

TOSHIBA Diode Silicon Epitaxial Planar Type

## 015AZ2.0~015AZ24

### Constant-Voltage Regulation Applications

- Small package
- Nominal voltage tolerance of about  $\pm 2.5\%$   
(2.0 V~24 V)

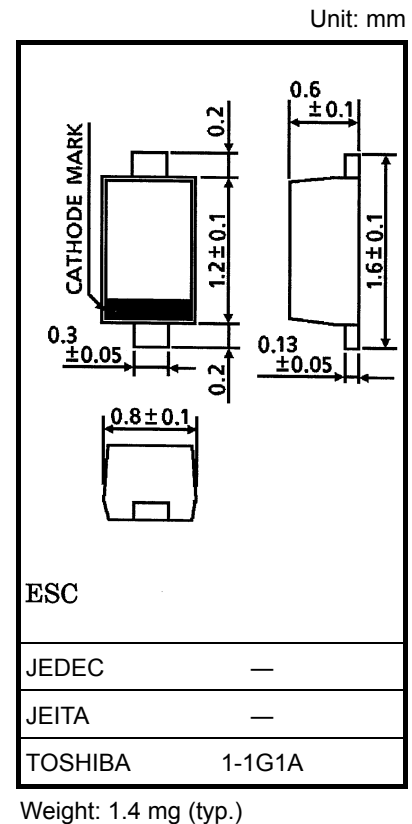
### Absolute Maximum Ratings (Ta = 25°C)

| Characteristic            | Symbol           | Rating  | Unit |
|---------------------------|------------------|---------|------|
| Power dissipation         | P*               | 150     | mW   |
| Junction temperature      | T <sub>j</sub>   | 125     | °C   |
| Storage temperature range | T <sub>stg</sub> | -55~125 | °C   |

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

\* Mounted on a glass-epoxy circuit board of 20 × 20 mm,  
Pad dimensions of 4 × 4 mm.

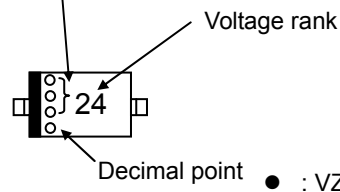


### Electrical Characteristics

(See pages 2~3.)

