

MA2000 Series

Silicon planer type

For stabilization of power supply

■ Features

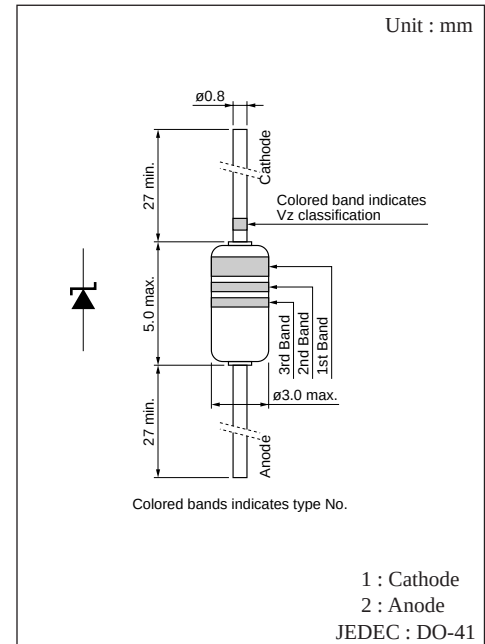
- High reliability because of combination of a planer chip and glass seal
- Large power dissipation : $P_D=1W$
- Wide voltage range : $V_Z= 5.1$ to $56V$
- Easy to use because of fine classification of the voltage rank : A and B ranks

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

Parameter	Symbol	Rating	Unit
Repetitive peak forward current	I_{FRM}	400	mA
Total power dissipation	P_{tot}^{*1}	1	W
Non-repetitive reverse surge power dissipation	P_{ZSM}^{*2}	75	W
Junction temperature	T_j	200	$^{\circ}C$
Storage temperature	T_{stg}	- 55 to + 200	$^{\circ}C$

* ¹ With a printed-circuit board

* ² $t=100\mu s$, $T_j=150^{\circ}C$



● Color indication of V_Z rank classification

A rank	B rank
Blue	Red

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

Parameter	Symbol	Condition	min	typ	max	Unit
Forward voltage	V_F	$I_F= 200mA$			1	V
Zener voltage	V_Z^{*2}	I_Z Specified value				V
Operating resistance	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				$mV/^{\circ}C$
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 $25^{\circ}C$. In other cases, carry out the temperature compensation.

* ² : Guaranteed at 20ms after power application

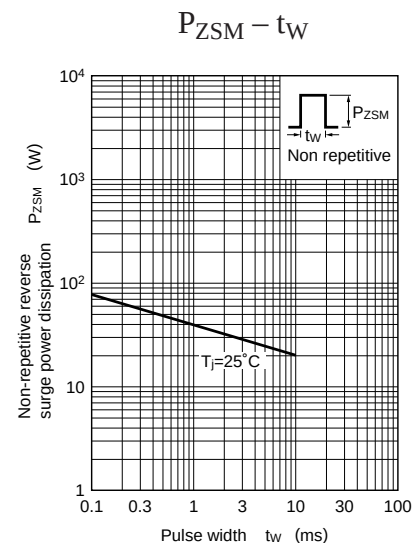
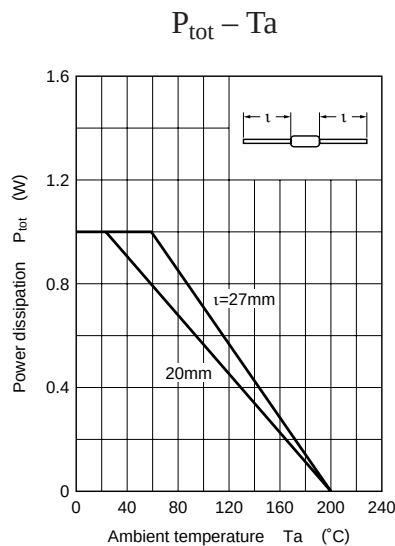
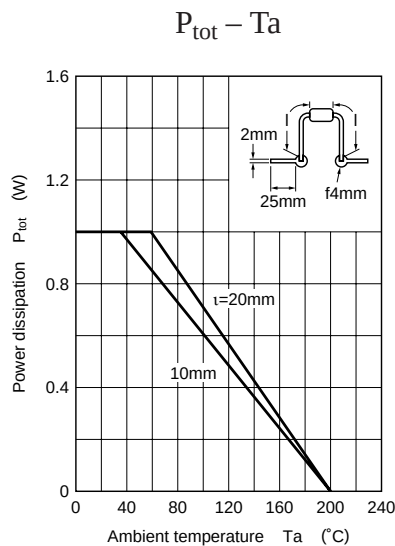
* ³ : $T_j= 25$ to $150^{\circ}C$

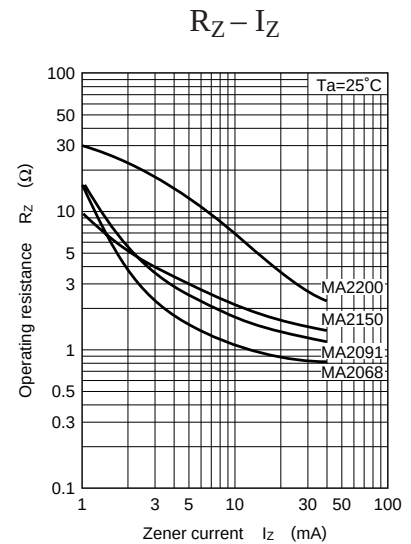
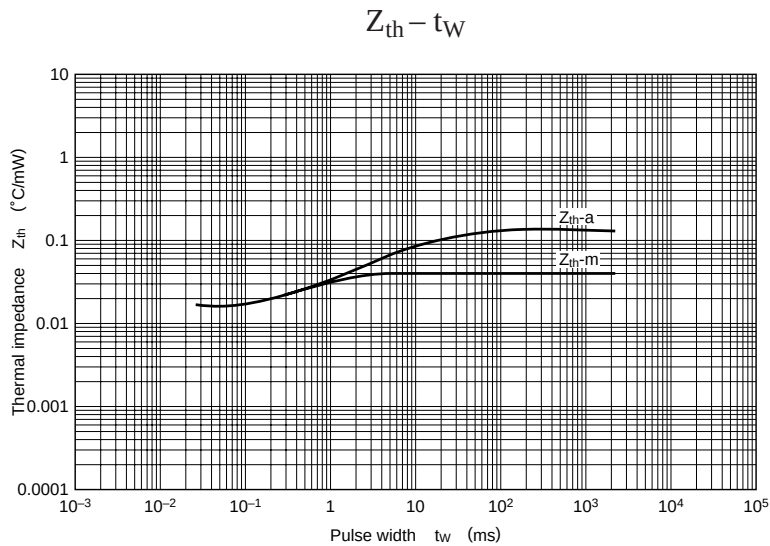
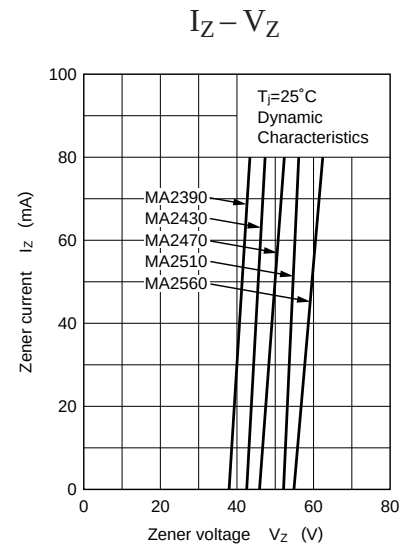
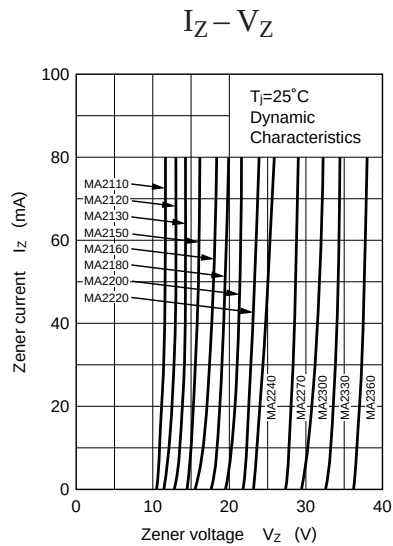
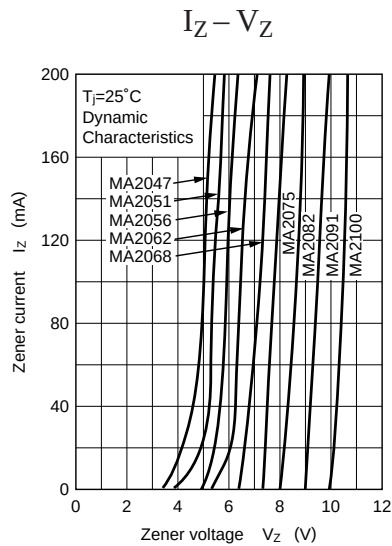
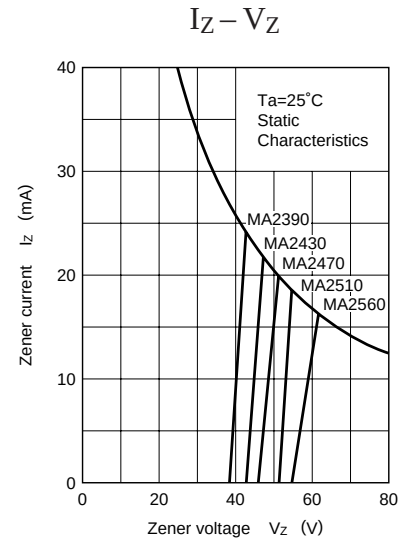
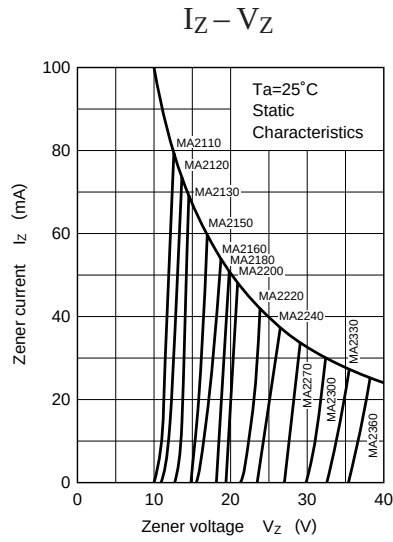
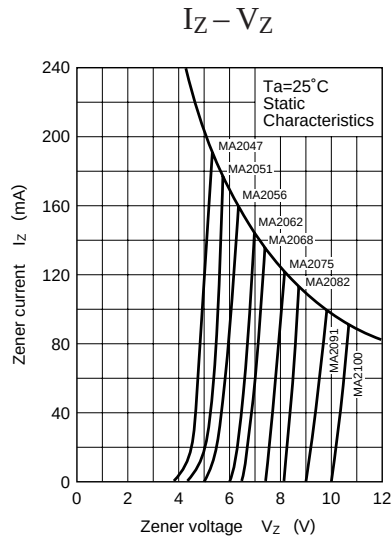
■ Electrical Characteristics (continued) (Ta= 25°C)

