

Zener Voltage Regulators

500 mW SOD-123 Surface Mount

Three complete series of Zener diodes are offered in the convenient, surface mount plastic SOD-123 package. These devices provide a convenient alternative to the leadless 34-package style.

Features

- 500 mW Rating on FR-4 or FR-5 Board
- Wide Zener Reverse Voltage Range – 1.8 V to 43 V
- Package Designed for Optimal Automated Board Assembly
- Small Package Size for High Density Applications
- ESD Rating of Class 3 (>16 kV) per Human Body Model
- We declare that the material of product compliance with RoHS requirements.

Mechanical Characteristics:

CASE: Void-free, transfer-molded, thermosetting plastic case

FINISH: Corrosion resistant finish, easily solderable

MAXIMUM CASE TEMPERATURE FOR SOLDERING PURPOSES:

260°C for 10 Seconds

POLARITY: Cathode indicated by polarity band

FLAMMABILITY RATING: UL 94 V-0

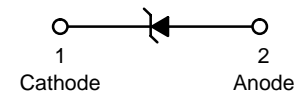
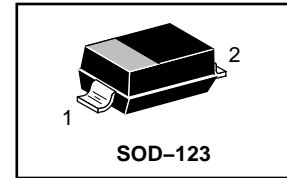
MAXIMUM RATINGS

Rating	Symbol	Max	Unit
Total Power Dissipation on FR-5 Board, (Note 1) @ $T_L = 75^\circ\text{C}$ Derated above 75°C	P_D	500 6.7	mW mW/ $^\circ\text{C}$
Thermal Resistance, (Note 2) Junction-to-Ambient	$R_{\theta JA}$	340	$^\circ\text{C}/\text{W}$
Thermal Resistance, (Note 2) Junction-to-Lead	$R_{\theta JL}$	150	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. FR-5 = 3.5 X 1.5 inches, using the minimum recommended footprint.
2. Thermal Resistance measurement obtained via infrared Scan Method.

LMSZ4xxxT1G



MARKING DIAGRAM



- xx = Device Code
- M = Date Code
- = Pb-Free Package

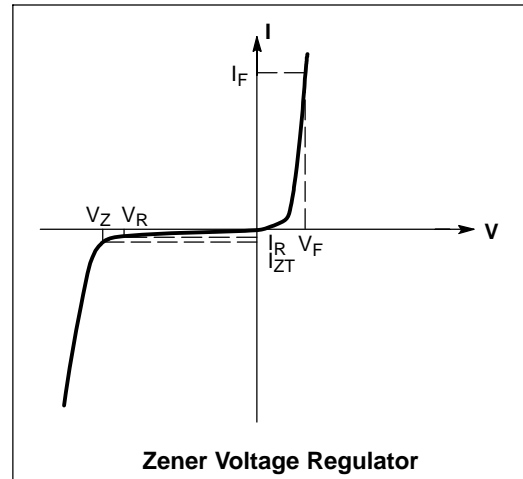
ORDERING INFORMATION

Device	Package	Shipping
LMSZ4xxxT1G	SOD-123	3000/Tape & Reel
LMSZ4xxxT3G	SOD-123	10000/Tape & Reel

LMSZ4xxxT1G

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted, $V_F = 0.95\text{ V Max. @ } I_F = 10\text{ mA}$)

Symbol	Parameter
V_Z	Reverse Zener Voltage @ I_{ZT}
I_{ZT}	Reverse Current
I_R	Reverse Leakage Current @ V_R
V_R	Reverse Voltage
I_F	Forward Current
V_F	Forward Voltage @ I_F



LMSZ4xxxT1G

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted, $V_F = 0.9\text{ V Max.}$ @ $I_F = 10\text{ mA}$)