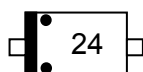
### Marking

VZ additional ranking  
upper --- X rank, middle --- Y rank, lower --- Z rank



● : VZ = (VZ ranking voltage) X 0.1, nil: VZ = VZ ranking

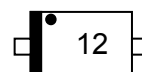
Example 1: 015AZ2.4-X



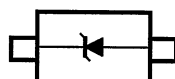
Example 2: 015AZ2.4-Z



Example 3: 015AZ12-X



### Pin Assignment (Top View)



## Electrical Characteristics (Ta = 25°C)

| Type No.    |   | Zener Voltage        |      |                     | Dynamic Impedance  |                     | Knee Dynamic Impedance |                     | Reverse Current     |                    |
|-------------|---|----------------------|------|---------------------|--------------------|---------------------|------------------------|---------------------|---------------------|--------------------|
|             |   | * V <sub>Z</sub> (V) |      | I <sub>Z</sub> (mA) | Z <sub>Z</sub> (Ω) | I <sub>Z</sub> (mA) | Z <sub>ZK</sub> (Ω)    | I <sub>Z</sub> (mA) | I <sub>R</sub> (μA) | V <sub>R</sub> (V) |
|             |   | Min                  | Max  |                     | Max                |                     | Max                    |                     | Max                 |                    |
| 015AZ2.0 ** | X | 1.85                 | 2.05 | 5                   | 100                | 5                   | 1000                   | 0.5                 | 120                 | 0.5                |
|             | Z | 1.95                 | 2.15 |                     |                    |                     |                        |                     |                     |                    |
| 015AZ2.2 ** | X | 2.05                 | 2.26 | 5                   | 100                | 5                   | 1000                   | 0.5                 | 120                 | 1.0                |
|             | Z | 2.16                 | 2.38 |                     |                    |                     |                        |                     |                     |                    |
| 015AZ2.4    | X | 2.28                 | 2.50 | 5                   | 100                | 5                   | 1000                   | 0.5                 | 120                 | 1.0                |
|             | Z | 2.40                 | 2.60 |                     |                    |                     |                        |                     |                     |                    |
| 015AZ2.7    | X | 2.50                 | 2.75 | 5                   | 110                | 5                   | 1000                   | 0.5                 | 120                 | 1.0                |
|             | Z | 2.65                 | 2.90 |                     |                    |                     |                        |                     |                     |                    |
| 015AZ3.0    | X | 2.80                 | 3.05 | 5                   | 120                | 5                   | 1000                   | 0.5                 | 50                  | 1.0                |
|             | Z | 2.95                 | 3.20 |                     |                    |                     |                        |                     |                     |                    |
| 015AZ3.3    | X | 3.10                 | 3.35 | 5                   | 130                | 5                   | 1000                   | 0.5                 | 20                  | 1.0                |
|             | Z | 3.25                 | 3.50 |                     |                    |                     |                        |                     |                     |                    |
| 015AZ3.6    | X | 3.40                 | 3.65 | 5                   | 130                | 5                   | 1000                   | 0.5                 | 10                  | 1.0                |
|             | Z | 3.55                 | 3.80 |                     |                    |                     |                        |                     |                     |                    |
| 015AZ3.9    | X | 3.70                 | 3.97 | 5                   | 130                | 5                   | 1000                   | 0.5                 | 10                  | 1.0                |
|             | Z | 3.87                 | 4.10 |                     |                    |                     |                        |                     |                     |                    |
| 015AZ4.3    | X | 4.00                 | 4.23 | 5                   | 130                | 5                   | 1000                   | 0.5                 | 5                   | 1.0                |
|             | Y | 4.13                 | 4.35 |                     |                    |                     |                        |                     |                     |                    |
|             | Z | 4.25                 | 4.50 |                     |                    |                     |                        |                     |                     |                    |
| 015AZ4.7    | X | 4.40                 | 4.63 | 5                   | 120                | 5                   | 1000                   | 0.5                 | 5                   | 1.0                |
|             | Y | 4.53                 | 4.76 |                     |                    |                     |                        |                     |                     |                    |
|             | Z | 4.66                 | 4.90 |                     |                    |                     |                        |                     |                     |                    |
| 015AZ5.1    | X | 4.80                 | 5.07 | 5                   | 70                 | 5                   | 1000                   | 0.5                 | 1                   | 1.5                |
|             | Y | 4.97                 | 5.24 |                     |                    |                     |                        |                     |                     |                    |
|             | Z | 5.14                 | 5.40 |                     |                    |                     |                        |                     |                     |                    |
| 015AZ5.6    | X | 5.30                 | 5.63 | 5                   | 40                 | 5                   | 900                    | 0.5                 | 1                   | 2.5                |
|             | Y | 5.43                 | 5.81 |                     |                    |                     |                        |                     |                     |                    |
|             | Z | 5.61                 | 6.00 |                     |                    |                     |                        |                     |                     |                    |
| 015AZ6.2    | X | 5.80                 | 6.20 | 5                   | 30                 | 5                   | 500                    | 0.5                 | 1                   | 3.0                |
|             | Y | 6.00                 | 6.39 |                     |                    |                     |                        |                     |                     |                    |
|             | Z | 6.19                 | 6.60 |                     |                    |                     |                        |                     |                     |                    |
| 015AZ6.8    | X | 6.40                 | 6.80 | 5                   | 25                 | 5                   | 150                    | 0.5                 | 0.5                 | 5.0                |
|             | Y | 6.60                 | 7.02 |                     |                    |                     |                        |                     |                     |                    |
|             | Z | 6.82                 | 7.20 |                     |                    |                     |                        |                     |                     |                    |