Part Number	Zener voltage				Reverse current		Operating resistance		Temperature coefficient of zener voltage		Terminal capacitance	Marking (Color indication)		
	V _Z (V)				I _R		R _Z		S _Z		C _t (pF) (V _R = 0V) f=1MHz typ			
	I _Z (mA)	min	nom	max	V _R (V)	max (μA)	I _Z (mA)	max (Ω)	I _Z (mA)	typ (mV/°C)				
												1st.	2nd.	3rd.
MA2051	40	4.8	5.1	5.4	1	20	40	10	40	0	200	Green	Brown	Brown
MA2051-A		4.8		5.15										
MA2051-B		5.05		5.4										
MA2056	40	5.2	5.6	6.0	2	20	40	8	40	1.5	180	Green	Blue	Blue
MA2056-A		5.3		5.7										
MA2056-B		5.6		6.0										
MA2062	40	5.8	6.2	6.6	3	20	40	6	40	2.4	330	Blue	Red	Red
MA2062-A		5.8		6.2										
MA2062-B		6.1		6.5										
MA2068	40	6.4	6.8	7.2	3	10	40	6	40	3.1	280	Blue	Gray	Gray
MA2068-A		6.4		6.8										
MA2068-B		6.7		7.1										
MA2075	40	7.0	7.5	7.9	3	10	40	5	40	3.8	250	Purple	Green	Green
MA2075-A		7.0		7.45										
MA2075-B		7.35		7.8										
MA2082	40	7.7	8.2	8.7	4	10	40	5	40	4.5	230	Gray	Red	Red
MA2082-A		7.7		8.2										
MA2082-B		8.1		8.6										
MA2091	40	8.5	9.1	9.6	5	10	40	6	40	5.4	220	White	Brown	Brown
MA2091-A		8.5		9.05										
MA2091-B		8.95		9.5										
MA2100	40	9.4	10.0	10.6	7	10	40	6	40	6.3	200	Brown	Black	—
MA2100-A		9.4		10										
MA2100-B		9.9		10.5										
MA2110	20	10.4	11.0	11.6	7	5	20	8	20	7.4	160	Brown	Brown	—
MA2110-A		10.4		11.05										
MA2110-B		10.85		11.5										
MA2120	20	11.4	12.0	12.7	8	5	20	8	20	8.4	160	Brown	Red	—
MA2120-A		11.4		12.1										
MA2120-B		11.9		12.6										
MA2130	20	12.4	13.0	14.1	9	5	20	10	20	9.4	155	Brown	Orange	—
MA2130-A		12.4		13.25										
MA2130-B		13.15		14.0										
MA2150	20	13.8	15.0	15.6	10	5	20	12	20	11.4	150	Brown	Green	—
MA2150-A		13.8		14.7										
MA2150-B		14.5		15.4										
MA2160	20	15.3	16.0	17.1	11	5	20	12	20	12.5	135	Brown	Blue	—
MA2160-A		15.3		16.3										
MA2160-B		16.1		17.1										
MA2180	20	16.8	18.0	19.1	12	5	20	15	20	14.5	110	Brown	Gray	—
MA2180-A		16.8		18.0										
MA2180-B		17.8		19.0										
MA2200	20	18.8	20.0	21.2	14	5	20	15	20	16.6	100	Red	Black	—
MA2200-A		18.8		20.0										
MA2200-B		19.8		21.0										

