



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
- SZ Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- Pb-Free Packages are Available*

Mechanical Characteristics:

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

FINISH: Corrosion resistant finish, easily solderable

MAXIMUM CASE TEMPERATURE FOR SOLDERING PURPOSES:

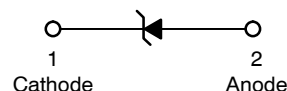
260°C for 10 Seconds

POLARITY: Cathode indicated by polarity band

FLAMMABILITY RATING: UL 94 V-0



SOD-123
CASE 425
STYLE 1



MAXIMUM RATINGS

Rating	Symbol	Max	Units
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, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	340	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Lead (Note 2)	$R_{\theta JL}$	150	$^\circ\text{C/W}$
Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. FR-5 = 3.5 X 1.5 inches, using the minimum recommended footprint.

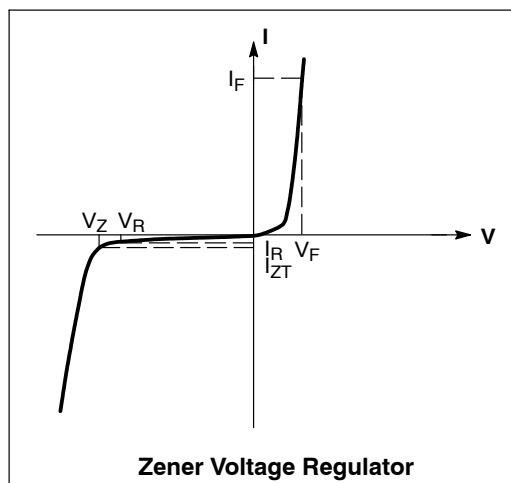
2. Thermal Resistance measurement obtained via infrared Scan Method.



AMS83xxBT1G Series

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
Z_{ZT}	Maximum Zener Impedance @ I_{ZT}
I_{ZK}	Reverse Current
Z_{ZK}	Maximum Zener Impedance @ I_{ZK}
I_R	Reverse Leakage Current @ V_R
V_R	Reverse Voltage
I_F	Forward Current
V_F	Forward Voltage @ I_F





