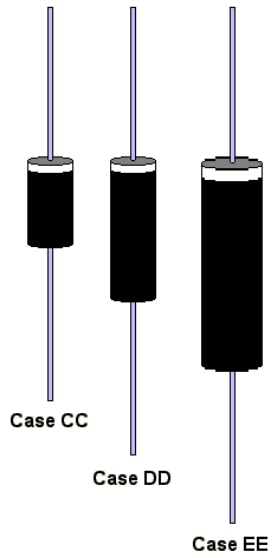
Microsemi
SCOTTSDALE DIVISION

High Voltage Temperature Compensated Zener Reference Diodes

DESCRIPTION

The 1N4057 thru 1N4085A series of Zero-TC Reference Diodes provides a wide selection of nominal voltages ranging from 12.4 V to 200 V with low temperature coefficients of either 0.005%/C or 0.002%/°C for minimal voltage change with temperature. This is achieved at the specified test currents of 10.0 mA for the lower voltages 12.4 V to 33 V, a specified test current of 7.5 mA for the next higher voltage grouping of 37 V to 100 V, 5.00 mA for 68 V to 100 V, and 2.5 mA for the highest voltage group 105 V to 200 V. These axial-leaded reference diodes are packaged in three different plastic body package configurations progressively increasing in size with the voltage. Microsemi also offers numerous other Zener Reference Diode products in smaller packages for lower voltages in popular JEDEC registrations.

APPEARANCE



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

FEATURES

- Reference Voltage 12.4V to 200V
- Standard voltage tolerance of +/-5%
- Maximum temperature coefficient selections available of 0.005%/°C and 0.002%/°C
- 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

APPLICATIONS / BENEFITS

- Provides minimal voltage change in voltage over a broad temperature range
- For instrumentation and other circuit designs requiring a stable voltage reference
- Flexible axial-lead mounting terminals
- Nonsensitive to ESD per MIL-STD-750 Method 1020

MAXIMUM RATINGS

- Operating & StorageTemperature: -65°C to +175°C
- DC Power Dissipation: Case CC: 1.5W
  Case DD: 2W
  Case EE: 2.5W

NOTE: Starting at 25°C, derate linearly to zero at 150°C
Case CC derate at 12 mW/°C
Case DD derate at 16 mW/°C
Case EE derate at 20 mW/°C

- Solder Temperatures: 260C for 10 s (maximum)

MECHANICAL AND PACKAGING

- CASE: Plastic shell and filled with epoxy around hermetically sealed glass diodes
- TERMINALS: Tin-lead plated and solderable per MIL-STD-750, Method 2026
- MARKING: Part number and cathode band
- POLARITY: Reference diode to be operated with the banded end positive with respect to the opposite end
- WEIGHT: Case CC: 1.17 grams
  Case DD: 1.42 grams
  Case EE: 2.86 grams
- See package dimensions on last page

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*ELECTRICAL CHARACTERISTICS @ 25°C, unless otherwise specified

JEDEC TYPE NUMBER	ZENER VOLTAGE V_Z @ I_{ZT} VOLTS (+/-5%) (See Note 1)	ZENER TEST CURRENT (I_{ZT}) mA	MAXIMUM DYNAMICS IMPEDANCE @ (I_{ZT}) OHMS	MAXIMUM TEMPERATURE COEFFICIENT (See Note 2) α_{VZ}		TEMPERATURE RANGE °C	CASE TYPE NO.
				+/-%/°C	+/-mV/°C		
1N4057	12.4	10.0	25	.005	.62	55 to +25 to +100	CC
1N4057A	12.4	10.0	25	.002	.25	55 to +25 to +100	CC
1N4058	14.6	10.0	30	.005	.73	55 to +25 to +100	CC
1N4058A	14.6	10.0	30	.002	.29	55 to +25 to +100	CC
1N4059	16.8	10.0	30	.005	.84	55 to +25 to +100	CC
1N4059A	16.8	10.0	30	.002	.34	55 to +25 to +100	CC
1N4060	18.5	10.0	30	.005	.92	55 to +25 to +100	CC
1N4060A	18.5	10.0	30	.002	.37	55 to +25 to +100	CC
1N4061	21	10.0	35	.005	1.05	55 to +25 to +100	CC
1N4061A	21	10.0	35	.002	.42	55 to +25 to +100	CC
1N4062	23	10.0	40	.005	1.15	55 to +25 to +100	CC
1N4062A	23	10.0	40	.002	.46	55 to +25 to +100	CC
1N4063	27	10.0	45	.005	1.35	55 to +25 to +100	CC
1N4063A	27	10.0	45	.002	.54	55 to +25 to +100	CC
1N4064	30	10.0	50	.005	1.50	55 to +25 to +100	CC
1N4064A	30	10.0	50	.002	.60	55 to +25 to +100	CC
1N4065	33	10.0	55	.005	1.65	55 to +25 to +100	CC
1N4065A	33	10.0	55	.002	.66	55 to +25 to +100	CC
1N4066	37	7.5	80	.005	1.85	55 to +25 to +100	CC
1N4066A	37	7.5	80	.002	.74	55 to +25 to +100	CC
1N4067	43	7.5	90	.005	2.15	55 to +25 to +100	CC
1N4067A	43	7.5	90	.002	.86	55 to +25 to +100	CC
1N4068	47	7.5	100	.005	2.35	55 to +25 to +100	CC
1N4068A	47	7.5	100	.002	.94	55 to +25 to +100	CC
1N4069	51	7.5	110	.005	2.55	55 to +25 to +100	DD
1N4069A	51	7.5	110	.002	1.02	55 to +25 to +100	DD
1N4070	56	7.5	120	.005	2.80	55 to +25 to +100	DD
1N4070A	56	7.5	120	.002	1.12	55 to +25 to +100	DD
1N4071	62	7.5	135	.005	3.10	55 to +25 to +100	DD
1N4071A	62	7.5	135	.002	1.24	55 to +25 to +100	DD
1N4072	68	5.0	230	.005	3.40	55 to +25 to +100	DD
1N4072A	68	5.0	230	.002	1.36	55 to +25 to +100	DD
1N4073	75	5.0	250	.005	3.75	55 to +25 to +100	DD
1N4073A	75	5.0	250	.002	1.50	55 to +25 to +100	DD
1N4074	82	5.0	270	.005	4.10	55 to +25 to +100	DD
1N4074A	82	5.0	270	.002	1.64	55 to +25 to +100	DD
1N4075	87	5.0	290	.005	4.35	55 to +25 to +100	DD
1N4075A	87	5.0	290	.002	1.74	55 to +25 to +100	DD
1N4076	91	5.0	310	.005	4.55	55 to +25 to +100	DD
1N4076A	91	5.0	310	.002	1.82	55 to +25 to +100	DD
1N4077	100	5.0	340	.005	5.00	55 to +25 to +100	DD
1N4077A	100	5.0	340	.002	2.00	55 to +25 to +100	DD
1N4078	105	2.5	700	.005	5.25	55 to +25 to +100	DD
1N4078A	105	2.5	700	.002	2.10	55 to +25 to +100	DD
1N4079	110	2.5	740	.005	5.50	55 to +25 to +100	DD
1N4079A	110	2.5	740	.002	2.20	55 to +25 to +100	DD
1N4080	120	2.5	800	.005	6.00	55 to +25 to +100	DD
1N4080A	120	2.5	800	.002	2.40	55 to +25 to +100	DD
1N4081	130	2.5	840	.005	6.50	55 to +25 to +100	EE
1N4081A	130	2.5	840	.002	2.60	55 to +25 to +100	EE
1N4082	140	2.5	960	.005	7.00	55 to +25 to +100	EE
1N4082A	140	2.5	960	.002	2.80	55 to +25 to +100	EE
1N4083	150	2.5	1020	.005	7.50	55 to +25 to +100	EE
1N4083A	150	2.5	1020	.002	3.00	55 to +25 to +100	EE
1N4084	175	2.5	1150	.005	8.75	55 to +25 to +100	EE
1N4084A	175	2.5	1150	.002	3.50	55 to +25 to +100	EE
1N4085	200	2.5	1350	.005	10.00	55 to +25 to +100	EE
1N4085A	200	2.5	1350	.002	4.00	55 to +25 to +100	EE