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

Part Number	Zener voltage				Reverse current		Operating resistance		Temperature coefficient of zener voltage		Terminal capacitance	Marking (Color indication)		
	V _Z (V)				I _R		R _Z		S _Z		C _t (pF) (V _R = 0V) f=1MHz typ			
	I _E (mK)	min	nom	max	V _R (V)	max (μA)	I _Z (mA)	max (Ω)	I _Z (mA)	typ (mV/°C)				
MA2220	10	20.8	22.0	23.3	15	5	10	20	10	18.6	95	Red	Red	—
MA2220-A		20.8	—	22.15										
MA2220-B		21.85	—	23.2										
MA2240	10	22.8	24.0	25.6	16	5	10	20	10	20.7	90	Red	Yellow	—
MA2240-A		22.9	—	24.35										
MA2240-B		24.15	—	25.6										
MA2270	10	25.1	27.0	28.9	18	2	10	25	10	23.8	85	Red	Purple	—
MA2270-A		25.1	—	27.0										
MA2270-B		26.9	—	28.9										
MA2300	10	28.0	30.0	32.0	20	2	10	25	10	26.9	80	Orange	Black	—
MA2300-A		28.0	—	30.1										
MA2300-B		29.9	—	32.0										
MA2330	10	31.0	33.0	35.0	22	2	10	30	10	30.0	75	Orange	Orange	—
MA2330-A		31.0	—	33.14										
MA2330-B		32.86	—	35.0										
MA2360	10	34.0	36.0	38.0	24	2	10	30	10	33.4	70	Orange	Blue	—
MA2360-A		34.0	—	36.16										
MA2360-B		35.84	—	38.0										
MA2390	10	37.0	39.0	41.0	26	5	10	50	10	36.3	65	Orange	White	—
MA2430	10	40.0	43.0	46.0	29	5	10	50	10	41.1	60	Yellow	Orange	—
MA2470	10	44.0	47.0	50.0	31	5	10	50	10	44.9	55	Yellow	Purple	—
MA2510	10	48.0	51.0	54.0	33	5	10	50	10	48.6	50	Green	Brown	—
MA2560	10	52.0	56.0	60.0	35	5	10	50	10	54.9	45	Green	Blue	—

Note 1. The V_Z 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_j= 25 to 150°C.



$S_Z - I_Z$

