

# MAZ3000 Series (MA3000 Series)

Silicon planar type

For stabilization of power supply

■ Features

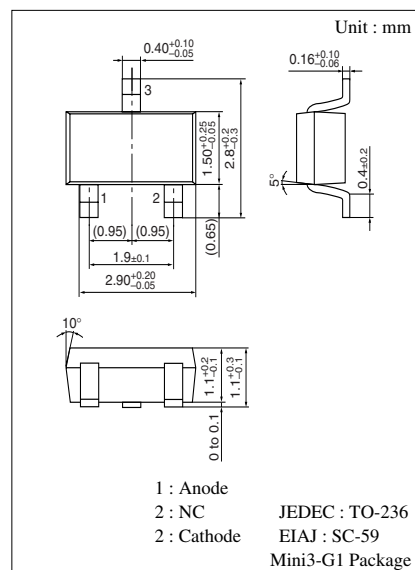
- Mini type package (3-pin)
- Allowing to achieve a high-density set
- Sharp rising performance
- Wide voltage range:  $V_Z = 2.0 \text{ V to } 36 \text{ V}$

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

Parameter	Symbol	Rating	Unit
Average forward current	$I_{F(AV)}$	100	mA
Instantaneous forward current	$I_{FRM}$	200	mA
Total power dissipation*1	$P_{tot}$	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 : With a printed-circuit board

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



Marking Symbol

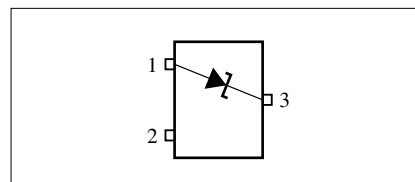
Refer to the list of the electrical characteristics within part numbers

(Example) MAZ3020: 2.0

MAZ3082-H: 8.2H

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

Internal Connection



■ Common Electrical Characteristics  $T_a = 25^\circ\text{C}$ \*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
Operating resistance	$R_{ZK}$	$I_Z$ ..... Specified value				$\Omega$
	$R_Z$	$I_Z$ ..... Specified value				$\Omega$
Reverse current	$I_{R1}$	$V_R$ ..... Specified value				$\mu\text{A}$
	$I_{R2}$	$V_R$ ..... Specified value				$\mu\text{A}$
Temperature coefficient of zener voltage*3	$S_Z$	$I_Z$ ..... Specified value				$\text{mV}/^\circ\text{C}$
Terminal capacitance	$C_t$	$V_R$ ..... Specified value				pF

