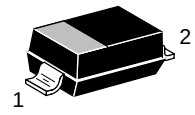
Zener Voltage Regulators

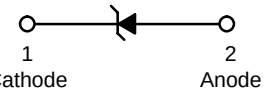
500 mW SOD−123 Surface Mount

LMSZ4678T1G Series
S-LMSZ4678T1G Series

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.



SOD−123



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
- General Purpose, Medium Current
- ESD Rating of Class 3 (>16 kV) per Human Body Model
- We declare that the material of product compliance with RoHS requirements.
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

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

MARKING DIAGRAM

xx = Device Code
M = Date Code

MAXIMUM RATINGS

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

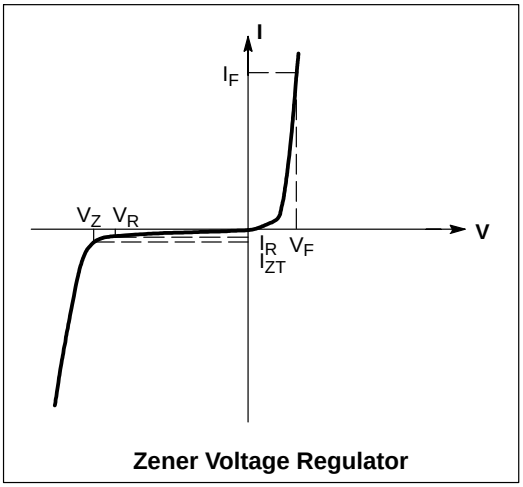
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur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

ORDERING INFORMATION

Device	Package	Shipping
LMSZ4678T1G Series	SOD−123	3000/Tape & Reel
LMSZ4678T3G Series	SOD−123	10,000/Tape & Reel

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted, V_F = 0.95 V Max. @ I_F = 10 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



Zener Voltage Regulator

LMSZ4678T1G Series,S-LMSZ4678T1G Series

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted, V_F = 0.9 V Max. @ I_F = 10 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°C ±1°C.

TYPICAL CHARACTERISTICS

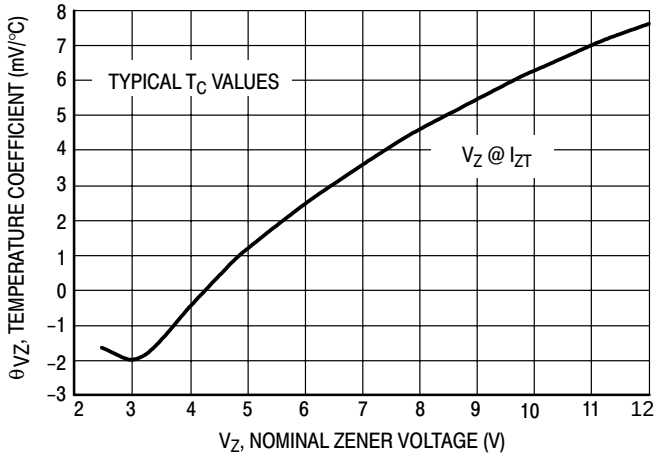


Figure 1. Temperature Coefficients (Temperature Range −55°C to +150°C)

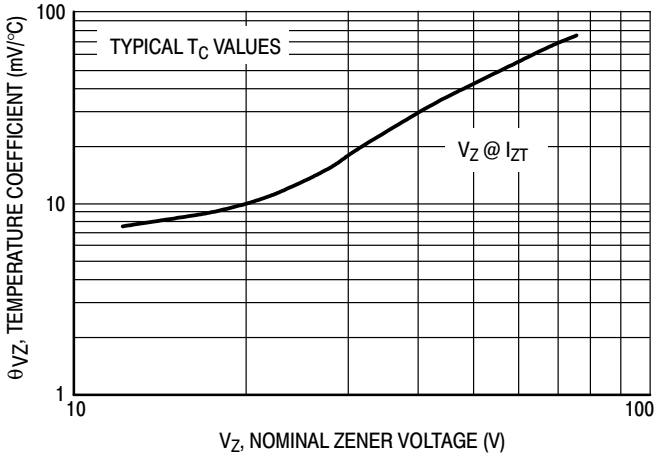


Figure 2. Temperature Coefficients (Temperature Range −55°C to +150°C)

