

# BZT-RLZ Series

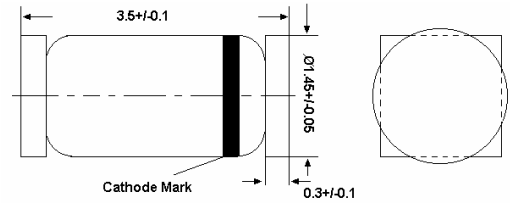
## SILICON EPITAXIAL PLANAR ZENER DIODES

Constant Voltage Control Applications

### Features

- Small surface mounting type
- High reliability

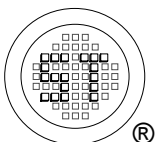
LS-34



**QuadromELF**  
Dimensions in mm

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

| Parameter                 | Symbol | Value         | Unit             |
|---------------------------|--------|---------------|------------------|
| Power Dissipation         | $P_D$  | 500           | mW               |
| Junction Temperature      | $T_j$  | 175           | $^\circ\text{C}$ |
| Storage Temperature Range | $T_s$  | - 65 to + 175 | $^\circ\text{C}$ |



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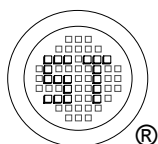


Dated : 10/07/2006

# BZT-RLZ Series

## Characteristics at $T_a = 25\text{ }^\circ\text{C}$

| Type        | Zener Voltage <sup>1)</sup> |       |            | Operating Resistance |            | Rising Operating Resistance |            | Reverse Current         |           |
|-------------|-----------------------------|-------|------------|----------------------|------------|-----------------------------|------------|-------------------------|-----------|
|             | $V_Z$ (V)                   |       |            | $Z_Z$ ( $\Omega$ )   |            | $Z_{ZK}$ ( $\Omega$ )       |            | $I_R$ ( $\mu\text{A}$ ) |           |
|             | Min.                        | Max.  | $I_Z$ (mA) | Max.                 | $I_Z$ (mA) | Max.                        | $I_Z$ (mA) | Max.                    | $V_R$ (V) |
| BZT-RLZ2V2A | 2.12                        | 2.3   | 20         | 120                  | 20         | 2000                        | 1          | 120                     | 0.7       |
| BZT-RLZ2V2B | 2.22                        | 2.41  | 20         | 120                  | 20         | 2000                        | 1          | 120                     | 0.7       |
| BZT-RLZ2V4A | 2.33                        | 2.52  | 20         | 100                  | 20         | 2000                        | 1          | 120                     | 1         |
| BZT-RLZ2V4B | 2.43                        | 2.63  | 20         | 100                  | 20         | 2000                        | 1          | 120                     | 1         |
| BZT-RLZ2V7A | 2.54                        | 2.75  | 20         | 100                  | 20         | 1000                        | 1          | 100                     | 1         |
| BZT-RLZ2V7B | 2.69                        | 2.91  | 20         | 100                  | 20         | 1000                        | 1          | 100                     | 1         |
| BZT-RLZ3V0A | 2.85                        | 3.07  | 20         | 80                   | 20         | 1000                        | 1          | 50                      | 1         |
| BZT-RLZ3V0B | 3.01                        | 3.22  | 20         | 80                   | 20         | 1000                        | 1          | 50                      | 1         |
| BZT-RLZ3V3A | 3.16                        | 3.38  | 20         | 70                   | 20         | 1000                        | 1          | 20                      | 1         |
| BZT-RLZ3V3B | 3.32                        | 3.53  | 20         | 70                   | 20         | 1000                        | 1          | 20                      | 1         |
| BZT-RLZ3V6  | 3.4                         | 3.8   | 20         | 60                   | 20         | 1000                        | 1          | 10                      | 1         |
| BZT-RLZ3V6A | 3.455                       | 3.695 | 20         | 60                   | 20         | 1000                        | 1          | 10                      | 1         |
| BZT-RLZ3V6B | 3.6                         | 3.845 | 20         | 60                   | 20         | 1000                        | 1          | 10                      | 1         |
| BZT-RLZ3V9  | 3.7                         | 4.1   | 20         | 50                   | 20         | 1000                        | 1          | 5                       | 1         |
| BZT-RLZ3V9A | 3.74                        | 4.01  | 20         | 50                   | 20         | 1000                        | 1          | 5                       | 1         |
