

MA3000 Series

Silicon planer type

For stabilization of power supply

■ Features

- Mini type package (3-pin)
- Highly dense set available
- Sharp rising performance
- Wide voltage range : $V_Z = 2.0$ to 36V

■ 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	P_{tot}^{*1}	200	mW
Non-repetitive reverse surge power dissipation	P_{ZSM}^{*2}	15	W
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	- 55 to +150	$^\circ\text{C}$

* 1 with a printed-circuit board

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

■ Common Electrical Characteristics ($T_a = 25^\circ\text{C}$) *1

Parameter	Symbol	Condition	min	typ	max	Unit
Forward voltage	V_F	$I_F = 10\text{mA}$		0.8	0.9	V
Zener voltage	V_Z^{*2}	I_Z Specified value				V
Operating resistance	R_{ZK}	I_Z Specified value				Ω
	R_Z	I_Z Specified value				Ω
Reverse current	I_{R1}	V_R Specified value	Refer to the electrical characteristics list of P449 to P451			μA
	I_{R2}	V_R Specified value				μA
Temperature coefficient of zener voltage	S_Z^{*3}	I_Z Specified value				$\text{mV}/^\circ\text{C}$
Terminal capacitance	C_t	V_R Specified value				pF

Note 1. Rated input/output frequency : 5MHz

2. * 1 : The V_Z value is for the temperature of 25°C . In other cases, carry out the temperature compensation.

* 2 : Guaranteed at 20ms after power application

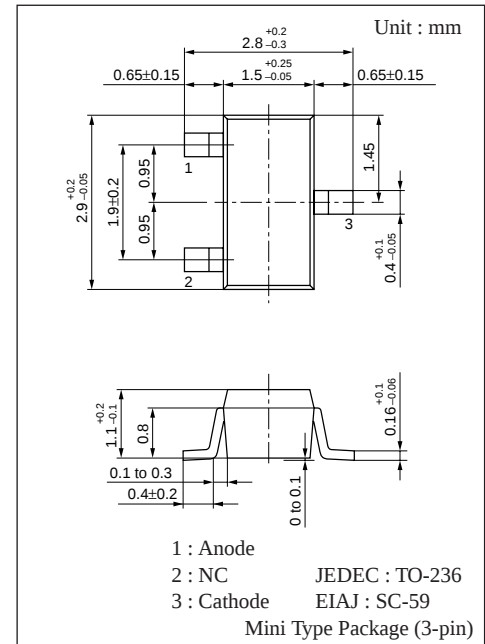
* 3 : $T_j = 25$ to 150°C

■ Marking (Example)

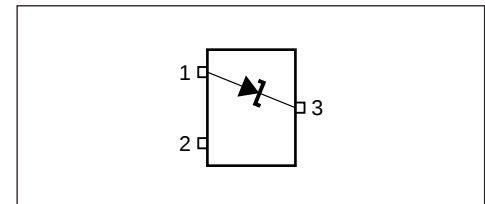

 MA3020
 (V_Z rank, 2.0V)


 MA3082-H
 (V_Z rank, 8.2V
 (Fine classification, H rank))

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



■ Internal Connection



■ Electrical Characteristics (Ta= 25°C)

- V
- _Z
- = 2.0 to 8.2V (I
- _Z
- = 5mA)