Note) 1. Rated input/output frequency: 5 MHz

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

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

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

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

Part Number	Zener voltage			Reverse current				Operating resistance				Temperature coefficient of zener voltage			Terminal capacitance		Marking Symbol
	$V_Z$ (V) $I_Z = 5\text{ mA}$			$I_{R1}$ ( $\mu\text{A}$ ) $V_R$ (V)		$I_{R2}$ ( $\mu\text{A}$ ) $V_R$ (V)		$R_Z$ ( $\Omega$ ) $I_Z = 5\text{ mA}$		$R_{ZK}$ ( $\Omega$ ) $I_Z$ (mA)		$S_Z$ (mV/ $^\circ\text{C}$ ) $I_Z = 5\text{ mA}$			$C_t$ (pF) ( $V_R = 0\text{ V}$ ) $f = 1\text{ MHz}$		
	Min	Nom	Max	Max	Max	Max	Typ	Max	Typ	Max	Min	Typ	Max	Typ	Max		
MAZ3020	1.88	2.0	2.12	0.5	120	—	—	5	100	—	—	-3.5	-1.5	0	—	—	2.0
MAZ3022	2.08	2.2	2.32	0.7	120	—	—	5	100	—	—	-3.5	-1.5	0	—	—	2.2
MAZ3024	2.28	2.4	2.60	1	120	—	—	5	100	—	—	-3.5	-1.6	0	—	—	2.4
MAZ3027	2.50	2.7	2.90	1	120	—	—	5	110	—	—	-3.5	-2.0	0	—	—	2.7L or 2.7H
MAZ3027-L	2.50	2.6	2.75														2.7L
MAZ3027-H	2.65	2.8	2.90														2.7H
MAZ3030	2.80	3.0	3.20	1	50	—	—	5	120	—	—	-3.5	-2.1	0	—	—	3.0L or 3.0H
MAZ3030-L	2.80	2.9	3.05														3.0L
MAZ3030-H	2.95	3.1	3.20														3.0H
MAZ3033	3.10	3.3	3.50	1	20	—	—	5	130	—	—	-3.5	-2.4	0	—	—	3.3L or 3.3H
MAZ3033-L	3.10	3.2	3.35														3.3L
MAZ3033-H	3.25	3.4	3.50														3.3H
MAZ3036	3.40	3.6	3.80	1	10	—	—	5	130	—	—	-3.5	-2.4	0	—	—	3.6L or 3.6H
MAZ3036-L	3.40	3.5	3.65														3.6L
MAZ3036-H	3.55	3.7	3.80														3.6H
MAZ3039	3.70	3.9	4.10	1	10	—	—	5	130	—	—	-3.5	-2.5	0	—	—	3.9L or 3.9H
MAZ3039-L	3.70	3.8	3.97														3.9L
MAZ3039-H	3.87	4.0	4.10														3.9H
MAZ3043	4.00	4.3	4.60	1	10	—	—	5	130	—	—	-3.5	-2.5	0	—	—	4.3L or 4.3M or 4.3H
MAZ3043-L	4.03	4.1	4.26														4.3L
MAZ3043-M	4.17	4.3	4.40														4.3M
MAZ3043-H	4.31	4.4	4.54														4.3H
MAZ3047	4.4	4.7	5.0	1	3	—	—	50	80	1	900	-3.5	-1.4	0.2	130	180	4.7L or 4.7M or 4.7H
MAZ3047-L	4.45	4.6	4.69														4.7L
MAZ3047-M	4.59	4.7	4.83														4.7M
MAZ3047-H	4.74	4.9	4.99														4.7H
MAZ3051	4.8	5.1	5.4	2	2	—	—	40	60	1	800	-2.7	-0.8	1.2	110	160	5.1L or 5.1M or 5.1H
MAZ3051-L	4.87	5.0	5.12														5.1L
MAZ3051-M	5.0	5.1	5.26														5.1M
MAZ3051-H	5.14	5.3	5.4														5.1H
MAZ3056	5.3	5.6	6.0	2	1	—	—	15	40	1	500	-2	1.2	2.5	95	140	5.6L or 5.6M or 5.6H
MAZ3056-L	5.3	5.4	5.58														5.6L
MAZ3056-M	5.48	5.6	5.76														5.6M
MAZ3056-H	5.66	5.8	5.95														5.6H
MAZ3062	5.8	6.2	6.6	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
MAZ3062-L	5.85	6.0	6.15														6.2L
MAZ3062-M	6.05	6.2	6.36														6.2M
MAZ3062-H	6.24	6.4	6.56														6.2H
MAZ3068	6.4	6.8	7.2	4	2	5.9	60	6	15	0.5	140	1.2	3	4.5	85	110	6.8L or 6.8M or 6.8H
MAZ3068-L	6.44	6.6	6.77														6.8L
MAZ3068-M	6.64	6.8	6.98														6.8M
MAZ3068-H	6.85	7.0	7.2														6.8H
MAZ3075	7.0	7.5	7.9	5	1	6.5	60	6	15	0.5	120	2.5	4	5.3	80	100	7.5L or 7.5M or 7.5H
MAZ3075-L	7.07	7.3	7.43														7.5L
MAZ3075-M	7.29	7.5	7.67														7.5M
MAZ3075-H	7.51	7.7	7.89														7.5H
MAZ3082	7.7	8.2	8.7	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
MAZ3082-L	7.77	7.9	8.17														8.2L
MAZ3082-M	8.03	8.2	8.43														8.2M
MAZ3082-H	8.29	8.5	8.7														8.2H

