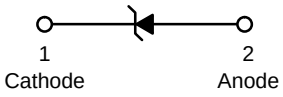
Zener Voltage Regulators

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.



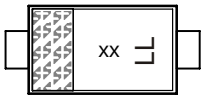
Features

- 500 mW Rating on FR−4 or FR−5 Board
- Wide Zener Reverse Voltage Range − 2.4 V to 110 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
- Pb−Free Packages are Available

SOD−123
CASE 425
STYLE 1

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



XX : Marking code
LL : Lot code or datecode abbreviation
From A~Z,a~z,1~9

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, (Note 2) Junction−to−Ambient	$R_{\theta JA}$	340	°C/W
Thermal Resistance, (Note 2) Junction−to−Lead	$R_{\theta JL}$	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	Marking Code	Package	Shipping†
ALD10XXTR	XX LL	SOD−123	3000 / Tape & Reel

Electrical Characteristics @ T_A = 25°C unless otherwise specified

Type Number	Type Code	Zener Voltage Range (Note 2)			Test Current	Maximum Zener Impedance (Note 3)		Maximum Reverse Leakage Current (Note 2)	
		V_Z @ I_{ZT}			I_{ZT}	Z_{ZT} @ I_{ZT}	Z_{ZK} @ I_{ZK} = 0.25mA	I_R	@ V_R
		Nom (V)	Min (V)	Max (V)	mA	Ω		μA	V
ALD1001TR	C1	2.4	2.28	2.52	20	30	1200	100	1.0
ALD1002TR	C3	2.7	2.57	2.84	20	30	1300	75	1.0
ALD1003TR	C5	3.0	2.85	3.15	20	30	1600	50	1.0
ALD1004TR	G1	3.3	3.14	3.47	20	28	1600	25	1.0
ALD1005TR	G2	3.6	3.42	3.78	20	24	1700	15	1.0
ALD1006TR	G3	3.9	3.71	4.10	20	23	1900	10	1.0
ALD1007TR	G4	4.3	4.09	4.52	20	22	2000	5.0	1.0
ALD1008TR	G5	4.7	4.4 7	4.94	20	19	1900	5.0	2.0
ALD1009TR	E1	5.1	4.85	5.36	20	17	1600	5.0	2.0
ALD1010TR	E2	5.6	5.32	5.88	20	11	1600	5.0	3.0
ALD1011TR	E3	6.0	5.70	6.30	20	7	1600	5.0	3.5
ALD1012TR	E4	6.2	5.89	6.51	20	7	1000	5.0	4.0
ALD1013TR	E5	6.8	6.46	7.14	20	5	750	3.0	5.0
ALD1014TR	F1	7.5	7.13	7.88	20	6	500	3.0	6.0
ALD1015TR	F2	8.2	7.79	8.61	20	8	500	3.0	6.5
ALD1016TR	F3	8.7	8.27	9.14	20	8	600	3.0	6.5
ALD1017TR	F4	9.1	8.65	9.56	20	10	600	3.0	7.0
ALD1018TR	F5	10	9.50	10.50	20	17	600	3.0	8.0
ALD1019TR	H1	11	10.45	11.55	20	22	600	2.0	8.4
ALD1020TR	H2	12	11.40	12.60	20	30	600	1.0	9.1
ALD1021TR	H3	13	12.35	13.65	9.5	13	600	0.5	9.9
ALD1022TR	H5	15	14.25	15.75	8.5	16	600	0.1	11
ALD1023TR	J1	16	15.20	16.80	7.8	17	600	0.1	12
ALD1024TR	J3	18	17.10	18.90	7.0	21	600	0.1	14
ALD1025TR	J5	20	19.00	21.00	6.2	25	600	0.1	15
ALD1026TR	K1	22	20.90	23.10	5.6	29	600	0.1	17
ALD1027TR	K2	24	22.80	25.20	5.2	33	600	0.1	18
ALD1028TR	K4	27	25.65	28.35	5.0	41	600	0.1	21
ALD1029TR	K5	28	26.60	29.40	4.5	44	600	0.1	21
ALD1030TR	M1	30	28.50	31.50	4.2	49	600	0.1	23
ALD1031TR	M2	33	31.35	34.65	3.8	58	700	0.1	25
ALD1032TR	M3	36	34.20	37.80	3.4	70	700	0.1	27
ALD1033TR	M4	39	37.05	40.95	3.2	80	800	0.1	30

Notes: 1. Device mounted on ceramic PCB; 7.6 mm x 9.4 mm x 0.87 mm with pad areas 25 mm^2.
2. Short duration test pulse used to minimize self-heating effect.
3. f = 1KHz.

