

# MAZ3xxx Series (MA3xxx Series)

## Silicon planar type

For stabilization of power supply

### ■ Features

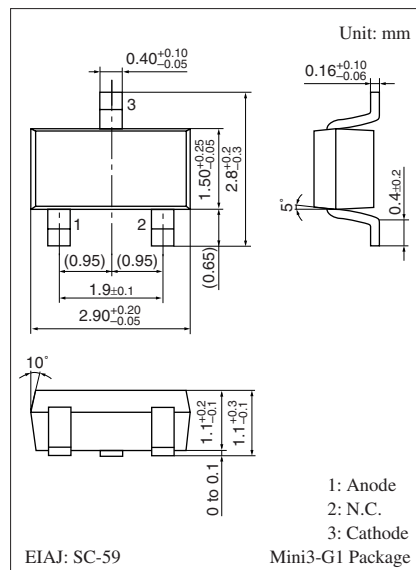
- Allowing to achieve a high-density set
- Sharp rising performance
- Wide voltage range: Zener voltage  $V_Z = 2.0\text{ V}$  to  $36.0\text{ V}$

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

| Parameter   | Symbol      | Rating      | Unit             |
|---|-------------|-------------|------------------|
| Forward current (Average)                         | $I_{F(AV)}$ | 100         | mA               |
| Repetitive peak forward current                   | $I_{FRM}$   | 200         | mA               |
| Power dissipation *1                              | $P_D$       | 200         | mW               |
| Non-repetitive reverse surge power dissipation *2 | $P_{ZSM}$   | 15          | W                |
| Junction temperature                              | $T_j$       | 150         | $^\circ\text{C}$ |
| Storage temperature                               | $T_{stg}$   | -55 to +150 | $^\circ\text{C}$ |

Note) \*1:  $P_D = 200\text{ mW}$  achieved with a printed circuit board

\*2:  $t = 100\text{ }\mu\text{s}$ ,  $T_j = 150^\circ\text{C}$

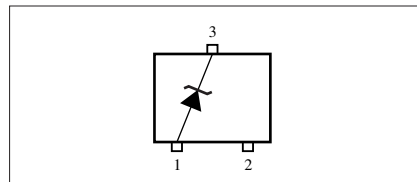


### Marking Symbol

Refer to the list of the electrical characteristics within part numbers

(Example) MAZ3024: 2.4

### Internal Connection



### ■ Common Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$ \*1

| Parameter                                   | Symbol   | Conditions   | Min   | Typ | Max | Unit                 |
|---|----------|--|---|-----|-----|----------------------|
| Forward voltage                             | $V_F$    | $I_F = 10\text{ mA}$                                       |   | 0.8 | 0.9 | V                    |
| Zener voltage *2                            | $V_Z$    | $I_Z$ Specified value                                      |   |     |     | V                    |
| Zener rise operating resistance             | $R_{ZK}$ | $I_Z$ Specified value                                      |   |     |     | $\Omega$             |
| Zener operating resistance                  | $R_Z$    | $I_Z$ Specified value                                      | Refer to the list of the electrical characteristics within part numbers |     |     | $\Omega$             |
| Reverse current                             | $I_{R1}$ | $V_R$ Specified value                                      |   |     |     | $\mu\text{A}$        |
|   | $I_{R2}$ | $V_R$ Specified value                                      |   |     |     |                      |
| Temperature coefficient of zener voltage *3 | $S_Z$    | $I_Z$ Specified value                                      |   |     |     | mV/ $^\circ\text{C}$ |
| Terminal capacitance                        | $C_t$    | $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$<br>Specified value |   |     |     | pF                   |

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7031 measuring methods for diodes.

2. Absolute frequency of input and output is 5 MHz.

3. \*1: The temperature must be controlled  $25^\circ\text{C}$  for  $V_Z$  measurement.

$V_Z$  value measured at other temperature must be adjusted to  $V_Z (25^\circ\text{C})$

\*2:  $V_Z$  guaranteed 20 ms after current flow.