| BZT-RLZ3V9B | 3.89                        | 4.16  | 20         | 50                   | 20         | 1000                        | 1          | 5                       | 1         |
| BZT-RLZ4V3  | 4                           | 4.5   | 20         | 40                   | 20         | 1000                        | 1          | 5                       | 1         |
| BZT-RLZ4V3A | 4.04                        | 4.29  | 20         | 40                   | 20         | 1000                        | 1          | 5                       | 1         |
| BZT-RLZ4V3B | 4.17                        | 4.43  | 20         | 40                   | 20         | 1000                        | 1          | 5                       | 1         |
| BZT-RLZ4V3C | 4.3                         | 4.57  | 20         | 40                   | 20         | 1000                        | 1          | 5                       | 1         |
| BZT-RLZ4V7  | 4.4                         | 4.9   | 20         | 25                   | 20         | 900                         | 1          | 5                       | 1         |
| BZT-RLZ4V7A | 4.44                        | 4.68  | 20         | 25                   | 20         | 900                         | 1          | 5                       | 1         |
| BZT-RLZ4V7B | 4.55                        | 4.8   | 20         | 25                   | 20         | 900                         | 1          | 5                       | 1         |
| BZT-RLZ4V7C | 4.68                        | 4.93  | 20         | 25                   | 20         | 900                         | 1          | 5                       | 1         |
| BZT-RLZ5V1  | 4.8                         | 5.4   | 20         | 20                   | 20         | 800                         | 1          | 5                       | 1.5       |
| BZT-RLZ5V1A | 4.81                        | 5.07  | 20         | 20                   | 20         | 800                         | 1          | 5                       | 1.5       |
| BZT-RLZ5V1B | 4.94                        | 5.2   | 20         | 20                   | 20         | 800                         | 1          | 5                       | 1.5       |
| BZT-RLZ5V1C | 5.09                        | 5.37  | 20         | 20                   | 20         | 800                         | 1          | 5                       | 1.5       |
| BZT-RLZ5V6  | 5.3                         | 6     | 20         | 13                   | 20         | 500                         | 1          | 5                       | 2.5       |
| BZT-RLZ5V6A | 5.28                        | 5.55  | 20         | 13                   | 20         | 500                         | 1          | 5                       | 2.5       |
| BZT-RLZ5V6B | 5.45                        | 5.73  | 20         | 13                   | 20         | 500                         | 1          | 5                       | 2.5       |
| BZT-RLZ5V6C | 5.61                        | 5.91  | 20         | 13                   | 20         | 500                         | 1          | 5                       | 2.5       |
| BZT-RLZ6V2  | 5.8                         | 6.6   | 20         | 10                   | 20         | 300                         | 1          | 5                       | 3         |
| BZT-RLZ6V2A | 5.78                        | 6.09  | 20         | 10                   | 20         | 300                         | 1          | 5                       | 3         |
| BZT-RLZ6V2B | 5.96                        | 6.27  | 20         | 10                   | 20         | 300                         | 1          | 5                       | 3         |
| BZT-RLZ6V2C | 6.12                        | 6.44  | 20         | 10                   | 20         | 300                         | 1          | 5                       | 3         |
| BZT-RLZ6V8  | 6.4                         | 7.2   | 20         | 8                    | 20         | 150                         | 0.5        | 2                       | 3.5       |



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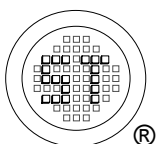
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 ISO 14001:2004 Certificate No. 7116  
 ISO 9001:2000 Certificate No. 0506098

