

# ANTREX Electronics

Electronic Components Sourcing Information

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## Product Reference Information

**Part Number:** MAZ22700AG  
**Manufacturer:** Panasonic Electronic Components  
**Package:** DO41-A1  
**Availability:** Please confirm with sales

**Product Page:**

<https://antrexco.com/product/details/panasonic-electronic-components/maz22700ag.html>

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**Note:**

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

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# MAZ2000 Series (MA2000 Series)

## Silicon planar type

For stabilization of power supply

### ■ Features

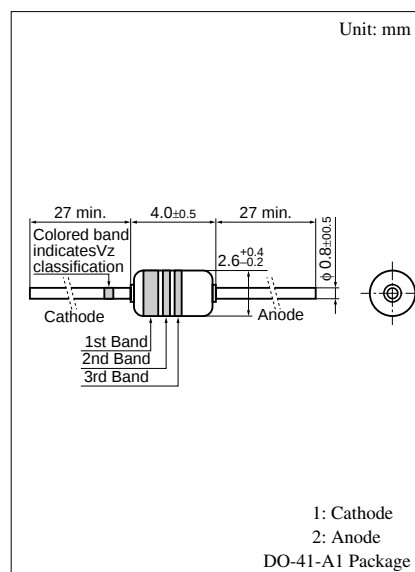
- High reliability, achieved by the combination the planar type and the glass seal
- Large power dissipation:  $P_D = 1$  W
- Wide voltage range:  $V_Z = 5.1$  V to 56.0 V
- Easy-to-use because of the finely divided zener voltage ranks, such as A and B ranks

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

| Parameter                                         | Symbol    | Rating      | Unit             |
|---------------------------------------------------|-----------|-------------|------------------|
| Repetitive peak forward current                   | $I_{FRM}$ | 400         | mA               |
| Total power dissipation *1                        | $P_{tot}$ | 1           | W                |
| Non-repetitive reverse surge power dissipation *2 | $P_{ZSM}$ | 75          | W                |
| Junction temperature                              | $T_j$     | 200         | $^\circ\text{C}$ |
| Storage temperature                               | $T_{stg}$ | -55 to +200 | $^\circ\text{C}$ |

Note) \*1: With a printed circuit board

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



### • Color indication of $V_Z$ rank classification

| Rank  | A    | B   |
|-------|------|-----|
| Color | Blue | Red |

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

| Parameter                                   | Symbol | Conditions            | Min | Typ | Max | Unit                 |
|---------------------------------------------|--------|-----------------------|-----|-----|-----|----------------------|
| Forward voltage                             | $V_F$  | $I_F = 200$ mA        |     |     | 1   | V                    |
| Zener voltage *2                            | $V_Z$  | $I_Z$ Specified value |     |     |     | V                    |
| Zener operating resistance                  | $R_Z$  | $I_Z$ Specified value |     |     |     | $\Omega$             |
| Reverse current                             | $I_R$  | $V_R$ Specified value |     |     |     | $\mu\text{A}$        |
| Temperature coefficient of zener voltage *3 | $S_Z$  | $I_Z$ Specified value |     |     |     | mV/ $^\circ\text{C}$ |
| Terminal capacitance                        | $C_t$  | $V_R$ Specified value |     |     |     | pF                   |

Note) 1 .Rated input/output frequency: 5 MHz

2 \*1: The  $V_Z$  value is for the temperature of  $25^\circ\text{C}$ . In other cases, carry out the temperature compensation.

\*2: Guaranteed at 20 ms after power application.

\*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  $T_a = 25^\circ\text{C}$

