

# MAZ3xxx Series (MA3xxx Series)

## Silicon planar type

For stabilization of power supply

### ■ Features

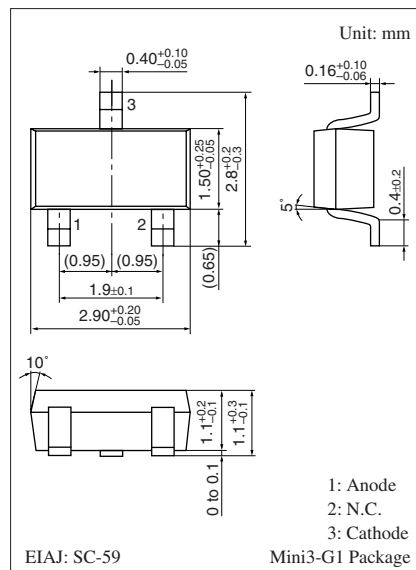
- Allowing to achieve a high-density set
- Sharp rising performance
- Wide voltage range: Zener voltage  $V_Z = 2.0\text{ V}$  to  $36.0\text{ V}$

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

Parameter	Symbol	Rating	Unit
Forward current (Average)	$I_{F(AV)}$	100	mA
Repetitive peak forward current	$I_{FRM}$	200	mA
Power dissipation *1	$P_D$	200	mW
Non-repetitive reverse surge power dissipation *2	$P_{ZSM}$	15	W
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

Note) \*1:  $P_D = 200\text{ mW}$  achieved with a printed circuit board

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

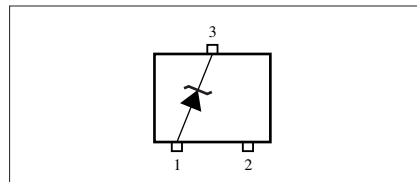


### Marking Symbol

Refer to the list of the electrical characteristics within part numbers

(Example) MAZ3024: 2.4

### 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	$V_F$	$I_F = 10\text{ mA}$		0.8	0.9	V
Zener voltage *2	$V_Z$	$I_Z$ Specified value				V
Zener rise operating resistance	$R_{ZK}$	$I_Z$ Specified value				$\Omega$
Zener operating resistance	$R_Z$	$I_Z$ Specified value	Refer to the list of the electrical characteristics within part numbers			$\Omega$
Reverse current	$I_{R1}$	$V_R$ Specified value				$\mu\text{A}$
	$I_{R2}$	$V_R$ 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 5 MHz.

3. \*1: The temperature must be controlled  $25^\circ\text{C}$  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.

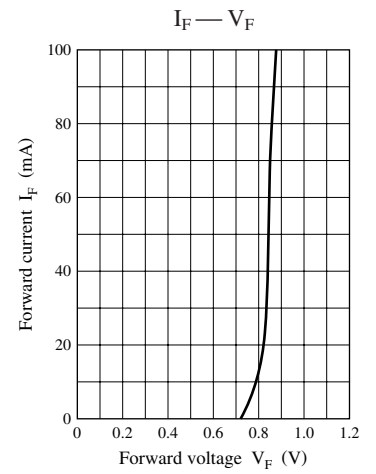
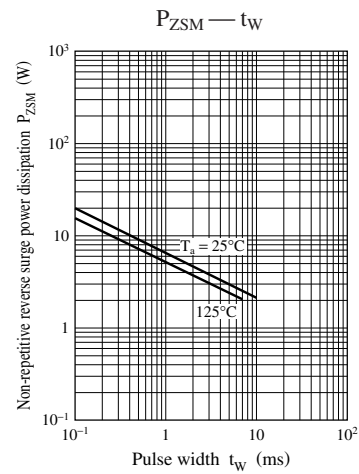
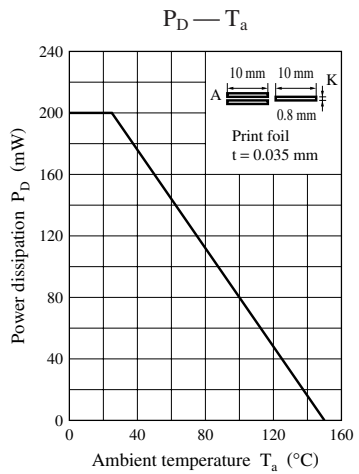
\*3:  $T_j = 25^\circ\text{C}$  to  $150^\circ\text{C}$

