

MAZ4xxx Series (MA4xxx Series)

Silicon planar type

For stabilization of power supply

■ Features

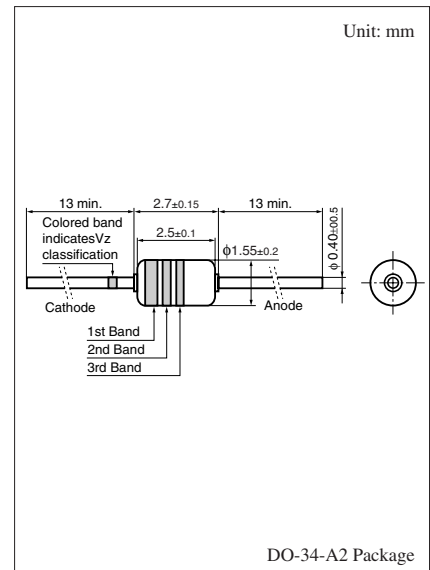
- High reliability, achieved by the DHD structure
- Allowing to insert to a 5 mm pitch hole
- Finely divided zener-voltage rank
- Sharp rising performance
- Wide voltage range: Zener voltage $V_Z = 2.0\text{ V}$ to 39.0 V

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

Parameter	Symbol	Rating	Unit
Forward current (Average)	$I_{F(AV)}$	250	mA
Repetitive peak forward current	I_{FRM}	250	mA
Power dissipation *1	P_D	370	mW
Non-repetitive reverse surge power dissipation *2	P_{ZSM}	30	W
Junction temperature	T_j	200	$^\circ\text{C}$
Storage temperature	T_{stg}	-65 to +200	$^\circ\text{C}$

Note) *1: $P_D = 370\text{ mW}$ achieved with a printed circuit board

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



■ 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				Ω
Zener operating resistance	R_Z	I_Z Specified value				Ω
Reverse current	I_{R1}	V_R Specified value	Refer to the list of the electrical characteristics within part numbers			μA
	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	$V_R = 0\text{ V}$, $f = 1\text{ MHz}$ 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 50 MHz.

3. *1: The temperature must be controlled 25°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°C