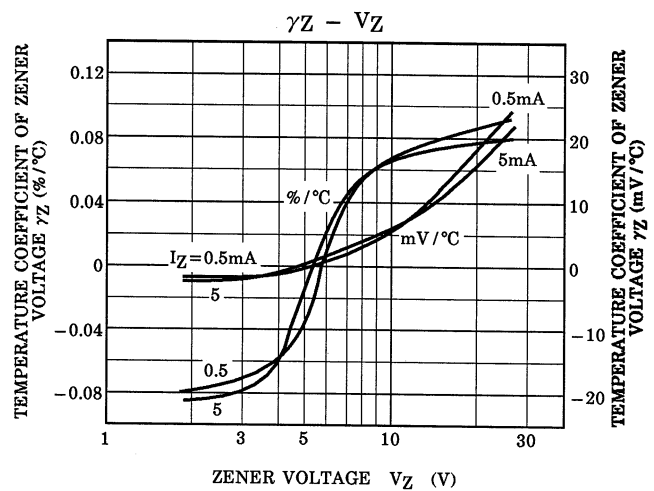
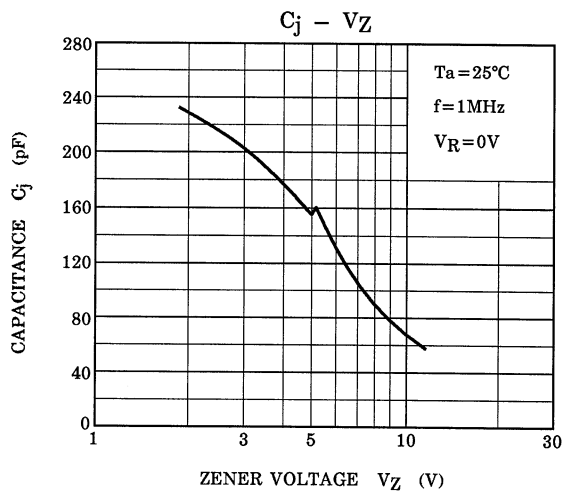
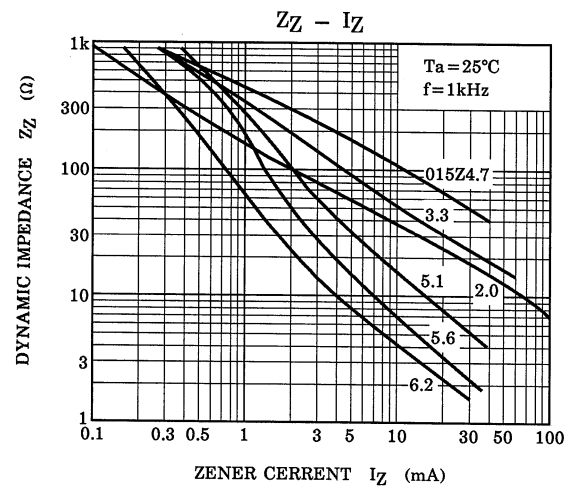
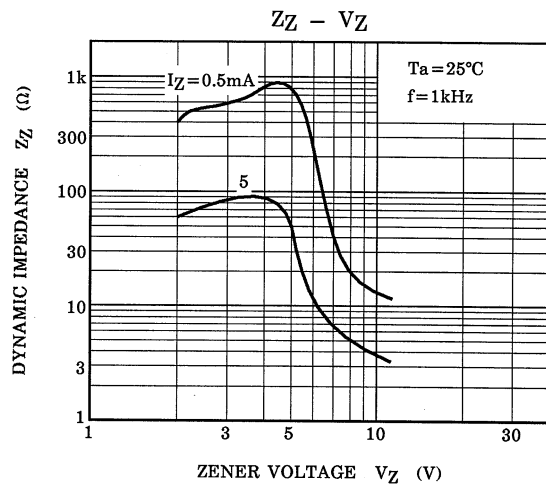
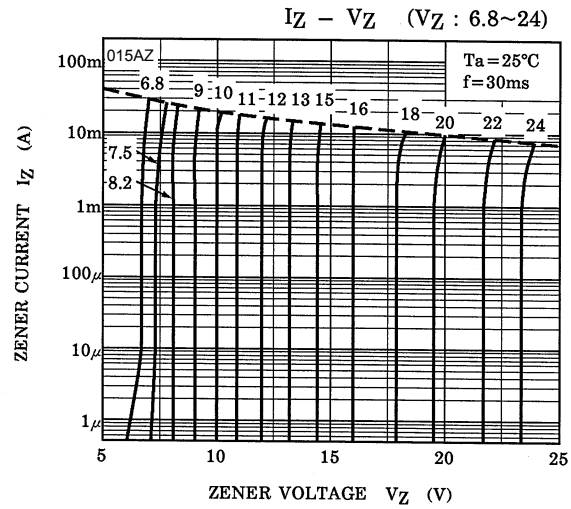
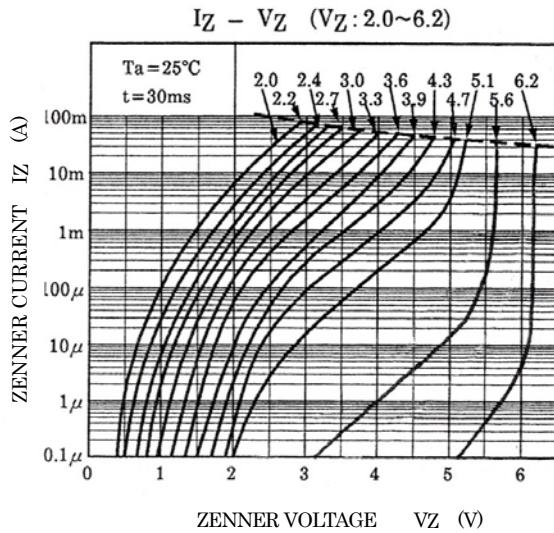
\* : Test time: t = 30 ms