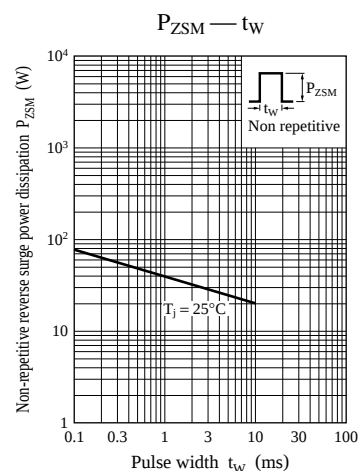
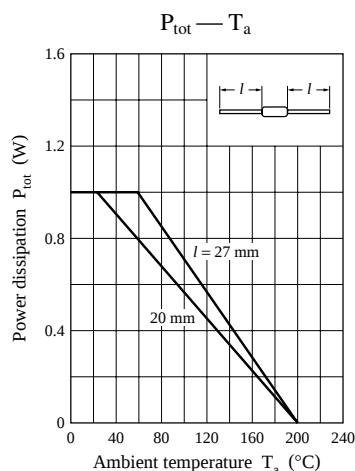
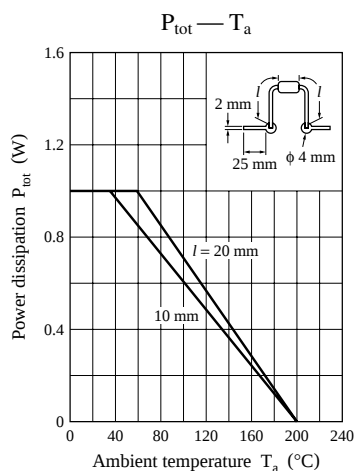
| Part Number | Zener voltage |       |      |       | Reverse current         |     | Zener operating resistance |     | Temperature coefficient of zener voltage |      | Terminal capacitance                               | Marking symbol (Color indication) |        |       |
|-------------|---------------|-------|------|-------|-------------------------|-----|----------------------------|-----|------------------------------------------|------|----------------------------------------------------|-----------------------------------|--------|-------|
|             | $V_Z$ (V)     |       |      |       | $I_R$ ( $\mu\text{A}$ ) |     | $R_Z$ ( $\Omega$ )         |     | $S_Z$ (mV/ $^\circ\text{C}$ )            |      | $C_t$ (pF)<br>( $V_R = 0$ V)<br>$f = 1$ MHz<br>Typ |                                   |        |       |
|             | $I_Z$ (mA)    | Min   | Nom  | Max   | $V_R$ (V)               | Max | $I_Z$ (mA)                 | Max | $I_Z$ (mA)                               | Typ  |                                                    |                                   |        |       |
| MAZ2051     | 40            | 4.8   | 5.1  | 5.4   | 1                       | 20  | 40                         | 10  | 40                                       | 0    | 200                                                | Green                             | Brown  | Brown |
| MAZ20510A   |               | 4.8   | —    | 5.15  |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ20510B   |               | 5.05  | —    | 5.4   |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ2056     | 40            | 5.2   | 5.6  | 6.0   | 2                       | 20  | 40                         | 8   | 40                                       | 1.5  | 180                                                | Green                             | Blue   | Blue  |
| MAZ20560A   |               | 5.3   | —    | 5.7   |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ20560B   |               | 5.6   | —    | 6.0   |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ2062     | 40            | 5.8   | 6.2  | 6.6   | 3                       | 20  | 40                         | 6   | 40                                       | 2.4  | 330                                                | Blue                              | Red    | Red   |
| MAZ20620A   |               | 5.8   | —    | 6.2   |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ20620B   |               | 6.1   | —    | 6.5   |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ2068     | 40            | 6.4   | 6.8  | 7.2   | 3                       | 10  | 40                         | 6   | 40                                       | 3.1  | 280                                                | Blue                              | Gray   | Gray  |
| MAZ20680A   |               | 6.4   | —    | 6.8   |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ20680B   |               | 6.7   | —    | 7.1   |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ2075     | 40            | 7.0   | 7.5  | 7.9   | 3                       | 10  | 40                         | 5   | 40                                       | 3.8  | 250                                                | Purple                            | Green  | Green |
| MAZ20750A   |               | 7.0   | —    | 7.45  |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ20750B   |               | 7.35  | —    | 7.8   |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ2082     | 40            | 7.7   | 8.2  | 8.7   | 4                       | 10  | 40                         | 5   | 40                                       | 4.5  | 230                                                | Gray                              | Red    | Red   |
| MAZ20820A   |               | 7.7   | —    | 8.2   |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ20820B   |               | 8.1   | —    | 8.6   |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ2091     | 40            | 8.5   | 9.1  | 9.6   | 5                       | 10  | 40                         | 6   | 40                                       | 5.4  | 220                                                | White                             | Brown  | Brown |