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

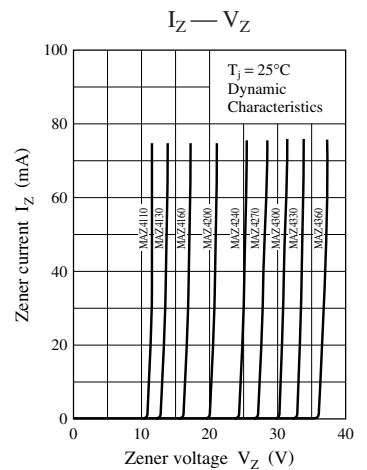
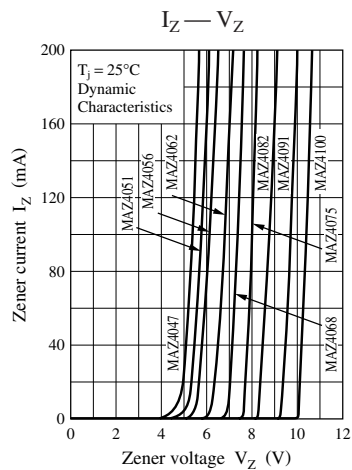
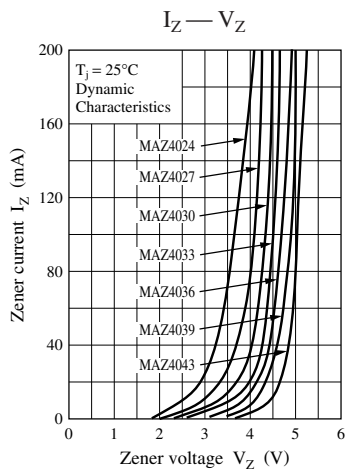
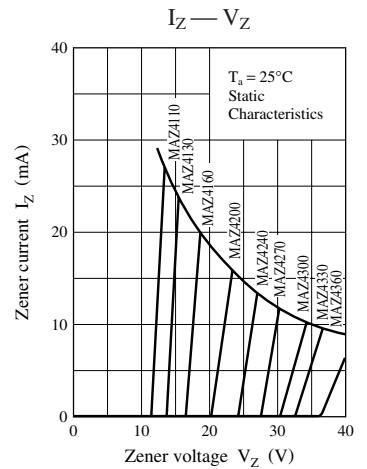
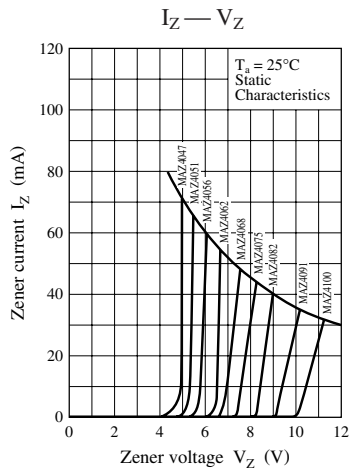
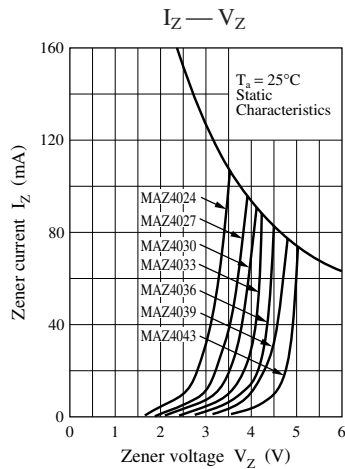
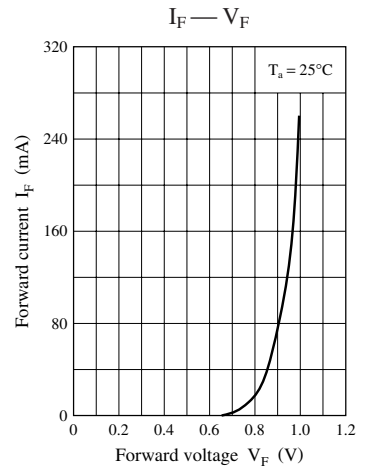
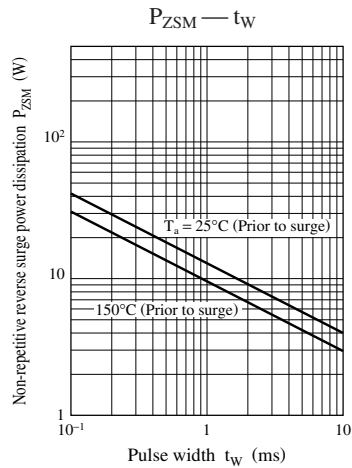
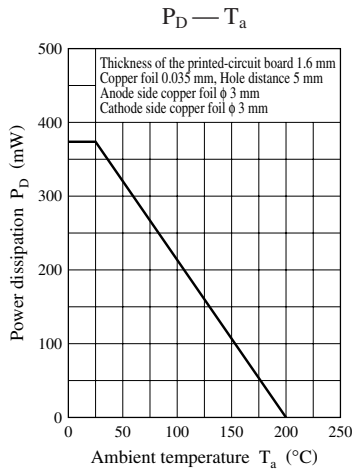
■ Electrical Characteristics within Part Numbers $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

• $V_Z = 2.0\text{ V to } 6.8\text{ V}$ ($I_Z = 5\text{ mA}$)

