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1N5913BG thru 1N5956BG (Glass)

Axial-Leaded 1.5 Watt Zener Diodes

ALSC AVAILABLE IN SURFACE MOUNT

DESCRIPTION

The 1N5913BG-5956BG series of 1.5 watt Zeners provides voltage regulation in a selection from 3.3 to 200 volts with different tolerances as identified by suffix letter on the part. These glass encapsulated Zeners with a G suffix provide hermetic-sealed qualities and higher rated temperature when required beyond that optionally provided in equivalent plastic-body constructions (P suffix) for the same JEDEC part numbers. Both package options are available by Microsemi. A variety of other Zener product offerings and packages are available by Microsemi to meet higher or lower power and test-current applications.

APPEARANCE

DO-41 or DO-204AL (Glass)

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

FEATURES

- JEDEC registered 1N5913B to 1N5956B
- Zener voltage available 3.3V to 200V
- Standard voltage tolerances are plus/minus 5% with B suffix and 10 % with A suffix identification
- Tight tolerances available in plus or minus 2% or 1% with C or D suffix respectively
- Options for screening in accordance with MIL-PRF-19500 for JAN, JANTX, JANTXV, and JANS are available by adding MQ, MX, MV, or MSP prefixes respectively to part numbers.
- Surface mount equivalents available as SMBJ5913 to SMBJ5956B, SMBG5913 to SMBG5956B, or MLL5913B to MLL5956B
- Plastic body axial-leaded Zener equivalents are also available as 1N5913BP to 1N5956BP

APPLICATIONS / BENEFITS

- Regulates voltage over a broad operating current and temperature range
- Wide selection from 3.3 to 200 V
- Flexible axial-lead mounting terminals
- Metallurgically enhanced internal contact design for greater reliability and lower thermal resistance in glass hermetically sealed package
- Nonsensitive to ESD
- Hermetically sealed glass body construction
- Specified capacitance (see Figure 3)
- Inherently radiation hard as described in Microsemi MicroNote 050

MAXIMUM RATINGS

- Power dissipation at 25°C: 1.5 watts (also see derating in Figure 1).
- Operating and Storage temperature: -65°C to +175°C
- Thermal Resistance: 60 °C/W junction to lead at 3/8 (10 mm) lead length from body, or 120°C/W junction to ambient when mounted on FR4 PC board (1 oz Cu) with 4 mm^2 copper pads and track width 1 mm, length 25 mm
- Steady-State Power: 1.5 watts at $T_L \leq 85^oC$ 3/8 inch (10 mm) from body, or 1.25 watts at $T_A = 25^oC$ when mounted on FR4 PC board as described for thermal resistance (also see Figure 1)
- Forward voltage @200 mA: 1.2 volts (maximum)
- Solder Temperatures: 260 °C for 10 s (max)

MECHANICAL AND PACKAGING

- CASE: Hermetically sealed axial-lead glass package
- TERMINALS: Leads, tin-lead plated solderable per MIL-STD-750, method 2026
- POLARITY: Cathode indicated by band. Diode to be operated with the banded end positive with respect to the opposite end for Zener regulation
- MARKING: Part number
- TAPE & REEL optional: Standard per EIA-296 (add "TR" suffix to part number)
- WEIGHT: 0.4 grams
- See package dimensions on last page

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ELECTRICAL CHARACTERISTICS @ T_L = 30°C