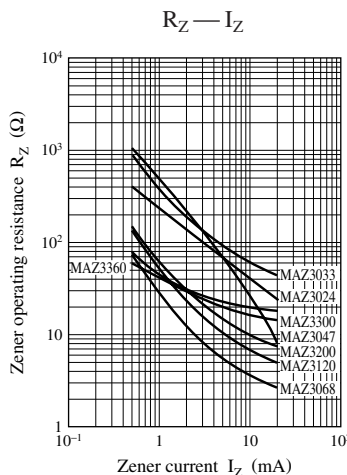
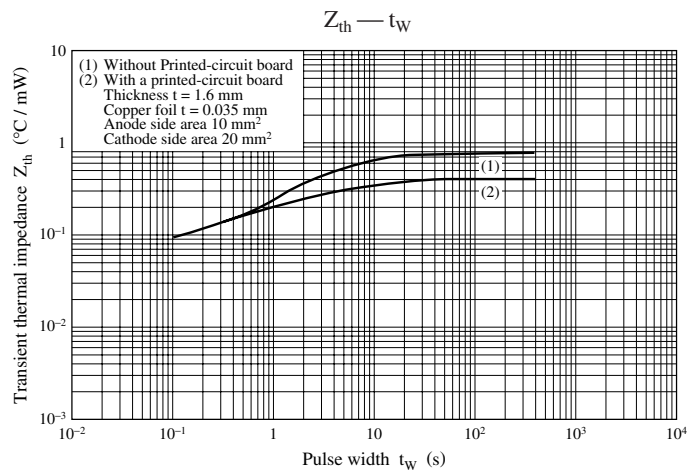
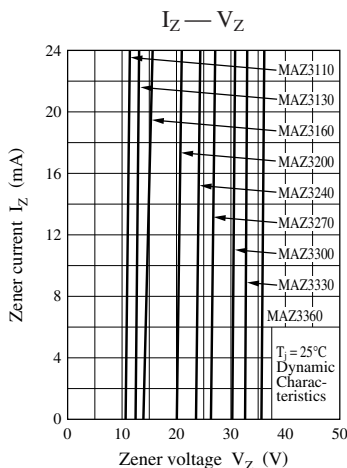
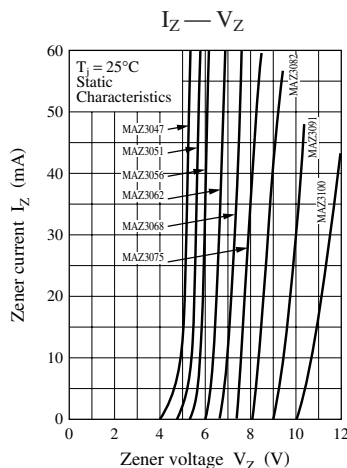
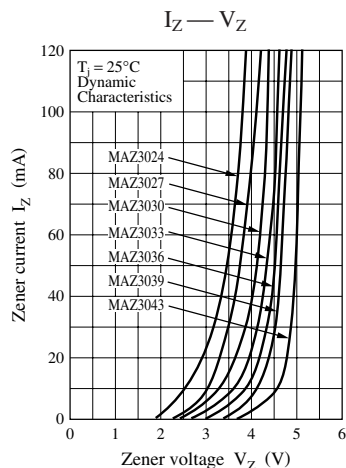
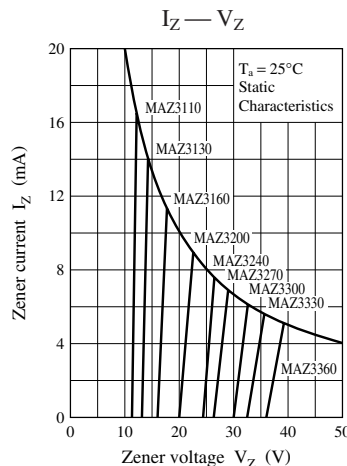
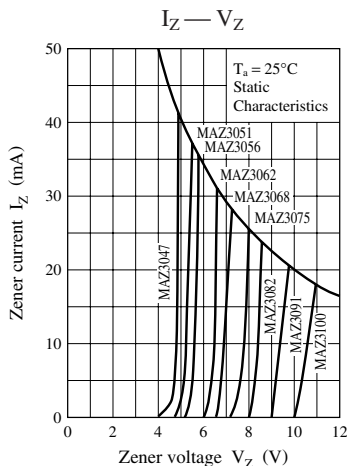
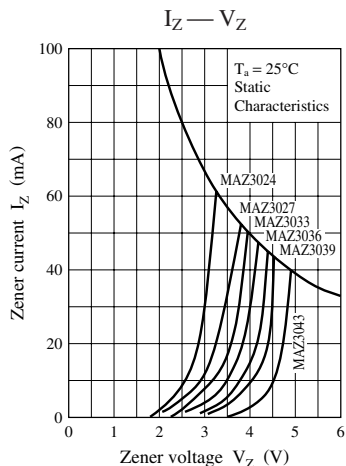
Note) The part number in the parenthesis shows conventional part number.

