

# MAZSxxx Series

## Silicon planar type

For constant voltage, constant current, waveform clipper and surge absorption circuit

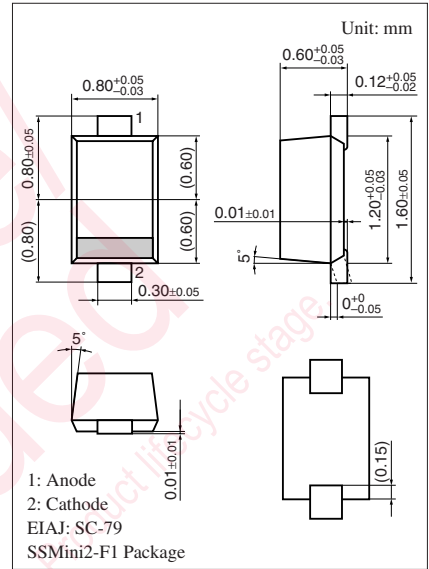
### ■ Features

- SS-Mini type 2-pin package (SSMini2-F1)
- Low noise type
- $V_Z$  rank classified ( $V_Z = 2.4\text{ V to }39\text{ V}$ )

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

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

Note) \*: With a printed circuit board



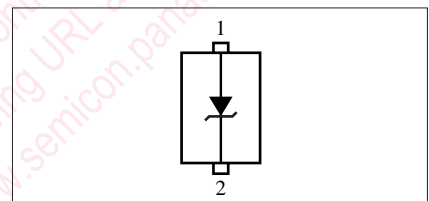
### Marking Symbol

Refer to the list of the electrical characteristics within part numbers

- (Example) MAZS082 : 8  
 MAZS0820L : 8\_   
 MAZS0820M : 8-   
 MAZS0820H : 8^

Note) L/M/H marked products will be supplied unless other wise specified

### Internal Connection



### ■ Common Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$ \*1

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Forward voltage	$V_F$	$I_F = 10\text{ mA}$		0.9	1.0	V
Zener voltage *2	$V_Z$	$I_Z$ Specified value				V
Reverse current	$I_R$	$V_R$ Specified value				$\mu\text{A}$
Zener rise operating resistance	$R_{ZK}$	$I_Z$ Specified value				$\Omega$
Zener operating resistance	$R_Z$	$I_Z$ Specified value				$\Omega$
Temperature coefficient of zener voltage *3	$S_Z$	$I_Z$ Specified value				mV/ $^\circ\text{C}$

Refer to the list of the electrical characteristics within part numbers

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7031 measuring methods for diodes.

2. Rated input/output frequency: 5 MHz

3. \*1: The  $V_Z$  value is for the temperature of  $25^\circ\text{C}$ . In other cases, carry out the temperature compensation.

\*2: Guaranteed at 20 ms after power application.

\*3:  $T_j = 25^\circ\text{C to }150^\circ\text{C}$

■ Electrical characteristics within part numbers  $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