Device	Device Marking	Zener Voltage (Note 3)				Leakage Current	
		V_Z (Volts)			@ I_{ZT}	I_R @ V_R	
		Min	Nom	Max	μA	μA	Volts
LMSZ4678T1G	CC	1.71	1.8	1.89	50	7.5	1
LMSZ4679T1G	CD	1.90	2.0	2.10	50	5	1
LMSZ4680T1G	CE	2.09	2.2	2.31	50	4	1
LMSZ4681T1G	CF	2.28	2.4	2.52	50	2	1
LMSZ4682T1G	CH	2.565	2.7	2.835	50	1	1
LMSZ4683T1G	CJ	2.85	3.0	3.15	50	0.8	1
LMSZ4684T1G	CK	3.13	3.3	3.47	50	7.5	1.5
LMSZ4685T1G	CM	3.42	3.6	3.78	50	7.5	2
LMSZ4686T1G	CN	3.70	3.9	4.10	50	5	2
LMSZ4687T1G	CP	4.09	4.3	4.52	50	4	2
LMSZ4688T1G	CT	4.47	4.7	4.94	50	10	3
LMSZ4689T1G	CU	4.85	5.1	5.36	50	10	3
LMSZ4690T1G	CV	5.32	5.6	5.88	50	10	4
LMSZ4691T1G	CA	5.89	6.2	6.51	50	10	5
LMSZ4692T1G	CX	6.46	6.8	7.14	50	10	5.1
LMSZ4693T1G	CY	7.13	7.5	7.88	50	10	5.7
LMSZ4694T1G	CZ	7.79	8.2	8.61	50	1	6.2
LMSZ4695T1G	DC	8.27	8.7	9.14	50	1	6.6
LMSZ4696T1G	DD	8.65	9.1	9.56	50	1	6.9
LMSZ4697T1G	DE	9.50	10	10.50	50	1	7.6
LMSZ4698T1G	DF	10.45	11	11.55	50	0.05	8.4
LMSZ4699T1G	DH	11.40	12	12.60	50	0.05	9.1
LMSZ4700T1G	DJ	12.35	13	13.65	50	0.05	9.8
LMSZ4701T1G	DK	13.30	14	14.70	50	0.05	10.6
LMSZ4702T1G	DM	14.25	15	15.75	50	0.05	11.4
LMSZ4703T1G	DN	15.20	16	16.80	50	0.05	12.1
LMSZ4704T1G	DP	16.15	17	17.85	50	0.05	12.9
LMSZ4705T1G	DT	17.10	18	18.90	50	0.05	13.6
LMSZ4706T1G	DU	18.05	19	19.95	50	0.05	14.4
LMSZ4707T1G	DV	19.00	20	21.00	50	0.01	15.2
LMSZ4708T1G	DA	20.90	22	23.10	50	0.01	16.7
LMSZ4709T1G	DX	22.80	24	25.20	50	0.01	18.2
LMSZ4710T1G	DY	23.75	25	26.25	50	0.01	19.0
LMSZ4711T1G	EA	25.65	27	28.35	50	0.01	20.4
LMSZ4712T1G	EC	26.60	28	29.40	50	0.01	21.2
LMSZ4713T1G	ED	28.50	30	31.50	50	0.01	22.8
LMSZ4714T1G	EE	31.35	33	34.65	50	0.01	25.0
LMSZ4715T1G	EF	34.20	36	37.80	50	0.01	27.3
LMSZ4716T1G	EH	37.05	39	40.95	50	0.01	29.6
LMSZ4717T1G	EJ	40.85	43	45.15	50	0.01	32.6

3. Nominal Zener voltage is measured with the device junction in thermal equilibrium at $T_L = 30^\circ\text{C} \pm 1^\circ\text{C}$.

TYPICAL CHARACTERISTICS

LMSZ4xxxT1G

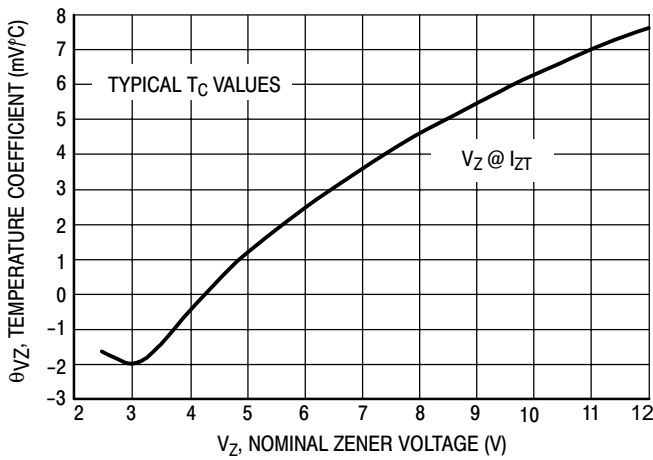


Figure 1. Temperature Coefficients
(Temperature Range -55°C to +150°C)