| MAZ20910A   |               | 8.5   | —    | 9.05  |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ20910B   |               | 8.95  | —    | 9.5   |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ2100     | 40            | 9.4   | 10.0 | 10.6  | 7                       | 10  | 40                         | 6   | 40                                       | 6.3  | 200                                                | Brown                             | Black  | —     |
| MAZ21000A   |               | 9.4   | —    | 10    |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ21000B   |               | 9.9   | —    | 10.5  |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ2110     | 20            | 10.4  | 11.0 | 11.6  | 7                       | 5   | 20                         | 8   | 20                                       | 7.4  | 160                                                | Brown                             | Brown  | —     |
| MAZ21100A   |               | 10.4  | —    | 11.05 |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ21100B   |               | 10.85 | —    | 11.5  |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ2120     | 20            | 11.4  | 12.0 | 12.7  | 8                       | 5   | 20                         | 8   | 20                                       | 8.4  | 160                                                | Brown                             | Red    | —     |
| MAZ21200A   |               | 11.4  | —    | 12.1  |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ21200B   |               | 11.9  | —    | 12.6  |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ2130     | 20            | 12.4  | 13.0 | 14.1  | 9                       | 5   | 20                         | 10  | 20                                       | 9.4  | 155                                                | Brown                             | Orange | —     |
| MAZ21300A   |               | 12.4  | —    | 13.25 |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ21300B   |               | 13.15 | —    | 14.0  |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ2150     | 20            | 13.8  | 15.0 | 15.6  | 10                      | 5   | 20                         | 12  | 20                                       | 11.4 | 150                                                | Brown                             | Green  | —     |
| MAZ21500A   |               | 13.8  | —    | 14.7  |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ21500B   |               | 14.5  | —    | 15.4  |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ2160     | 20            | 15.3  | 16.0 | 17.1  | 11                      | 5   | 20                         | 12  | 20                                       | 12.5 | 135                                                | Brown                             | Blue   | —     |
| MAZ21600A   |               | 15.3  | —    | 16.3  |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ21600B   |               | 16.1  | —    | 17.1  |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ2180     | 20            | 16.8  | 18.0 | 19.1  | 12                      | 5   | 20                         | 15  | 20                                       | 14.5 | 110                                                | Brown                             | Gray   | —     |
| MAZ21800A   |               | 16.8  | —    | 18.0  |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ21800B   |               | 17.8  | —    | 19.0  |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ2200     | 20            | 18.8  | 20.0 | 21.2  | 14                      | 5   | 20                         | 15  | 20                                       | 16.6 | 100                                                | Red                               | Black  | —     |
| MAZ22000A   |               | 18.8  | —    | 20.0  |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |
| MAZ22000B   |               | 19.8  | —    | 21.0  |                         |     |                            |     |                                          |      |                                                    |                                   |        |       |

