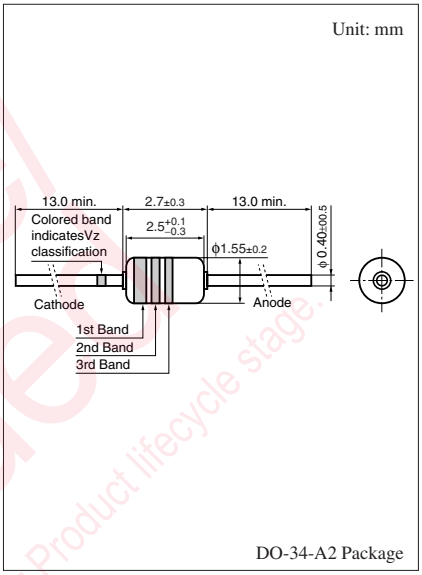
MAZ4xxx Series (MA4xxx Series)

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 V to 39.0 V

■ Absolute Maximum Ratings T_a = 25°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 *2 power dissipation	P_{ZSM}	30	W
Junction temperature	T_j	200	°C
Storage temperature	T_{stg}	−65 to +200	°C

Note) *1: P_D = 370 mW achieved with a printed circuit board
*2: t = 100 µs, T_j = 150°C

■ Common Electrical Characteristics T_a = 25°C ± 3°C *1

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Forward voltage	V_F	I_F = 10 mA		0.8	0.9	V
Zener voltage *2	V_Z	I_Z Specified value	Refer to the list of the electrical characteristics within part numbers			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				µA
	I_{R2}	V_R Specified value				
Temperature coefficient of zener voltage *3	S_Z	I_Z Specified value				mV/°C
Terminal capacitance	C_t	V_R = 0 V, f = 1 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 mesurement.
V_Z value measured at other temperature must be adjusted to V_Z (25°C)
*2: V_Z guaranteed 20 ms after current flow.
*3: T_j = 25°C to 150°C

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

Maintenance/Discontinued
Maintenance/Discontinued includes following four Product lifecycle stage.
Planned maintenance type
Planned discontinued type
Discontinued type
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■ Electrical Characteristics within Part Numbers $T_a = 25°C \pm 3°C$

• $V_Z = 2.0$ V to 6.8 V ($I_Z = 5$ mA)

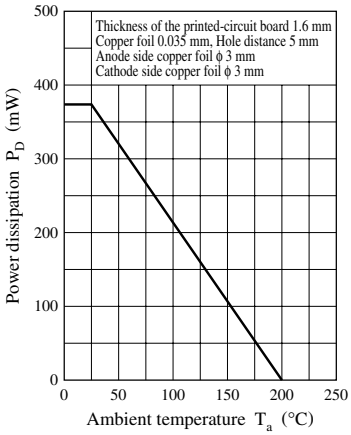
Part number	Zener voltage V_Z (V) I_Z = 5 mA		Reverse current I_{R1} (μA)		I_{R2} (μA)		Zener operating resistance R_Z (Ω) I_Z = 5 mA	Zener rise operating resistance R_{ZK} (Ω)		Temperature coefficient of zener voltage S_Z (mV/°C) I_Z = 5 mA			Terminal capacitance C_t (pF) (V_R = 0 V) f = 1 MHz		Marking symbol (Color indication Main body: Light green)		
	Min	Max	V_R (V)	Max	V_R (V)	Max	Max	I_Z (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	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	—

• $V_Z = 27.0$ V to 39.0 V ($I_Z = 2$ mA)

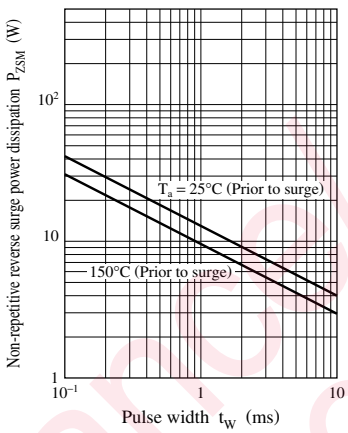
Part number	Zener voltage V_Z (V) I_Z = 2 mA		Reverse current I_{R1} (μA)		I_{R2} (μA)		Zener operating resistance R_Z (Ω) I_Z = 2 mA	Zener rise operating resistance R_{ZK} (Ω)		Temperature coefficient of zener voltage S_Z (mV/°C) I_Z = 2 mA			Terminal capacitance C_t (pF) (V_R = 0 V) f = 1 MHz		Marking symbol (Color indication Main body: Light green)		
	Min	Max	V_R (V)	Max	V_R (V)	Max	Max	I_Z (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	—

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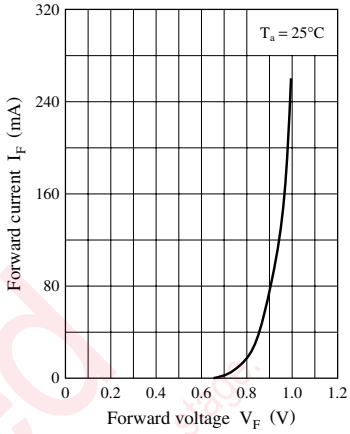
P_D — T_a