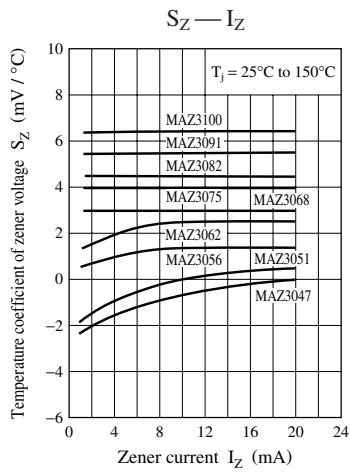
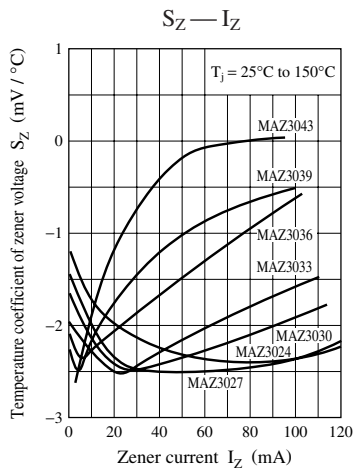
■ Electrical Characteristics within Part Numbers  $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

•  $V_Z = 2.0\text{ V}$  to  $8.2\text{ V}$  ( $I_Z = 5\text{ mA}$ )

Part number	Zener voltage			Reverse current			Zener operating resistance		Zener rise operating resistance		Temperature coefficient of zener voltage			Terminal capacitance		Marking symbol	
	$V_Z$ (V)			$I_{R1}$ ( $\mu\text{A}$ )	$I_{R2}$ ( $\mu\text{A}$ )	$R_Z$ ( $\Omega$ )	$R_{ZK}$ ( $\Omega$ )	$S_Z$ (mV/ $^\circ\text{C}$ )			$C_T$ (pF)						
	$I_Z = 5\text{ mA}$			$V_R$	$V_R$	$I_Z = 5\text{ mA}$	$I_Z$	$I_Z = 5\text{ mA}$			$(V_R = 0\text{ V})$						
	Min	Nom	Max	(V)	Max	(V)	Max	Typ	Max	(mA)	Max	Min	Typ	Max	Typ	Max	
MAZ3024	2.28	2.40	2.60	1.0	120	—	—	—	100	—	—	-3.5	-1.6	0	—	—	2.4
MAZ3027	2.50	2.70	2.90	1.0	120	—	—	—	110	—	—	-3.5	-2.0	0	—	—	2.7L or 2.7H
MAZ3030	2.80	3.00	3.20	1.0	50	—	—	—	120	—	—	-3.5	-2.1	0	—	—	3.0L or 3.0H
MAZ3033	3.10	3.30	3.50	1.0	20	—	—	—	130	—	—	-3.5	-2.4	0	—	—	3.3L or 3.3H
MAZ3036	3.40	3.60	3.80	1.0	10	—	—	—	130	—	—	-3.5	-2.4	0	—	—	3.6L or 3.6H
MAZ3039	3.70	3.90	4.10	1.0	10	—	—	—	130	—	—	-3.5	-2.5	0	—	—	3.9L or 3.9H
MAZ3043	4.00	4.30	4.60	1.0	10	—	—	—	130	—	—	-3.5	-2.5	0	—	—	4.3L or 4.3M or 4.3H
MAZ3047	4.40	4.70	5.00	1	3	—	—	50	80	1	900	-3.5	-1.4	0.2	130	180	4.7L or 4.7M or 4.7H
MAZ3051	4.80	5.10	5.40	2	2	—	—	40	60	1	800	-2.7	-0.8	1.2	110	160	5.1L or 5.1M or 5.1H
MAZ3056	5.30	5.60	6.00	2	1	—	—	15	40	1	500	-2.0	1.2	2.5	95	140	5.6L or 5.6M or 5.6H
MAZ3062	5.80	6.20	6.60	4	3	5.3	60	6	20	0.5	300	0.4	2.3	3.7	90	130	6.2L or 6.2M or 6.2H
MAZ3068	6.40	6.80	7.20	4	2	5.9	60	6	15	0.5	140	1.2	3.0	4.5	85	110	6.8L or 6.8M or 6.8H
MAZ3075	7.00	7.50	7.90	5	1	6.5	60	6	15	0.5	120	2.5	4.0	5.3	80	100	7.5L or 7.5M or 7.5H
MAZ3082	7.70	8.20	8.70	5	0.5	7.2	60	6	15	0.5	120	3.2	4.6	6.2	75	95	8.2L or 8.2M or 8.2H
MAZ3091	8.50	9.10	9.60	6	0.2	8.0	60	6	15	0.5	130	3.8	5.5	7.0	70	90	9.1L or 9.1M or 9.1H
MAZ3100	9.40	10.00	10.60	7	0.2	8.9	60	8	20	0.5	130	4.5	6.4	8.0	70	90	10L or 10M or 10H
MAZ3110	10.40	11.00	11.60	7	0.1	9.9	60	10	20	0.5	170	5.4	7.4	9.0	65	85	11L or 11M or 11H
MAZ3120	11.40	12.00	12.70	8	0.1	10.9	60	10	25	0.5	170	6.0	8.4	10.0	65	85	12L or 12M or 12H
MAZ3130	12.40	13.00	14.10	9	0.1	11.9	60	10	30	0.5	170	7.0	9.4	11.0	60	80	13L or 13M or 13H
MAZ3140	13.65	14.00	14.35	9	0.1	13.1	60	10	30	0.5	170	7.0	10.0	13.0	60	80	14M
MAZ3150	13.90	15.00	15.60	10	0.05	13.4	60	10	30	0.5	170	9.2	11.4	13.0	55	75	15L or 15M or 15H
MAZ3160	15.30	16.00	17.10	11	0.05	14.8	60	10	40	0.5	170	10.4	12.4	14.0	52	75	16L or 16M or 16H
MAZ3180	16.90	18.00	19.10	13	0.05	16.4	60	10	45	0.5	170	12.4	14.4	16.0	47	70	18L or 18M or 18H
MAZ3200	18.80	20.00	21.20	14	0.05	18.3	60	15	55	0.5	180	14.4	16.4	18.0	36	60	20L or 20M or 20H
MAZ3220	20.80	22.00	23.30	15	0.05	20.3	60	20	55	0.5	180	16.4	18.4	20.0	34	60	22L or 22M or 22H
MAZ3240	22.80	24.00	25.60	17	0.05	22.3	60	25	70	0.5	180	18.4	20.4	22.0	33	55	24L or 24M or 24H
MAZ3270	25.10	27.00	28.90	19	0.05	24.8	60	25	80	0.5	200	21.4	23.4	25.3	30	50	27L or 27M or 27H
MAZ3300	28.00	30.00	32.00	21	0.05	27.8	60	30	80	0.5	200	24.4	26.6	29.4	27	50	30L or 30M or 30H
MAZ3330	31.00	33.00	35.00	23	0.05	30.7	60	35	80	0.5	200	27.4	29.7	33.4	25	45	33L or 33M or 33H
MAZ3360	34.00	36.00	38.00	25	0.05	33.6	60	35	90	0.5	200	30.4	33.0	37.4	23	45	36L or 36M or 36H