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

•  $V_Z = 9.1\text{ V to } 24\text{ V}$  ( $I_Z = 5\text{ mA}$ )

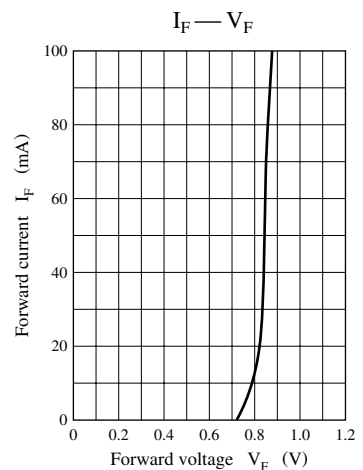
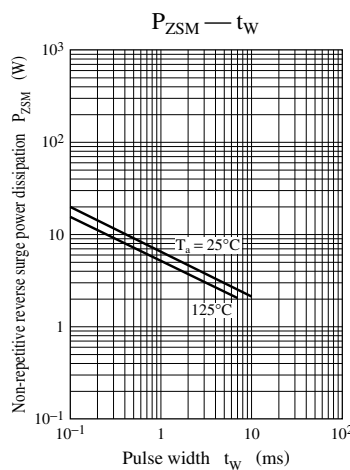
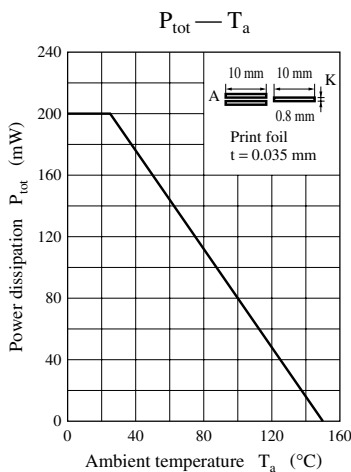
Part Number	Zener voltage			Reverse current			Operating resistance				Temperature coefficient of zener voltage			Terminal capacitance		Marking Symbol		
	$V_Z$ (V) $I_Z = 5\text{ mA}$			$I_{R1}$ ( $\mu\text{A}$ )		$I_{R2}$ ( $\mu\text{A}$ )	$R_Z$ ( $\Omega$ )		$R_{ZK}$ ( $\Omega$ )		$S_Z$ (mV/ $^\circ\text{C}$ ) $I_Z = 5\text{ mA}$			$C_t$ (pF) ( $V_R = 0\text{ V}$ ) $f = 1\text{ MHz}$				
	Min	Nom	Max	$V_R$ (V)	Max	Max	$I_Z = 5\text{ mA}$ Typ	Max	$I_Z$ (mA)	Max	Min	Typ	Max	Typ	Max			
MAZ3091	8.5	9.1	9.6	6	0.2	8	60	6	15	0.5	130	3.8	5.5	7	70	90	9.1L or 9.1M or 9.1H	
MAZ3091-L	8.58	8.8	9.02			8											9.1L	
MAZ3091-M	8.87	9.1	9.33			8.3											9.1M	
MAZ3091-H	9.14	9.4	9.6			8.6											9.1H	
MAZ3100	9.4	10	10.6	7	0.2	8.9	60	8	20	0.5	130	4.5	6.4	8	70	90	10L or 10M or 10H	
MAZ3100-L	9.44	9.7	9.92			8.9											10L	
MAZ3100-M	9.75	10	10.25			9.2											10M	
MAZ3100-H	10.07	10.3	10.59			9.5											10H	
MAZ3110	10.4	11	11.6	7	0.1	9.9	60	10	20	0.5	170	5.4	7.4	9	65	85	11L or 11M or 11H	
MAZ3110-L	10.4	10.7	10.94			9.9											11L	
MAZ3110-M	10.73	11	11.28			10.2											11M	
MAZ3110-H	11.05	11.3	11.6			10.5											11H	
MAZ3120	11.4	12	12.7	8	0.1	10.9	60	10	25	0.5	170	6	8.4	10	65	85	12L or 12M or 12H	
MAZ3120-L	11.4	11.7	11.96			10.9											12L	
MAZ3120-M	11.73	12	12.33			11.2											12M	
MAZ3120-H	12.06	12.3	12.68			11.5											12H	