Part Number	Zener voltage $V_Z$ (V)				Reverse current $I_R$ ( $\mu\text{A}$ )		Zener operating resistance				Temperature coefficient of zener voltage $S_Z$ (mV/ $^\circ\text{C}$ )		Marking symbol
	Min	Nom	Max	$I_Z$ (mA)	Max	$V_R$ (V)	$R_Z$ ( $\Omega$ )		$R_{ZK}$ ( $\Omega$ )		Typ	$I_Z$ (mA)	
							Max	$I_Z$ (mA)	Max	$I_Z$ (mA)			
MAZS024	2.28	2.40	2.60	5	120	1.0	100	5	—	—	-1.6	5	T
MAZS027	2.50	2.70	2.90				2 or 2 <sub>-</sub> or 2 <sup>^</sup>						
MAZS0270L	2.50	2.60	2.75				2 <sub>-</sub>						
MAZS0270H	2.65	2.80	2.90				2 <sup>^</sup>						
MAZS030	2.80	3.00	3.20	5	50	1.0	120	5	—	—	-2.1	5	3 or 3 <sub>-</sub> or 3 <sup>^</sup>
MAZS0300L	2.80	2.90	3.05				3 <sub>-</sub>						
MAZS0300H	2.95	3.10	3.20				3 <sup>^</sup>						
MAZS033	3.10	3.30	3.50				F or F <sub>-</sub> or F <sup>^</sup>						
MAZS0330L	3.10	3.20	3.35	5	20	1.0	130	5	—	—	-2.4	5	F <sub>-</sub>
MAZS0330H	3.25	3.40	3.50				F <sup>^</sup>						
MAZS036	3.40	3.60	3.80				H or H <sub>-</sub> or H <sup>^</sup>						
MAZS0360L	3.40	3.50	3.65				H <sub>-</sub>						
MAZS0360H	3.55	3.70	3.80	H <sup>^</sup>									
MAZS039	3.70	3.90	4.10	5	10	1.0	130	5	—	—	-2.5	5	K or K <sub>-</sub> or K <sup>^</sup>
MAZS0390L	3.70	3.80	3.97				K <sub>-</sub>						
MAZS0390H	3.87	4.00	4.10				K <sup>^</sup>						
MAZS043	4.00	4.30	4.60				L or L <sub>-</sub> or L <sub>-</sub> or L <sup>^</sup>						
MAZS0430L	4.03	4.10	4.26	5	10	1.0	130	5	—	—	-2.5	5	L <sub>-</sub>
MAZS0430M	4.17	4.30	4.40				L <sub>-</sub>						
MAZS0430H	4.31	4.40	4.54				L <sup>^</sup>						
MAZS047	4.40	4.70	5.00				N or N <sub>-</sub> or N <sub>-</sub> or N <sup>^</sup>						
MAZS0470L	4.45	4.60	4.69	5	2.0	1.0	80	5	800	1.0	-1.4	5	N <sub>-</sub>
MAZS0470M	4.59	4.70	4.83				N <sub>-</sub>						
MAZS0470H	4.74	4.90	4.99				N <sup>^</sup>						
MAZS051	4.80	5.10	5.40				5 or 5 <sub>-</sub> or 5 <sub>-</sub> or 5 <sup>^</sup>						
MAZS0510L	4.87	5.00	5.12	5	1.0	2.0	60	5	500	1.0	-0.8	5	5 <sub>-</sub>
MAZS0510M	5.00	5.10	5.26				5 <sub>-</sub>						
MAZS0510H	5.14	5.30	5.40				5 <sup>^</sup>						
MAZS056	5.30	5.60	6.00				P or P <sub>-</sub> or P <sub>-</sub> or P <sup>^</sup>						
MAZS0560L	5.30	5.40	5.58	5	0.5	2.5	40	5	200	0.5	1.2	5	P <sub>-</sub>
MAZS0560M	5.48	5.60	5.76				P <sub>-</sub>						
MAZS0560H	5.66	5.80	5.95				P <sup>^</sup>						
MAZS062	5.80	6.20	6.60				6 or 6 <sub>-</sub> or 6 <sub>-</sub> or 6 <sup>^</sup>						
MAZS0620L	5.85	6.00	6.15	5	0.2	4.0	30	5	100	0.5	2.3	5	6 <sub>-</sub>
MAZS0620M	6.05	6.20	6.36				6 <sub>-</sub>						
MAZS0620H	6.24	6.40	6.56				6 <sup>^</sup>						
MAZS068	6.40	6.80	7.20				R or R <sub>-</sub> or R <sub>-</sub> or R <sup>^</sup>						
MAZS0680L	6.44	6.60	6.77	5	0.1	4.0	20	5	60	0.5	3.0	5	R <sub>-</sub>
MAZS0680M	6.64	6.80	6.98				R <sub>-</sub>						
MAZS0680H	6.85	7.00	7.20				R <sup>^</sup>						
MAZS075	7.00	7.50	7.90				7 or 7 <sub>-</sub> or 7 <sub>-</sub> or 7 <sup>^</sup>						
MAZS0750L	7.07	7.30	7.43	5	0.1	5.0	20	5	60	0.5	4.0	5	7 <sub>-</sub>
MAZS0750M	7.29	7.50	7.67				7 <sub>-</sub>						
MAZS0750H	7.51	7.70	7.89				7 <sup>^</sup>						
MAZS082	7.70	8.20	8.70				8 or 8 <sub>-</sub> or 8 <sub>-</sub> or 8 <sup>^</sup>						
MAZS0820L	7.77	7.90	8.17	5	0.1	5.0	20	5	60	0.5	4.6	5	8 <sub>-</sub>
MAZS0820M	8.03	8.20	8.43				8 <sub>-</sub>						
MAZS0820H	8.29	8.50	8.70				8 <sup>^</sup>						
MAZS091	8.50	9.10	9.60				9 or 9 <sub>-</sub> or 9 <sub>-</sub> or 9 <sup>^</sup>						
MAZS0910L	8.58	8.80	9.02	5	0.1	6.0	20	5	60	0.5	5.5	5	9 <sub>-</sub>
MAZS0910M	8.87	9.10	9.33				9 <sub>-</sub>						
MAZS0910H	9.14	9.40	9.60				9 <sup>^</sup>						