JEDEC TYPE NUMBER (note 1)	ZENER VOLTAGE V_Z	TEST CURRENT I_{ZT}	MAXIMUM DYNAMIC IMPEDANCE Z_{ZT}	KNEE CURRENT I_{ZK}	MAXIMUM KNEE IMPEDANCE Z_{ZK}	MAXIMUM REVERSE CURRENT I_R @ V_R	REVERSE VOLTAGE V_R	MAX. DC CURRENT I_{ZM}
	Volts	mA	Ohms	mA	Ohms	µAdc	Volts	mA
1N5913B	3.3	113.6	10	1.0	500	100	1.0	454
1N5914B	3.6	104.2	9.0	1.0	500	75	1.0	416
1N5915B	3.9	96.1	7.5	1.0	500	25	1.0	384
1N5916B	4.3	87.2	6.0	1.0	500	5.0	1.0	348
1N5917B	4.7	79.8	5.0	1.0	500	5.0	1.5	319
1N5918B	5.1	73.5	4.0	1.0	350	5.0	2.0	294
1N5919B	5.6	66.9	2.0	1.0	250	5.0	3.0	267
1N5920B	6.2	60.5	2.0	1.0	200	5.0	4.0	241
1N5921B	6.8	55.1	2.5	1.0	200	5.0	5.2	220
1N5922B	7.5	50	3.0	0.5	400	5.0	6.0	200
1N5923B	8.2	45.7	3.5	0.5	400	5.0	6.5	182
1N5924B	9.1	41.2	4.0	0.5	500	5.0	7.0	164
1N5925B	10	37.5	4.5	0.25	500	5.0	8.0	150
1N5926B	11	34.1	5.5	0.25	550	1.0	8.4	136
1N5927B	12	31.2	6.5	0.25	550	1.0	9.1	125
1N5928B	13	28.8	7.0	0.25	550	1.0	9.9	115
1N5929B	15	25	9.0	0.25	600	1.0	11.4	100
1N5930B	16	23.4	10	0.25	600	1.0	12.2	93
1N5931B	18	20.8	12	0.25	650	1.0	13.7	83
1N5932B	20	18.7	14	0.25	650	1.0	15.2	75
1N5933B	22	17	17.5	0.25	650	1.0	16.7	68
1N5934B	24	15.6	19	0.25	700	1.0	18.2	62
1N5935B	27	13.9	23	0.25	700	1.0	20.6	55
1N5936B	30	12.5	28	0.25	750	1.0	22.8	50
1N5937B	33	11.4	33	0.25	800	1.0	25.1	45
1N5938B	36	10.4	38	0.25	850	1.0	27.4	41
1N5939B	39	9.6	45	0.25	900	1.0	29.7	38
1N5940B	43	8.7	53	0.25	950	1.0	32.7	34
1N5941B	47	8.0	67	0.25	1000	1.0	35.8	31
1N5942B	51	7.3	70	0.25	1100	1.0	38.8	29
1N5943B	56	6.7	86	0.25	1300	1.0	42.6	26
1N5944B	62	6.0	100	0.25	1500	1.0	47.1	24
1N5945B	68	5.5	120	0.25	1700	1.0	51.2	22
1N5946B	75	5.0	140	0.25	2000	1.0	56	20
1N5947B	82	4.6	160	0.25	2500	1.0	62.2	18
1N5948B	91	4.1	200	0.25	3000	1.0	69.2	16
1N5949B	100	3.7	250	0.25	3100	1.0	76	15
1N5950B	110	3.4	300	0.25	4000	1.0	83.6	13
1N5951B	120	3.1	380	0.25	4500	1.0	91.2	12
1N5952B	130	2.9	450	0.25	5000	1.0	98.8	11
1N5953B	150	2.5	600	0.25	6000	1.0	114	10
1N5954B	160	2.3	700	0.25	6500	1.0	121.6	9.0
1N5955B	180	2.1	900	0.25	7000	1.0	136.8	8.0
1N5956B	200	1.9	1200	0.25	8000	1.0	152	7.0

NOTES:

1. No suffix indicates a +/-20% tolerance on nominal V_Z. Suffix A denotes a +/-10% tolerance, B denotes a +/-5% tolerance, C denotes a 2% tolerance, and D denotes a +/-1% tolerance. Also add a G suffix for Glass construction, e.g. 1N5956BG (P suffix designates plastic body options described by separate data sheet).
2. Zener voltage (V_Z) is measured at T_L = 30°C and 90 seconds after application of dc current.
3. The zener impedance is derived from the 60 Hz ac voltage, which results when an ac current having an rms value equal to 10% of the dc zener current (I_{ZT} or I_{ZK}) is superimposed on I_{ZT} or I_{ZK}. See MicroNote 202 for zener impedance variation with different operating currents.