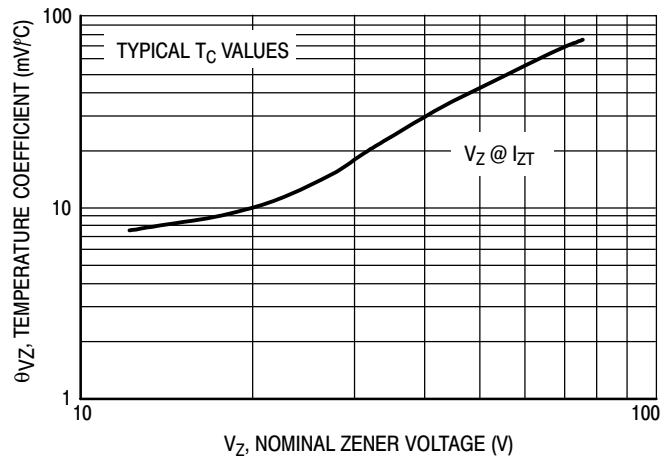


Figure 2. Temperature Coefficients
(Temperature Range -55°C to +150°C)

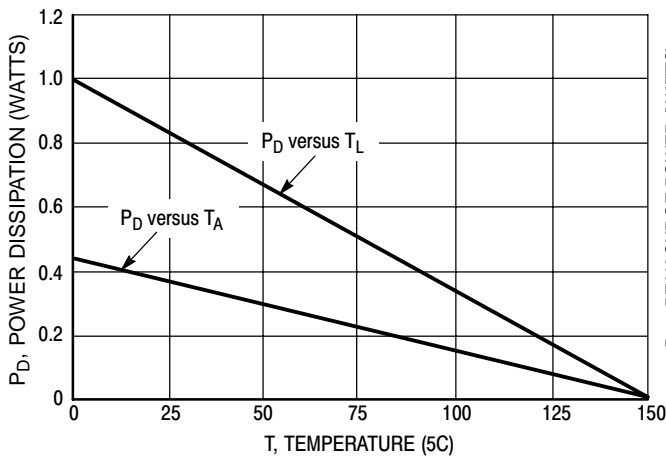


Figure 3. Steady State Power Derating

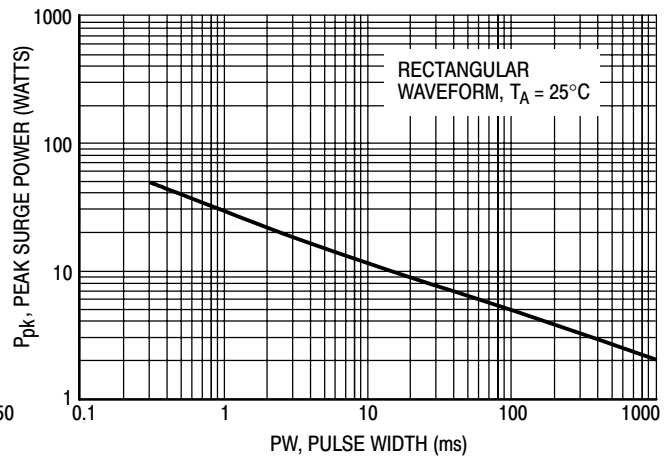


Figure 4. Maximum Nonrepetitive Surge Power

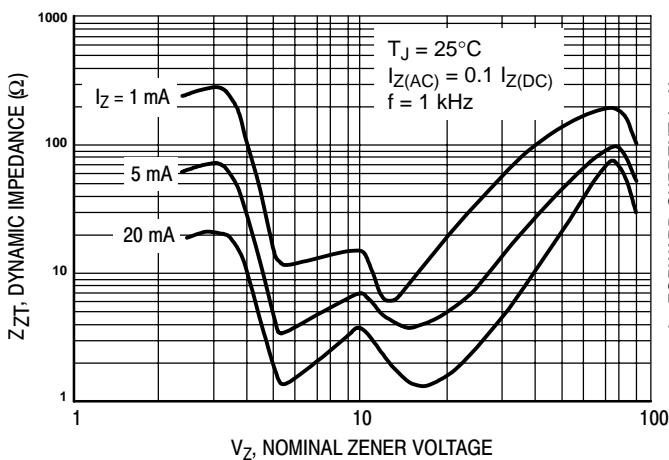


Figure 5. Effect of Zener Voltage on Zener Impedance

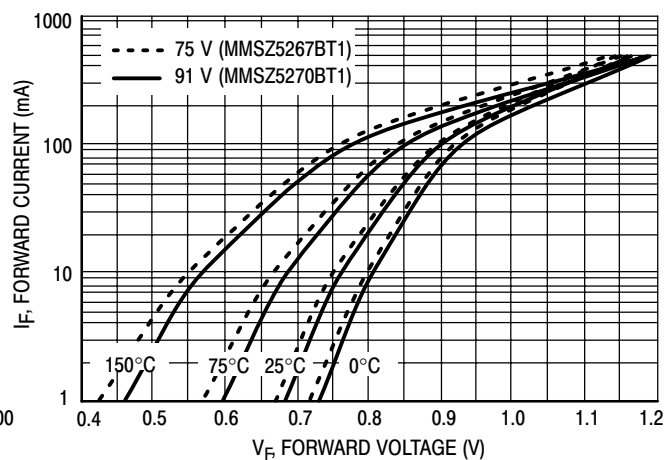


Figure 6. Typical Forward Voltage

TYPICAL CHARACTERISTICS

