<br>Voltage<br>$V_Z$ (V) | Test<br>Current<br>$I_{ZT}$ (mA) | Maximum<br>Reverse<br>Leakage |           | Maximum<br>Zener Impedance          |               |                                     | $I_{ZM}$ (mA) | $I_{ZSM}$<br>$T_p =$<br>10 ms<br>(mA) |
|--------|--|----------------------------------|-------------------------------|-----------|-------------------------------------|---------------|-------------------------------------|---------------|---------------------------------------|
|        |  |                                  | $I_R$ ( $\mu\text{A}$ )       | $V_R$ (V) | $Z_{ZT}$<br>@ $I_{ZT}$ ( $\Omega$ ) | $I_{ZK}$ (mA) | $Z_{ZK}$<br>@ $I_{ZK}$ ( $\Omega$ ) |               |                                       |
| 1N4752 | 33                                       | 7.5                              | 5                             | 25.1      | 45                                  | 0.25          | 1000                                | 27            | 350                                   |
| 1N4753 | 36                                       | 7.0                              | 5                             | 27.4      | 50                                  | 0.25          | 1000                                | 25            | 320                                   |

Note: Tolerance designation:

Units with guaranteed limits are indicated by no suffix for  $\pm 10\%$  tolerance, suffix A for  $\pm 5\%$ .