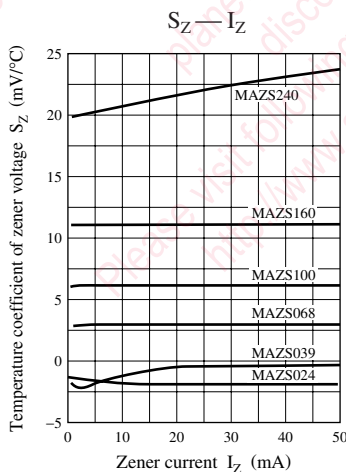
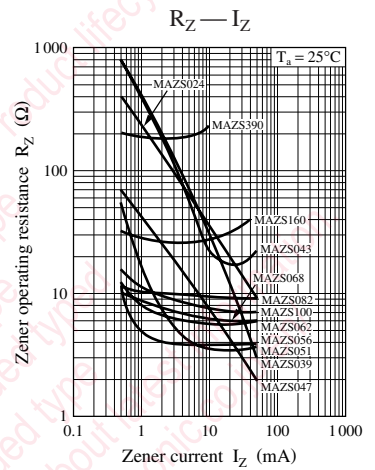
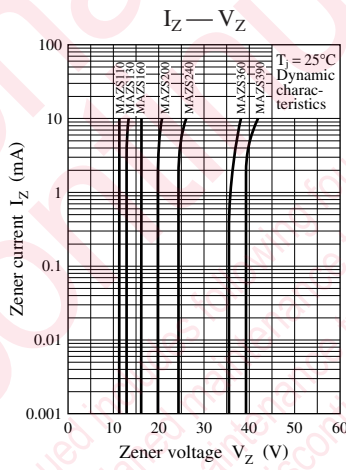
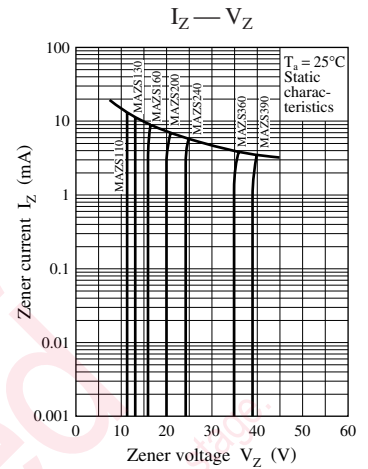
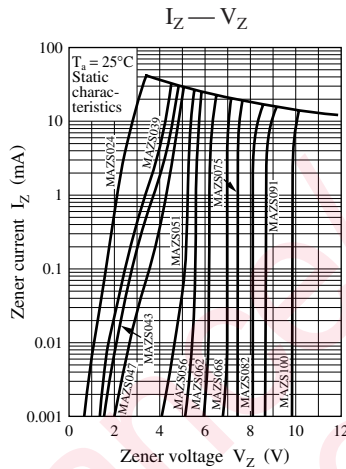
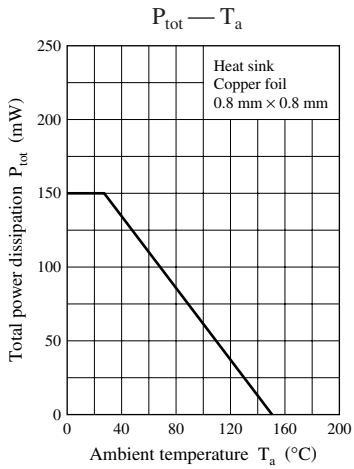
■ Electrical characteristics within part numbers (continued)  $T_a = 25^{\circ}\text{C} \pm 3^{\circ}\text{C}$

