500mW SOD-123 SURFACE MOUNT

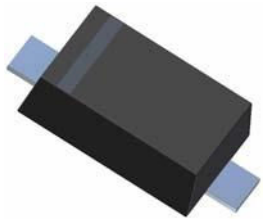
Flat Lead Surface Mount Plastic Package
Zener Voltage Regulators

Formosa MS

Absolute Maximum Ratings T_A = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
P_D	Power Dissipation	500	mW
T_{STG}	Storage Temperature Range	-65 to +150	°C
T_{OPR}	Operating Temperature Range	-65 to +150	°C

These ratings are limiting values above which the serviceability of the diode may be impaired.



SOD-123 Flat Lead

Specification Features:

- Wide Zener Voltage Range Selection, 2.4V to 75V
- VZ Tolerance Selection of ±5% (C Series)
- Flat Lead SOD-123 Plastic Package
- Surface Device Type Mounting
- RoHS Compliant
- Halogen-free Compliant
- Matte Tin(Sn) Lead Finish
- Band Indicates Cathode

ELECTRICAL SYMBOL

Electrical Characteristics T_A = 25°C unless otherwise noted

Device Type	Device Marking	V_Z @ I_{ZT} (Volts)			I_{ZT} (mA)	Z_{ZT} @ I_{ZT} (Ω) Max	I_{ZK} (mA)	Z_{ZK} @ I_{ZK} (Ω) Max	I_R @ V_R (μA) Max	V_R (Volts)
		Min	Nom	Max						
MMSZ2V4CW	2V4Z	2.28	2.4	2.52	5	100	1	564	45	1
MMSZ2V7CW	2V7Z	2.57	2.7	2.84	5	100	1	564	18	1
MMSZ3V0CW	3V0Z	2.85	3.0	3.15	5	100	1	564	9	1
MMSZ3V3CW	3V3Z	3.14	3.3	3.47	5	95	1	564	4.5	1
MMSZ3V6CW	3V6Z	3.42	3.6	3.78	5	90	1	564	4.5	1
MMSZ3V9CW	3V9Z	3.71	3.9	4.10	5	90	1	564	2.7	1
MMSZ4V3CW	4V3Z	4.09	4.3	4.52	5	90	1	564	2.7	1
MMSZ4V7CW	4V7Z	4.47	4.7	4.94	5	80	1	470	2.7	2
MMSZ5V1CW	5V1Z	4.85	5.1	5.36	5	60	1	451	1.8	2
MMSZ5V6CW	5V6Z	5.32	5.6	5.88	5	40	1	376	0.9	2
MMSZ6V2CW	6V2Z	5.89	6.2	6.51	5	10	1	141	2.7	4
MMSZ6V8CW	6V8Z	6.46	6.8	7.14	5	15	1	75	1.8	4
MMSZ7V5CW	7V5Z	7.11	7.5	7.86	5	15	1	75	0.9	5
MMSZ8V2CW	8V2Z	7.79	8.2	8.61	5	15	1	75	0.63	5
MMSZ9V1CW	9V1Z	8.65	9.1	9.56	5	15	1	94	0.45	6
MMSZ10VCW	10VZ	9.50	10	10.50	5	20	1	141	0.18	7
MMSZ11VCW	11VZ	10.45	11	11.55	5	20	1	141	0.09	8
MMSZ12VCW	12VZ	11.40	12	12.60	5	25	1	141	0.09	8
MMSZ13VCW	13VZ	12.35	13	13.65	5	30	1	160	0.09	8
MMSZ15VCW	15VZ	14.25	15	15.75	5	30	1	188	0.045	10.5
MMSZ16VCW	16VZ	15.20	16	16.80	5	40	1	188	0.045	11.2