AMS83xxBT1G Series

5% TOLERANCE FG 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	Zener Voltage (Notes 3 and 4)			Zener Impedance (Note 5)				Leakage Current	
		V_Z (Volts)			@ I_{ZT}	Z_{ZT} @ I_{ZT}	Z_{ZK} @ I_{ZK}		I_R @ V_R	
		Min	Nom	Max	mA	Ω	Ω	mA	μA	Volts
AMS8321BT1G		2.28	2.4	2.52	20	30	1200	0.25	100	1
AMS8322BT1G		2.38	2.5	2.63	20	30	1250	0.25	100	1
AMS8323BT1G		2.57	2.7	2.84	20	30	1300	0.25	75	1
AMS8324BT1G		2.66	2.8	2.94	20	30	1400	0.25	75	1
AMS8325BT1G		2.85	3.0	3.15	20	29	1600	0.25	50	1
AMS8326BT1G		3.14	3.3	3.47	20	28	1600	0.25	25	1
AMS8327BT1G		3.42	3.6	3.78	20	24	1700	0.25	15	1
AMS8328BT1G		3.71	3.9	4.10	20	23	1900	0.25	10	1
AMS8329BT1G		4.09	4.3	4.52	20	22	2000	0.25	5	1
AMS8330BT1G		4.47	4.7	4.94	20	19	1900	0.25	5	2
AMS8331BT1G		4.85	5.1	5.36	20	17	1600	0.25	5	2
AMS8332BT1G		5.32	5.6	5.88	20	11	1600	0.25	5	3
AMS83233BT1G		5.70	6.0	6.30	20	7	1600	0.25	5	3.5
AMS8334BT1G		5.89	6.2	6.51	20	7	1000	0.25	5	4
AMS8335BT1G		6.46	6.8	7.14	20	5	750	0.25	3	5
AMS8336BT1G		7.13	7.5	7.88	20	6	500	0.25	3	6
AMS8337BT1G		7.79	8.2	8.61	20	8	500	0.25	3	6.5
AMS8338BT1G		8.27	8.7	9.14	20	8	600	0.25	3	6.5
AMS8339BT1G		8.65	9.1	9.56	20	10	600	0.25	3	7
AMS8340BT1G		9.50	10	10.50	20	17	600	0.25	3	8
AMS8341BT1G		10.45	11	11.55	20	22	600	0.25	2	8.4
AMS8342BT1G/T3G		11.40	12	12.60	20	30	600	0.25	1	9.1
AMS8343BT1G		12.35	13	13.65	9.5	13	600	0.25	0.5	9.9
AMS8344BT1G		13.30	14	14.70	9.0	15	600	0.25	0.1	10
AMS8345BT1G		14.25	15	15.75	8.5	16	600	0.25	0.1	11
AMS8346BT1G		15.20	16	16.80	7.8	17	600	0.25	0.1	12
AMS8347BT1G		16.15	17	17.85	7.4	19	600	0.25	0.1	13
AMS8348BT1G		17.10	18	18.90	7.0	21	600	0.25	0.1	14
AMS8349BT1G		18.05	19	19.95	6.6	23	600	0.25	0.1	14
AMS8350BT1G		19.00	20	21.00	6.2	25	600	0.25	0.1	15
AMS8351BT1G		20.90	22	23.10	5.6	29	600	0.25	0.1	17
AMS8352BT1G		22.80	24	25.20	5.2	33	600	0.25	0.1	18
AMS8353BT1G		23.75	25	26.25	5.0	35	600	0.25	0.1	19
AMS8354BT1G		25.65	27	28.35	4.6	41	600	0.25	0.1	21
AMS8355BT1G		26.60	28	29.40	4.5	44	600	0.25	0.1	21
AMS8356BT1G		28.50	30	31.50	4.2	49	600	0.25	0.1	23
AMS8357BT1G		31.35	33	34.65	3.8	58	700	0.25	0.1	25
AMS8358BT1G/T3G		34.20	36	37.80	3.4	70	700	0.25	0.1	27
AMS8359BT1G		37.05	39	40.95	3.2	80	800	0.25	0.1	30
AMS8360BT1G		40.85	43	45.15	3.0	93	900	0.25	0.1	33
AMS8361BT1G		44.65	47	49.35	2.7	105	1000	0.25	0.1	36
AMS8362BT1G		48.45	51	53.55	2.5	125	1100	0.25	0.1	39
AMS8363BT1G		53.20	56	58.80	2.2	150	1300	0.25	0.1	43
AMS8364BT1G		57.00	60	63.00	2.1	170	1400	0.25	0.1	46
AMS8365BT1G		58.90	62	65.10	2.0	185	1400	0.25	0.1	47
AMS8366BT1G		64.60	68	71.40	1.8	230	1600	0.25	0.1	52
AMS8367BT1G		71.25	75	78.75	1.7	270	1700	0.25	0.1	56
AMS8368BT1G		77.90	82	86.10	1.5	330	2000	0.25	0.1	62
AMS8369BT1G		82.65	87	91.35	1.4	370	2200	0.25	0.1	68
AMS8370BT1G		86.45	91	95.55	1.4	400	2300	0.25	0.1	69
AMS8372BT1G		104.5	110	115.5	1.1	750	3000	0.25	0.1	84

3. The type numbers shown have a standard tolerance of $\pm 5\%$ on the nominal Zener voltage.

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

5. Z_{ZT} and Z_{ZK} are measured by dividing the AC voltage drop across the device by the ac current applied. The specified limits are for $I_{Z(AC)} = 0.1 I_{Z(dc)}$ with the AC frequency = 1 kHz.



AMS83xxBT1G Series

2% TOLERANCE FG 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	Zener Voltage (Notes 6 and 7)			Zener Impedance (Note 8)			Leakage Current	
		V_Z (Volts)			@ I_{ZT}	Z_{ZT} @ I_{ZT}	Z_{ZK} @ I_{ZK}	I_R @ V_R	
		Min	Nom	Max	mA	Ω	Ω	mA	μA Volts
AMS8326CT1G		3.234	3.3	3.366	20	28	1600	0.25	25 1
AMS8331CT1G		4.998	5.1	5.202	20	17	1600	0.25	5 2
AMS8332CT1G		5.488	5.6	5.712	20	11	1600	0.25	5 3
AMS8345CT1G		14.70	15	15.30	8.5	16	600	0.25	0.1 11
AMS8348CT1G		17.64	18	18.36	7.0	21	600	0.25	0.1 14
AMS8350CT1G		19.60	20	20.40	6.2	25	600	0.25	0.1 15
AMS8352CT1G		23.52	24	24.48	5.2	33	600	0.25	0.1 18
AMS8356CT1G		29.40	30	30.60	4.2	49	600	0.25	0.1 23

6. The type numbers shown have a standard tolerance of $\pm 5\%$ on the nominal Zener voltage.

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

8. Z_{ZT} and Z_{ZK} are measured by dividing the AC voltage drop across the device by the ac current applied.

The specified limits are for $I_{Z(AC)} = 0.1 I_{Z(dc)}$ with the AC frequency = 1 kHz.