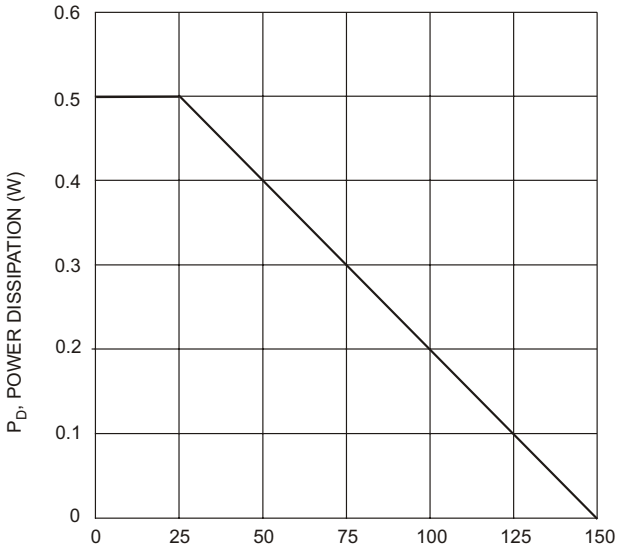


Fig. 1 Power Dissipation vs Ambient Temperature

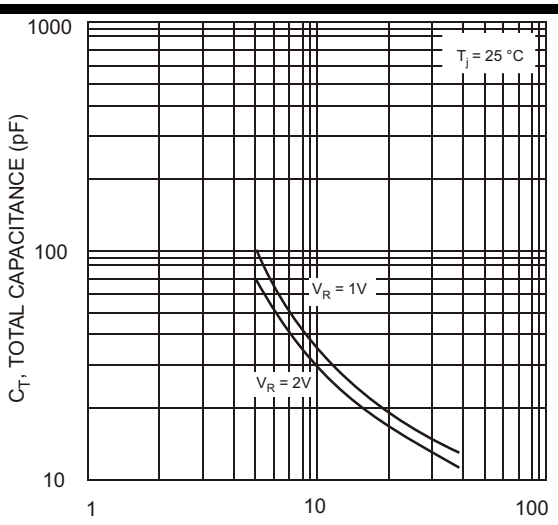


Fig. 2 Total Capacitance vs Nominal Zener Voltage

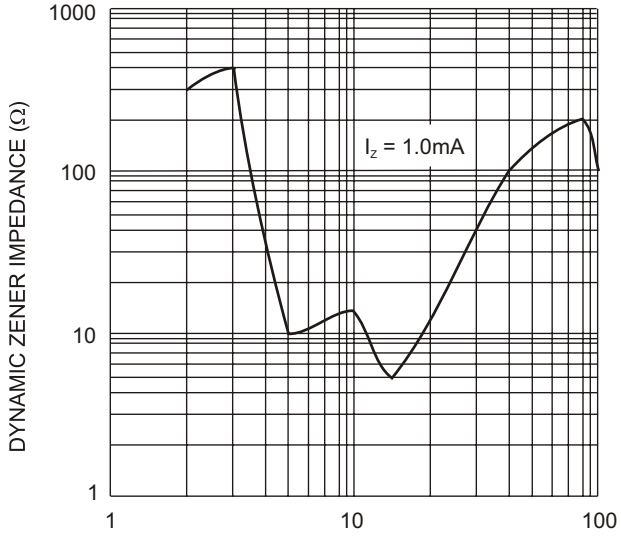


Fig. 3 Zener Voltage vs. Zener Impedence

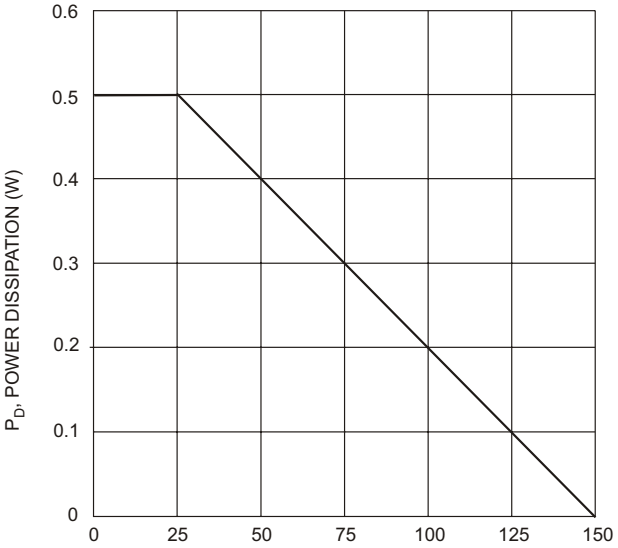


Fig. 1 Power Dissipation vs Ambient Temperature

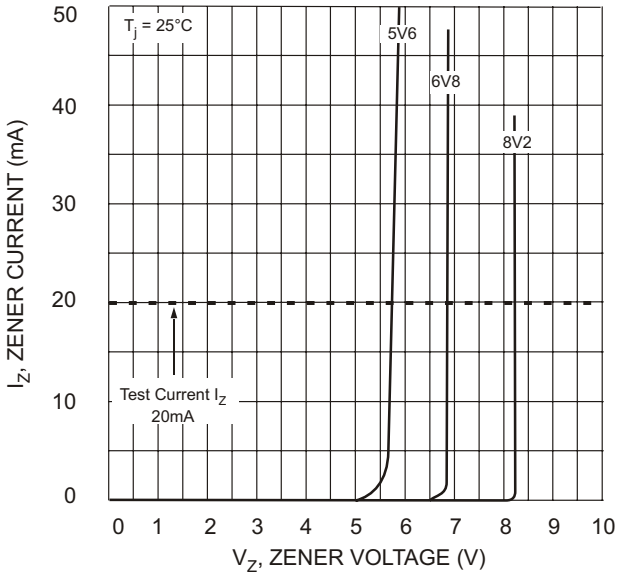


Fig. 5 Zener Breakdown Characteristics

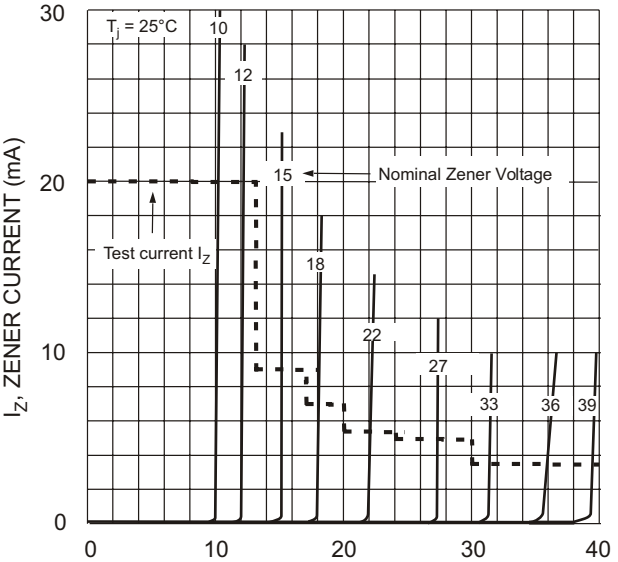