## Request for your special attention and precautions in using the technical information and semiconductors described in this book

- (1) If any of the products or technical information described in this book is to be exported or provided to non-residents, the laws and regulations of the exporting country, especially, those with regard to security export control, must be observed.
- (2) The technical information described in this book is intended only to show the main characteristics and application circuit examples of the products, and no license is granted under any intellectual property right or other right owned by our company or any other company. Therefore, no responsibility is assumed by our company as to the infringement upon any such right owned by any other company which may arise as a result of the use of technical information described in this book.
- (3) The products described in this book are intended to be used for standard applications or general electronic equipment (such as office equipment, communications equipment, measuring instruments and household appliances).  
Consult our sales staff in advance for information on the following applications:
  - Special applications (such as for airplanes, aerospace, automobiles, traffic control equipment, combustion equipment, life support systems and safety devices) in which exceptional quality and reliability are required, or if the failure or malfunction of the products may directly jeopardize life or harm the human body.
  - Any applications other than the standard applications intended.
- (4) The products and product specifications described in this book are subject to change without notice for modification and/or improvement. At the final stage of your design, purchasing, or use of the products, therefore, ask for the most up-to-date Product Standards in advance to make sure that the latest specifications satisfy your requirements.
- (5) When designing your equipment, comply with the range of absolute maximum rating and the guaranteed operating conditions (operating power supply voltage and operating environment etc.). Especially, please be careful not to exceed the range of absolute maximum rating on the transient state, such as power-on, power-off and mode-switching. Otherwise, we will not be liable for any defect which may arise later in your equipment.
  - Even when the products are used within the guaranteed values, take into the consideration of incidence of break down and failure mode, possible to occur to semiconductor products. Measures on the systems such as redundant design, arresting the spread of fire or preventing glitch are recommended in order to prevent physical injury, fire, social damages, for example, by using the products.
- (6) Comply with the instructions for use in order to prevent breakdown and characteristics change due to external factors (ESD, EOS, thermal stress and mechanical stress) at the time of handling, mounting or at customer's process. When using products for which damp-proof packing is required, satisfy the conditions, such as shelf life and the elapsed time since first opening the packages.
- (7) This book may be not reprinted or reproduced whether wholly or partially, without the prior written permission of Matsushita Electric Industrial Co., Ltd.