*Include SZ-prefix devices where applicable.



AMS83xxBT1G Series

TYPICAL CHARACTERISTICS

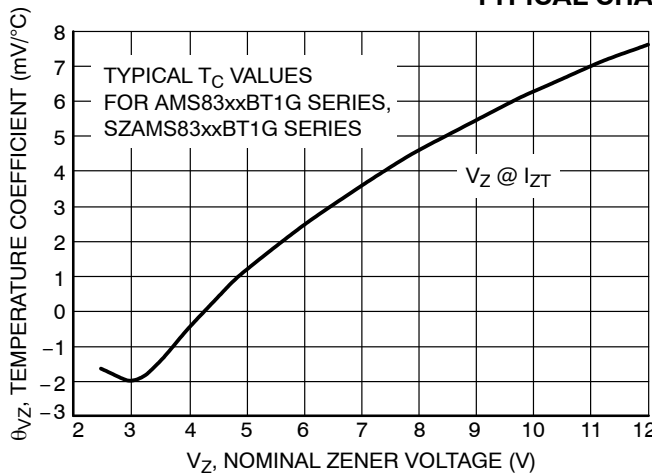


Figure 1. Temperature Coefficients
(Temperature Range -55°C to +150°C)

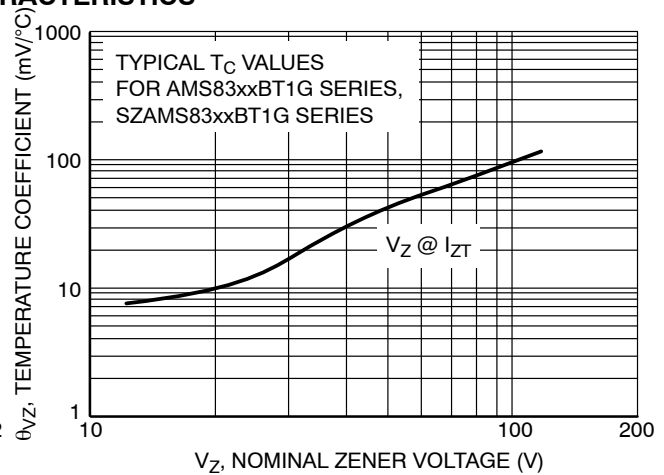


Figure 2. Temperature Coefficients
(Temperature Range -55°C to +150°C)