Part Number	Zener voltage			Reverse current				Operating resistance				Temperature coefficient of zener voltage			Terminal capacitance		Marking
	V _Z (V) I _Z = 5mA			I _{R1}		I _{R2}		R _Z (Ω) I _Z = 5mA		R _{ZK}		S _Z (mV/°C) I _Z = 5mA			C _t (pF) (V _R = 0V) f=1MHz		
	min	nom	max	V _R (V)	max (μA)	V _R (V)	max (μA)	I _Z typ	max	I _Z (mA)	max (Ω)	min	typ	max	typ	max	
MA3020	1.88	2.0	2.12	0.5	120	—	—	5	100	—	—	-3.5	-1.5	0	—	—	2.0
MA3022	2.08	2.2	2.32	0.7	120	—	—	5	100	—	—	-3.5	-1.5	0	—	—	2.2
MA3024	2.28	2.4	2.60	1	120	—	—	5	100	—	—	-3.5	-1.6	0	—	—	2.4
MA3027	2.50	2.7	2.90	1	120	—	—	5	110	—	—	-3.5	-2.0	0	—	—	2.7L or 2.7H
MA3027-L	2.50	2.6	2.75														2.7L
MA3027-H	2.65	2.8	2.90														2.7H
MA3030	2.80	3.0	3.20	1	50	—	—	5	120	—	—	-3.5	-2.1	0	—	—	3.0L or 3.0H
MA3030-L	2.80	2.9	3.05														3.0L
MA3030-H	2.95	3.1	3.20														3.0H
MA3033	3.10	3.3	3.50	1	20	—	—	5	130	—	—	-3.5	-2.4	0	—	—	3.3L or 3.3H
MA3033-L	3.10	3.2	3.35														3.3L
MA3033-H	3.25	3.4	3.50														3.3H
MA3036	3.40	3.6	3.80	1	10	—	—	5	130	—	—	-3.5	-2.4	0	—	—	3.6L or 3.6H
MA3036-L	3.40	3.5	3.65														3.6L
MA3036-H	3.55	3.7	3.80														3.6H
MA3039	3.70	3.9	4.10	1	10	—	—	5	130	—	—	-3.5	-2.5	0	—	—	3.9L or 3.9H
MA3039-L	3.70	3.8	3.97														3.9L
MA3039-H	3.87	4.0	4.10														3.9H
MA3043	4.00	4.3	4.60	1	10	—	—	5	130	—	—	-3.5	-2.5	0	—	—	4.3L or 4.3M or 4.3H
MA3043-L	4.03	4.1	4.26														4.3L
MA3043-M	4.17	4.3	4.40														4.3M
MA3043-H	4.31	4.4	4.54														4.3H
MA3047	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
MA3047-L	4.45	4.6	4.69														4.7L
MA3047-M	4.59	4.7	4.83														4.7M
MA3047-H	4.74	4.9	4.99														4.7H
MA3051	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
MA3051-L	4.87	5.0	5.12														5.1L
MA3051-M	5.0	5.1	5.26														5.1M
MA3051-H	5.14	5.3	5.4														5.1H
MA3056	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
MA3056-L	5.3	5.4	5.58														5.6L
MA3056-M	5.48	5.6	5.76														5.6M
MA3056-H	5.66	5.8	5.95														5.6H
MA3062	5.8	6.2	6.6	4	3	5.3 5.3 5.5 5.7	60	6	20	0.5	300	0.4	2.3	3.7	90	130	6.2L or 6.2M or 6.2H
MA3062-L	5.85	6.0	6.15														6.2L
MA3062-M	6.05	6.2	6.36														6.2M
MA3062-H	6.24	6.4	6.56														6.2H
MA3068	6.4	6.8	7.2	4	2	5.9 5.9 6.1 6.3	60	6	15	0.5	140	1.2	3	4.5	85	110	6.8L or 6.8M or 6.8H
MA3068-L	6.44	6.6	6.77														6.8L
MA3068-M	6.64	6.8	6.98														6.8M
MA3068-H	6.85	7.0	7.2														6.8H
MA3075	7.0	7.5	7.9	5	1	6.5 6.5 6.7 7.0	60	6	15	0.5	120	2.5	4	5.3	80	100	7.5L or 7.5M or 7.5H
MA3075-L	7.07	7.3	7.43														7.5L
MA3075-M	7.29	7.5	7.67														7.5M
MA3075-H	7.51	7.7	7.89														7.5H
MA3082	7.7	8.2	8.7	5	0.5	7.2 7.2 7.5 7.7	60	6	15	0.5	120	3.2	4.6	6.2	75	95	8.2L or 8.2M or 8.2H
MA3082-L	7.77	7.9	8.17														8.2L
MA3082-M	8.03	8.2	8.43														8.2M
MA3082-H	8.29	8.5	8.7														8.2H

■ Electrical Characteristics (Ta= 25°C)

- V
- _Z
- = 9.1 to 24V (I
- _Z
- = 5mA)

Part Number	Zener voltage			Reverse current				Operating resistance				Temperature coefficient of zener voltage			Terminal capacitance		Marking
	V _Z (V)			I _{R1}		I _{R2}		R _Z (Ω)		R _{ZK}		S _Z (mV/°C)			C _t (pF)		
	I _Z = 5mA			V _R	max	V _R	max	I _Z = 5mA	max	I _Z	max	I _Z = 5mA			(V _R = 0V) f=1MHz		
	min	nom	max	(V)	(μA)	(V)	(μA)	typ	max	(mA)	(Ω)	min	typ	max	typ	max	
MA3091	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
MA3091-L	8.58	8.8	9.02			8											9.1L
MA3091-M	8.87	9.1	9.33			8.3											9.1M
MA3091-H	9.14	9.4	9.6			8.6											9.1H
MA3100	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
MA3100-L	9.44	9.7	9.92			8.9											10L
MA3100-M	9.75	10	10.25			9.2											10M
MA3100-H	10.07	10.3	10.59			9.5											10H
MA3110	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
MA3110-L	10.4	10.7	10.94			9.9											11L
MA3110-M	10.73	11	11.28			10.2											11M
MA3110-H	11.05	11.3	11.6			10.5											11H
MA3120	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
MA3120-L	11.4	11.7	11.96			10.9											12L
MA3120-M	11.73	12	12.33			11.2											12M
MA3120-H	12.06	12.3	12.68			11.5											12H
MA3130	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
MA3130-L	12.4	12.7	12.99			11.9											13L
MA3130-M	12.73	13	13.4			12.2											13M
MA3130-H	13.25	13.7	14.08			12.7											13H
MA3140-M	13.65	14	14.35	9	0.1	13.1	60	10	30	0.5	170	7	10	13	60	80	14M
MA3150	13.9	15	15.6	10	0.05	13.4	60	10	30	0.5	170	9.2	11.4	13	55	75	15L or 15M or 15H
MA3150-L	13.9	14.3	14.76			13.4											15L
MA3150-M	14.6	15	15.35			14.1											15M
MA3150-H	14.95	15.3	15.6			14.4											15H
MA3160	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
MA3160-L	15.3	15.7	16.09			14.8											16L
MA3160-M	15.7	16	16.5			15.2											16M
MA3160-H	16.26	16.7	17.1			15.7											16H
MA3180	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
MA3180-L	16.9	17.3	17.76			16.4											18L
MA3180-M	17.55	18	18.45			17											18M
MA3180-H	18.2	18.7	19.1			17.7											18H
MA3200	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
MA3200-L	18.85	19.3	19.81			18.3											20L or 20M or 20H
MA3200-M	19.50	20	20.5			19											20M
MA3200-H	20.15	20.7	21.19			19.6											20H
MA3220	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
MA3220-L	20.8	21.3	21.86			20.3											22L
MA3220-M	21.45	22	22.55			20.9											22M
MA3220-H	22.1	22.7	23.24			21.6											22H
MA3240	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
MA3240-L	22.8	23.3	23.97			22.3											24L
MA3240-M	23.5	24	24.7			23											24M
MA3240-H	24.35	25	25.6			23.8											24H

- $V_Z = 27$ to $36V$ ($I_Z = 2mA$)

Part Number	Zener voltage			Reverse current				Operating resistance				Temperature coefficient of zener voltage			Terminal capacitance		Marking
	V _Z (V)			I _{R1}		I _{R2}		R _Z (Ω)		R _{ZK}		S _Z (mV/°C)			C _t (pF)		
	I _Z = 2mA			V _R (V)	max (μA)	V _R (V)	max (μA)	I _Z = 2mA		I _Z (mA)	max (Ω)	I _Z = 2mA			typ	max	
	min	nom	max					typ	max			min	typ	max			
MA3270	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
MA3270-L	25.3	26	26.7			24.8											27L
MA3270-M	26.3	27	27.7			25.8											27M
MA3270-H	27.3	28	28.7			26.8											27H
MA3300	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
MA3300-L	28.3	29	29.7			27.8											30L
MA3300-M	29.3	30	30.8			28.8											30M
MA3300-H	30.2	31	31.8			29.7											30H
MA3330	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
MA3330-L	31.2	32	32.8			30.7											33L
MA3330-M	32.2	33	33.8			31.7											33M
MA3330-H	33.2	34	34.9			32.7											33H
MA3360	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
MA3360-L	34.1	35	35.9			33.6											36L
MA3360-M	35.1	36	36.9			34.6											36M
MA3360-H	36.1	37	37.9			35.6											36H

Note 1. The V_Z value is the one after power application for 20ms at $T_a = 25^{\circ}C$.

Note 2. The Zener voltage temperature coefficient is the one for $T_j = 25$ to $150^{\circ}C$.