Electrical Characteristics

T_A = 25°C unless otherwise noted

Device Type	Device Marking	V_Z @ I_{ZT} (Volts)			I_{ZT} (mA)	Z_{ZT} @ I_{ZT} (Ω) Max	I_{ZK} (mA)	Z_{ZK} @ I_{ZK} (Ω) Max	I_R @ V_R (μA) Max	V_R (Volts)
		Min	Nom	Max						
MMSZ18VCW	18VZ	17.10	18	18.90	5	45	1	212	0.045	12.6
MMSZ20VCW	20VZ	19.00	20	21.00	5	55	1	212	0.045	14.0
MMSZ22VCW	22VZ	20.90	22	23.10	5	55	1	235	0.045	15.4
MMSZ24VCW	24VZ	22.80	24	25.20	5	70	1	235	0.045	16.8
MMSZ27VCW	27VZ	25.65	27	28.35	2	80	0.5	282	0.045	18.9
MMSZ30VCW	30VZ	28.50	30	31.50	2	80	0.5	282	0.045	21.0
MMSZ33VCW	33VZ	31.35	33	34.65	2	80	0.5	306	0.045	23.0
MMSZ36VCW	36VZ	34.20	36	37.80	2	90	0.5	329	0.045	25.2
MMSZ39VCW	39VZ	37.05	39	40.95	2	130	0.5	329	0.045	27.3
MMSZ43VCW	43VZ	40.85	43	45.15	2	150	0.5	353	0.045	30.1
MMSZ47VCW	47VZ	44.65	47	49.35	2	170	0.5	353	0.045	33.0
MMSZ51VCW	51VZ	48.45	51	53.55	2	180	0.5	376	0.045	35.7
MMSZ56VCW	56VZ	53.20	56	58.80	2	200	0.5	400	0.045	39.2
MMSZ62VCW	62VZ	58.90	62	65.10	2	215	0.5	423	0.045	43.4
MMSZ68VCW	68VZ	64.60	68	71.40	2	240	0.5	447	0.045	47.6
MMSZ75VCW	75VZ	71.25	75	78.75	2	255	0.5	470	0.045	52.5

V_F Forward Voltage = 900mV Maximum @ I_F = 10 mA for all types

Notes:

1. The Zener Voltage (V_Z) is tested under pulse condition of 10mS.
2. The device numbers listed have a standard tolerance on the nominal zener voltage of ±5%.
3. The zener impedance is derived from the 60-cycle ac voltage, which results when an ac current having an rms value equal to 10% of the dc zener current (I_{ZT} or I_{ZK}) is superimposed to I_{ZT} or I_{ZK}.

RATING AND CHARACTERISTIC CURVES

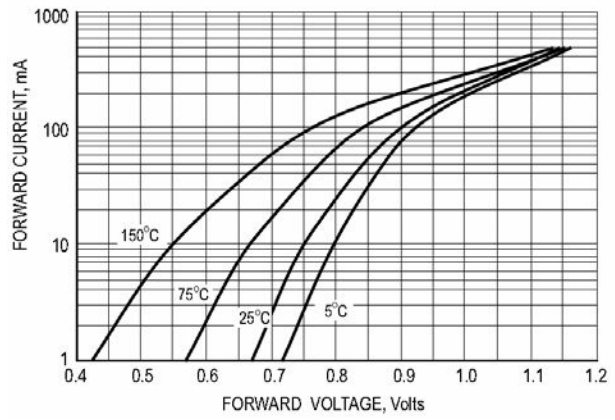


Fig.1 TYPICAL FORWARD VOLTAGE

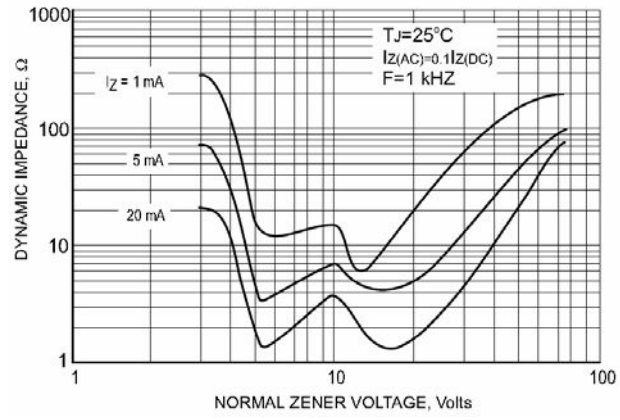


Fig.2 EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE

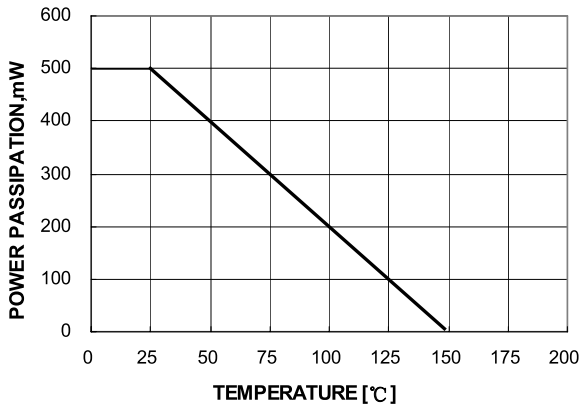


Fig.3 POWER DISSIPATION VS. AMBIENT TEMP.