MAZ3130	12.4	13	14.1	9	0.1	11.9	60	10	30	0.5	170	7	9.4	11	60	80	13L or 13M or 13H	
MAZ3130-L	12.4	12.7	12.99			11.9											13L	
MAZ3130-M	12.73	13	13.4			12.2											13M	
MAZ3130-H	13.25	13.7	14.08			12.7											13H	
MAZ3140-M	13.65	14	14.35	10	0.05	13.1	60	10	30	0.5	170	7	10	13	60	80	14M	
MAZ3150	13.9	15	15.6			13.4											15L or 15M or 15H	
MAZ3150-L	13.9	14.3	14.76			13.4												15L
MAZ3150-M	14.6	15	15.35			14.1												15M
MAZ3150-H	14.95	15.3	15.6	14.4	15H													
MAZ3160	15.3	16	17.1	11	0.05	14.8	60	10	40	0.5	170	10.4	12.4	14	52	75	16L or 16M or 16H	
MAZ3160-L	15.3	15.7	16.09			14.8											16L	
MAZ3160-M	15.7	16	16.5			15.2											16M	
MAZ3160-H	16.26	16.7	17.1			15.7											16H	
MAZ3180	16.9	18	19.1	13	0.05	16.4	60	10	45	0.5	170	12.4	14.4	16	47	70	18L or 18M or 18H	
MAZ3180-L	16.9	17.3	17.76			16.4											18L	
MAZ3180-M	17.55	18	18.45			17											18M	
MAZ3180-H	18.2	18.7	19.1			17.7											18H	
MAZ3200	18.8	20	21.2	14	0.05	18.3	60	15	55	0.5	180	14.4	16.4	18	36	60	20L or 20M or 20H	
MAZ3200-L	18.85	19.3	19.81			18.3											20L or 20M or 20H	
MAZ3200-M	19.50	20	20.5			19											20M	
MAZ3200-H	20.15	20.7	21.19			19.6											20H	
MAZ3220	20.8	22	23.3	15	0.05	20.3	60	20	55	0.5	180	16.4	18.4	20	34	60	22L or 22M or 22H	
MAZ3220-L	20.8	21.3	21.86			20.3											22L	
MAZ3220-M	21.45	22	22.55			20.9											22M	
MAZ3220-H	22.1	22.7	23.24			21.6											22H	
MAZ3240	22.8	24	25.6	17	0.05	22.3	60	25	70	0.5	180	18.4	20.4	22	33	55	24L or 24M or 24H	
MAZ3240-L	22.8	23.3	23.97			22.3											24L	
MAZ3240-M	23.5	24	24.7			23											24M	
MAZ3240-H	24.35	25	25.6			23.8											24H	

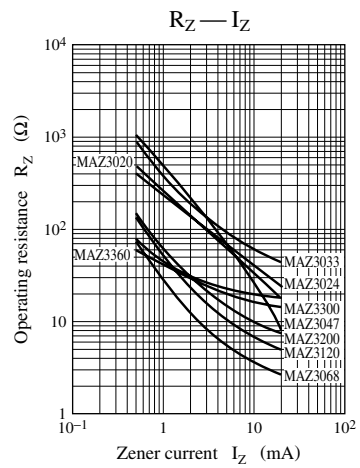
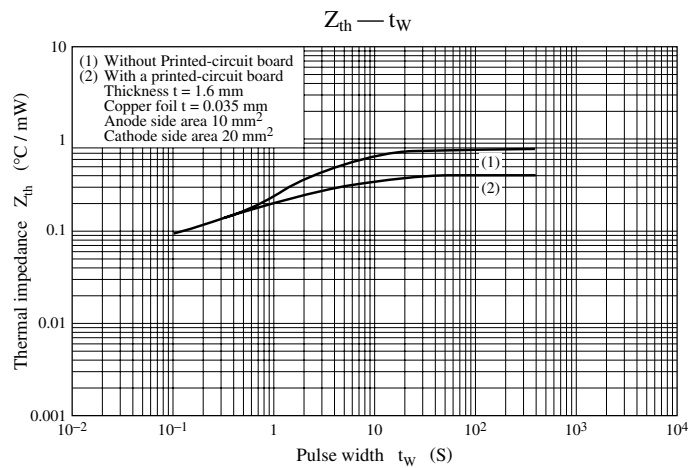
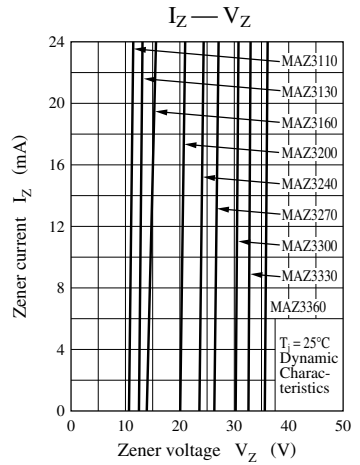
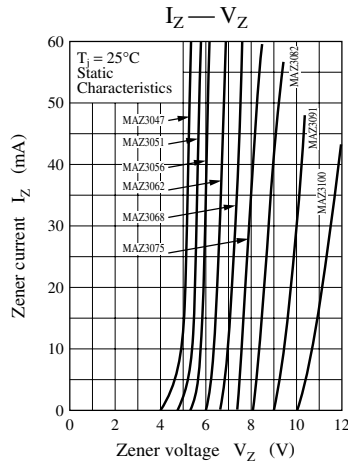
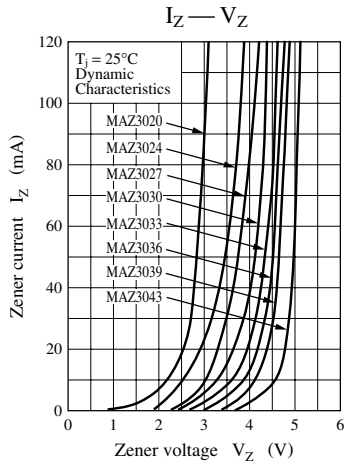
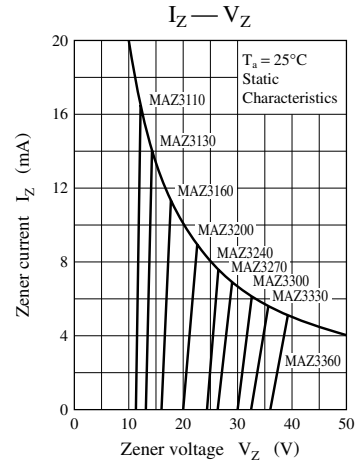
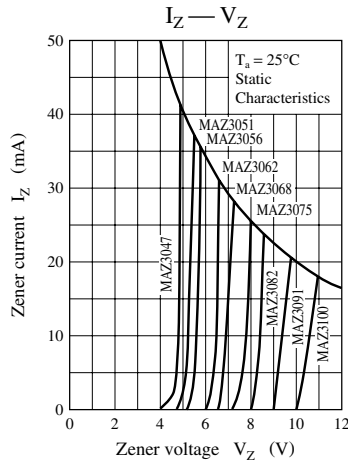
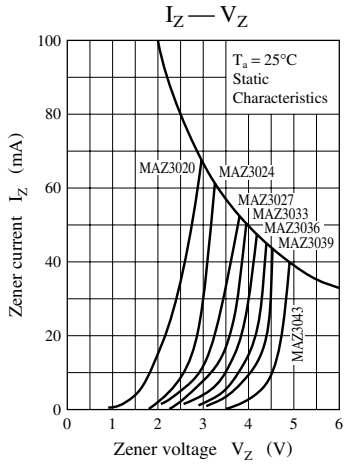
■ Electrical characteristics within part numbers (continued)  $T_a = 25^\circ\text{C}$