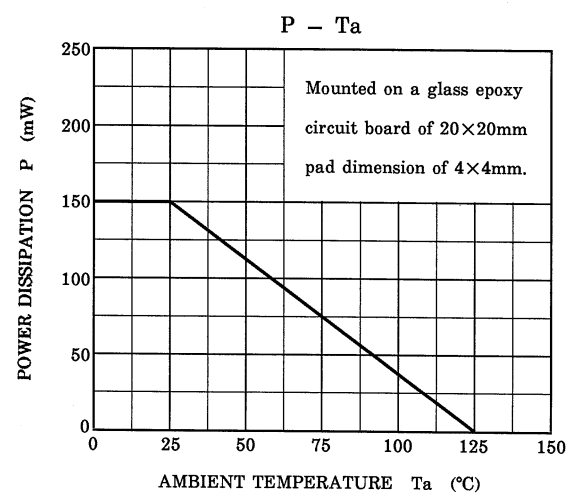
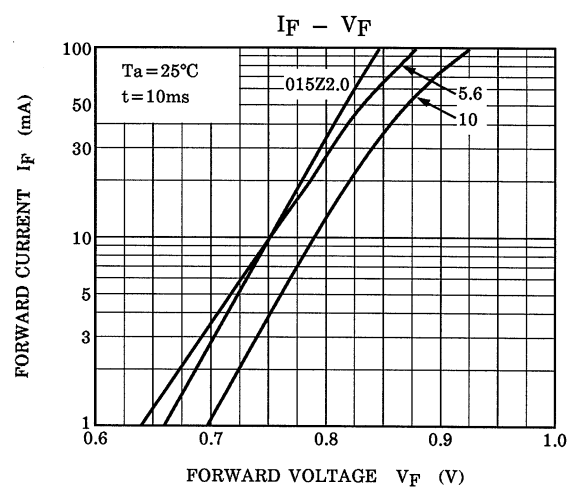
\*\* : Product by order.

