



SEMICONDUCTOR

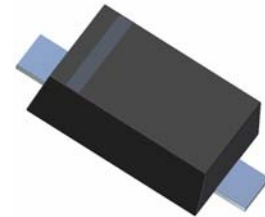
# DATA SHEET

## MMSZxxV Series

### 500mW SOD-123 SURFACE MOUNT Flat Lead Surface Mount Plastic Package Zener Voltage Regulators



SOD-123 Flat Lead



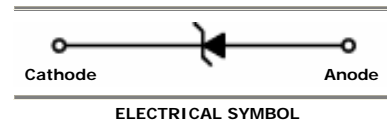
#### Absolute Maximum Ratings $T_A = 25^\circ\text{C}$ unless otherwise noted

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

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

#### Specification Features:

- Wide Zener Voltage Range Selection, 2.4V to 75V
- VZ Tolerance Selection of  $\pm 5\%$  (B Series of  $\pm 2\%$ )
- Flat Lead SOD-123 Plastic Package
- Surface Device Type Mounting
- Moisture Sensitivity Level 1
- Clip Bonding Construction, Good Thermal Capability
- Pb Free Version and RoHS Compliant
- Matte Tin(Sn) Lead Finish with Nickel(Ni) Underplate
- Band Indicates Cathode



XX = Product Type Marking Code

#### Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

Device Type	Device Marking	$V_Z @ I_{ZT}$ (Volts)			$I_{ZT}$ (mA)	$Z_{ZT} @ I_{ZT}$ ( $\Omega$ ) Max	$I_{ZK}$ (mA)	$Z_{ZK} @ I_{ZK}$ ( $\Omega$ ) Max	$I_R @ V_R$ ( $\mu\text{A}$ ) Max	$V_R$ (Volts)
		Min	Nom	Max						
MMSZ2V4	2V4Z	2.28	2.4	2.52	5	94	1	564	45	1
MMSZ2V7	2V7Z	2.57	2.7	2.84	5	94	1	564	18	1
MMSZ3V0	3V0Z	2.85	3.0	3.15	5	89	1	564	9	1
MMSZ3V3	3V3Z	3.14	3.3	3.47	5	89	1	564	4.5	1
MMSZ3V6	3V6Z	3.42	3.6	3.78	5	84	1	564	4.5	1
MMSZ3V9	3V9Z	3.71	3.9	4.10	5	84	1	564	2.7	1
MMSZ4V3	4V3Z	4.09	4.3	4.52	5	84	1	564	2.7	1
MMSZ4V7	4V7Z	4.47	4.7	4.94	5	75	1	470	2.7	2
MMSZ5V1	5V1Z	4.85	5.1	5.36	5	56	1	451	1.8	2
MMSZ5V6	5V6Z	5.32	5.6	5.88	5	37	1	376	0.9	2
MMSZ6V2	6V2Z	5.89	6.2	6.51	5	9	1	141	2.7	4
MMSZ6V8	6V8Z	6.46	6.8	7.14	5	14	1	75	1.8	4
MMSZ7V5	7V5Z	7.11	7.5	7.86	5	14	1	75	0.9	5
MMSZ8V2	8V2Z	7.79	8.2	8.61	5	14	1	75	0.63	5
MMSZ9V1	9V1Z	8.65	9.1	9.56	5	14	1	94	0.45	6
MMSZ10V	10VZ	9.50	10	10.50	5	18	1	141	0.18	7
MMSZ11V	11VZ	10.45	11	11.55	5	18	1	141	0.09	8
MMSZ12V	12VZ	11.40	12	12.60	5	23	1	141	0.09	8
MMSZ13V	13VZ	12.35	13	13.65	5	28	1	160	0.09	8
MMSZ15V	15VZ	14.25	15	15.75	5	28	1	188	0.045	10.5
MMSZ16V	16VZ	15.20	16	16.80	5	37	1	188	0.045	11.2
MMSZ18V	18VZ	17.10	18	18.90	5	42	1	212	0.045	12.6
MMSZ20V	20VZ	19.00	20	21.00	5	51	1	212	0.045	14.0