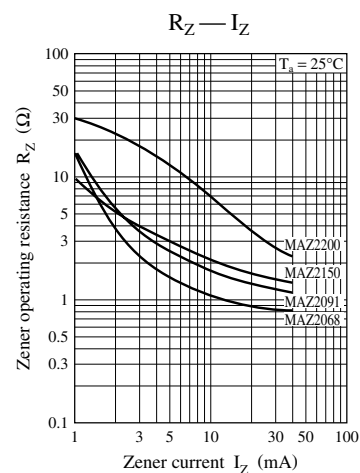
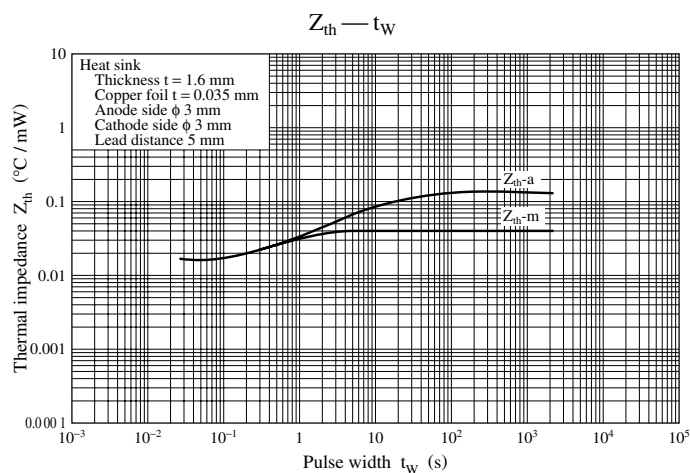
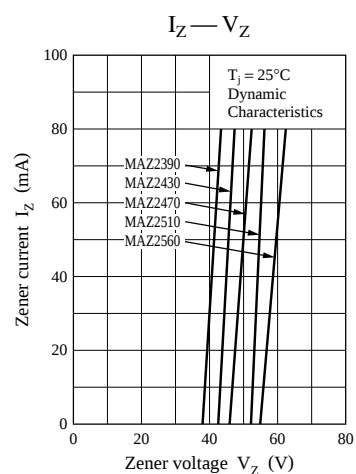
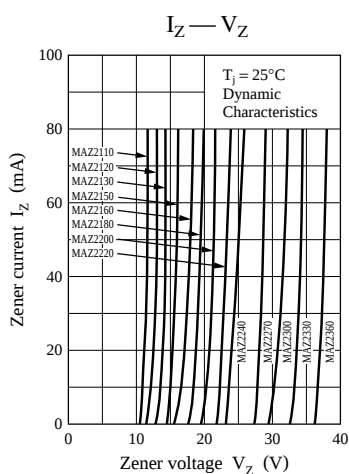
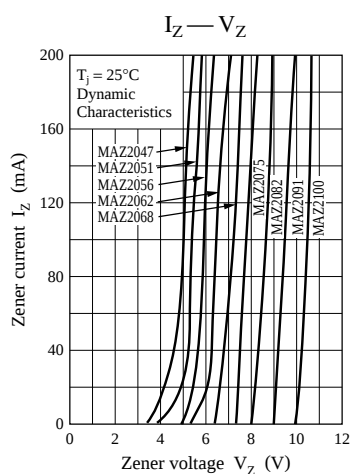
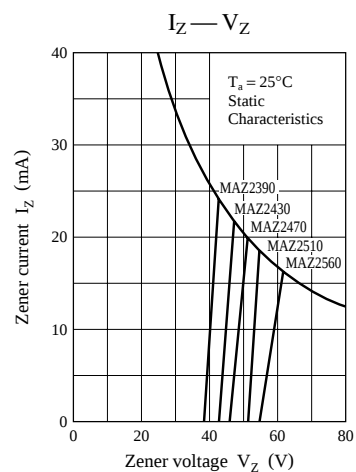
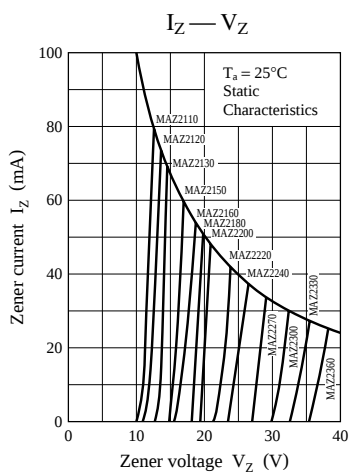
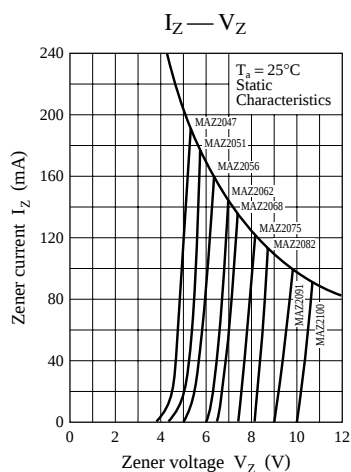
■ Electrical characteristics within part numbers (continued)  $T_a = 25^\circ\text{C}$