Dated : 10/07/2006

# BZT-RLZ Series

## Characteristics at $T_a = 25\text{ }^\circ\text{C}$

| Type        | Zener Voltage <sup>1)</sup> |       |            | Operating Resistance |            | Rising Operating Resistance |            | Reverse Current         |           |
|-------------|-----------------------------|-------|------------|----------------------|------------|-----------------------------|------------|-------------------------|-----------|
|             | $V_Z$ (V)                   |       |            | $Z_Z$ ( $\Omega$ )   |            | $Z_{ZK}$ ( $\Omega$ )       |            | $I_R$ ( $\mu\text{A}$ ) |           |
|             | Min.                        | Max.  | $I_Z$ (mA) | Max.                 | $I_Z$ (mA) | Max.                        | $I_Z$ (mA) | Max.                    | $V_R$ (V) |
| BZT-RLZ6V8A | 6.29                        | 6.63  | 20         | 8                    | 20         | 150                         | 0.5        | 2                       | 3.5       |
| BZT-RLZ6V8B | 6.49                        | 6.83  | 20         | 8                    | 20         | 150                         | 0.5        | 2                       | 3.5       |
| BZT-RLZ6V8C | 6.66                        | 7.01  | 20         | 8                    | 20         | 150                         | 0.5        | 2                       | 3.5       |
| BZT-RLZ7V5  | 7                           | 7.9   | 20         | 8                    | 20         | 120                         | 0.5        | 0.5                     | 4         |
| BZT-RLZ7V5A | 6.85                        | 7.22  | 20         | 8                    | 20         | 120                         | 0.5        | 0.5                     | 4         |
| BZT-RLZ7V5B | 7.07                        | 7.45  | 20         | 8                    | 20         | 120                         | 0.5        | 0.5                     | 4         |
| BZT-RLZ7V5C | 7.29                        | 7.67  | 20         | 8                    | 20         | 120                         | 0.5        | 0.5                     | 4         |
| BZT-RLZ8V2  | 7.7                         | 8.7   | 20         | 8                    | 20         | 120                         | 0.5        | 0.5                     | 5         |
| BZT-RLZ8V2A | 7.53                        | 7.92  | 20         | 8                    | 20         | 120                         | 0.5        | 0.5                     | 5         |
| BZT-RLZ8V2B | 7.78                        | 8.19  | 20         | 8                    | 20         | 120                         | 0.5        | 0.5                     | 5         |
| BZT-RLZ8V2C | 8.03                        | 8.45  | 20         | 8                    | 20         | 120                         | 0.5        | 0.5                     | 5         |
| BZT-RLZ9V1  | 8.5                         | 9.6   | 20         | 8                    | 20         | 120                         | 0.5        | 0.5                     | 6         |
| BZT-RLZ9V1A | 8.29                        | 8.73  | 20         | 8                    | 20         | 120                         | 0.5        | 0.5                     | 6         |
| BZT-RLZ9V1B | 8.57                        | 9.01  | 20         | 8                    | 20         | 120                         | 0.5        | 0.5                     | 6         |
| BZT-RLZ9V1C | 8.83                        | 9.3   | 20         | 8                    | 20         | 120                         | 0.5        | 0.5                     | 6         |
| BZT-RLZ10   | 9.4                         | 10.6  | 20         | 8                    | 20         | 120                         | 0.5        | 0.2                     | 7         |
| BZT-RLZ10A  | 9.12                        | 9.59  | 20         | 8                    | 20         | 120                         | 0.5        | 0.2                     | 7         |
| BZT-RLZ10B  | 9.41                        | 9.9   | 20         | 8                    | 20         | 120                         | 0.5        | 0.2                     | 7         |
| BZT-RLZ10C  | 9.7                         | 10.2  | 20         | 8                    | 20         | 120                         | 0.5        | 0.2                     | 7         |
| BZT-RLZ10D  | 9.94                        | 10.44 | 20         | 8                    | 20         | 120                         | 0.5        | 0.2                     | 7         |
| BZT-RLZ11   | 10.4                        | 11.6  | 10         | 10                   | 10         | 120                         | 0.5        | 0.2                     | 8         |
| BZT-RLZ11A  | 10.18                       | 10.71 | 10         | 10                   | 10         | 120                         | 0.5        | 0.2                     | 8         |
| BZT-RLZ11B  | 10.50                       | 11.05 | 10         | 10                   | 10         | 120                         | 0.5        | 0.2                     | 8         |
| BZT-RLZ11C  | 10.82                       | 11.38 | 10         | 10                   | 10         | 120                         | 0.5        | 0.2                     | 8         |
| BZT-RLZ12   | 11.4                        | 12.6  | 10         | 12                   | 10         | 110                         | 0.5        | 0.2                     | 9         |
| BZT-RLZ12A  | 11.13                       | 11.71 | 10         | 12                   | 10         | 110                         | 0.5        | 0.2                     | 9         |
| BZT-RLZ12B  | 11.44                       | 12.03 | 10         | 12                   | 10         | 110                         | 0.5        | 0.2                     | 9         |
| BZT-RLZ12C  | 11.74                       | 12.35 | 10         | 12                   | 10         | 110                         | 0.5        | 0.2                     | 9         |
| BZT-RLZ13   | 12.4                        | 14.1  | 10         | 14                   | 10         | 110                         | 0.5        | 0.2                     | 10        |
| BZT-RLZ13A  | 12.11                       | 12.75 | 10         | 14                   | 10         | 110                         | 0.5        | 0.2                     | 10        |
| BZT-RLZ13B  | 12.55                       | 13.21 | 10         | 14                   | 10         | 110                         | 0.5        | 0.2                     | 10        |
| BZT-RLZ13C  | 12.99                       | 13.66 | 10         | 14                   | 10         | 110                         | 0.5        | 0.2                     | 10        |
| BZT-RLZ15   | 13.8                        | 15.6  | 10         | 16                   | 10         | 110                         | 0.5        | 0.2                     | 11        |
| BZT-RLZ15A  | 13.44                       | 14.13 | 10         | 16                   | 10         | 110                         | 0.5        | 0.2                     | 11        |
| BZT-RLZ15B  | 13.89                       | 14.62 | 10         | 16                   | 10         | 110                         | 0.5        | 0.2                     | 11        |
| BZT-RLZ15C  | 14.35                       | 15.09 | 10         | 16                   | 10         | 110                         | 0.5        | 0.2                     | 11        |



