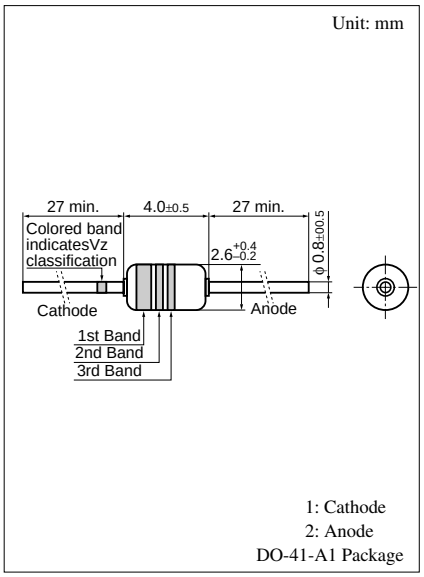
MAZ2000 Series (MA2000 Series)

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°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	°C
Storage temperature	T_{stg}	−55 to +200	°C

Note) ∗1: With a printed circuit board
∗2: t = 100 µs, T_j = 150°C

- Color indication of V_Z rank classification

Rank	A	B
Color	Blue	Red

■ Common Electrical Characteristics T_a = 25°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	Refer to the list of the electrical characteristics within part numbers			V
Zener operating resistance	R_Z	I_Z	Specified value				Ω
Reverse current	I_R	V_R	Specified value				µA
Temperature coefficient of zener voltage *3	S_Z	I_Z	Specified value				mV/°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°C. In other cases, carry out the temperature compensation.
∗2: Guaranteed at 20 ms after power application.
∗3: T_j = 25°C to 150°C

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

■ Electrical characteristics within part numbers $T_a = 25°C$

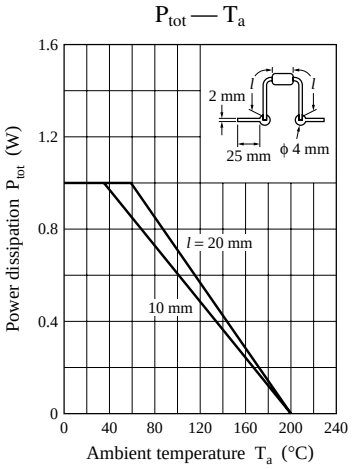
Part Number	Zener voltage				Reverse current		Zener operating resistance		Temperature coefficient of zener voltage		Terminal capacitance	Marking symbol (Color indication)		
	V_Z (V)				I_R (μA)		R_Z (Ω)		S_Z (mV/°C)		C_t (pF) (V_R = 0 V) f = 1 MHz			
	I_Z (mA)	Min	Nom	Max	V_R (V)	Max	I_Z (mA)	Max	I_Z (mA)	Typ	Typ	1st.	2nd.	3rd.
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										

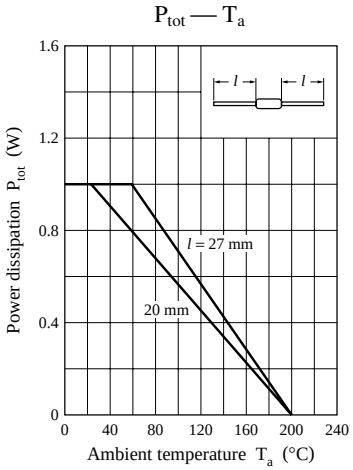
■ Electrical characteristics within part numbers (continued) $T_a = 25°C$

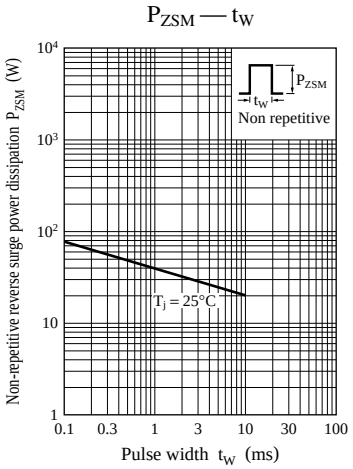
Part number	Zener voltage				Reverse current		Zener operating resistance		Temperature coefficient of zener voltage		Terminal capacitance	Marking symbol (Color indication)		
	V_Z (V)				I_R (μA)		R_Z (Ω)		S_Z (mV/°C)		C_t (pF) (V_R = 0 V) f = 1 MHz			
	I_Z (mA)	Min	Nom	Max	V_R (V)	Max	I_Z (mA)	Max	I_Z (mA)	Typ	Typ	1st.	2nd.	3rd.
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 $T_a = 25°C$.

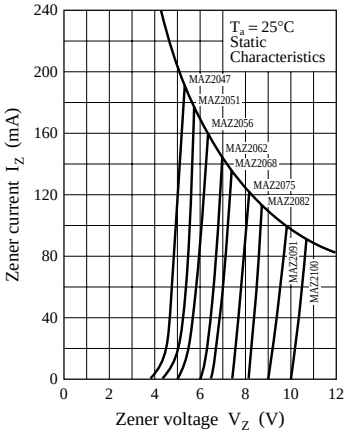
2. The zener voltage temperature coefficient is the one for $T_j = 25°C$ to 150°C.



