

# MA8000 Series

## Silicon planer type

For stabilization of power supply

### ■ Features

- Extremely low noise voltage from the diode (2.4V to 39V, 1/3 to 1/10 of our conventional MA3000 series)
- Satisfactory in rise performance in the low-current range
- Easy-to-select voltage rank which are further subdivided
- Reliability equivalent to the conventional products (Mini type) guaranteed
- Substantial reduction of the mounting area, thickness, and weight when compared with the conventional products
- Automatic soldering according to reflow and flow methods
- Automatic mounting according to the existing chip mounter possible

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

Parameter	Symbol	Rating	Unit
Repetitive peak forward current	$I_{FRM}$	200	mA
Total power dissipation	$P_{tot}^{*1}$	150	mW
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	- 55 to +150	°C

\* With a printed-circuit board

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

Parameter	Symbol	Condition	min	typ	max	Unit
Forward voltage	$V_F$	$I_F = 10\text{mA}$		0.9	1.0	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 P478 to P480			Ω
	$R_Z$	$I_Z$ ..... Specified value				Ω
Reverse current	$I_R$	$V_R$ ..... Specified value				μA
Temperature coefficient of zener voltage	$S_Z^{*3}$	$I_Z$ ..... Specified value				mV/°C

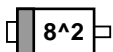
Note 1. Rated input/output frequency : 5MHz

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

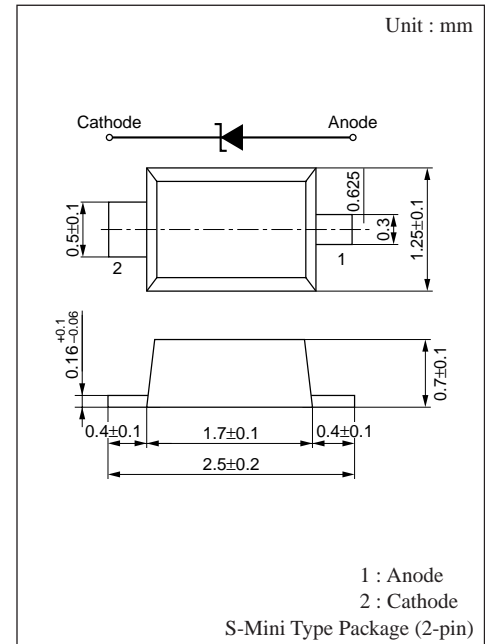
\*<sup>3</sup> :  $T_j = 25$  to 125°C

### ■ Marking (Example)



MA8082-H  
 [  $V_Z$  rank: 8.2V  
 [ Fine classification, H rank ]