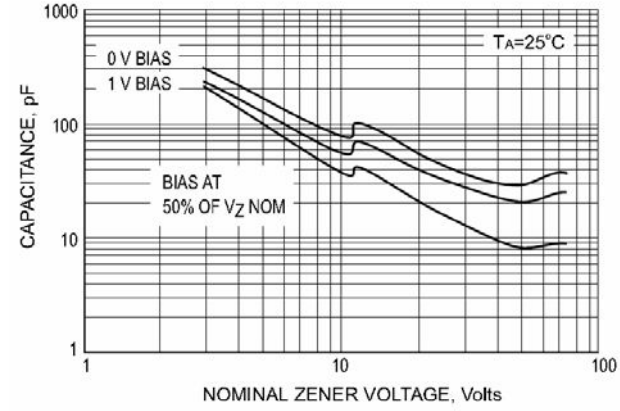


Fig.4 TYPICAL CAPACITANCE

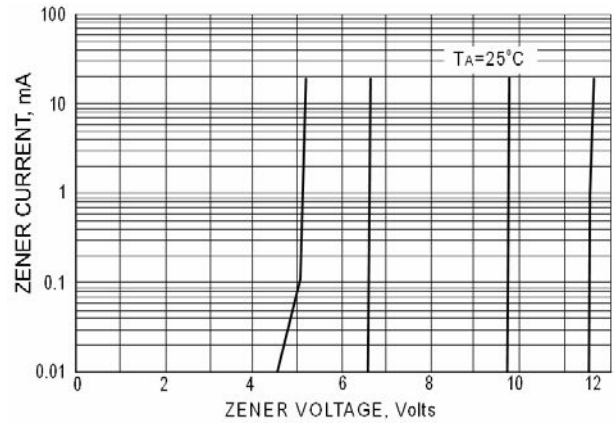


Fig.5 ZENER BREAKDOWN CHARACTERISTICS

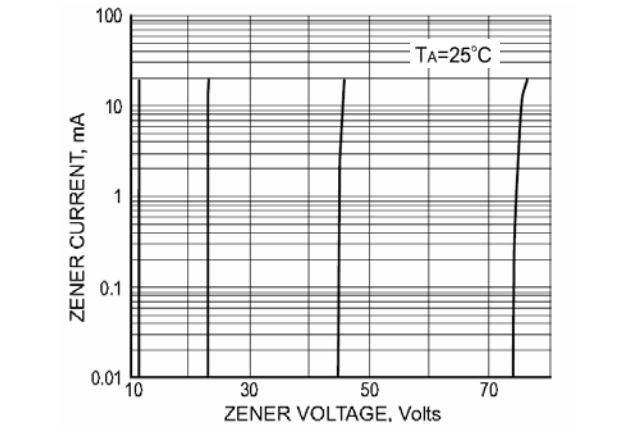


Fig.6 ZENER BREAKDOWN CHARACTERISTICS

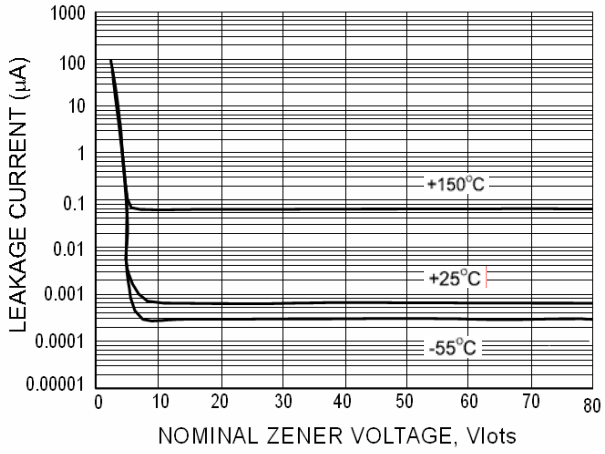