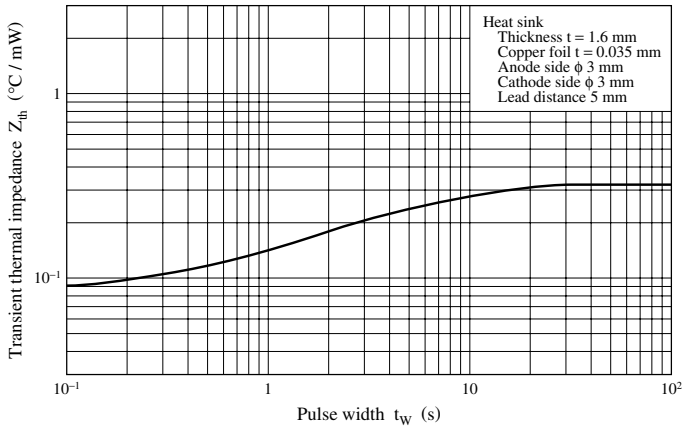
Part number	Zener voltage V_Z (V) $I_Z = 5\text{ mA}$		Reverse current				Zener operating resistance R_Z (Ω) $I_Z = 5\text{ mA}$	Zener rise operating resistance R_{ZK} (Ω)		Temperature coefficient of zener voltage S_Z (mV/ $^\circ\text{C}$) $I_Z = 5\text{ mA}$			Terminal capacitance C_t (pF) $(V_R = 0\text{ V})$ $f = 1\text{ MHz}$		Marking symbol (Color indication) Main body: Light green		
			I_{R1} (μA)		I_{R2} (μA)			I_Z									
	Min	Max	V_R (V)	Max	V_R (V)	Max	Max	(mA)	Max	Min	Typ	Max	Typ	Max	1st.	2nd.	3rd.
	MAZ4020	1.88	2.24	0.5	120	—	—	100	1	2000	-3.5	-1.5	0	375	450	Red	Black
MAZ4022	2.08	2.45	0.7	120	—	—	100	1	2000	-3.5	-1.5	0	375	450	Red	Red	Red
MAZ4024	2.28	2.70	1.0	120	—	—	100	1	2000	-3.5	-1.6	0	375	450	Red	Yellow	Yellow
MAZ4027	2.50	2.90	1.0	100	—	—	100	1	1000	-3.5	-2.0	0	350	450	Red	Purple	Purple
MAZ4030	2.80	3.20	1.0	50	—	—	100	1	1000	-3.5	-2.1	0	350	450	Orange	Black	Black
MAZ4033	3.10	3.50	1.0	20	—	—	100	1	1000	-3.5	-2.4	0	325	450	Orange	Orange	Orange
MAZ4036	3.40	3.80	1.0	10	—	—	100	1	1000	-3.5	-2.4	0	300	450	Orange	Blue	Blue
MAZ4039	3.70	4.10	1.0	10	—	—	100	1	1000	-3.5	-2.5	0	300	450	Orange	White	White
MAZ4043	4.00	4.60	1.0	10	—	—	100	1	1000	-3.5	-2.5	0	275	450	Yellow	Orange	Orange
MAZ4047	4.40	5.00	1.0	3	—	—	80	1	900	-3.5	-1.4	0.2	130	180	Yellow	Purple	Purple
MAZ4051	4.80	5.40	2.0	2	—	—	60	1	800	-2.7	-0.8	1.2	110	160	Green	Brown	Brown
MAZ4056	5.30	6.00	2.0	1	—	—	40	1	500	-2.0	1.2	2.5	95	140	Green	Blue	Blue
MAZ4062	5.80	6.60	4.0	3	5.3	60	20	0.5	300	0.4	2.3	3.7	90	130	Blue	Red	Red
MAZ4068	6.40	7.20	4.0	2	5.9	60	15	0.5	140	1.2	3.0	4.5	85	110	Blue	Gray	Gray
MAZ4075	7.00	7.90	5	1	6.5	60	15	0.5	120	2.5	4.0	5.3	80	100	Purple	Green	Green
MAZ4082	7.70	8.70	5	0.5	7.2	60	15	0.5	120	3.2	4.6	6.2	75	95	Gray	Red	Red
MAZ4091	8.50	9.60	6	0.2	8.0	60	15	0.5	130	3.8	5.5	7.0	70	90	White	Brown	Brown
MAZ4100	9.40	10.60	7	0.2	8.9	60	20	0.5	130	4.5	6.4	8.0	70	90	Brown	Black	—
MAZ4110	10.40	11.60	7	0.1	9.9	60	20	0.5	170	5.4	7.4	9.0	65	85	Brown	Brown	—
MAZ4120	11.40	12.70	8	0.1	10.9	60	25	0.5	170	6.0	8.4	10.0	65	85	Brown	Red	—
MAZ4130	12.40	14.10	9	0.1	11.9	60	30	0.5	170	7.0	9.4	11.0	60	80	Brown	Orange	—
MAZ4140	13.65	14.35	9	0.1	13.1	60	30	0.5	170	7.0	10.0	13.0	60	80	Brown	Yellow	—
MAZ4150	13.90	15.60	10	0.05	13.4	60	30	0.5	170	9.2	11.4	13.0	55	75	Brown	Green	—
MAZ4160	15.30	17.10	11	0.05	14.8	60	40	0.5	170	10.4	12.4	14.0	52	75	Brown	Blue	—
MAZ4180	16.90	19.10	13	0.05	16.4	60	45	0.5	170	12.4	14.4	16.0	47	70	Brown	Gray	—
MAZ4200	18.80	21.20	14	0.05	18.3	60	55	0.5	180	14.4	16.4	18.0	36	60	Red	Black	—
MAZ4220	20.80	23.30	15	0.05	20.3	60	55	0.5	180	16.4	18.4	20.0	34	60	Red	Red	—
MAZ4240	22.80	25.60	17	0.05	22.3	60	70	0.5	180	18.4	20.4	22.0	33	55	Red	Yellow	—