Note: L/M/H marked products supplied as general purpose products



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

Part Number	Zener voltage			Reverse current		Operating resistance				Temperature coefficient of zener voltage		Marking	Conventional products	
	V <sub>Z</sub> (V)			I <sub>R</sub> max (Ω)	V <sub>R</sub> (V)	R <sub>Z</sub>		R <sub>ZK</sub>		S <sub>Z</sub>				
	min	nom	max			I <sub>Z</sub> (mA)	max (Ω)	I <sub>Z</sub> (mA)	max (Ω)	I <sub>Z</sub> (mA)	typ (mV/°C)			I <sub>Z</sub> (mA)
MA8024	2.28	2.40	2.60	5	120	1.0	100	5	—	—	-1.6	5	2.4	MA3024
MA8027	2.50	2.70	2.90	5	120	1.0	110	5	—	—	-2.0	5	2_7 or 2^7	MA3027
MA8027-L	2.50	2.60	2.75										2_7	MA3027-L
MA8027-H	2.65	2.80	2.90										2^7	MA3027-H
MA8030	2.80	3.00	3.20	5	50	1.0	120	5	—	—	-2.1	5	3_0 or 3^0	MA3030
MA8030-L	2.80	2.90	3.05										3_0	MA3030-L
MA8030-H	2.95	3.10	3.20										3^0	MA3030-H
MA8033	3.10	3.30	3.50	5	20	1.0	130	5	—	—	-2.4	5	3_3 or 3^3	MA3033
MA8033-L	3.10	3.20	3.35										3_3	MA3033-L
MA8033-H	3.25	3.40	3.50										3^3	MA3033-H
MA8036	3.40	3.60	3.80	5	10	1.0	130	5	—	—	-2.4	5	3_6 or 3^6	MA3036
MA8036-L	3.40	3.50	3.65										3_6	MA3036-L
MA8036-H	3.55	3.70	3.80										3^6	MA3036-H
MA8039	3.70	3.90	4.10	5	10	1.0	130	5	—	—	-2.5	5	3_9 or 3^9	MA3039
MA8039-L	3.70	3.80	3.97										3_9	MA3039-L
MA8039-H	3.87	4.00	4.10										3^9	MA3039-H
MA8043	4.00	4.30	4.60	5	10	1.0	130	5	—	—	-2.5	5	4_3 or 4-3 or 4^3	MA3043
MA8043-L	4.03	4.10	4.26										4_3	MA3043-L
MA8043-M	4.17	4.30	4.40										4-3	MA3043-M
MA8043-H	4.31	4.40	4.54										4^3	MA3043-H
MA8047	4.40	4.70	5.00	5	2.0	1.0	80	5	800	1.0	-1.4	5	4_7 or 4-7 or 4^7	MA3047
MA8047-L	4.45	4.60	4.69										4_7	MA3047-L
MA8047-M	4.59	4.70	4.83										4-7	MA3047-M
MA8047-H	4.74	4.90	4.99										4^7	MA3047-H
MA8051	4.80	5.10	5.40	5	1.0	2.0	60	5	500	1.0	-0.8	5	5_1 or 5-1 or 5^1	MA3051
MA8051-L	4.87	5.00	5.12										5_1	MA3051-L
MA8051-M	5.00	5.10	5.26										5-1	MA3051-M
MA8051-H	5.14	5.30	5.40										5^1	MA3051-H
MA8056	5.30	5.60	6.00	5	0.5	2.5	40	5	200	0.5	1.2	5	5_6 or 5-6 or 5^6	MA3056
MA8056-L	5.30	5.40	5.58										5_6	MA3056-L
MA8056-M	5.48	5.60	5.76										5-6	MA3056-M
MA8056-H	5.66	5.80	5.95										5^6	MA3056-H
MA8062	5.80	6.20	6.60	5	0.2	4.0	30	5	100	0.5	2.3	5	6_2 or 6-2 or 6^2	MA3062
MA8062-L	5.85	6.00	6.15										6_2	MA3062-L
MA8062-M	6.05	6.20	6.36										6-2	MA3062-M
MA8062-H	6.24	6.40	6.56										6^2	MA3062-H
MA8068	6.40	6.80	7.20	5	0.1	4.0	20	5	60	0.5	3.0	5	6_8 or 6-8 or 6^8	MA3068
MA8068-L	6.44	6.60	6.77										6_8	MA3068-L
MA8068-M	6.64	6.80	6.98										6-8	MA3068-M
MA8068-H	6.85	7.00	7.20										6^8	MA3068-H
MA8075	7.00	7.50	7.90	5	0.1	5.0	20	5	60	0.5	4.0	5	7_5 or 7-5 or 7^5	MA3075
MA8075-L	7.07	7.30	7.43										7_5	MA3075-L
MA8075-M	7.29	7.50	7.67										7-5	MA3075-M
MA8075-H	7.51	7.70	7.89										7^5	MA3075-H
MA8082	7.70	8.20	8.70	5	0.1	5.0	20	5	60	0.5	4.6	5	8_2 or 8-2 or 8^2	MA3082
MA8082-L	7.77	7.90	8.17										8_2	MA3082-L
MA8082-M	8.03	8.20	8.43										8-2	MA3082-M
MA8082-H	8.29	8.50	8.70										8^2	MA3082-H

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

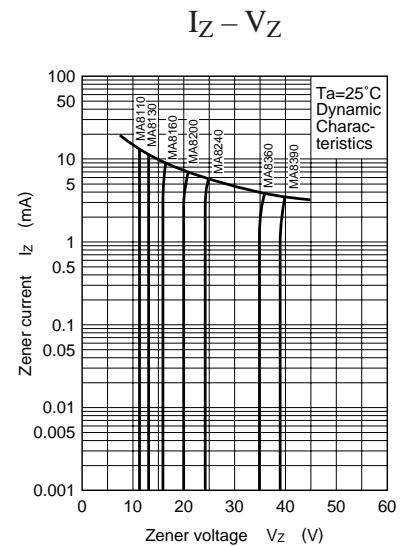
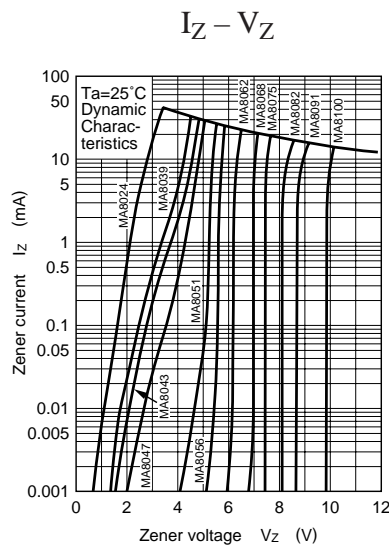
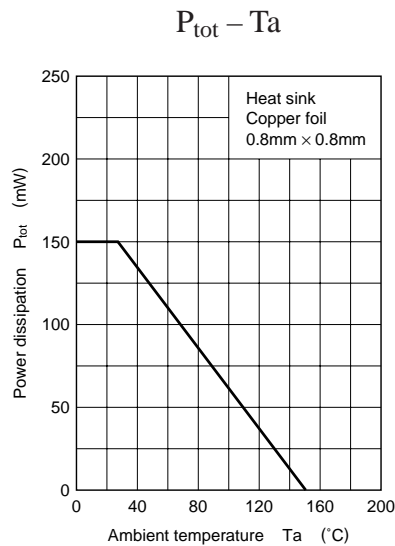
Part Number	Zener voltage			Reverse current		Operating resistance				Temperature coefficient of zener voltage		Marking	Conventional products	
	V <sub>Z</sub> (V)			I <sub>R</sub> max (μA)	V <sub>R</sub> (V)	R <sub>Z</sub> max (Ω)	I <sub>Z</sub> (mA)	R <sub>ZK</sub> max (Ω)	I <sub>Z</sub> (mA)	S <sub>Z</sub>				
	min	nom	max							I <sub>Z</sub> (mA)	typ (mV/°C)			I <sub>Z</sub> (mA)
MA8091	8.50	9.10	9.60	5	0.1	6.0	20	5	60	0.5	5.5	5	9_1 or 9-1 or 9^1	MA3091
MA8091-L	8.58	8.80	9.02										9_1	MA3091-L
MA8091-M	8.87	9.10	9.33										9-1	MA3091-M
MA8091-H	9.14	9.40	9.60										9^1	MA3091-H
MA8100	9.40	10.00	10.60	5	0.05	7.0	30	5	60	0.5	6.4	5	10_ or 10- or 10^	MA3100
MA8100-L	9.44	9.70	9.92										10_	MA3100-L
MA8100-M	9.75	10.00	10.25										10-	MA3100-M
MA8100-H	10.07	10.30	10.59										10^	MA3100-H
MA8110	10.40	11.00	11.60	5	0.05	8.0	30	5	60	0.5	7.4	5	11_ or 11- or 11^	MA3110
MA8110-L	10.40	10.70	10.94										11_	MA3110-L
MA8110-M	10.73	11.00	11.28										11-	MA3110-M
MA8110-H	11.05	11.30	11.60										11^	MA3110-H
MA8120	11.40	12.00	12.70	5	0.05	9.0	30	5	80	0.5	8.4	5	12_ or 12- or 12^	MA3120
MA8120-L	11.40	11.70	11.96										12_	MA3120-L
MA8120-M	11.73	12.00	12.33										12-	MA3120-M
MA8120-H	12.06	12.30	12.68										12^	MA3120-H
MA8130	12.40	13.00	14.10	5	0.05	10.0	35	5	80	0.5	9.4	5	13_ or 13- or 13^	MA3130
MA8130-L	12.40	12.70	12.99										13_	MA3130-L
MA8130-M	12.73	13.00	13.40										13-	MA3130-M
MA8130-H	13.25	13.70	14.08										13^	MA3130-H
MA8140-M	13.65	14.00	14.35	5	0.05	10.0	40	5	80	0.5	10.0	5	14-	MA3140-M
MA8150	13.90	15.00	15.60	5	0.05	11.0	40	5	80	0.5	11.4	5	15_ or 15- or 15^	MA3150
MA8150-L	13.90	14.30	14.76										15_	MA3150-L
MA8150-M	14.60	15.00	15.35										15-	MA3150-M
MA8150-H	14.95	15.30	15.60										15^	MA3150-H
MA8160	15.30	16.00	17.10	5	0.05	12.0	50	5	80	0.5	12.4	5	16_ or 16- or 16^	MA3160
MA8160-L	15.30	15.70	16.09										16_	MA3160-L
MA8160-M	15.70	16.00	16.50										16-	MA3160-M
MA8160-H	16.26	16.70	17.10										16^	MA3160-H
MA8180	16.90	18.00	19.10	5	0.05	13.0	60	5	80	0.5	14.4	5	18_ or 18- or 18^	MA3180
MA8180-L	16.90	17.30	17.76										18_	MA3180-L
MA8180-M	17.55	18.00	18.45										18-	MA3180-M
MA8180-H	18.20	18.70	19.10										18^	MA3180-H
MA8200	18.80	20.00	21.20	5	0.05	15.0	80	5	100	0.5	16.4	5	20_ or 20- or 20^	MA3200
MA8200-L	18.85	19.30	19.81										20_	MA3200-L
MA8200-M	19.50	20.00	20.50										20-	MA3200-M
MA8200-H	20.15	20.70	21.19										20^	MA3200-H
MA8220	20.80	22.00	23.30	5	0.05	17.0	80	5	100	0.5	18.4	5	22_ or 22- or 22^	MA3220
MA8220-L	20.80	21.30	21.86										22_	MA3220-L
MA8220-M	21.45	22.00	22.55										22-	MA3220-M
MA8220-H	22.10	22.70	23.24										22^	MA3220-H
MA8240	22.80	24.00	25.60	5	0.05	19.0	100	5	120	0.5	20.4	5	24_ or 24- or 24^	MA3240
MA8240-L	22.80	23.30	23.97										24_	MA3240-L
MA8240-M	23.50	24.00	24.70										24-	MA3240-M
MA8240-H	24.35	25.00	25.60										24^	MA3240-H
MA8270	25.10	27.00	28.90	2	0.05	21.0	120	2	120	0.5	23.4	2	27_ or 27- or 27^	MA3270
MA8270-L	25.30	26.00	26.70										27_	MA3270-L
MA8270-M	26.30	27.00	27.70										27-	MA3270-M
MA8270-H	27.30	28.00	28.70										27^	MA3270-H

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

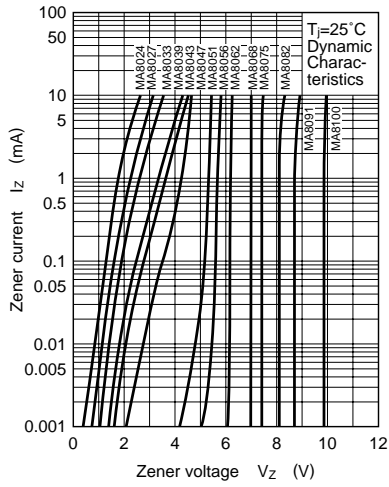
Part Number	Zener voltage			Reverse current		Operating resistance				Temperature coefficient of zener voltage		Marking	Conventional products	
	V <sub>Z</sub> (V)			I <sub>R</sub> max (μA)	V <sub>R</sub> (V)	R <sub>Z</sub>		R <sub>ZK</sub>		S <sub>Z</sub>				
	min	nom	max			I <sub>Z</sub> (mA)	max (Ω)	I <sub>Z</sub> (mA)	max (Ω)	I <sub>Z</sub> (mA)	typ (mV/°C)			I <sub>Z</sub> (mA)
MA8300	28.00	30.00	32.00	2	0.05	23.0	160	2	160	0.5	26.6	2	30_ or 30- or 30^	MA3300
MA8300-L	28.30	29.00	29.70										30_	MA3300-L
MA8300-M	29.30	30.00	30.80										30-	MA3300-M
MA8300-H	30.20	31.00	31.80										30^	MA3300-H
MA8330	31.00	33.00	35.00	2	0.05	25.0	200	2	200	0.5	29.7	2	33_ or 33- or 33^	MA3330
MA8330-L	31.20	32.00	32.80										33_	MA3330-L
MA8330-M	32.20	33.00	33.80										33-	MA3330-M
MA8330-H	33.20	34.00	34.90										33^	MA3330-H
MA8360	34.00	36.00	38.00	2	0.05	27.0	250	2	250	0.5	33.0	2	36_ or 36- or 36^	MA3360
MA8360-L	34.10	35.00	35.90										36_	MA3360-L
MA8360-M	35.10	36.00	36.90										36-	MA3360-M
MA8360-H	36.10	37.00	37.90										36^	MA3360-H
MA8390	37.00	39.00	41.00	2	0.05	30.0	300	2	300	0.5	35.6	2	39_ or 39- or 39^	—
MA8390-L	37.10	38.00	39.00										39_	—
MA8390-M	38.00	39.00	40.00										39-	—
MA8390-H	39.00	40.00	41.00										39^	—

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

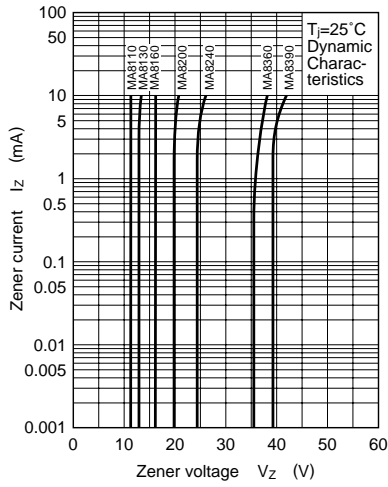
Note 2. The Zener voltage temperature coefficient is the one for T<sub>j</sub>= 25 to 150°C.



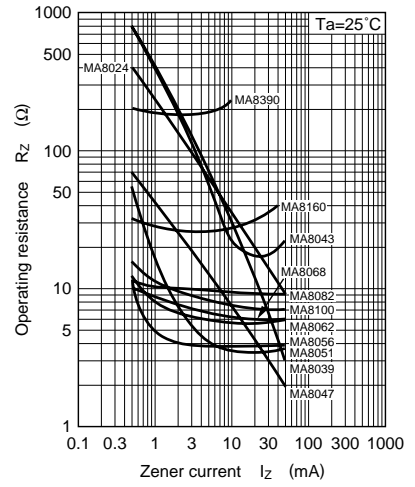
$I_Z - V_Z$



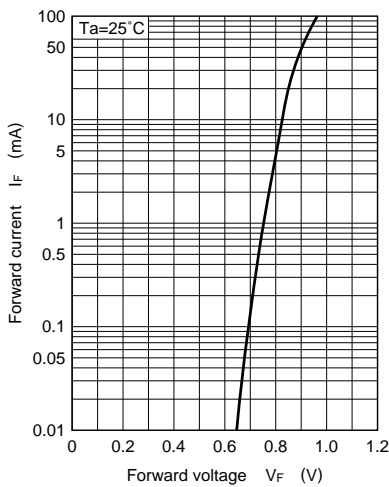
$I_Z - V_Z$



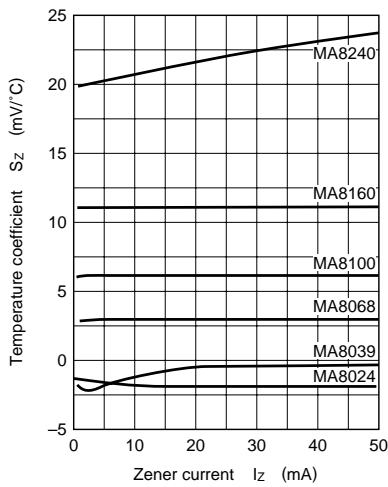
$R_Z - I_Z$



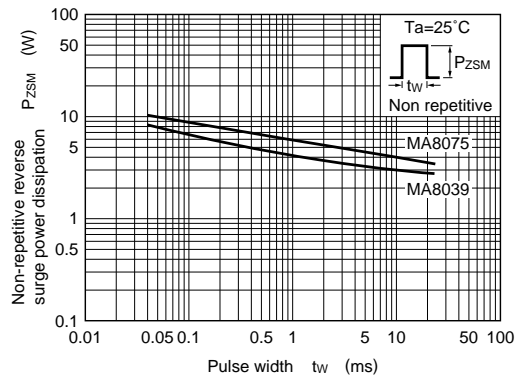
$I_F - V_F$



$S_Z - I_Z$



$P_{ZSM} - t_w$



$Z_{th} - t_w$