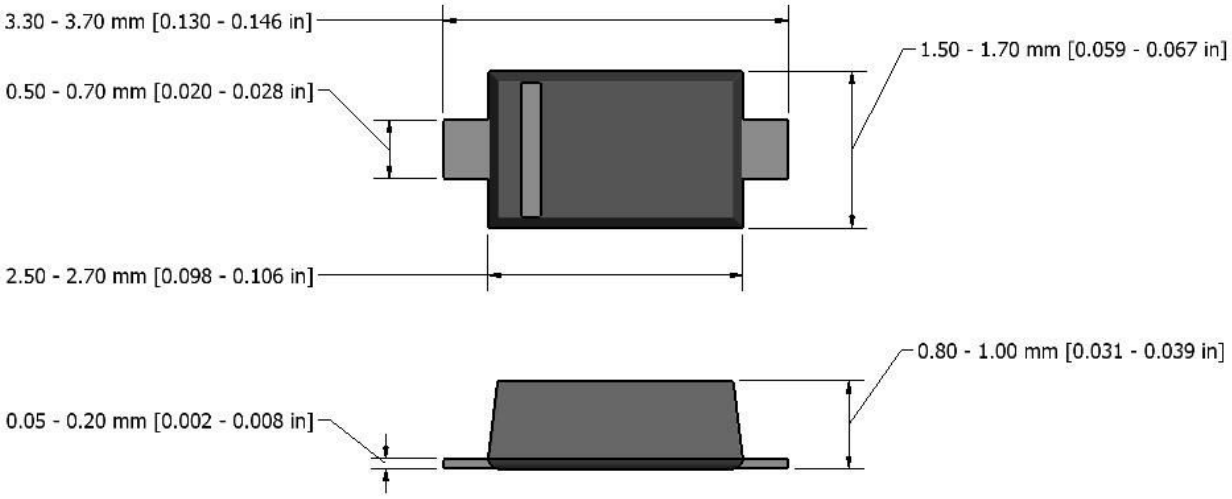


Fig.7 TYPICAL LEAKGE CURRENT

Flat Lead SOD-123 Package Outline



Note: Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.

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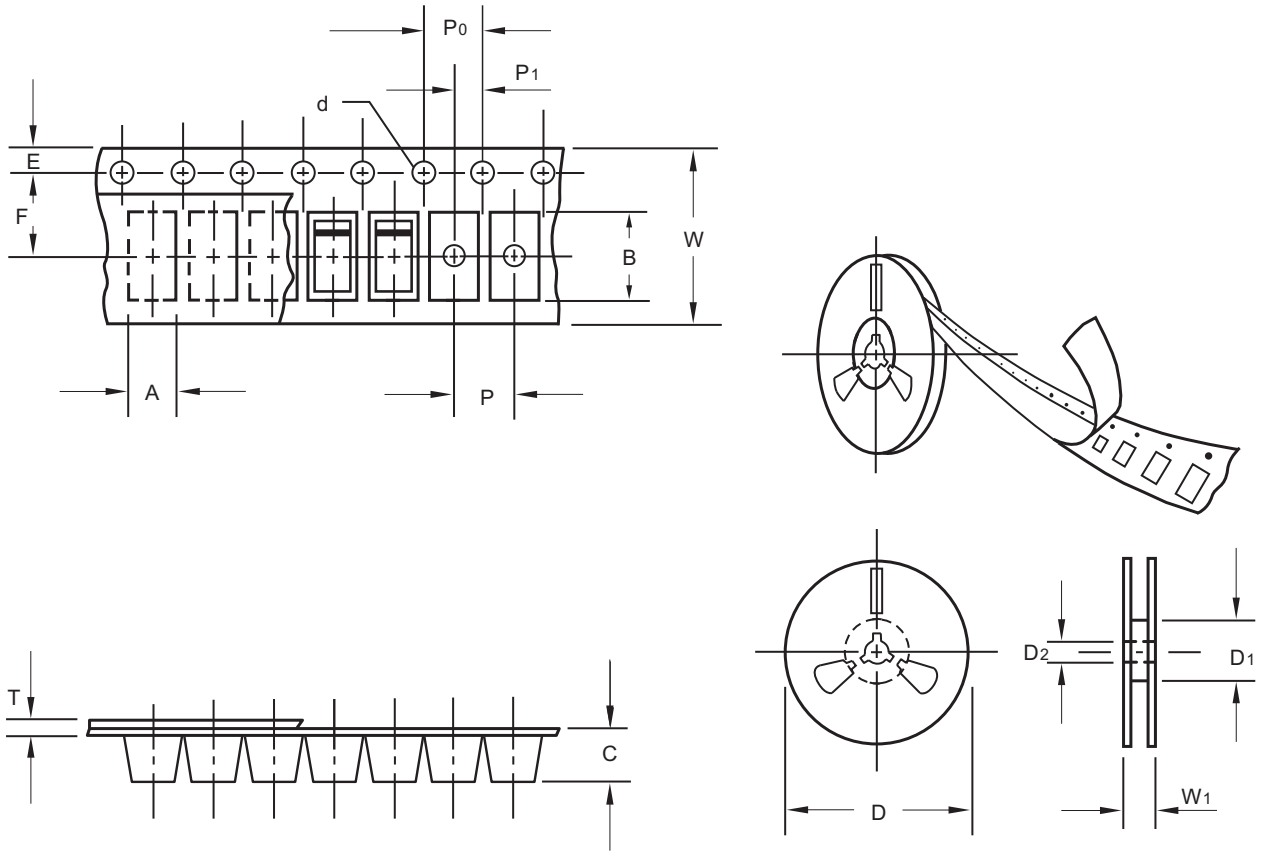
Packing information