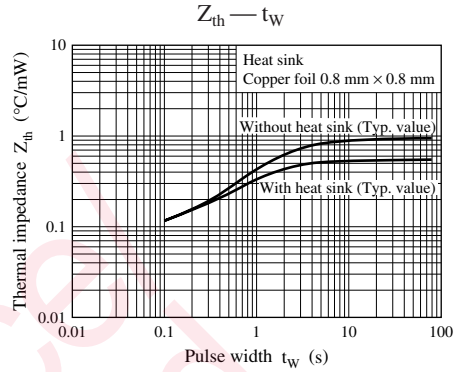
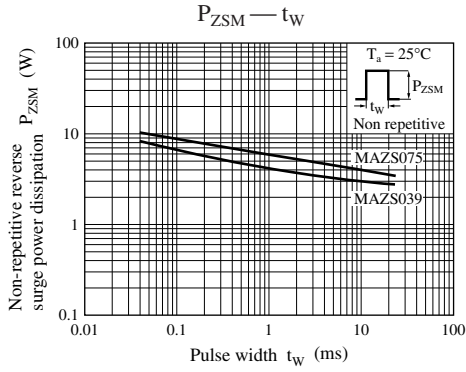
Part Number	Zener voltage			$I_Z$ (mA)	Reverse current		Zener operating resistance				Temperature coefficient of zener voltage		Marking symbol
	$V_Z$ (V)				$I_R$ ( $\mu\text{A}$ )	$V_R$ (V)	$R_Z$ ( $\Omega$ )		$R_{ZK}$ ( $\Omega$ )		Typ	$S_Z$ (mV/ $^{\circ}\text{C}$ )	
	Min	Nom	Max				Max	$I_Z$ (mA)	Max	$I_Z$ (mA)			
MAZS100	9.40	10.00	10.60	5	0.05	7.0	30	5	60	0.5	6.4	5	10 or 10_ or 10- or 10^
MAZS1000L	9.44	9.70	9.92										10_
MAZS1000M	9.75	10.00	10.25										10-
MAZS1000H	10.07	10.30	10.59										10^
MAZS110	10.40	11.00	11.60	5	0.05	8.0	30	5	60	0.5	7.4	5	11 or 11_ or 11- or 11^
MAZS1100L	10.40	10.70	10.94										11_
MAZS1100M	10.73	11.00	11.28										11-
MAZS1100H	11.05	11.30	11.60										11^
MAZS120	11.40	12.00	12.70	5	0.05	9.0	30	5	80	0.5	8.4	5	12 or 12_ or 12- or 12^
MAZS1200L	11.40	11.70	11.96										12_
MAZS1200M	11.73	12.00	12.33										12-
MAZS1200H	12.06	12.30	12.68										12^
MAZS130	12.40	13.00	14.10	5	0.05	10.0	35	5	80	0.5	9.4	5	13 or 13_ or 13- or 13^
MAZS1300L	12.40	12.70	12.99										13_
MAZS1300M	12.73	13.00	13.40										13-
MAZS1300H	13.25	13.70	14.08										13^
MAZS150	13.90	15.00	15.60	5	0.05	11.0	40	5	80	0.5	11.4	5	15 or 15_ or 15- or 15^
MAZS1500L	13.90	14.30	14.76										15_
MAZS1500M	14.60	15.00	15.35										15-
MAZS1500H	14.95	15.30	15.60										15^
MAZS160	15.30	16.00	17.10	5	0.05	12.0	50	5	80	0.5	12.4	5	16 or 16_ or 16- or 16^
MAZS1600L	15.30	15.70	16.09										16_
MAZS1600M	15.70	16.00	16.50										16-
MAZS1600H	16.26	16.70	17.10										16^
MAZS180	16.90	18.00	19.10	5	0.05	13.0	60	5	80	0.5	14.4	5	18 or 18_ or 18- or 18^
MAZS1800L	16.90	17.30	17.76										18_
MAZS1800M	17.55	18.00	18.45										18-
MAZS1800H	18.20	18.70	19.10										18^
MAZS200	18.80	20.00	21.20	5	0.05	15.0	80	5	100	0.5	16.4	5	20 or 20_ or 20- or 20^
MAZS2000L	18.85	19.30	19.81										20_
MAZS2000M	19.50	20.00	20.50										20-
MAZS2000H	20.15	20.70	21.19										20^
MAZS220	20.80	22.00	23.30	5	0.05	17.0	80	5	100	0.5	18.4	5	22 or 22_ or 22- or 22^
MAZS2200L	20.80	21.30	21.86										22_
MAZS2200M	21.45	22.00	22.55										22-
MAZS2200H	22.10	22.70	23.24										22^
MAZS240	22.80	24.00	25.60	5	0.05	19.0	100	5	120	0.5	20.4	5	24 or 24_ or 24- or 24^
MAZS2400L	22.80	23.30	23.97										24_
MAZS2400M	23.50	24.00	24.70										24-
MAZS2400H	24.35	25.00	25.60										24^
MAZS270	25.10	27.00	28.90	2	0.05	21.0	120	2	120	0.5	23.4	2	27 or 27_ or 27- or 27^
MAZS2700L	25.30	26.00	26.70										27_
MAZS2700M	26.30	27.00	27.70										27-
MAZS2700H	27.30	28.00	28.70										27^
MAZS300	28.00	30.00	32.00	2	0.05	23.0	160	2	160	0.5	26.6	2	30 or 30_ or 30- or 30^
MAZS3000L	28.30	29.00	29.70										30_
MAZS3000M	29.30	30.00	30.80										30-
MAZS3000H	30.20	31.00	31.80										30^
MAZS330	31.00	33.00	35.00	2	0.05	25.0	200	2	200	0.5	29.7	2	33 or 33_ or 33- or 33^
MAZS3300L	31.20	32.00	32.80										33_
MAZS3300M	32.20	33.00	33.80										33-
MAZS3300H	33.20	34.00	34.90										33^