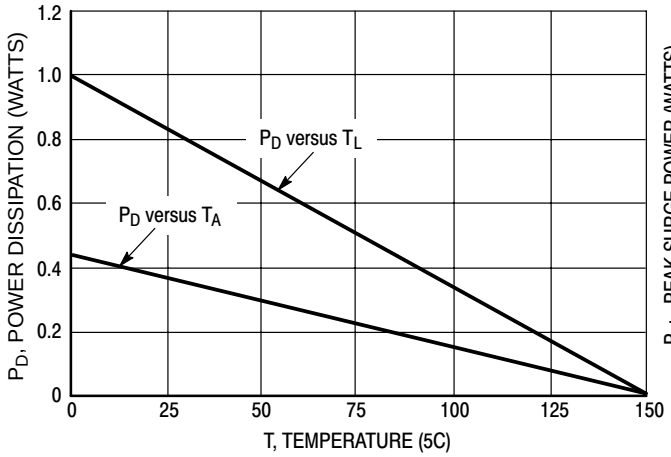


Figure 3. Steady State Power Derating

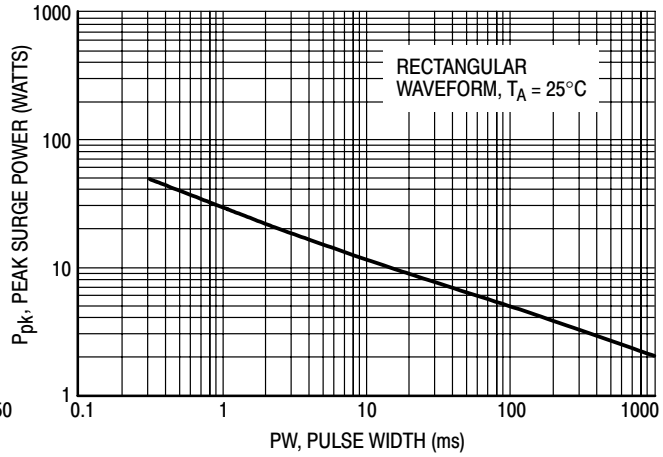


Figure 4. Maximum Nonrepetitive Surge Power

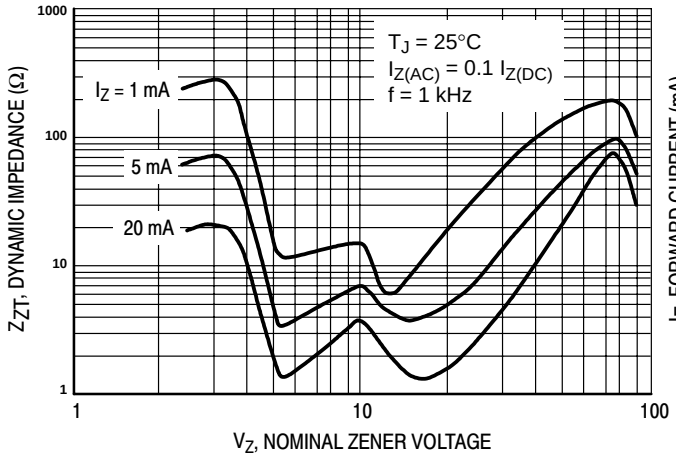


Figure 5. Effect of Zener Voltage on Zener Impedance

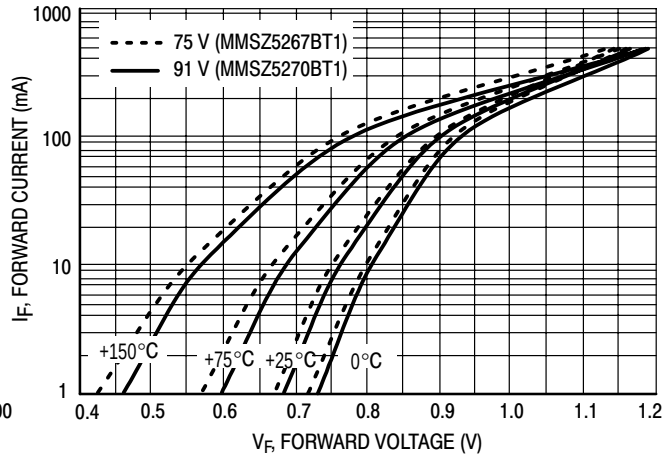


Figure 6. Typical Forward Voltage

LMSZ4678T1G Series,S-LMSZ4678T1G Series

TYPICAL CHARACTERISTICS

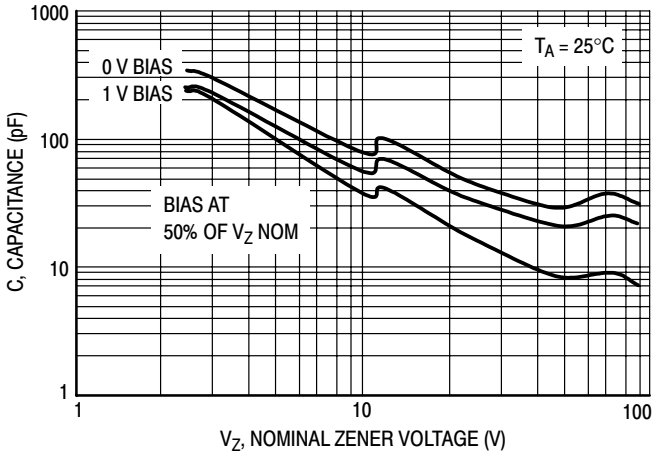


Figure 7. Typical Capacitance

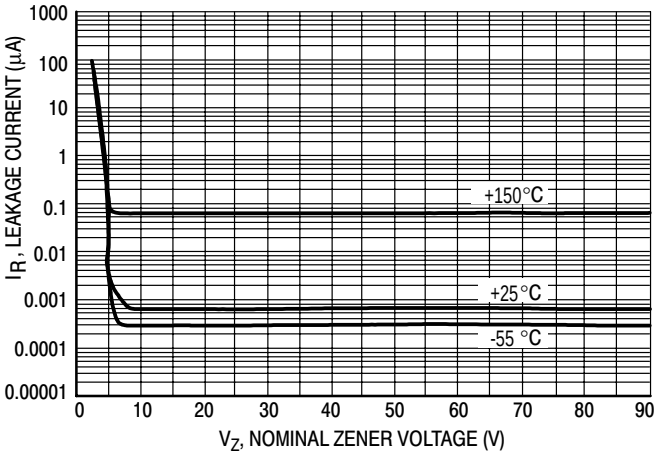


Figure 8. Typical Leakage Current

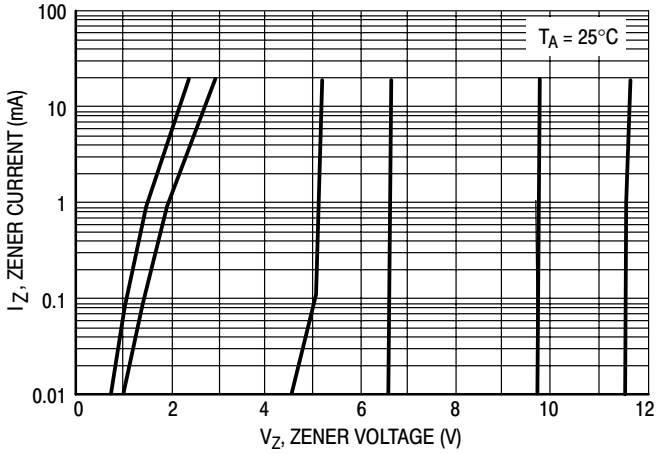


Figure 9. Zener Voltage versus Zener Current (V_Z Up to 12 V)

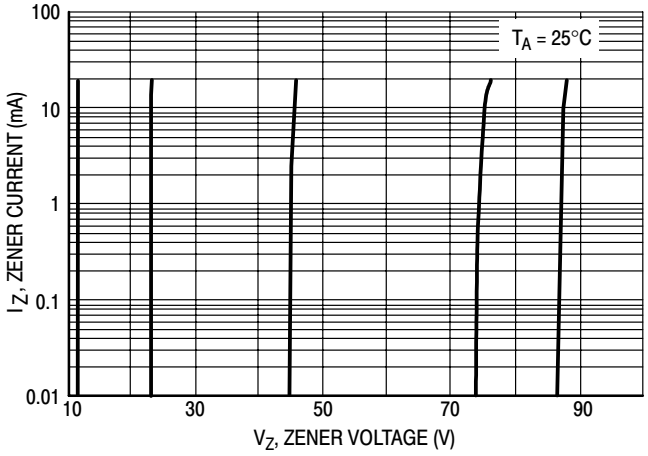
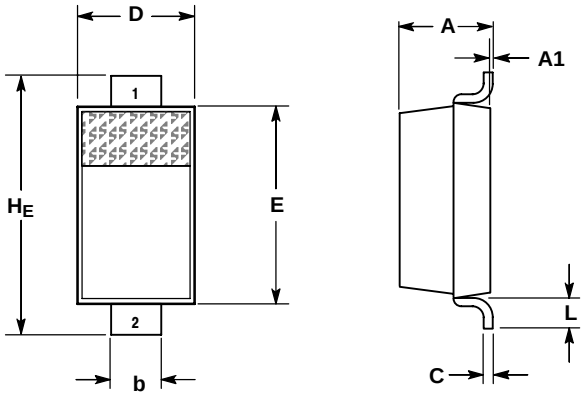


Figure 10. Zener Voltage versus Zener Current (12 V to 91 V)

SOD−123

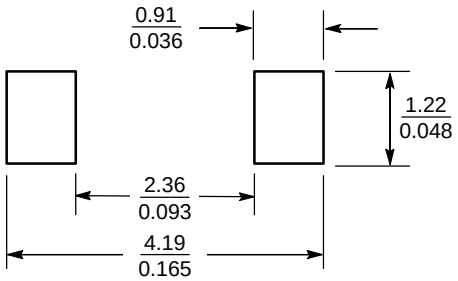


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	MILLIMETERS			INCHES		
DIM	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
H_E	3.56	3.68	3.86	0.140	0.145	0.152
L	0.25	---	---	0.010	---	---

STYLE 1:
PIN 1. CATHODE
2. ANODE

SOLDERING FOOTPRINT*



SCALE 10:1 (mm / inches)