LMSZ4xxxT1G

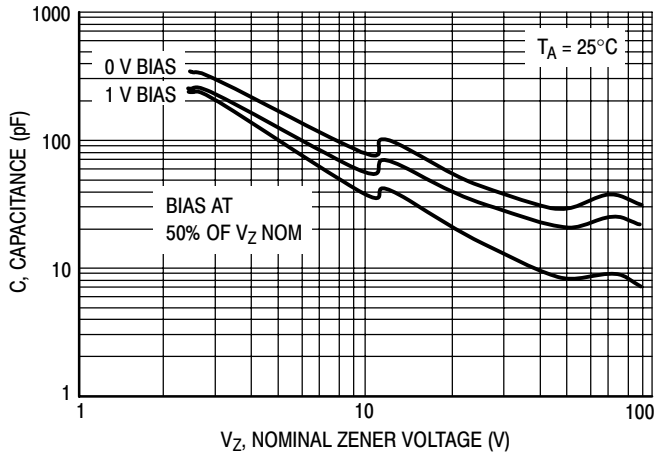


Figure 7. Typical Capacitance

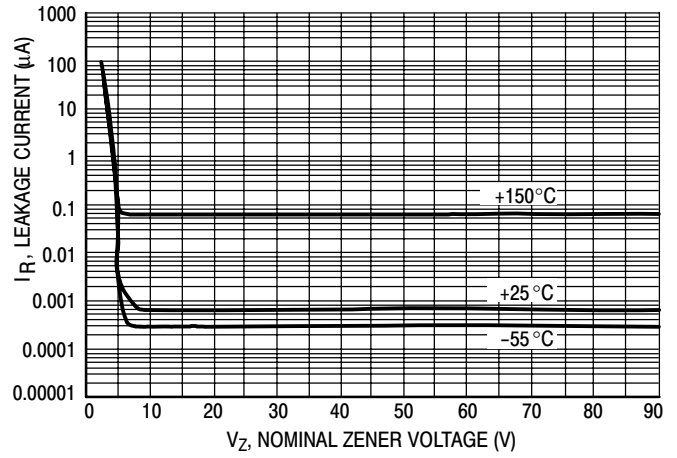


Figure 8. Typical Leakage Current

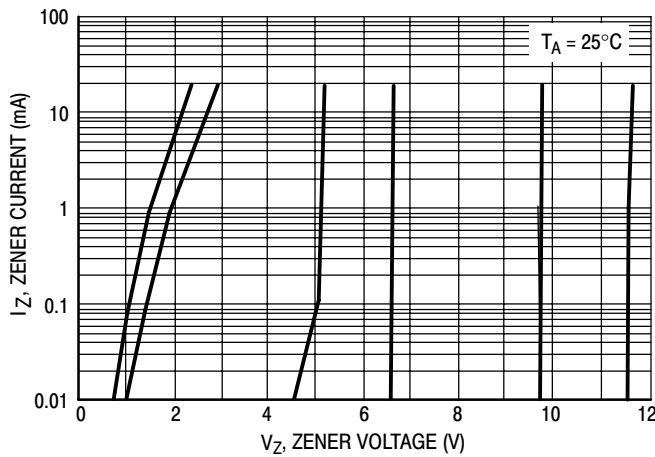


Figure 9. Zener Voltage versus Zener Current (V_Z Up to 12 V)

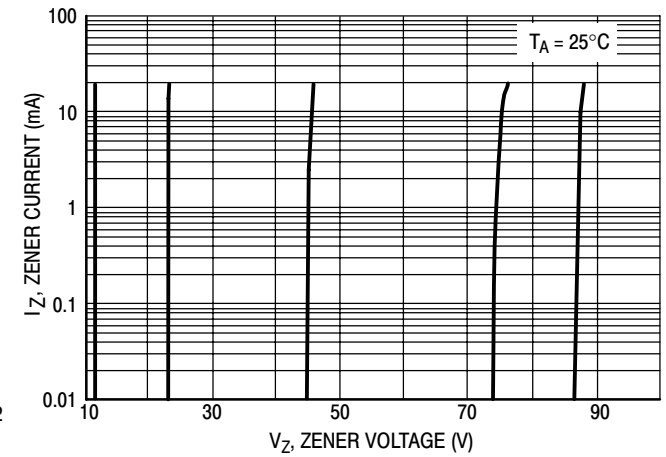
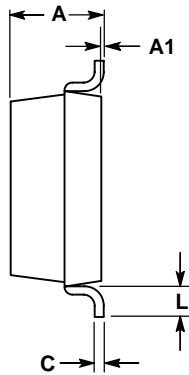
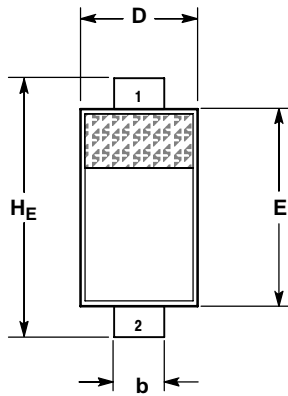


Figure 10. Zener Voltage versus Zener Current (12 V to 91 V)

PACKAGE DIMENSIONS

LMSZ4xxxT1G

SOD-123
CASE 425-04
ISSUE E



NOTES:

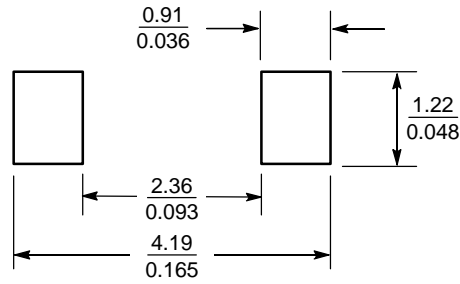
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.94	1.17	1.35	0.037	0.046	0.053
A1	0.00	0.05	0.10	0.000	0.002	0.004
b	0.51	0.61	0.71	0.020	0.024	0.028
c	---	---	0.15	---	---	0.006
D	1.40	1.60	1.80	0.055	0.063	0.071
E	2.54	2.69	2.84	0.100	0.106	0.112
HE	3.56	3.68	3.86	0.140	0.145	0.152
L	0.25	---	---	0.010	---	---

STYLE 1:

- PIN 1. CATHODE
- PIN 2. ANODE

SOLDERING FOOTPRINT*



SCALE 10:1 (mm/inches)