Microsemi
SCOTTSDALE DIVISION

1N6309 thru 1N6355

VOIDLESS-HERMETICALLY-SEALED 500 mW Glass Zener Diodes

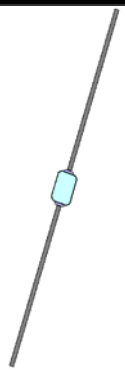
ALSO AVAILABLE IN SURFACE MOUNT

DESCRIPTION

This Zener Voltage Regulator series is military qualified to MIL-PRF-19500/533 and is ideal for high-reliability applications where a failure cannot be tolerated. These industry-recognized 0.5 Watt Zener Voltage Regulators are hermetically sealed with voidless-glass construction using an internal metallurgical bond. It includes Zener selections from 2.4 to 200 volts in standard 5% tolerances as well as tighter tolerances identified by different suffix letters on the part number. They are also available in surface-mount packages (see separate data sheet for 1N6309US thru 1N6355US). Microsemi also offers numerous other Zener products to meet higher and lower power ratings in both thru-hole and surface mount packages.

IMPORTANT: For the most current data, consult *MICROSEMI's* website: **http://www.microsemi.com**

APPEARANCE



DO-35 ("B" PACKAGE)

FEATURES

- Popular JEDEC registered series
- Voidless hermetically sealed glass package
- Triple-layer passivation
- Internal "*Category I*" Metallurgical bonds for 1N6320 thru 1N6355 and "*Category III*" for 1N6309 thru 1N6319
- JAN, JANTX, JANTXV, and JANS available per MIL-PRF-19500/533 for 1N6309 to 1N6336
- JANS types available per MIL-S-19500/533 for 1N6320 to 1N6336.
- Surface mount equivalents also available in a square end-cap MELF configuration with a "US" suffix (see separate data sheet for 1N6309US thru 1N6355US)

APPLICATIONS / BENEFITS

- Small DO-35 size package (or "B" Package)
- Regulates voltage over a broad operating current and temperature range
- Extensive selection from 2.4 to 200 V
- Standard voltage tolerances are plus/minus 5% with no suffix
- Tight tolerances available in plus or minus 2% or 1% with C or D suffix respectively
- Extremely robust construction
- Flexible axial-lead mounting terminals
- Nonsensitive to ESD per MIL-STD-750 Method 1020
- Inherently radiation hard as described in Microsemi MicroNote 050

MAXIMUM RATINGS

- Operating Temperature: -65°C to +175°C
- Storage Temperature: -65°C to +175°C
- Power Dissipation: 0.5 Watts @ T_L = 75°C
- Thermal Resistance: 200°C/W junction to lead at 3/8 inch (10 mm) from body
- Thermal Impedance: 15°C/W at 10 ms
- Forward Voltage: 1.4 V at 1.0 A

MECHANICAL AND PACKAGING

- CASE: Hermetically sealed voidless hard glass with Tungsten slugs
- TERMINATIONS: Axial-leads are Tin/Lead (Sn/Pb) over Copper clad steel
- MARKING: Body painted and part number, etc.
- POLARITY: Cathode indicated by band
- Tape & Reel option: Standard per EIA-296
- Weight: 150 mg

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1N6309 thru 1N6355

VOIDLESS-HERMETICALLY-SEALED 500 mW Glass Zener Diodes

ELECTRICAL CHARACTERISTICS

TYPE Note 1	V_{Z2} NOM. +/-5% @ I_{Z2}	V_{Z1} MIN. @ I_{Z1} 250 uA	Test Current I_{Z2}	Dynamic Impedance Z_Z @ I_{Z2}	Dynamic Impedance Z_{ZK} @ 250 µA	Max. Current I_{ZM}	Voltage Reg. $V_{Z(reg)}$ (ΔV_Z) Note 2	Max. Surge Current I_{ZSM}	Reverse Voltage V_R	Max. Reverse Current I_{R1} @ V_R 25°C	Max. Reverse Current I_{R2} @ V_R 150°C	Maximum Noise Density N_D @ 250 µA 1 to 3 kHz	Max. Temp. Coeff. of Zener Voltage α_{VZ}	Max. Cap. @ O V
	VOLTS	VOLTS	mA	OHMS	OHMS	mA	VOLTS	AMPS	VOLTS	µA	µA	µV /√Hz	%/°C	pF
1N6309	2.4	1.1	20	30	1200	177	1.5	2.5	1.0	100	200	1.0	-.085	2000
1N6310	2.7	1.2	20	30	1300	157	1.5	2.2	1.0	60	150	1.0	-.080	1900
1N6311	3.0	1.3	20	29	1400	141	1.5	2.0	1.0	30	100	1.0	-.075	1800
1N6312	3.3	1.5	20	24	1400	128	1.6	1.8	1.0	5.0	20	1.0	-.065	1650
1N6313	3.6	1.8	20	22	1400	109	1.6	1.65	1.0	3.0	12	1.0	-.055 +.020	1600
1N6314	3.9	2.0	20	20	1700	118	1.6	1.5	1.0	2.0	12	1.0	-.043 +.025	1400
1N6315	4.3	2.4	20	18	1400	99	0.9	1.4	1.0	2.0	12	1.0	-.030 +.030	1350
1N6316	4.7	2.8	20	16	1500	90	0.5	1.27	1.5	5.0	12	1.0	-.028 +.032	1300
1N6317	5.1	3.3	20	14	1300	83	0.4	1.17	2.0	5.0	12	1.0	+.045	1200
1N6318	5.6	4.3	20	8.0	1200	76	0.4	1.10	2.5	5.0	10	2.0	+.050.	1150
1N6319	6.2	5.2	20	3.0	800	68	0.3	0.97	3.5	5.0	10	5.0	+060	1050
1N6320	6.8	6.0	20	3.0	400	63	0.35	1.23	4.0	2.0	10	5.0	+.062	1000
1N6321	7.5	6.6	20	4.0	400	57	0.4	1.16	5.0	2.0	10	5.0	+.068	900
1N6322	8.2	7.5	20	5.0	400	52	0.4	1.07	6.0	1.0	10	20	+.075	800
1N6323	9.1	8.4	20	6.0	500	47	0.5	0.97	7.0	1.0	10	40	+.076	700
1N6324	10	9.1	20	6.0	500	43	0.5	.89	8.0	1.0	10	80	+.079	600
1N6325	11	10	20	7.0	550	39	0.5	.83	8.5	1.0	10	100	+.082	500
1N6326	12	11	20	7.0	550	35	0.55	.77	9.0	1.0	10	100	+.083	450
1N6327	13	11.9	9.5	8.0	550	33	0.55	.71	9.9	.05	10	100	+.079	400
1N6328	15	13.8	8.5	10	600	28	.70	.62	11	.05	10	100	+.082	350
1N6329	16	14.7	7.8	12	600	27	.75	.58	12	.05	10	100	+.083	325
1N6330	18	16.6	7.0	14	600	24	.85	.52	14	.05	10	100	+.085	300
1N6331	20	18.5	6.2	18	500	21	.95	.47	15	.05	10	100	+.086	275
1N6332	22	20.4	5.6	20	500	19	1.05	.43	17	.05	10	100	+.087	260
1N6333	24	22.3	5.2	24	500	18	1.15	.39	18	.05	10	100	+.088	240
1N6334	27	25.2	4.6	27	500	16	1.30	.35	21	.05	10	100	+.090	220
1N6335	30	28	4.2	32	500	14	1.45	.31	23	.05	10	100	+.091	200
1N6336	33	30.9	3.8	40	600	13	1.60	.28	25	.05	10	100	+.092	185
1N6337	36	33.7	3.4	50	600	12	1.75	.26	27	.05	10	100	+.093	175
1N6338	39	36.6	3.2	55	700	11	1.90	.24	30	.05	10	100	+.094	170
1N6339	43	40.4	3.0	65	800	9.9	2.10	.22	33	.05	10	80	+.095	165
1N6340	47	44.2	2.7	75	900	9.0	2.25	.20	36	.05	10	80	+.095	155
1N6341	51	48	2.5	85	1000	8.3	2.50	.18	39	.05	10	80	+.096	145
1N6342	56	52.7	2.2	100	1200	7.6	2.70	.17	43	.05	10	80	+.097	135
1N6343	62	58.4	2.0	125	1300	6.8	2.90	.15	47	.05	10	80	+.097	130
1N6344	68	64.1	1.8	155	1500	6.3	3.20	.13	52	.05	10	80	+.098	120
1N6345	75	70.8	1.7	180	1600	5.7	3.40	.125	56	.05	10	80	+.098	110
1N6346	82	77.4	1.5	220	1800	5.2	3.80	.115	62	.05	10	80	+.099	105
1N6347	91	86	1.4	270	2100	4.7	4.20	.100	69	.05	10	80	+.099	100
1N6348	100	94.5	1.3	340	2400	4.3	4.40	.095	76	.05	10	80	+.110	95
1N6349	110	104	1.1	500	2800	3.9	4.80	.085	84	.05	10	80	+.110	90
1N6350	120	113	1.0	600	3200	3.5	5.20	.080	91	.05	10	80	+.110	70
1N6351	130	122	0.95	850	4100	3.3	5.60	.070	99	.05	10	80	+.110	70
1N6352	150	141	.85	1000	4500	2.8	7.00	.065	114	.05	10	80	+.110	65
1N6353	160	151	.80	1200	5000	2.7	7.50	.060	122	.05	10	80	+.110	65
1N6354	180	170	.68	1500	5600	2.4	9.00	.050	137	.05	10	80	+.110	60
1N6355	200	189	.65	1800	6500	2.1	12.0	.045	152	.05	10	80	+.110	55

NOTE 1: Tight tolerances available in plus or minus 2% or 1% with C or D suffix respectively, e.g. 1N6309C, 1N6335D, etc.

NOTE 2: Voltage regulation $V_{Z(reg)}$ is the measured voltage change at thermal equilibrium between the current of 10% and 50% of Maximum Zener Current I_{ZM} when the lead temperature is maintained at 25°C =+8°C, -2°C.

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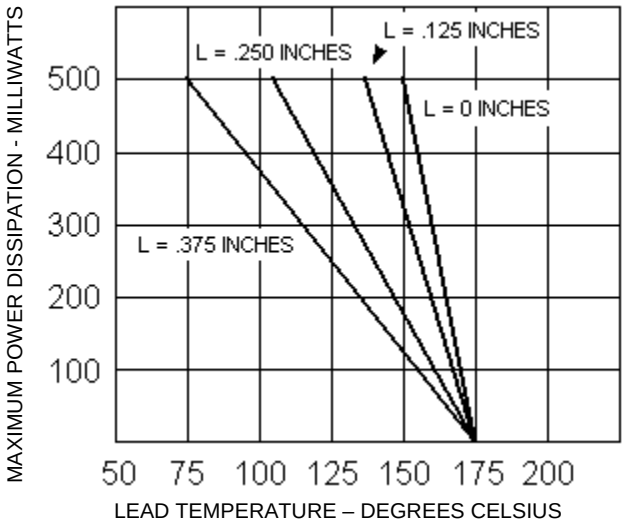
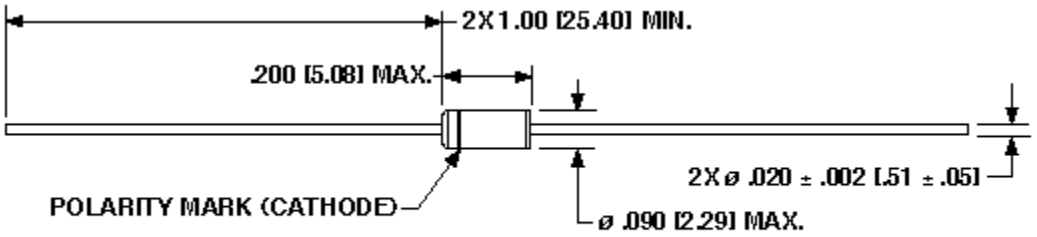
GRAPHS



PACKAGE DIMENSIONS



NOTE: DIMENSIONS IN INCHES [MM]