## Electrical Characteristics (Ta = 25°C)

| Type No. |   | Zener Voltage        |       | I <sub>Z</sub><br>(mA) | Dynamic Impedance  |                        | Knee Dynamic Impedance |                        | Reverse Current     |                       |
|----------|---|----------------------|-------|------------------------|--------------------|------------------------|------------------------|------------------------|---------------------|-----------------------|
|          |   | * V <sub>Z</sub> (V) |       |                        | Z <sub>Z</sub> (Ω) | I <sub>Z</sub><br>(mA) | Z <sub>ZK</sub> (Ω)    | I <sub>Z</sub><br>(mA) | I <sub>R</sub> (μA) | V <sub>R</sub><br>(V) |
|          |   | Min                  | Max   |                        | Max                |                        | Max                    |                        | Max                 |                       |
| 015AZ7.5 | X | 7.00                 | 7.43  | 5                      | 23                 | 5                      | 120                    | 0.5                    | 0.5                 | 6.0                   |
|          | Y | 7.23                 | 7.66  |                        |                    |                        |                        |                        |                     |                       |
|          | Z | 7.46                 | 7.90  |                        |                    |                        |                        |                        |                     |                       |
| 015AZ8.2 | X | 7.70                 | 8.16  | 5                      | 20                 | 5                      | 120                    | 0.5                    | 0.5                 | 6.5                   |
|          | Y | 7.96                 | 8.43  |                        |                    |                        |                        |                        |                     |                       |
|          | Z | 8.23                 | 8.70  |                        |                    |                        |                        |                        |                     |                       |
| 015AZ9.1 | X | 8.50                 | 9.00  | 5                      | 18                 | 5                      | 120                    | 0.5                    | 0.5                 | 7.0                   |
|          | Y | 8.80                 | 9.30  |                        |                    |                        |                        |                        |                     |                       |
|          | Z | 9.10                 | 9.60  |                        |                    |                        |                        |                        |                     |                       |
| 015AZ10  | X | 9.40                 | 9.93  | 5                      | 15                 | 5                      | 120                    | 0.5                    | 0.5                 | 8.0                   |
|          | Y | 9.73                 | 10.26 |                        |                    |                        |                        |                        |                     |                       |
|          | Z | 10.06                | 10.60 |                        |                    |                        |                        |                        |                     |                       |
| 015AZ11  | X | 10.40                | 10.98 | 5                      | 15                 | 5                      | 120                    | 0.5                    | 0.5                 | 8.5                   |
|          | Y | 10.73                | 11.26 |                        |                    |                        |                        |                        |                     |                       |
|          | Z | 11.06                | 11.60 |                        |                    |                        |                        |                        |                     |                       |
| 015AZ12  | X | 11.40                | 11.93 | 5                      | 15                 | 5                      | 110                    | 0.5                    | 0.5                 | 9.0                   |
|          | Y | 11.73                | 12.26 |                        |                    |                        |                        |                        |                     |                       |
|          | Z | 12.06                | 12.60 |                        |                    |                        |                        |                        |                     |                       |
| 015AZ13  | X | 12.40                | 13.08 | 5                      | 15                 | 5                      | 110                    | 0.5                    | 0.5                 | 10                    |
|          | Y | 12.88                | 13.57 |                        |                    |                        |                        |                        |                     |                       |
|          | Z | 13.37                | 14.10 |                        |                    |                        |                        |                        |                     |                       |
| 015AZ15  | X | 13.80                | 14.63 | 5                      | 15                 | 5                      | 110                    | 0.5                    | 0.5                 | 11                    |
|          | Y | 14.33                | 15.11 |                        |                    |                        |                        |                        |                     |                       |
|          | Z | 14.81                | 15.60 |                        |                    |                        |                        |                        |                     |                       |
| 015AZ16  | X | 15.30                | 16.10 | 5                      | 18                 | 5                      | 150                    | 0.5                    | 0.5                 | 12                    |
|          | Y | 15.80                | 16.60 |                        |                    |                        |                        |                        |                     |                       |
|          | Z | 16.30                | 17.10 |                        |                    |                        |                        |                        |                     |                       |
| 015AZ18  | X | 16.80                | 17.76 | 5                      | 20                 | 5                      | 150                    | 0.5                    | 0.5                 | 14                    |
|          | Y | 17.46                | 18.43 |                        |                    |                        |                        |                        |                     |                       |
|          | Z | 18.13                | 19.10 |                        |                    |                        |                        |                        |                     |                       |
| 015AZ20  | X | 18.80                | 19.78 | 5                      | 25                 | 5                      | 200                    | 0.5                    | 0.5                 | 15                    |
|          | Y | 19.48                | 20.46 |                        |                    |                        |                        |                        |                     |                       |
|          | Z | 20.16                | 21.20 |                        |                    |                        |                        |                        |                     |                       |
| 015AZ22  | X | 20.80                | 21.88 | 5                      | 30                 | 5                      | 200                    | 0.5                    | 0.5                 | 17                    |
|          | Y | 21.48                | 22.56 |                        |                    |                        |                        |                        |                     |                       |
|          | Z | 22.16                | 23.30 |                        |                    |                        |                        |                        |                     |                       |
| 015AZ24  | X | 22.80                | 24.11 | 5                      | 40                 | 5                      | 200                    | 0.5                    | 0.5                 | 19                    |
|          | Y | 23.61                | 24.92 |                        |                    |                        |                        |                        |                     |                       |
|          | Z | 24.42                | 25.60 |                        |                    |                        |                        |                        |                     |                       |

\* : Test time: t = 30 ms





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