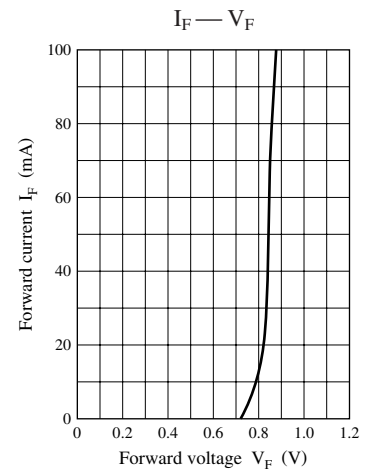
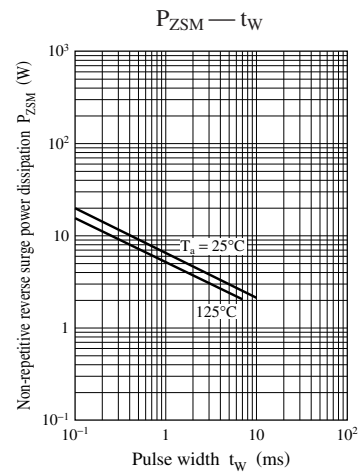
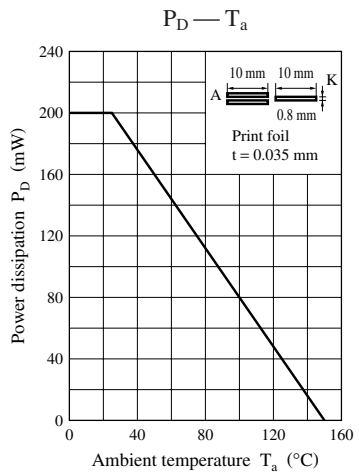
\*3:  $T_j = 25^\circ\text{C}$  to  $150^\circ\text{C}$

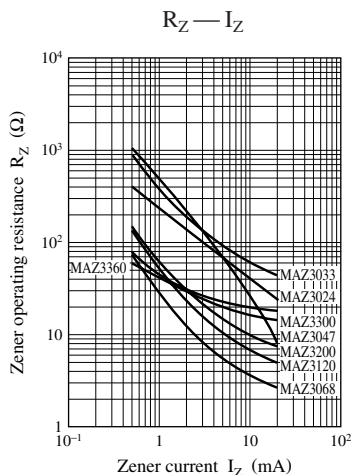
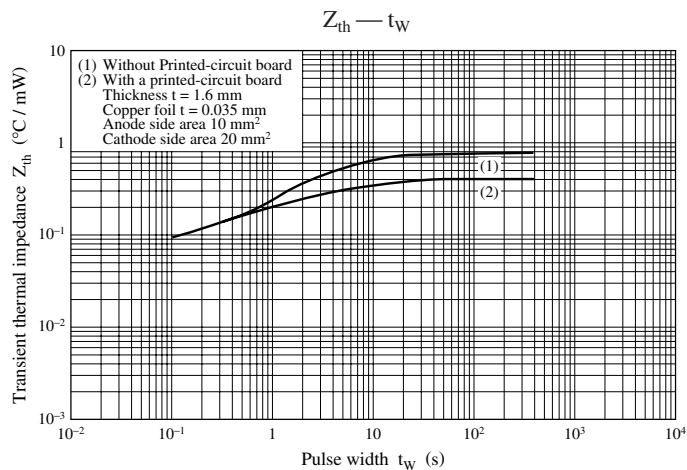
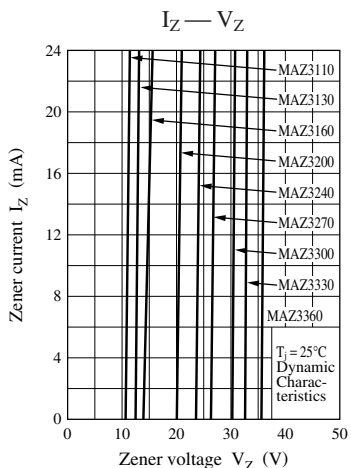
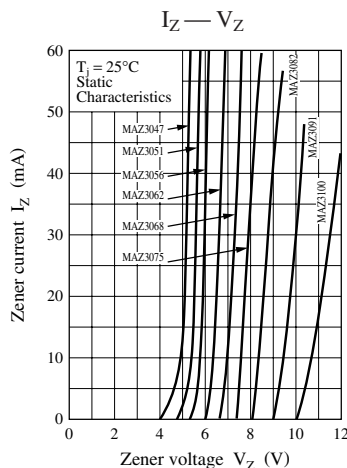
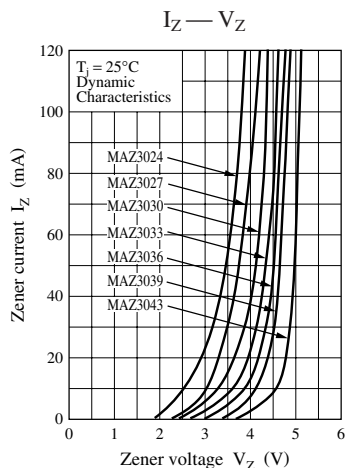
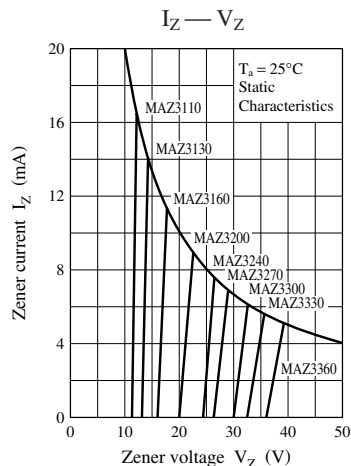
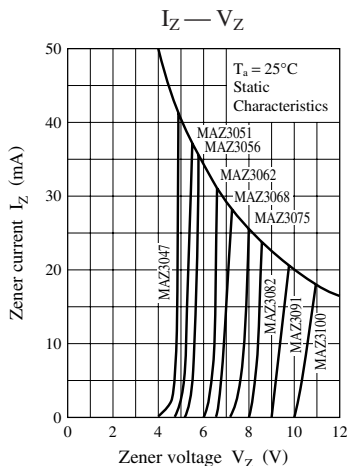
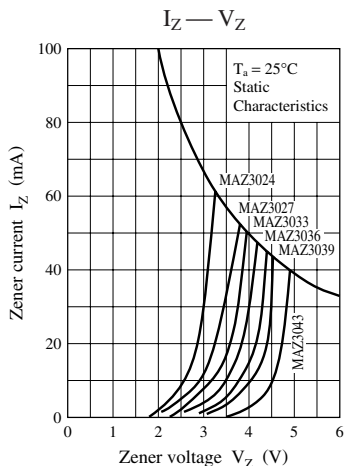
Note) The part number in the parenthesis shows conventional part number.

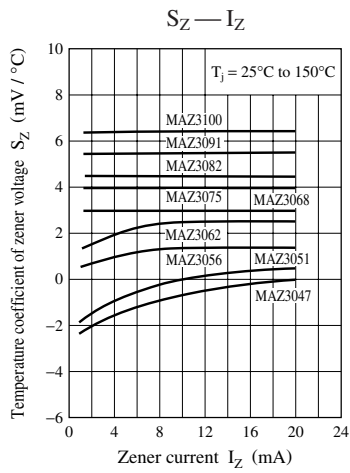
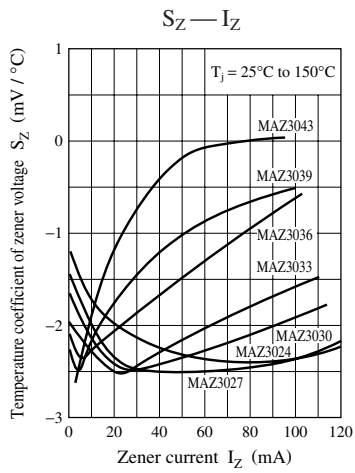
■ Electrical Characteristics within Part Numbers  $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

•  $V_Z = 2.0\text{ V}$  to  $8.2\text{ V}$  ( $I_Z = 5\text{ mA}$ )

| Part number | Zener voltage       |       |       | Reverse current            |                            |                     | Zener operating resistance |                               | Zener rise operating resistance |     | Temperature coefficient of zener voltage |                    |      | Terminal capacitance |     | Marking symbol |                      |
|-------------|---------------------|-------|-------|----------------------------|----------------------------|---------------------|----------------------------|-------------------------------|---------------------------------|-----|--|--------------------|------|----------------------|-----|----------------|----------------------|
|             | $V_Z$ (V)           |       |       | $I_{R1}$ ( $\mu\text{A}$ ) | $I_{R2}$ ( $\mu\text{A}$ ) | $R_Z$ ( $\Omega$ )  | $R_{ZK}$ ( $\Omega$ )      | $S_Z$ (mV/ $^\circ\text{C}$ ) |                                 |     | $C_T$ (pF)                               |                    |      |                      |     |                |                      |
|             | $I_Z = 5\text{ mA}$ |       |       | $V_R$ (V)                  | $V_R$ (V)                  | $I_Z = 5\text{ mA}$ | $I_Z$ (mA)                 | Min                           | Typ                             | Max | $V_R = 0\text{ V}$                       | $f = 1\text{ MHz}$ |      |                      |     |                |                      |
|             | Min                 | Nom   | Max   | Max                        | Max                        | Max                 | Typ                        | Max                           | Max                             | Max | Min                                      | Typ                | Max  | Typ                  | Max |                |                      |
| MAZ3024     | 2.28                | 2.40  | 2.60  | 1.0                        | 120                        | —                   | —                          | —                             | 100                             | —   | —  | -3.5               | -1.6 | 0                    | —   | —              | 2.4                  |
| MAZ3027     | 2.50                | 2.70  | 2.90  | 1.0                        | 120                        | —                   | —                          | —                             | 110                             | —   | —  | -3.5               | -2.0 | 0                    | —   | —              | 2.7L or 2.7H         |
| MAZ3030     | 2.80                | 3.00  | 3.20  | 1.0                        | 50                         | —                   | —                          | —                             | 120                             | —   | —  | -3.5               | -2.1 | 0                    | —   | —              | 3.0L or 3.0H         |
| MAZ3033     | 3.10                | 3.30  | 3.50  | 1.0                        | 20                         | —                   | —                          | —                             | 130                             | —   | —  | -3.5               | -2.4 | 0                    | —   | —              | 3.3L or 3.3H         |
| MAZ3036     | 3.40                | 3.60  | 3.80  | 1.0                        | 10                         | —                   | —                          | —                             | 130                             | —   | —  | -3.5               | -2.4 | 0                    | —   | —              | 3.6L or 3.6H         |
| MAZ3039     | 3.70                | 3.90  | 4.10  | 1.0                        | 10                         | —                   | —                          | —                             | 130                             | —   | —  | -3.5               | -2.5 | 0                    | —   | —              | 3.9L or 3.9H         |
| MAZ3043     | 4.00                | 4.30  | 4.60  | 1.0                        | 10                         | —                   | —                          | —                             | 130                             | —   | —  | -3.5               | -2.5 | 0                    | —   | —              | 4.3L or 4.3M or 4.3H |
| MAZ3047     | 4.40                | 4.70  | 5.00  | 1                          | 3                          | —                   | —                          | 50                            | 80                              | 1   | 900                                      | -3.5               | -1.4 | 0.2                  | 130 | 180            | 4.7L or 4.7M or 4.7H |
| MAZ3051     | 4.80                | 5.10  | 5.40  | 2                          | 2                          | —                   | —                          | 40                            | 60                              | 1   | 800                                      | -2.7               | -0.8 | 1.2                  | 110 | 160            | 5.1L or 5.1M or 5.1H |
| MAZ3056     | 5.30                | 5.60  | 6.00  | 2                          | 1                          | —                   | —                          | 15                            | 40                              | 1   | 500                                      | -2.0               | 1.2  | 2.5                  | 95  | 140            | 5.6L or 5.6M or 5.6H |
| MAZ3062     | 5.80                | 6.20  | 6.60  | 4                          | 3                          | 5.3                 | 60                         | 6                             | 20                              | 0.5 | 300                                      | 0.4                | 2.3  | 3.7                  | 90  | 130            | 6.2L or 6.2M or 6.2H |
| MAZ3068     | 6.40                | 6.80  | 7.20  | 4                          | 2                          | 5.9                 | 60                         | 6                             | 15                              | 0.5 | 140                                      | 1.2                | 3.0  | 4.5                  | 85  | 110            | 6.8L or 6.8M or 6.8H |
| MAZ3075     | 7.00                | 7.50  | 7.90  | 5                          | 1                          | 6.5                 | 60                         | 6                             | 15                              | 0.5 | 120                                      | 2.5                | 4.0  | 5.3                  | 80  | 100            | 7.5L or 7.5M or 7.5H |