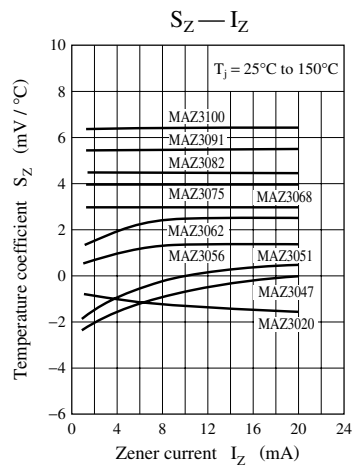
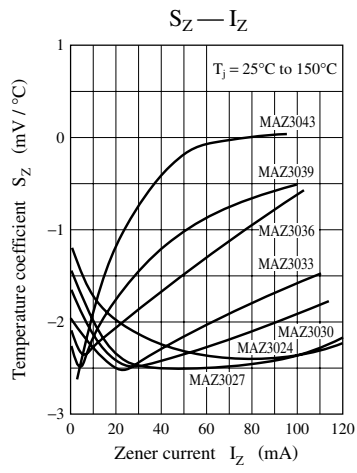
•  $V_Z = 27\text{ V to } 36\text{ V}$  ( $I_Z = 2\text{ mA}$ )

Part Number	Zener voltage			Reverse current			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)			
	$I_Z = 2\text{ mA}$			$V_R$	Max	$V_R$	$I_Z = 2\text{ mA}$		$I_Z$	Max	$I_Z = 2\text{ mA}$			$(V_R = 0\text{ V})$ $f = 1\text{ MHz}$			
	Min	Nom	Max	(V)	Max	(V)	Max	Typ	Max	(mA)	Max	Min	Typ	Max	Typ	Max	
MAZ3270	25.1	27	28.9	19	0.05	24.8	60	25	80	0.5	200	21.4	23.4	25.3	30	50	27L or 27M or 27H
MAZ3270-L	25.3	26	26.7			24.8											27L
MAZ3270-M	26.3	27	27.7			25.8											27M
MAZ3270-H	27.3	28	28.7			26.8											27H
MAZ3300	28	30	32	21	0.05	27.8	60	30	80	0.5	200	24.4	26.6	29.4	27	50	30L or 30M or 30H
MAZ3300-L	28.3	29	29.7			27.8											30L
MAZ3300-M	29.3	30	30.8			28.8											30M
MAZ3300-H	30.2	31	31.8			29.7											30H
MAZ3330	31	33	35	23	0.05	30.7	60	35	80	0.5	200	27.4	29.7	33.4	25	45	33L or 33M or 33H
MAZ3300-L	31.2	32	32.8			30.7											33L
MAZ3330-M	32.2	33	33.8			31.7											33M
MAZ3300-H	33.2	34	34.9			32.7											33H
MAZ3360	34	36	38	25	0.05	33.6	60	35	90	0.5	200	30.4	33	37.4	23	45	36L or 36M or 36H
MAZ3360-L	34.1	35	35.9			33.6											36L
MAZ3360-M	35.1	36	36.9			34.6											36M
MAZ3360-H	36.1	37	37.9			35.6											36H

- Note) 1. The  $V_Z$  value is the one after power application for 20 ms at  $T_a = 25^\circ\text{C}$ .  
 2. The zener voltage temperature coefficient is the one for  $T_j = 25^\circ\text{C}$  to  $150^\circ\text{C}$ .







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