# MMSZxxV Series

## Electrical Characteristics

$T_A = 25^\circ\text{C}$  unless otherwise noted

Device Type	Device Marking	$V_Z @ I_{ZT}$ (Volts)			$I_{ZT}$ (mA)	$Z_{ZT} @ I_{ZT}$ ( $\Omega$ ) Max	$I_{ZK}$ (mA)	$Z_{ZK} @ I_{ZK}$ ( $\Omega$ ) Max	$I_R @ V_R$ ( $\mu\text{A}$ ) Max	$V_R$ (Volts)
		Min	Nom	Max						
MMSZ22V	22VZ	20.90	22	23.10	5	51	1	235	0.045	15.4
MMSZ24V	24VZ	22.80	24	25.20	5	65	1	235	0.045	16.8
MMSZ27V	27VZ	25.65	27	28.35	5	75	0.5	282	0.045	18.9
MMSZ30V	30VZ	28.50	30	31.50	5	75	0.5	282	0.045	21.0
MMSZ33V	33VZ	31.35	33	34.65	5	75	0.5	306	0.045	23.0
MMSZ36V	36VZ	34.20	36	37.80	5	84	0.5	329	0.045	25.2
MMSZ39V	39VZ	37.05	39	40.95	5	122	0.5	329	0.045	27.3
MMSZ43V	43VZ	40.85	43	45.15	5	141	0.5	353	0.045	30.1
MMSZ47V	47VZ	44.65	47	49.35	5	160	0.5	353	0.045	33.0
MMSZ51V	51VZ	48.45	51	53.55	5	169	0.5	376	0.045	35.7
MMSZ56V	56VZ	53.20	56	58.80	5	188	0.5	400	0.045	39.2
MMSZ62V	62VZ	58.90	62	65.10	5	202	0.5	423	0.045	43.4
MMSZ68V	68VZ	64.60	68	71.40	5	226	0.5	447	0.045	47.6
MMSZ75V	75VZ	71.25	75	78.75	5	240	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  $\pm 5\%$ .
3. For detailed information on price, availability and delivery of nominal zener voltages between the voltages shown and tighter voltage tolerances, contact your nearest YEASHIN representative.
4. 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  $I_{ZK}$ .