*JEDEC Registered Data

NOTES:

1. Voltage measurements to be performed 15 seconds after application of dc current.
2. The 1N4057 through 1N4085 series is specified over the temperature range -55°C to +100°C with measurements made at -55°C, +100°C, and at the reference temperature +25°C. The maximum voltage change over the range -55°C to +25°C and +25°C to +100°C for this series is limited to the values (expressed in mV/°C) shown in the table. These values are computed by considering the temperature coefficient to be an average over the temperature range. For example, there is an 80°C change in temperature from -55°C to +25°C. At an average temperature coefficient of 0.005%/°C, the maximum percentage change in voltage would be: 80°C x 0.005%/°C or 0.4%. For the 1N4057, having a nominal zener voltage of 12.4 volts, the maximum allowable voltage change would be: 0.4% of 12.4 volts or 49.6 millivolts.

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GRAPHS

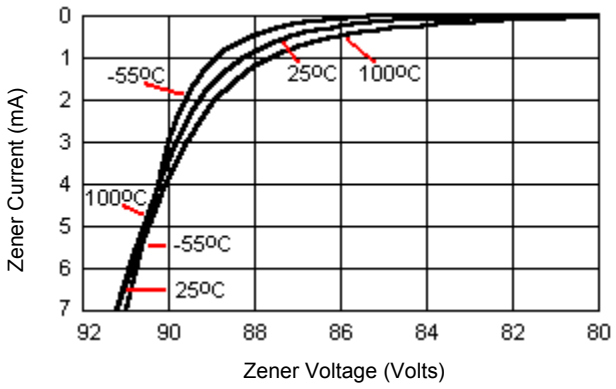
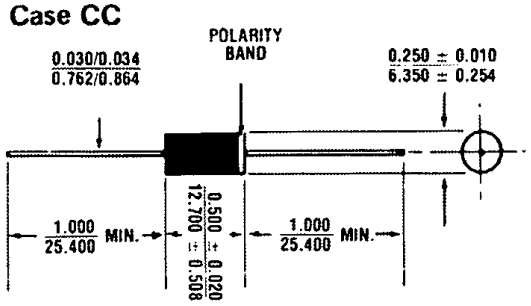


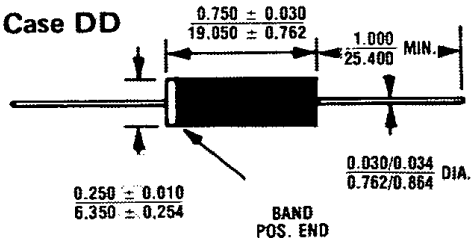
FIGURE 1
TYPICAL VOLT-AMPERE CURVE OF 1N4076A

PACKAGE DIMENSIONS

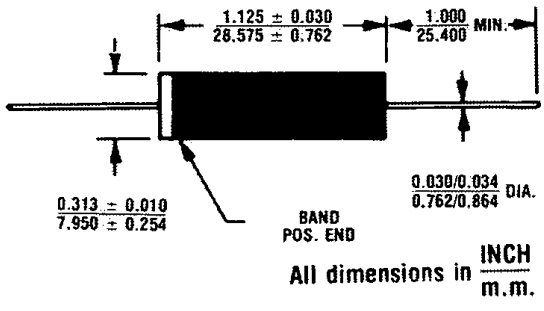
Case CC



Case DD



Case EE



All dimensions in INCH / m.m.