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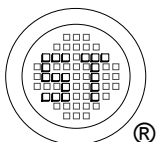
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Dated : 10/07/2006

# BZT-RLZ Series

## Characteristics at $T_a = 25\text{ }^\circ\text{C}$

| Type       | Zener Voltage <sup>1)</sup> |       |            | Operating Resistance |            | Rising Operating Resistance |            | Reverse Current         |           |
|------------|-----------------------------|-------|------------|----------------------|------------|-----------------------------|------------|-------------------------|-----------|
|            | $V_Z$ (V)                   |       |            | $Z_Z$ ( $\Omega$ )   |            | $Z_{ZK}$ ( $\Omega$ )       |            | $I_R$ ( $\mu\text{A}$ ) |           |
|            | Min.                        | Max.  | $I_Z$ (mA) | Max.                 | $I_Z$ (mA) | Max.                        | $I_Z$ (mA) | Max.                    | $V_R$ (V) |
| BZT-RLZ16  | 15.3                        | 17.1  | 10         | 18                   | 10         | 150                         | 0.5        | 0.2                     | 12        |
| BZT-RLZ16A | 14.8                        | 15.57 | 10         | 18                   | 10         | 150                         | 0.5        | 0.2                     | 12        |
| BZT-RLZ16B | 15.25                       | 16.04 | 10         | 18                   | 10         | 150                         | 0.5        | 0.2                     | 12        |
| BZT-RLZ16C | 15.69                       | 16.51 | 10         | 18                   | 10         | 150                         | 0.5        | 0.2                     | 12        |
| BZT-RLZ18  | 16.8                        | 19.1  | 10         | 23                   | 10         | 150                         | 0.5        | 0.2                     | 13        |
| BZT-RLZ18A | 16.22                       | 17.06 | 10         | 23                   | 10         | 150                         | 0.5        | 0.2                     | 13        |
| BZT-RLZ18B | 16.82                       | 17.7  | 10         | 23                   | 10         | 150                         | 0.5        | 0.2                     | 13        |
| BZT-RLZ18C | 17.42                       | 18.33 | 10         | 23                   | 10         | 150                         | 0.5        | 0.2                     | 13        |
| BZT-RLZ20  | 18.8                        | 21.2  | 10         | 28                   | 10         | 200                         | 0.5        | 0.2                     | 15        |
| BZT-RLZ20A | 18.02                       | 18.96 | 10         | 28                   | 10         | 200                         | 0.5        | 0.2                     | 15        |
| BZT-RLZ20B | 18.63                       | 19.59 | 10         | 28                   | 10         | 200                         | 0.5        | 0.2                     | 15        |
| BZT-RLZ20C | 19.23                       | 20.22 | 10         | 28                   | 10         | 200                         | 0.5        | 0.2                     | 15        |
| BZT-RLZ20D | 19.72                       | 20.72 | 10         | 28                   | 10         | 200                         | 0.5        | 0.2                     | 15        |
| BZT-RLZ22  | 20.8                        | 23.3  | 5          | 30                   | 5          | 200                         | 0.5        | 0.2                     | 17        |
| BZT-RLZ22A | 20.15                       | 21.2  | 5          | 30                   | 5          | 200                         | 0.5        | 0.2                     | 17        |
| BZT-RLZ22B | 20.64                       | 21.71 | 5          | 30                   | 5          | 200                         | 0.5        | 0.2                     | 17        |