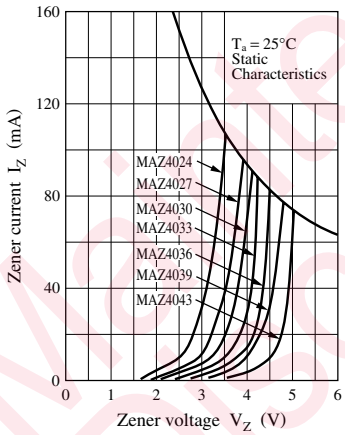
P_{ZSM} — t_W



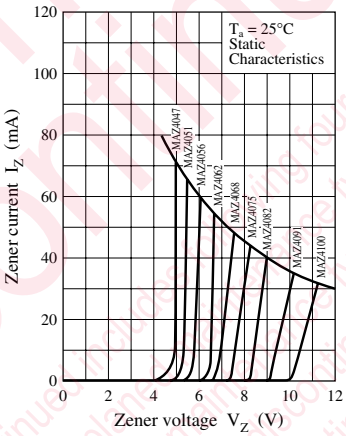
I_F — V_F



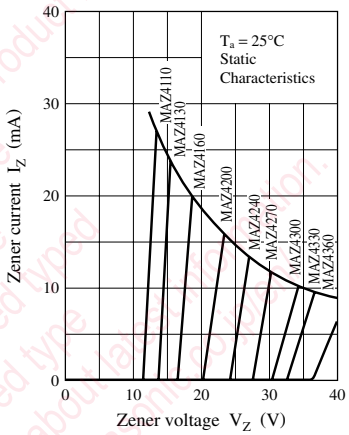
I_Z — V_Z



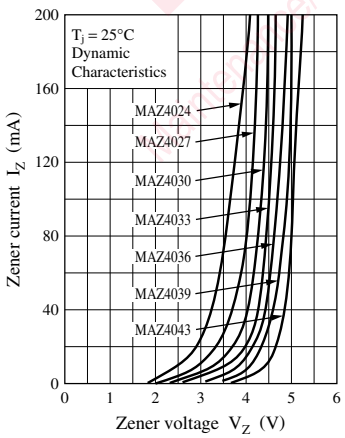
I_Z — V_Z



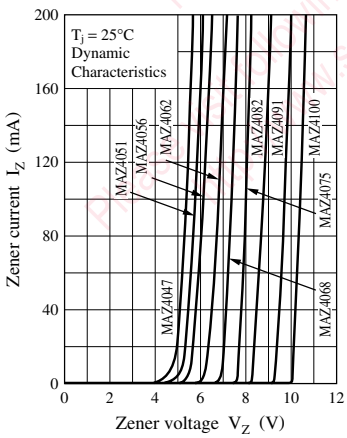
I_Z — V_Z



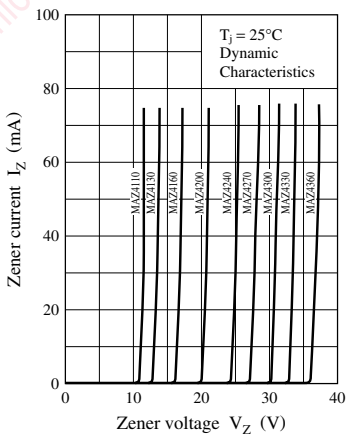
I_Z — V_Z



I_Z — V_Z

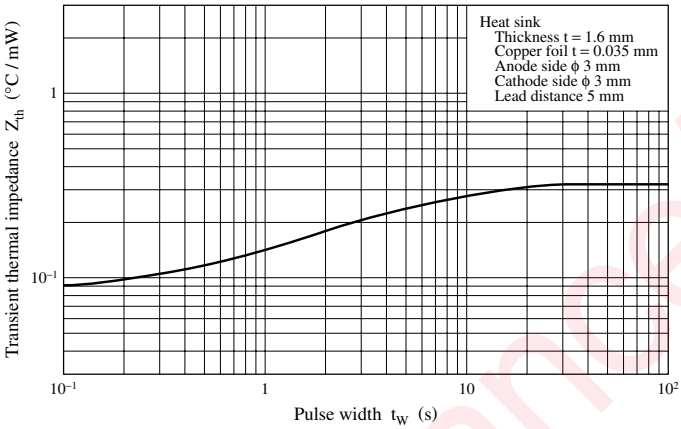


I_Z — V_Z

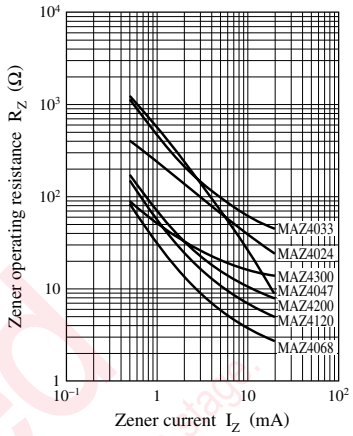


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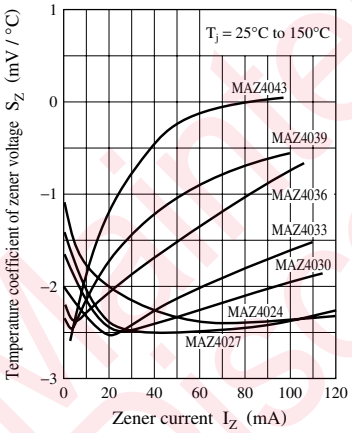
Z_{th} — t_W



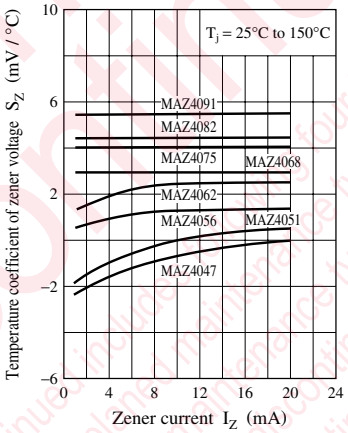
R_Z — I_Z



S_Z — I_Z



S_Z — I_Z



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