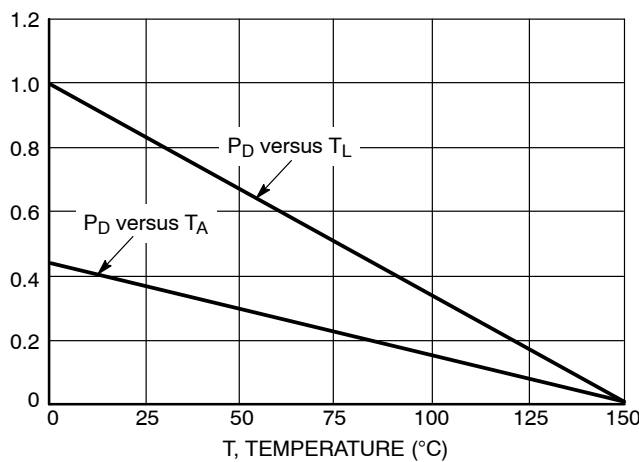


Figure 3. Steady State Power Derating

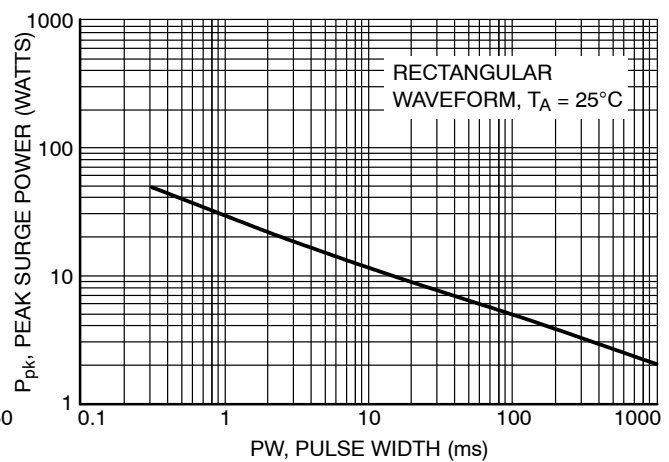


Figure 4. Maximum Nonrepetitive Surge Power

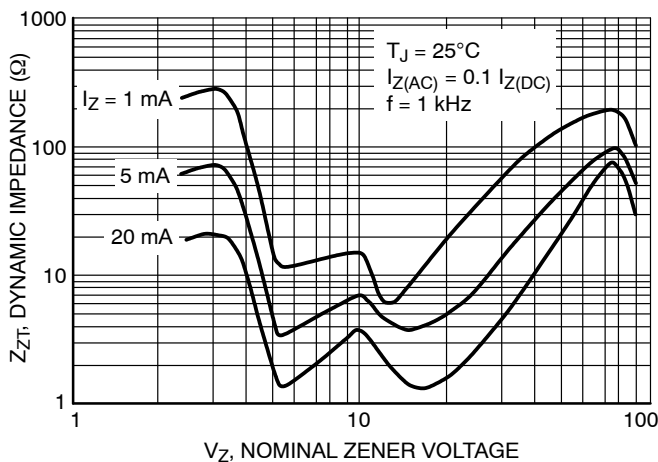


Figure 5. Effect of Zener Voltage on Zener Impedance

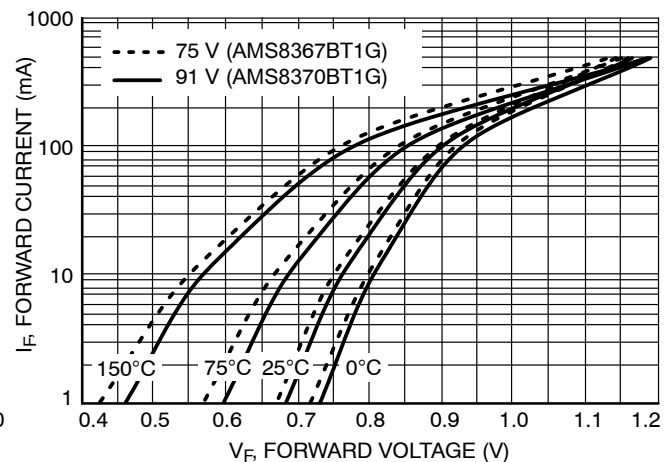


Figure 6. Typical Forward Voltage



TYPICAL CHARACTERISTICS

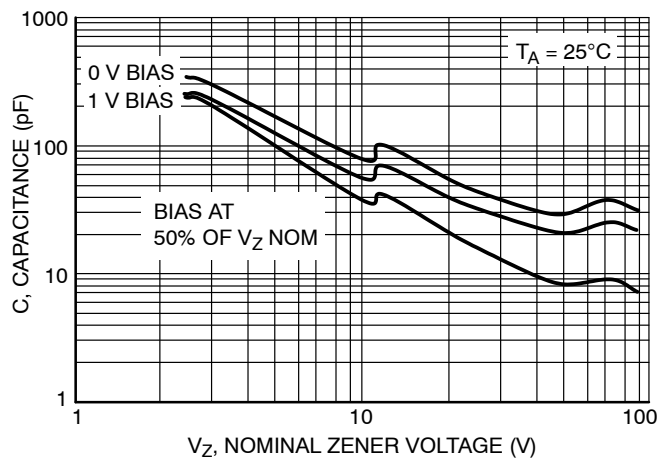


Figure 7. Typical Capacitance

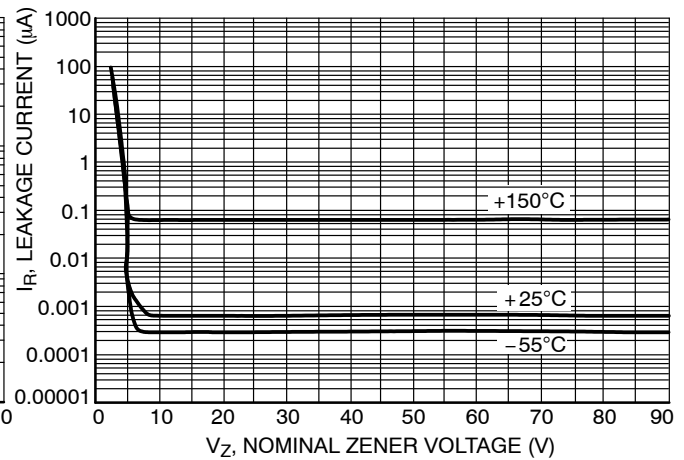


Figure 8. Typical Leakage Current

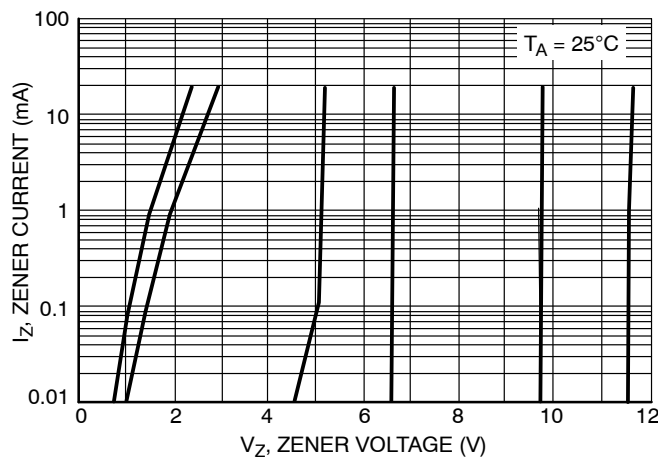


Figure 9. Zener Voltage versus Zener Current (V_Z Up to 12 V)