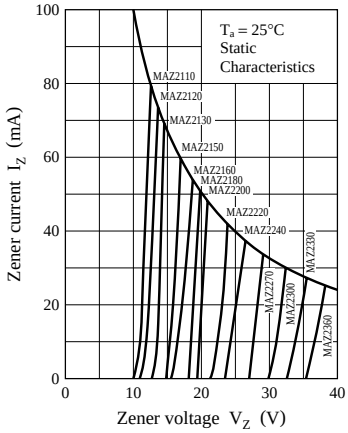




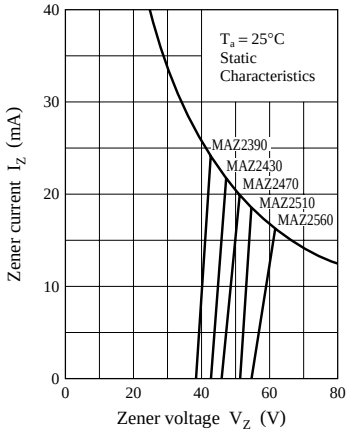
I_Z — V_Z



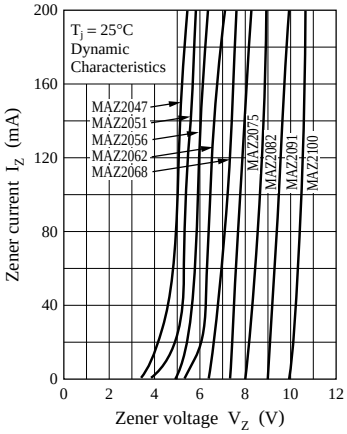
I_Z — V_Z



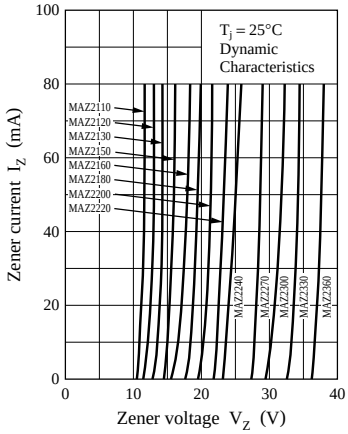
I_Z — V_Z



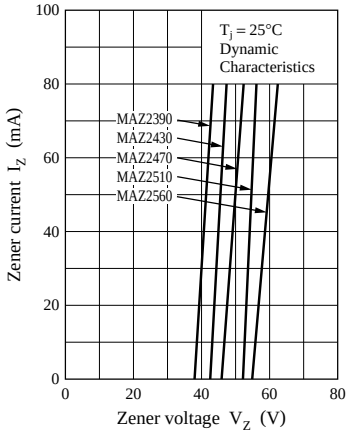
I_Z — V_Z



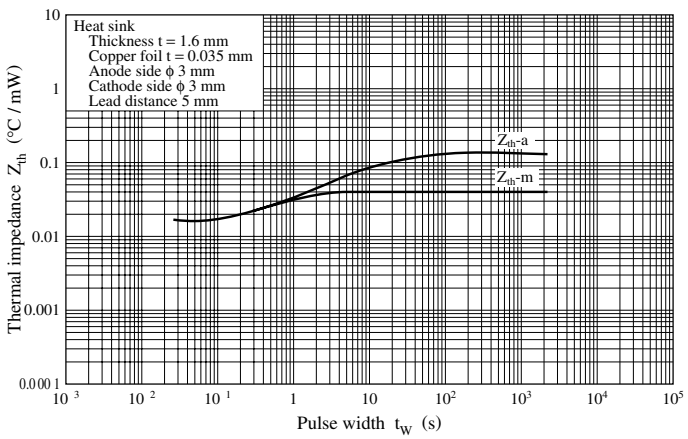
I_Z — V_Z



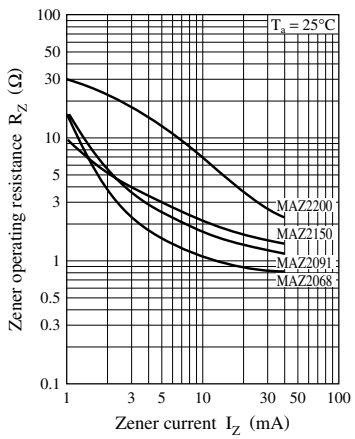
I_Z — V_Z



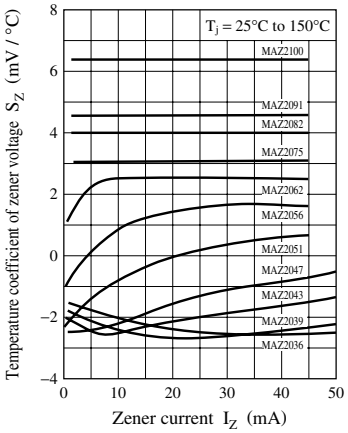
Z_{th} — t_W



R_Z — I_Z



S_Z — I_Z


Tj = 25°C to 150°C
MAZ2100
MAZ2091
MAZ2082
MAZ2075
MAZ2062
MAZ2056
MAZ2051
MAZ2047
MAZ2043
MAZ2039
MAZ2036
Temperature coefficient of zener voltage SZ (mV / °C)
Zener current IZ (mA)
8
6
4
2
0
−2
−4
0
10
20
30
40
50

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