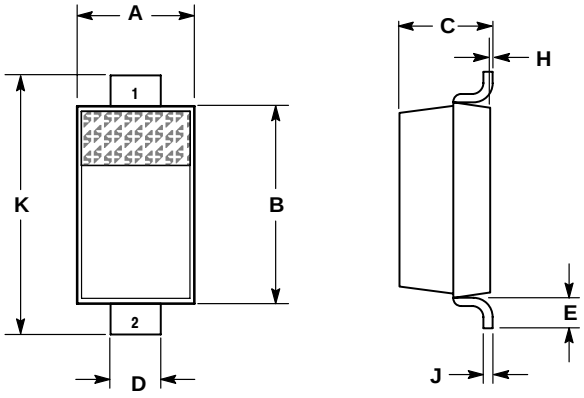


Fig. 6 Zener Breakdown Characteristics

SOD−123
CASE 425−04
ISSUE C

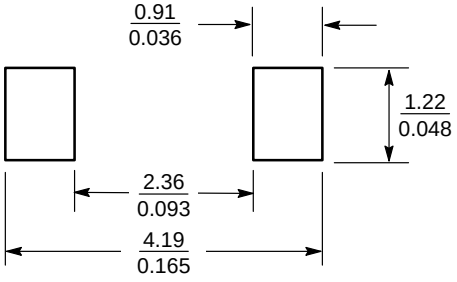


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.055	0.071	1.40	1.80
B	0.100	0.112	2.55	2.85
C	0.037	0.053	0.95	1.35
D	0.020	0.028	0.50	0.70
E	0.01	---	0.25	---
H	0.000	0.004	0.00	0.10
J	---	0.006	---	0.15
K	0.140	0.152	3.55	3.85

STYLE 1:
PIN 1. CATHODE
2. ANODE

SOLDERING FOOTPRINT*



SCALE 10:1 $\left(\frac{\text{mm}}{\text{inches}}\right)$