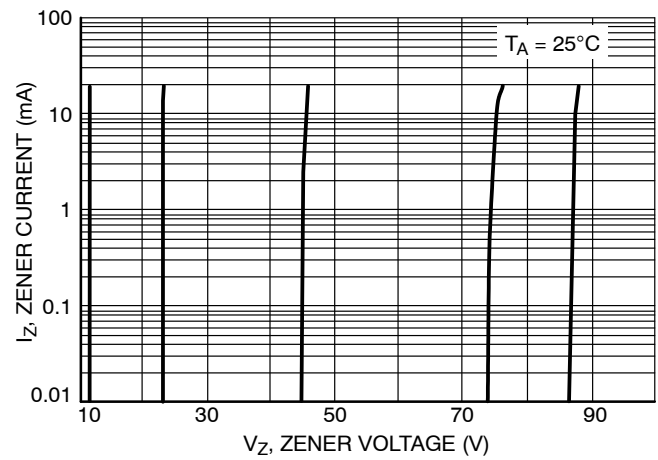


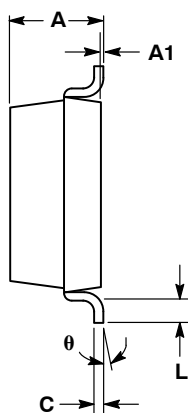
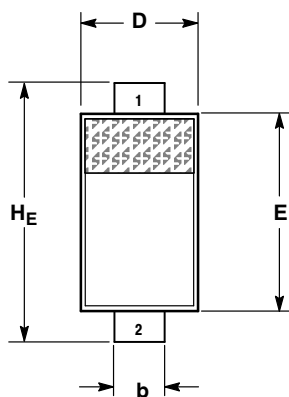
Figure 10. Zener Voltage versus Zener Current (12 V to 91 V)



AMS83xxBT1G Series

PACKAGE DIMENSIONS

SOD-123
CASE 425-04
ISSUE G

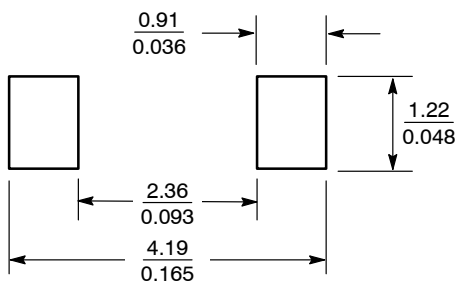


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

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
H _E	3.56	3.68	3.86	0.140	0.145	0.152
L	0.25	---	---	0.010	---	---
θ	0°	---	10°	0°	---	10°

STYLE 1:
PIN 1. CATHODE
2. ANODE

SOLDERING FOOTPRINT*



SCALE 10:1 (mm/inches)