# DEVICE CHARACTERISTICS

## MMSZxxV Series

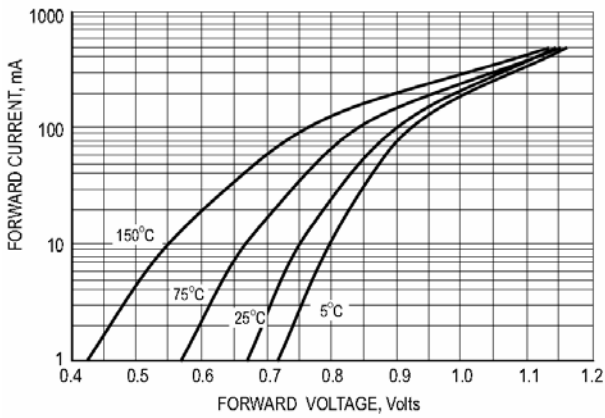


Fig.1 TYPICAL FORWARD VOLTAGE

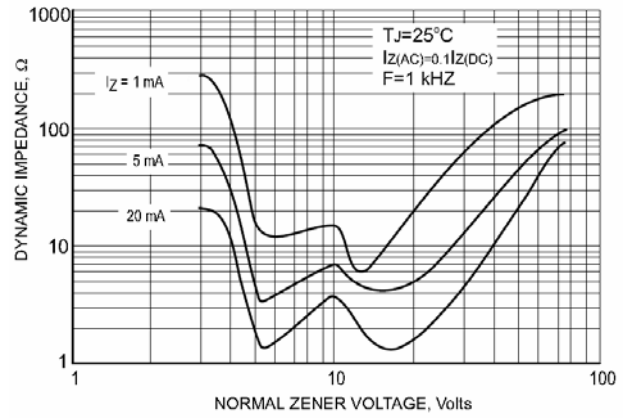


Fig.2 EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE

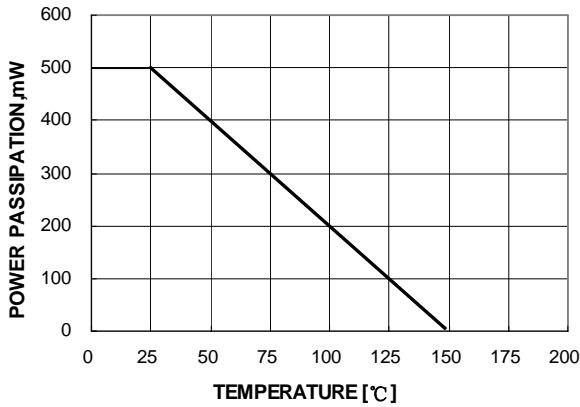


Fig.3 POWER DISSIPATION VS. AMBIENT TEMP.