■ Electrical characteristics within part numbers (continued)  $T_a = 25^{\circ}\text{C} \pm 3^{\circ}\text{C}$

Part Number	Zener voltage $V_Z$ (V)				Reverse current $I_R$ ( $\mu\text{A}$ )		Zener operating resistance				Temperature coefficient of zener voltage $S_Z$ (mV/ $^{\circ}\text{C}$ )		Marking symbol
	Min	Nom	Max	$I_Z$ (mA)	Max	$V_R$ (V)	$R_Z$ ( $\Omega$ )		$R_{ZK}$ ( $\Omega$ )		Typ	$I_Z$ (mA)	
							Max	$I_Z$ (mA)	Max	$I_Z$ (mA)			
MAZS360	34.00	36.00	38.00	2	0.05	27.0	250	2	250	0.5	33.0	2	36 or 36_ or 36- or 36^
MAZS3600L	34.10	35.00	35.90										36_
MAZS3600M	35.10	36.00	36.90										36-
MAZS3600H	36.10	37.00	37.90										36^
MAZS390	37.00	39.00	41.00	2	0.05	30.0	300	2	300	0.5	35.6	2	39 or 39_ or 39- or 39^
MAZS3900L	37.10	38.00	39.00										39_
MAZS3900M	38.00	39.00	40.00										39-
MAZS3900H	39.00	40.00	41.00										39^

Maintenance/Discontinued includes following four Product lifecycle stage.  
 Discontinued includes following four Product lifecycle stage.  
 planned maintenance type  
 maintenance type  
 planned discontinued type  
 discontinued type  
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Maintenance/Discontinued

includes following four Product lifecycle stage.

planned maintenance type

planned discontinued type

discontinued type

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standard applications or general electronic equipment (such as office  
and household appliances).

ng applications:

biles, traffic control equipment, combustion equipment, life support  
reliability are required, or if the failure or malfunction of the prod-

ck are subject to change without notice for modification and/or im-  
use of the products, therefore, ask for the most up-to-date Product  
atisfy your requirements.

bsolute maximum rating and the guaranteed operating conditions  
(.). Especially, please be careful not to exceed the range of absolute  
r-off and mode-switching. Otherwise, we will not be liable for any

take into the consideration of incidence of break down and failure  
n the systems such as redundant design, arresting the spread of fire  
al injury, fire, social damages, for example, by using the products.

own and characteristics change due to external factors (ESD, EOS,  
mounting or at customer's process. When using products for which  
shelf life and the elapsed time since first opening the packages.

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