• $V_Z = 27.0\text{ V to } 39.0\text{ V}$ ($I_Z = 2\text{ mA}$)

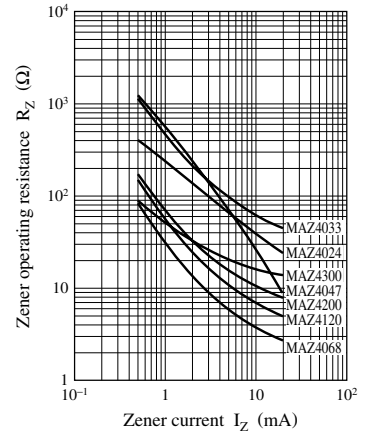
Part number	Zener voltage V_Z (V) $I_Z = 2\text{ mA}$		Reverse current				Zener operating resistance R_Z (Ω) $I_Z = 2\text{ mA}$	Zener rise operating resistance R_{ZK} (Ω)		Temperature coefficient of zener voltage S_Z (mV/ $^\circ\text{C}$) $I_Z = 2\text{ mA}$			Terminal capacitance C_t (pF) $(V_R = 0\text{ V})$ $f = 1\text{ MHz}$		Marking symbol (Color indication) Main body: Light green		
			I_{R1} (μA)		I_{R2} (μA)			I_Z									
	Min	Max	V_R (V)	Max	V_R (V)	Max	Max	(mA)	Max	Min	Typ	Max	Typ	Max	1st.	2nd.	3rd.
	MAZ4270	25.10	28.90	19	0.05	24.8	60	80	0.5	200	21.4	23.4	25.3	30	50	Red	Purple
MAZ4300	28.00	32.00	21	0.05	27.8	60	80	0.5	200	24.4	26.6	29.4	27	50	Orange	Black	—
MAZ4330	31.00	35.00	23	0.05	30.7	60	80	0.5	200	27.4	29.7	33.4	25	45	Orange	Orange	—
MAZ4360	34.00	38.00	25	0.05	33.6	60	90	0.5	200	30.4	33.0	37.4	23	45	Orange	Blue	—
MAZ4390	37.00	41.00	27	0.05	36.0	60	130	0.5	250	33.4	36.4	41.2	21	45	Orange	White	—



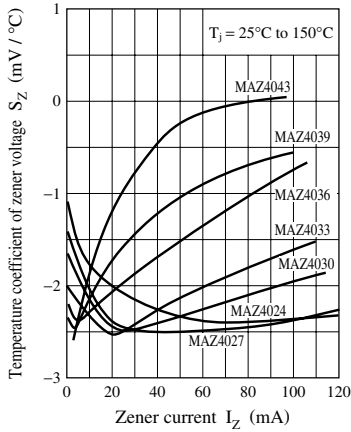
$Z_{th} - t_w$



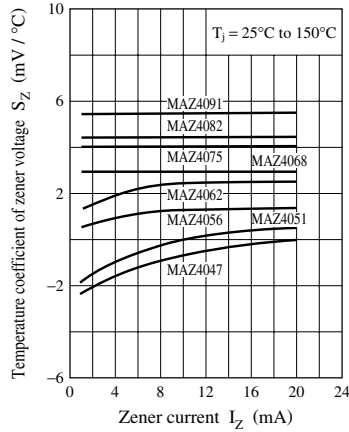
$R_Z - I_Z$



$S_Z - I_Z$



$S_Z - I_Z$



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