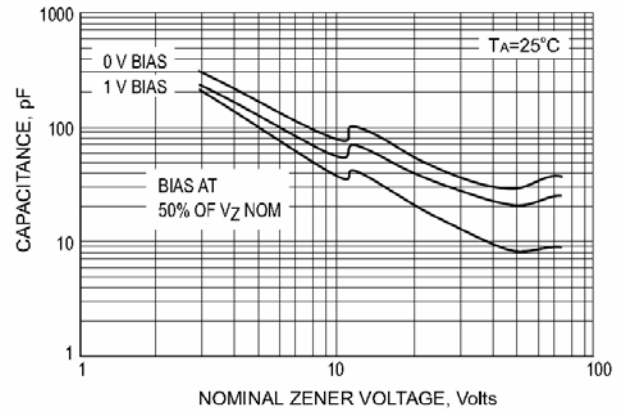


Fig.4 TYPICAL CAPACITANCE

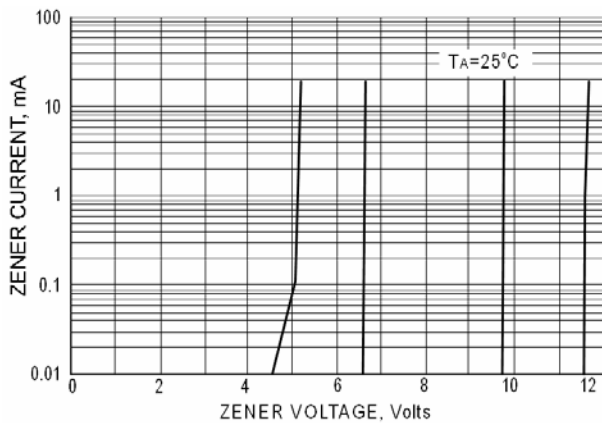


Fig.5 ZENER BREAKDOWN CHARACTERISTICS

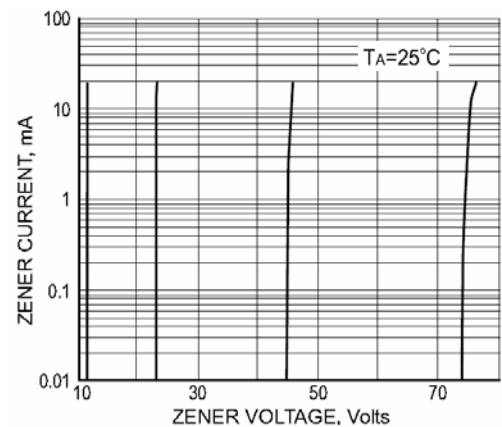


Fig.6 ZENER BREAKDOWN CHARACTERISTICS

# PACKAGE OUTLINE & DIMENSIONS

## MMSZxxV Series

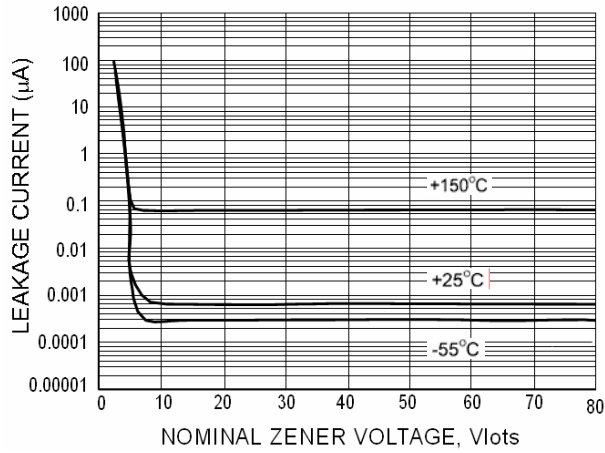
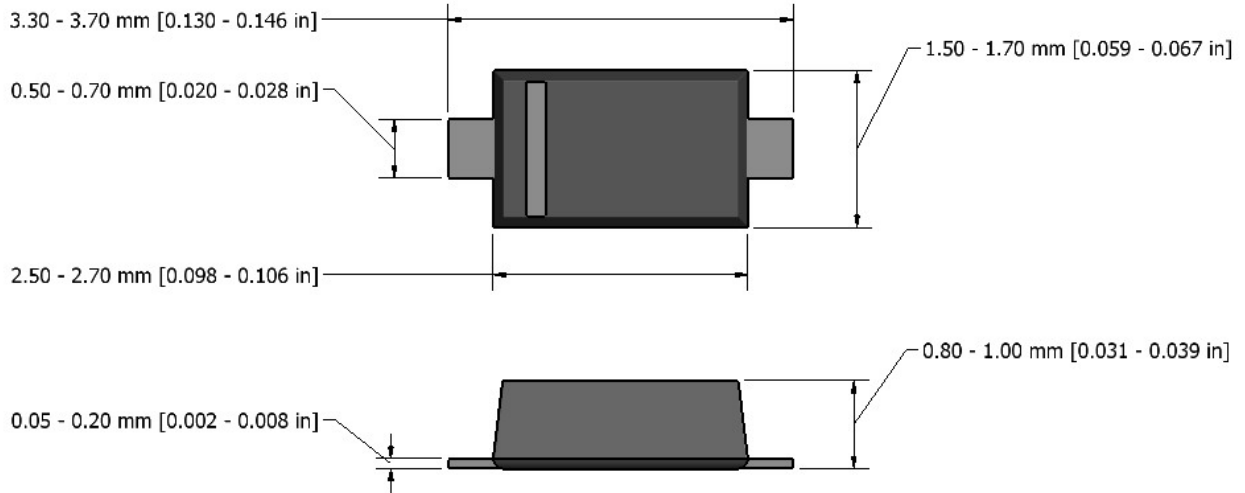


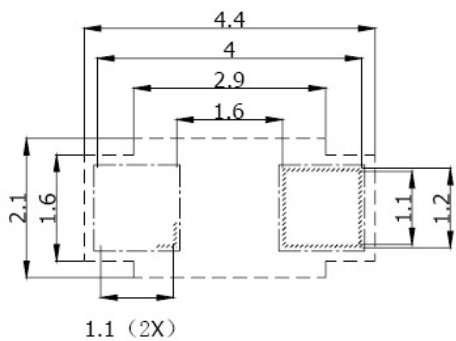
Fig.7 TYPICAL LEAKGE CURRENT

### Flat Lead SOD-123 Package Outline



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

### SOLDERING FOOTPRINT



-  Solder lands 焊接区
-  Solder resist 耐热区
-  Solder past 锡膏区
-  Occupied area 填满区