| BZT-RLZ22C | 21.08                       | 22.17 | 5          | 30                   | 5          | 200                         | 0.5        | 0.2                     | 17        |
| BZT-RLZ22D | 21.52                       | 22.63 | 5          | 30                   | 5          | 200                         | 0.5        | 0.2                     | 17        |
| BZT-RLZ24  | 22.8                        | 25.6  | 5          | 35                   | 5          | 200                         | 0.5        | 0.2                     | 19        |
| BZT-RLZ24A | 22.05                       | 23.18 | 5          | 35                   | 5          | 200                         | 0.5        | 0.2                     | 19        |
| BZT-RLZ24B | 22.61                       | 23.77 | 5          | 35                   | 5          | 200                         | 0.5        | 0.2                     | 19        |
| BZT-RLZ24C | 23.12                       | 24.31 | 5          | 35                   | 5          | 200                         | 0.5        | 0.2                     | 19        |
| BZT-RLZ24D | 23.63                       | 24.85 | 5          | 35                   | 5          | 200                         | 0.5        | 0.2                     | 19        |
| BZT-RLZ27  | 25.1                        | 28.9  | 5          | 45                   | 5          | 250                         | 0.5        | 0.2                     | 21        |
| BZT-RLZ27A | 24.26                       | 25.52 | 5          | 45                   | 5          | 250                         | 0.5        | 0.2                     | 21        |
| BZT-RLZ27B | 24.97                       | 26.26 | 5          | 45                   | 5          | 250                         | 0.5        | 0.2                     | 21        |
| BZT-RLZ27C | 25.63                       | 26.95 | 5          | 45                   | 5          | 250                         | 0.5        | 0.2                     | 21        |
| BZT-RLZ27D | 26.29                       | 27.64 | 5          | 45                   | 5          | 250                         | 0.5        | 0.2                     | 21        |
| BZT-RLZ30  | 28                          | 32    | 5          | 55                   | 5          | 250                         | 0.5        | 0.2                     | 23        |
| BZT-RLZ30A | 26.99                       | 28.39 | 5          | 55                   | 5          | 250                         | 0.5        | 0.2                     | 23        |
| BZT-RLZ30B | 27.70                       | 29.13 | 5          | 55                   | 5          | 250                         | 0.5        | 0.2                     | 23        |
| BZT-RLZ30C | 28.36                       | 29.82 | 5          | 55                   | 5          | 250                         | 0.5        | 0.2                     | 23        |
| BZT-RLZ30D | 29.02                       | 30.51 | 5          | 55                   | 5          | 250                         | 0.5        | 0.2                     | 23        |
| BZT-RLZ33  | 31                          | 35    | 5          | 65                   | 5          | 250                         | 0.5        | 0.2                     | 25        |
| BZT-RLZ33A | 29.68                       | 31.22 | 5          | 65                   | 5          | 250                         | 0.5        | 0.2                     | 25        |
| BZT-RLZ33B | 30.32                       | 31.88 | 5          | 65                   | 5          | 250                         | 0.5        | 0.2                     | 25        |
| BZT-RLZ33C | 30.9                        | 32.5  | 5          | 65                   | 5          | 250                         | 0.5        | 0.2                     | 25        |



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# BZT-RLZ Series

## Characteristics at $T_a = 25^\circ\text{C}$

| Type       | Zener Voltage <sup>1)</sup> |       |            | Operating Resistance |            | Rising Operating Resistance |            | Reverse Current         |           |
|------------|-----------------------------|-------|------------|----------------------|------------|-----------------------------|------------|-------------------------|-----------|
|            | $V_Z$ (V)                   |       |            | $Z_Z$ ( $\Omega$ )   |            | $Z_{ZK}$ ( $\Omega$ )       |            | $I_R$ ( $\mu\text{A}$ ) |           |
|            | Min.                        | Max.  | $I_Z$ (mA) | Max.                 | $I_Z$ (mA) | Max.                        | $I_Z$ (mA) | Max.                    | $V_R$ (V) |
| BZT-RLZ33D | 31.49                       | 33.11 | 5          | 65                   | 5          | 250                         | 0.5        | 0.2                     | 25        |
| BZT-RLZ36  | 34                          | 38    | 5          | 75                   | 5          | 250                         | 0.5        | 0.2                     | 27        |
| BZT-RLZ36A | 32.14                       | 33.79 | 5          | 75                   | 5          | 250                         | 0.5        | 0.2                     | 27        |
| BZT-RLZ36B | 32.79                       | 34.49 | 5          | 75                   | 5          | 250                         | 0.5        | 0.2                     | 27        |
| BZT-RLZ36C | 33.40                       | 35.13 | 5          | 75                   | 5          | 250                         | 0.5        | 0.2                     | 27        |
| BZT-RLZ36D | 34.01                       | 35.77 | 5          | 75                   | 5          | 250                         | 0.5        | 0.2                     | 27        |
| BZT-RLZ39  | 37                          | 41    | 5          | 85                   | 5          | 250                         | 0.5        | 0.2                     | 30        |
| BZT-RLZ39A | 34.68                       | 36.47 | 5          | 85                   | 5          | 250                         | 0.5        | 0.2                     | 30        |
| BZT-RLZ39B | 35.36                       | 37.19 | 5          | 85                   | 5          | 250                         | 0.5        | 0.2                     | 30        |
| BZT-RLZ39C | 36.00                       | 37.85 | 5          | 85                   | 5          | 250                         | 0.5        | 0.2                     | 30        |
| BZT-RLZ39D | 36.63                       | 38.52 | 5          | 85                   | 5          | 250                         | 0.5        | 0.2                     | 30        |

<sup>1)</sup> Tested with pulses  $t_p = 20$  ms.

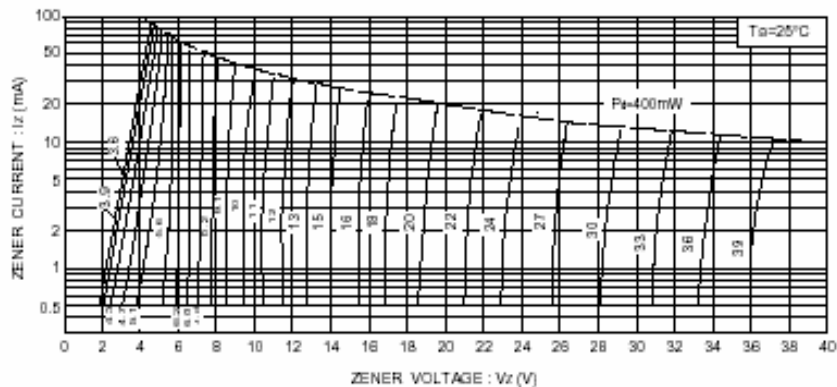


Fig.1 Zener characteristics

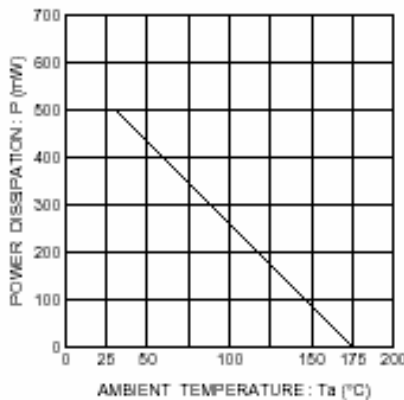


Fig.2 Derating curve

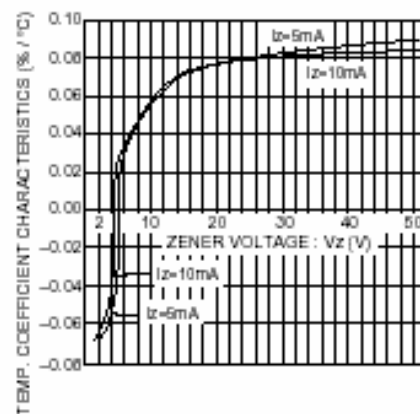
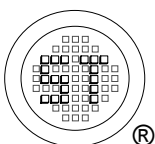


Fig.3 Zener voltage - temp. coefficient characteristics



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