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GRAPHS

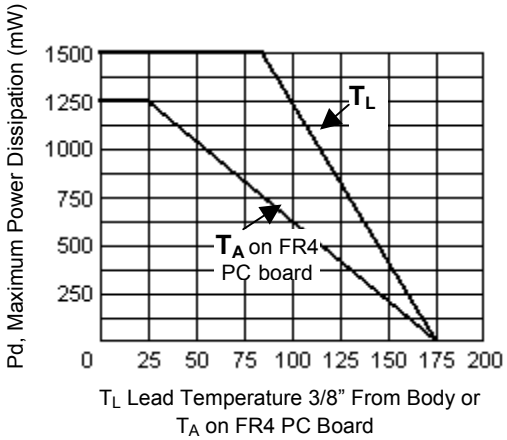


FIGURE 1
POWER DERATING CURVE

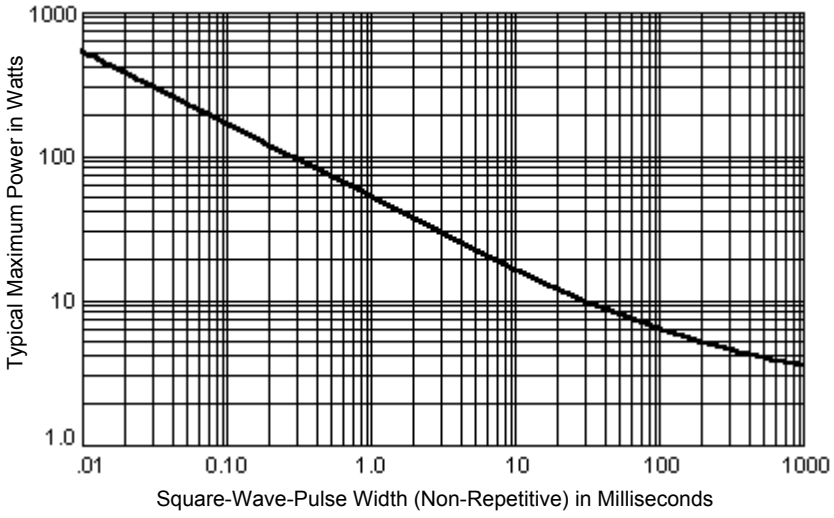


FIGURE 2
TRANSIENT SURGE CAPABILITY

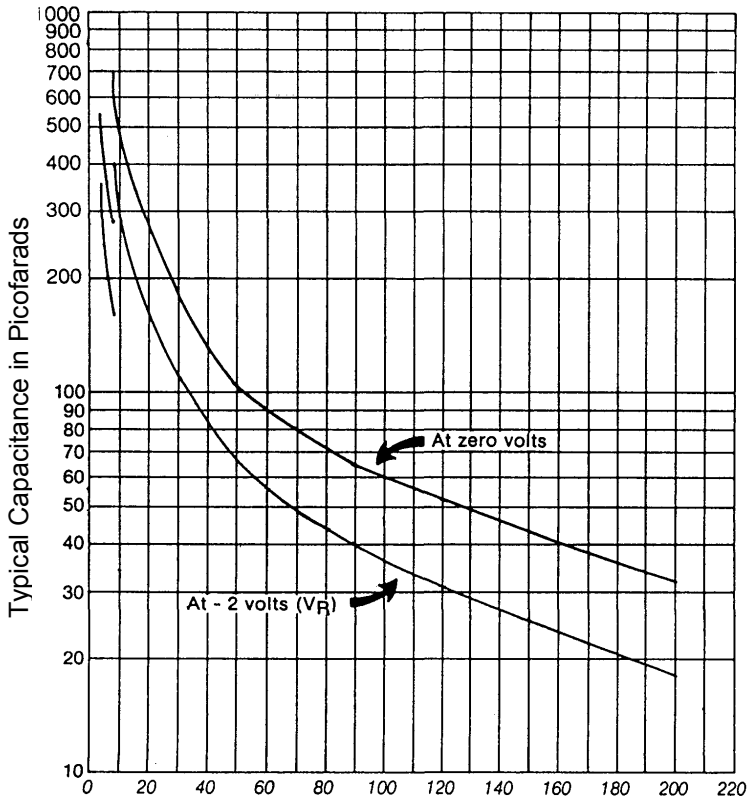
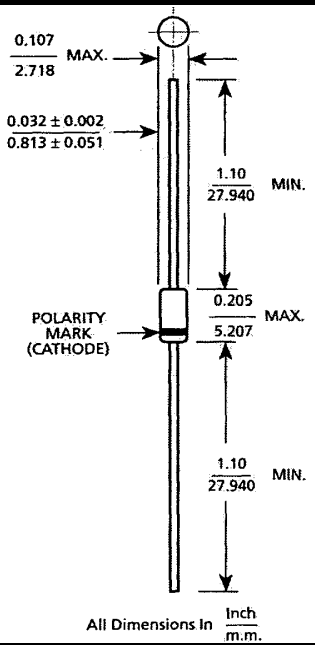


FIGURE 3 - CAPACITANCE vs. V_Z CURVE

PACKAGE DIMENSIONS
DO-41 or DO-204AL



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