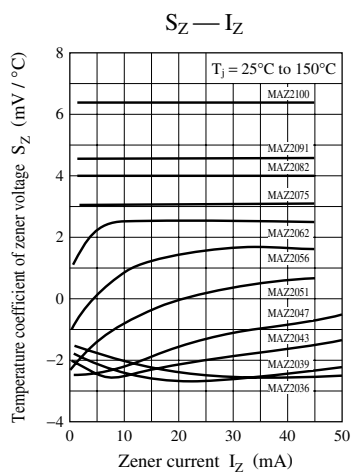
| Part number | Zener voltage |       |      |       | Reverse current         |     | Zener operating resistance |     | Temperature coefficient of zener voltage |      | Terminal capacitance                               | Marking symbol (Color indication) |        |   |
|-------------|---------------|-------|------|-------|-------------------------|-----|----------------------------|-----|------------------------------------------|------|----------------------------------------------------|-----------------------------------|--------|---|
|             | $V_Z$ (V)     |       |      |       | $I_R$ ( $\mu\text{A}$ ) |     | $R_Z$ ( $\Omega$ )         |     | $S_Z$ (mV/ $^\circ\text{C}$ )            |      | $C_t$ (pF)<br>( $V_R = 0$ V)<br>$f = 1$ MHz<br>Typ |                                   |        |   |
|             | $I_Z$ (mA)    | Min   | Nom  | Max   | $V_R$ (V)               | Max | $I_Z$ (mA)                 | Max | $I_Z$ (mA)                               | Typ  |                                                    |                                   |        |   |
| MAZ2220     | 10            | 20.8  | 22.0 | 23.3  | 15                      | 5   | 10                         | 20  | 10                                       | 18.6 | 95                                                 | Red                               | Red    | — |
| MAZ22200A   |               | 20.8  | —    | 22.15 |                         |     |                            |     |                                          |      |                                                    |                                   |        |   |
| MAZ22200B   |               | 21.85 | —    | 23.2  |                         |     |                            |     |                                          |      |                                                    |                                   |        |   |
| MAZ2240     | 10            | 22.8  | 24.0 | 25.6  | 16                      | 5   | 10                         | 20  | 10                                       | 20.7 | 90                                                 | Red                               | Yellow | — |
| MAZ22400A   |               | 22.8  | —    | 24.35 |                         |     |                            |     |                                          |      |                                                    |                                   |        |   |
| MAZ22400B   |               | 24.15 | —    | 25.6  |                         |     |                            |     |                                          |      |                                                    |                                   |        |   |
| MAZ2270     | 10            | 25.1  | 27.0 | 28.9  | 18                      | 2   | 10                         | 25  | 10                                       | 23.8 | 85                                                 | Red                               | Purple | — |
| MAZ22700A   |               | 25.1  | —    | 27.0  |                         |     |                            |     |                                          |      |                                                    |                                   |        |   |
| MAZ22700B   |               | 26.9  | —    | 28.9  |                         |     |                            |     |                                          |      |                                                    |                                   |        |   |
| MAZ2300     | 10            | 28.0  | 30.0 | 32.0  | 20                      | 2   | 10                         | 25  | 10                                       | 26.9 | 80                                                 | Orange                            | Black  | — |
| MAZ23000A   |               | 28.0  | —    | 30.1  |                         |     |                            |     |                                          |      |                                                    |                                   |        |   |
| MAZ23000B   |               | 29.9  | —    | 32.0  |                         |     |                            |     |                                          |      |                                                    |                                   |        |   |
| MAZ2330     | 10            | 31.0  | 33.0 | 35.0  | 22                      | 2   | 10                         | 30  | 10                                       | 30.0 | 75                                                 | Orange                            | Orange | — |
| MAZ23300A   |               | 31.0  | —    | 33.14 |                         |     |                            |     |                                          |      |                                                    |                                   |        |   |
| MAZ23300B   |               | 32.86 | —    | 35.0  |                         |     |                            |     |                                          |      |                                                    |                                   |        |   |
| MAZ2360     | 10            | 34.0  | 36.0 | 38.0  | 24                      | 2   | 10                         | 30  | 10                                       | 33.4 | 70                                                 | Orange                            | Blue   | — |
| MAZ23600A   |               | 34.0  | —    | 36.16 |                         |     |                            |     |                                          |      |                                                    |                                   |        |   |
| MAZ23600B   |               | 35.84 | —    | 38.0  |                         |     |                            |     |                                          |      |                                                    |                                   |        |   |
| MAZ2390     | 10            | 37.0  | 39.0 | 41.0  | 26                      | 5   | 10                         | 50  | 10                                       | 36.3 | 65                                                 | Orange                            | White  | — |
| MAZ2430     | 10            | 40.0  | 43.0 | 46.0  | 29                      | 5   | 10                         | 50  | 10                                       | 41.1 | 60                                                 | Yellow                            | Orange | — |
| MAZ2470     | 10            | 44.0  | 47.0 | 50.0  | 31                      | 5   | 10                         | 50  | 10                                       | 44.9 | 55                                                 | Yellow                            | Purple | — |
| MAZ2510     | 10            | 48.0  | 51.0 | 54.0  | 33                      | 5   | 10                         | 50  | 10                                       | 48.6 | 50                                                 | Green                             | Brown  | — |
| MAZ2560     | 10            | 52.0  | 56.0 | 60.0  | 35                      | 5   | 10                         | 50  | 10                                       | 54.9 | 45                                                 | Green                             | Blue   | — |

Note) 1. The  $V_Z$  value is the one after power application for 20 ms at  $T_a = 25^\circ\text{C}$ .

2. The zener voltage temperature coefficient is the one for  $T_j = 25^\circ\text{C}$  to  $150^\circ\text{C}$ .







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