unit:mm

Item	Symbol	Tolerance	SOD-123FL
Carrier width	A	0.1	2.00
Carrier length	B	0.1	3.85
Carrier depth	C	0.1	1.10
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D_1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	62.00
Feed hole diameter	D_2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W_1	1.0	11.40

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

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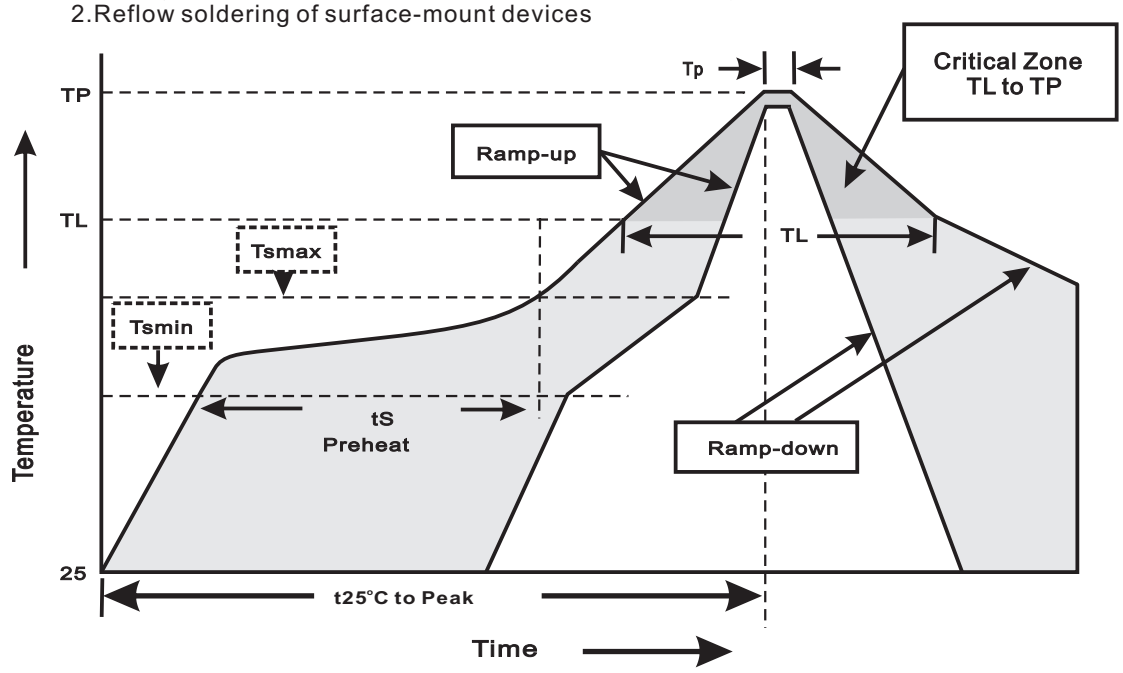
Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SOD-123	7"	3,000	4.0	30,000	183*183*123	178	382*262*387	240,000	9.5

Suggested thermal profiles for soldering processes

1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T_L to T_P)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax to T_L -Ramp-upRate	 <3°C/sec
Time maintained above: -Temperature(T_L) -Time(t_L)	 217°C 60~260sec
Peak Temperature(T_P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t_P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes