

# MA4000(N) Series

## Silicon planer type

For stabilization of power supply

### ■ Features

- Extremely low noise voltage from diode (1/3 to 1/10 of our conventional MA4000 series)
- Satisfactory particularly in rise performance in the low-current range
- Easy-to-read voltage rank identified with a color band
- Easy-to-select voltage rank which are further subdivided
- Small glass-sealed DHD package (DO-34) for easy mounting

### ■ Absolute Maximum Ratings (Ta= 25°C)

Parameter	Symbol	Rating	Unit
Average forward current	$I_{F(AV)}$	250	mA
Repetitive peak forward current	$I_{FRM}$	250	mA
Total power dissipation	$P_{tot}^{*1}$	400	mW
Junction temperature	$T_j$	200	°C
Storage temperature	$T_{stg}$	- 65 to +200	°C

\* With a printed-circuit board

### ■ Common Electrical Characteristics (Ta= 25°C)\*<sup>1</sup>

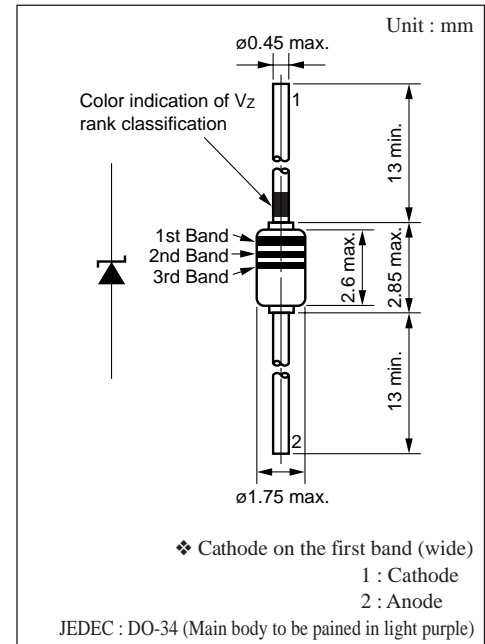
Parameter	Symbol	Condition	min	typ	max	Unit
Forward voltage	$V_F$	$I_F= 10mA$		0.83	0.9	V
Zener voltage	$V_Z^{*2}$	$I_Z$ ..... Specified value				V
Operating resistance	$R_{ZK}$	$I_Z$ ..... Specified value	Refer to the electrical characteristics list of P461 to P462			$\Omega$
	$R_Z$	$I_Z$ ..... Specified value				$\Omega$
Reverse current	$I_R$	$V_R$ ..... Specified value				
Temperature coefficient of zener voltage	$S_Z^{*3}$	$I_Z$ ..... Specified value				mV/°C

Note 1. Rated input/output frequency : 50MHz

2. \*<sup>1</sup> : The  $V_Z$  value is for the temperature of 25°C. In other cases, carry out the temperature compensation.

\*<sup>2</sup> : Guaranteed at 20ms after power application

\*<sup>3</sup> :  $T_j= 25$  to 150°C



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

L rank	M rank	H rank
Black	Blue	Red

## ■ Electrical Characteristics (Ta= 25°C)

Part Number	Zener voltage			Reverse current		Operating resistance				Temperature coefficient of zener voltage		Marking (Color indication Main body: light purple)		
	V <sub>Z</sub> (V) I <sub>Z</sub> = 5mA			I <sub>R</sub> max (μA)	V <sub>R</sub> (V)	R <sub>Z</sub> max (Ω)	I <sub>Z</sub> (mA)	R <sub>ZK</sub> max (Ω)	I <sub>Z</sub> (mA)	S <sub>Z</sub>		1st.	2nd.	3rd.
	min	typ	max							typ (mV/°C)	I <sub>Z</sub> (mA)			
MA4047(N)	4.42	4.66	4.90	2.0	1.0	80	5	800	0.5	-1.4	5	Yellow	Purple	Purple
MA4047(N)-L	4.42	4.52	4.61											
MA4047(N)-M	4.55	4.65	4.75											
MA4047(N)-H	4.69	4.80	4.90											
MA4051(N)	4.84	5.11	5.38	1.0	2.0	60	5	500	0.5	-0.8	5	Green	Brown	Brown
MA4051(N)-L	4.84	4.94	5.04											
MA4051(N)-M	4.98	5.10	5.21											
MA4051(N)-H	5.15	5.27	5.38											
MA4056(N)	5.32	5.62	5.92	0.5	2.5	40	5	200	0.5	1.2	5	Green	Blue	Blue
MA4056(N)-L	5.32	5.44	5.55											
MA4056(N)-M	5.49	5.61	5.73											
MA4056(N)-H	5.67	5.80	5.92											
MA4062(N)	5.86	6.20	6.53	0.2	4.0	30	5	100	0.5	2.3	5	Blue	Red	Red
MA4062(N)-L	5.86	5.99	6.12											
MA4062(N)-M	6.06	6.20	6.33											
MA4062(N)-H	6.26	6.40	6.53											
MA4068(N)	6.47	6.81	7.14	0.1	4.0	20	5	60	0.5	3.0	5	Blue	Gray	Gray
MA4068(N)-L	6.47	6.60	6.73											
MA4068(N)-M	6.65	6.79	6.93											
MA4068(N)-H	6.86	7.00	7.14											
MA4075(N)	7.07	7.45	7.83	0.1	5.0	20	5	60	0.5	4.0	5	Purple	Green	Green
MA4075(N)-L	7.07	7.21	7.35											
MA4075(N)-M	7.29	7.44	7.59											
MA4075(N)-H	7.53	7.68	7.83											
MA4082(N)	7.77	8.20	8.63	0.1	5.0	20	5	60	0.5	4.6	5	Gray	Red	Red
MA4082(N)-L	7.77	7.93	8.09											
MA4082(N)-M	8.03	8.19	8.35											
MA4082(N)-H	8.29	8.46	8.63											
MA4091(N)	8.57	9.05	9.53	0.1	6.0	20	5	60	0.5	5.5	5	White	Brown	Brown
MA4091(N)-L	8.57	8.75	8.93											
MA4091(N)-M	8.86	9.04	9.22											
MA4091(N)-H	9.15	9.34	9.53											
MA4100(N)	9.47	10.01	10.54	0.05	7.0	30	5	60	0.5	6.4	5	Brown	Black	—
MA4100(N)-L	9.47	9.66	9.85											
MA4100(N)-M	9.79	9.99	10.19											
MA4100(N)-H	10.12	10.33	10.54											
MA4110(N)	10.45	11.01	11.56	0.05	8.0	30	5	60	0.5	7.4	5	Brown	Brown	—
MA4110(N)-L	10.45	10.66	10.87											
MA4110(N)-M	10.77	10.99	11.21											
MA4110(N)-H	11.10	11.33	11.56											
MA4120(N)	11.43	12.01	12.58	0.05	9.0	30	5	80	0.5	8.4	5	Brown	Red	—
MA4120(N)-L	11.43	11.66	11.89											
MA4120(N)-M	11.75	11.99	12.23											
MA4120(N)-H	12.08	12.33	12.58											
MA4130(N)	12.46	13.21	13.96	0.05	10.0	35	5	80	0.5	9.4	5	Brown	Orange	—
MA4130(N)-L	12.46	12.74	13.02											
MA4130(N)-M	12.90	13.19	13.48											
MA4130(N)-H	13.36	13.66	13.96											

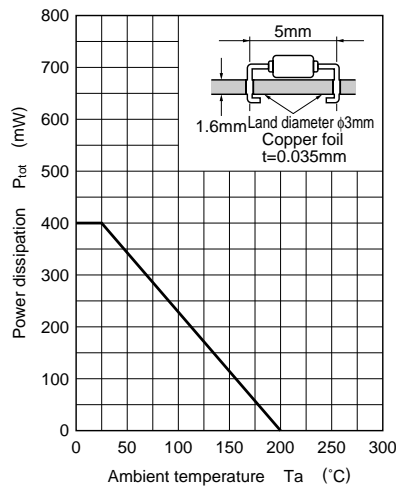
### ■ Electrical Characteristics(continued) (Ta= 25°C)

Part Number	Zener voltage			Reverse current		Operating resistance				Temperature coefficient of zener voltage		Marking (Color indication Main body: light purple)		
	V <sub>Z</sub> (V) I <sub>Z</sub> = 5mA			I <sub>R</sub> max (μA)	V <sub>R</sub> (V)	R <sub>Z</sub> max (Ω)	I <sub>Z</sub> (mA)	R <sub>ZK</sub> max (Ω)	I <sub>Z</sub> (mA)	S <sub>Z</sub>		1st.	2nd.	3rd.
	min	typ	max							typ (mV/°C)	I <sub>Z</sub> (mA)			
MA4150(N)	13.84	14.68	15.51	0.05	11.0	40	5	80	0.5	11.4	5	Brown	Green	—
MA4150(N)-L	13.84	14.15	14.46											
MA4150(N)-M	14.34	14.66	14.98											
MA4150(N)-H	14.86	15.19	15.51											
MA4160(N)	15.38	16.23	17.08	0.05	12.0	50	5	80	0.5	12.4	5	Brown	Blue	—
MA4160(N)-L	15.38	15.69	16.00											
MA4160(N)-M	15.86	16.18	16.50											
MA4160(N)-H	16.36	16.72	17.08											
MA4180(N)	16.94	17.98	19.02	0.05	13.0	60	5	80	0.5	14.4	5	Brown	Gray	—
MA4180(N)-L	16.94	17.32	17.70											
MA4180(N)-M	17.56	17.96	18.35											
MA4180(N)-H	18.21	18.62	19.02											
MA4200(N)	18.88	19.98	21.08	0.05	15.0	80	5	100	0.5	16.4	5	Red	Black	—
MA4200(N)-L	18.88	19.28	19.68											
MA4200(N)-M	19.53	19.95	20.37											
MA4200(N)-H	20.22	20.65	21.08											
MA4220(N)	20.89	22.02	23.15	0.05	17.0	80	5	100	0.5	18.4	5	Red	Red	—
MA4220(N)-L	20.89	21.33	21.76											
MA4220(N)-M	21.56	22.01	22.45											
MA4220(N)-H	22.25	22.70	23.15											
MA4240(N)	22.93	24.25	25.57	0.05	19.0	100	5	120	0.5	20.4	5	Red	Yellow	—
MA4240(N)-L	22.93	23.45	23.96											
MA4240(N)-M	23.76	24.27	24.78											
MA4240(N)-H	24.56	25.07	25.57											
MA4270(N)	25.20	26.91	28.61	0.05	21.0	120	5	120	0.5	23.4	5	Red	Purple	—
MA4270(N)-L	25.20	25.85	26.50											
MA4270(N)-M	26.19	26.86	27.53											
MA4270(N)-H	27.21	27.91	28.61											
MA4300(N)	28.22	29.98	31.74	0.05	23.0	160	5	160	0.5	26.6	5	Orange	Black	—
MA4300(N)-L	28.22	28.94	29.66											
MA4300(N)-M	29.19	29.94	30.69											
MA4300(N)-H	30.20	30.97	31.74											
MA4330(N)	31.18	33.01	34.83	0.05	25.0	200	5	200	0.5	29.7	5	Orange	Orange	—
MA4330(N)-L	31.18	31.98	32.78											
MA4330(N)-M	32.15	32.97	33.79											
MA4330(N)-H	33.13	33.98	34.83											
MA4360(N)	34.12	36.02	37.91	0.05	27.0	250	5	250	0.5	33.0	5	Orange	Blue	—
MA4360(N)-L	34.12	34.99	35.86											
MA4360(N)-M	35.07	35.97	36.87											
MA4360(N)-H	36.07	36.99	37.91											
MA4390(N)	37.04	39.02	40.99	0.05	30.0	300	5	300	0.5	35.6	5	Orange	White	—
MA4390(N)-L	37.04	37.99	38.94											
MA4390(N)-M	38.00	38.97	39.94											
MA4390(N)-H	38.99	39.99	40.99											

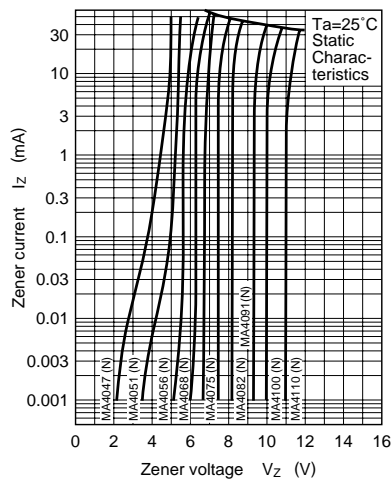
Note 1. The V<sub>Z</sub> value is the one after power application for 20ms at Ta= 25°C.

Note 2. The Zener voltage temperature coefficient is the one for T<sub>J</sub>= 25 to 150°C.

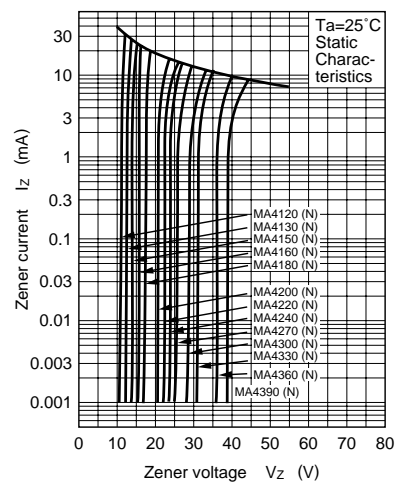
$P_{tot} - T_a$



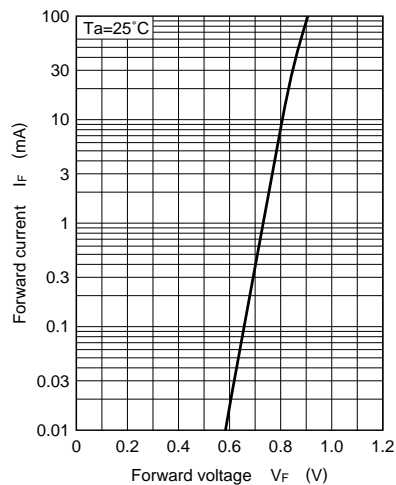
$I_Z - V_Z$



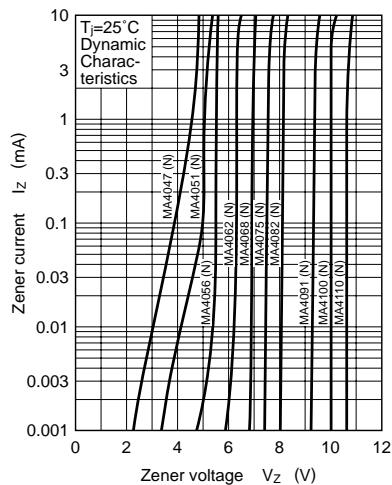
$I_Z - V_Z$



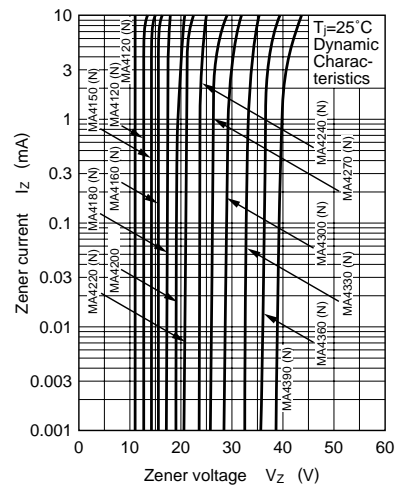
$I_F - V_F$



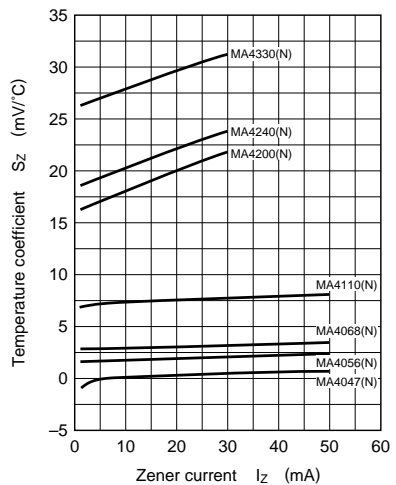
$I_Z - V_Z$



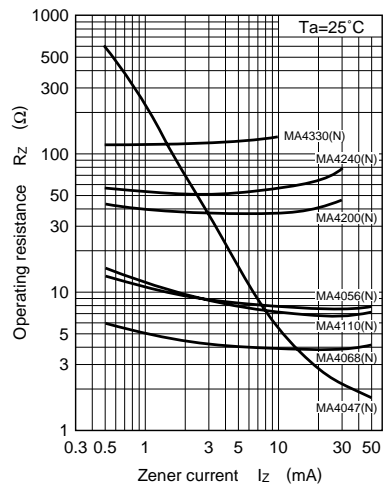
$I_Z - V_Z$

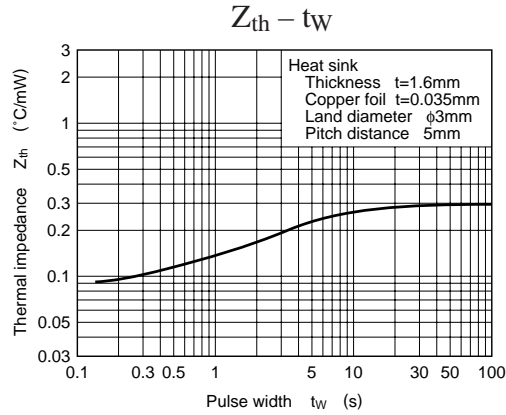


$S_Z - I_Z$

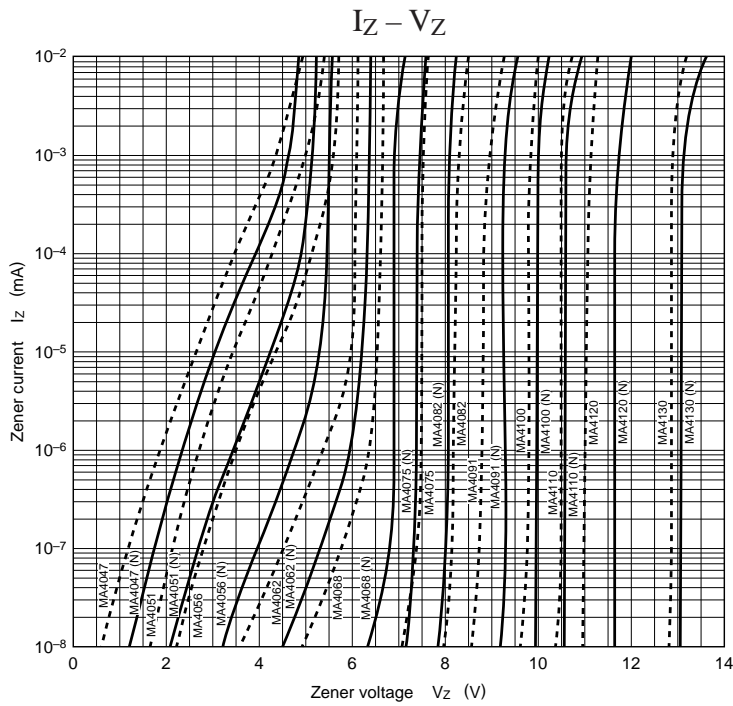


$R_Z - I_Z$





- Comparison (1) of rise performance between MA4000 (N) and MA4000 series



- Comparison (2) of rise performance between MA4000 (N) and MA4000 series