| MAZ3082     | 7.70                | 8.20  | 8.70  | 5                          | 0.5                        | 7.2                 | 60                         | 6                             | 15                              | 0.5 | 120                                      | 3.2                | 4.6  | 6.2                  | 75  | 95             | 8.2L or 8.2M or 8.2H |
| MAZ3091     | 8.50                | 9.10  | 9.60  | 6                          | 0.2                        | 8.0                 | 60                         | 6                             | 15                              | 0.5 | 130                                      | 3.8                | 5.5  | 7.0                  | 70  | 90             | 9.1L or 9.1M or 9.1H |
| MAZ3100     | 9.40                | 10.00 | 10.60 | 7                          | 0.2                        | 8.9                 | 60                         | 8                             | 20                              | 0.5 | 130                                      | 4.5                | 6.4  | 8.0                  | 70  | 90             | 10L or 10M or 10H    |
| MAZ3110     | 10.40               | 11.00 | 11.60 | 7                          | 0.1                        | 9.9                 | 60                         | 10                            | 20                              | 0.5 | 170                                      | 5.4                | 7.4  | 9.0                  | 65  | 85             | 11L or 11M or 11H    |
| MAZ3120     | 11.40               | 12.00 | 12.70 | 8                          | 0.1                        | 10.9                | 60                         | 10                            | 25                              | 0.5 | 170                                      | 6.0                | 8.4  | 10.0                 | 65  | 85             | 12L or 12M or 12H    |
| MAZ3130     | 12.40               | 13.00 | 14.10 | 9                          | 0.1                        | 11.9                | 60                         | 10                            | 30                              | 0.5 | 170                                      | 7.0                | 9.4  | 11.0                 | 60  | 80             | 13L or 13M or 13H    |
| MAZ3140     | 13.65               | 14.00 | 14.35 | 9                          | 0.1                        | 13.1                | 60                         | 10                            | 30                              | 0.5 | 170                                      | 7.0                | 10.0 | 13.0                 | 60  | 80             | 14M                  |
| MAZ3150     | 13.90               | 15.00 | 15.60 | 10                         | 0.05                       | 13.4                | 60                         | 10                            | 30                              | 0.5 | 170                                      | 9.2                | 11.4 | 13.0                 | 55  | 75             | 15L or 15M or 15H    |
| MAZ3160     | 15.30               | 16.00 | 17.10 | 11                         | 0.05                       | 14.8                | 60                         | 10                            | 40                              | 0.5 | 170                                      | 10.4               | 12.4 | 14.0                 | 52  | 75             | 16L or 16M or 16H    |
| MAZ3180     | 16.90               | 18.00 | 19.10 | 13                         | 0.05                       | 16.4                | 60                         | 10                            | 45                              | 0.5 | 170                                      | 12.4               | 14.4 | 16.0                 | 47  | 70             | 18L or 18M or 18H    |
| MAZ3200     | 18.80               | 20.00 | 21.20 | 14                         | 0.05                       | 18.3                | 60                         | 15                            | 55                              | 0.5 | 180                                      | 14.4               | 16.4 | 18.0                 | 36  | 60             | 20L or 20M or 20H    |
| MAZ3220     | 20.80               | 22.00 | 23.30 | 15                         | 0.05                       | 20.3                | 60                         | 20                            | 55                              | 0.5 | 180                                      | 16.4               | 18.4 | 20.0                 | 34  | 60             | 22L or 22M or 22H    |
| MAZ3240     | 22.80               | 24.00 | 25.60 | 17                         | 0.05                       | 22.3                | 60                         | 25                            | 70                              | 0.5 | 180                                      | 18.4               | 20.4 | 22.0                 | 33  | 55             | 24L or 24M or 24H    |
| MAZ3270     | 25.10               | 27.00 | 28.90 | 19                         | 0.05                       | 24.8                | 60                         | 25                            | 80                              | 0.5 | 200                                      | 21.4               | 23.4 | 25.3                 | 30  | 50             | 27L or 27M or 27H    |
| MAZ3300     | 28.00               | 30.00 | 32.00 | 21                         | 0.05                       | 27.8                | 60                         | 30                            | 80                              | 0.5 | 200                                      | 24.4               | 26.6 | 29.4                 | 27  | 50             | 30L or 30M or 30H    |
| MAZ3330     | 31.00               | 33.00 | 35.00 | 23                         | 0.05                       | 30.7                | 60                         | 35                            | 80                              | 0.5 | 200                                      | 27.4               | 29.7 | 33.4                 | 25  | 45             | 33L or 33M or 33H    |
| MAZ3360     | 34.00               | 36.00 | 38.00 | 25                         | 0.05                       | 33.6                | 60                         | 35                            | 90                              | 0.5 | 200                                      | 30.4               | 33.0 | 37.4                 | 23  | 45             | 36L or 36M or 36H    |







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