

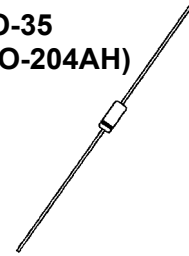
ALSO  
AVAILABLE IN  
SURFACE  
MOUNT

### DESCRIPTION

The 1N5728 thru 1N5757 series of 0.5 watt Zener Voltage Regulators provides a selection from 4.7 to 75 volts in standard 5% tolerances as well as tighter tolerances identified by a "C" or "D" suffix letter on the part number. These glass axial-leaded DO-35 Zeners are also available with an internal-metallurgical-bond option by adding a "-1" suffix. Microsemi also offers numerous other Zener products to meet higher and lower power applications.

### APPEARANCE

DO-35  
(DO-204AH)



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

### FEATURES

- JEDEC registered 1N5728 to 1N5757 series
- Internal metallurgical bond option available by adding a "-1" suffix
- 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 with "-1" suffix
- Surface Mount equivalents are also available in DO-213AA by adding a UR or UR-1 suffix, e.g. 1N5728UR, 1N5746UR-1, etc. (see separate data sheets)
- DO-7 glass body axial-leaded Zener equivalents are also available

### APPLICATIONS / BENEFITS

- Regulates voltage over a broad operating current and temperature range
- Extensive selection from 4.7 to 75 V
- Standard voltage tolerances of plus/minus 5% with a B suffix
- Tight tolerances available in plus or minus 2% or 1% with C or D suffix respectively
- Flexible axial-lead mounting terminals
- Nonsensitive to ESD per MIL-STD-750 Method 1020
- Minimal capacitance (see Figure 3)
- Inherently radiation hard as described in Microsemi MicroNote 050

### MAXIMUM RATINGS

- Operating and Storage temperature: -65°C to +175°C
- Thermal Resistance: 250 °C/W junction to lead at 3/8 (10 mm) lead length from body, or 310 °C/W junction to ambient when mounted on FR4 PC board (1 oz Cu) with 4 mm<sup>2</sup> copper pads and track width 1 mm, length 25 mm
- Steady-State Power: 0.5 watts at T<sub>L</sub> ≤ 50°C 3/8 inch (10 mm) from body or 0.48 W at T<sub>A</sub> ≤ 25°C when mounted on FR4 PC board as described for thermal resistance above (also see Figure 1)
- Forward voltage @10 mA: 0.9 volts (maximum)
- Solder Temperatures: 260 °C for 10 s (max)

### MECHANICAL AND PACKAGING

- CASE: Hermetically sealed axial-lead glass DO-35 (DO-204AH) 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 option: Standard per EIA-296 (add "TR" suffix to part number)
- WEIGHT: 0.2 grams
- See package dimensions on last page

**ELECTRICAL CHARACTERISTICS\***

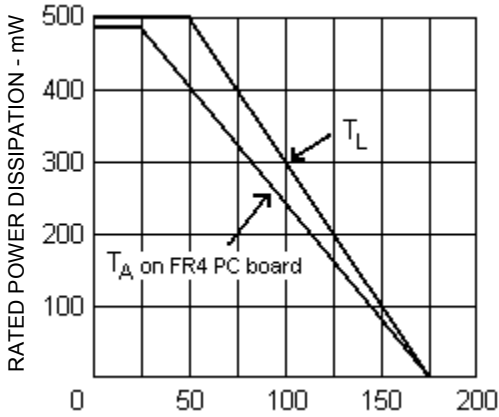
TYPE NUMBER (Note 1)	REGULATOR VOLTAGE	TEST CURRENT	DYNAMIC IMPEDANCE	REVERSE CURRENT	I <sub>R</sub> TEST VOLTAGE	MAXIMUM REGULATOR CURRENT	TEMPERATURE COEFFICIENT
	(V <sub>Z</sub> ) Volts	(I <sub>Z</sub> ) Amps	(Z <sub>Z</sub> ) Ohms	I <sub>R</sub> μA	(V <sub>R</sub> ) Volts	(I <sub>ZM</sub> ) mA	(α <sub>VZ</sub> ) mV/°C
1N5728B	4.7	10	70	3.0	2	70	-1.0
1N5729B	5.1	10	50	3.0	2	65	-0.2
1N5730B	5.6	10	25	3.0	2	60	+1.2
1N5731B	6.2	10	10	3.0	4	55	+2.3
1N5732B	6.8	10	10	3.0	4	50	+3.0
1N5733B	7.5	10	10	2.0	5	45	+4.0
1N5734B	8.2	10	15	1.0	5	40	+5.0
1N5735B	9.1	10	15	0.5	6	40	+6.0
1N5736B	10	10	20	0.2	7	35	+7.0
1N5737B	11	5	20	0.1	8	30	+8.0
1N5738B	12	5	25	0.1	8	30	+9.0
1N5739B	13	5	30	0.1	9	25	+10.5
1N5740B	15	5	30	0.1	10	25	+12.9
1N5741B	16	5	40	0.1	11	20	+13
1N5742B	18	5	45	0.1	12	20	+15
1N5743B	20	5	55	0.1	14	15	+17
1N5744B	22	5	55	0.1	15	15	+19
1N5745B	24	5	70	0.1	17	15	+21
1N5746B	27	2	80	0.1	19	10	+23.5
1N5747B	30	2	80	0.1	21	10	+26
1N5748B	33	2	90	0.1	23	10	+29
1N5749B	36	2	90	0.1	25	10	+31
1N5750B	39	2	130	0.1	27	9	+34
1N5751B	43	2	150	0.1	30	9	+37
1N5752B	47	2	170	0.1	33	8	+40
1N5753B	51	2	180	0.1	36	7	+44
1N5754B	56	2	200	0.1	39	6	+47
1N5755B	62	2	215	0.1	43	6	+51
1N5756B	68	2	240	0.1	48	5	+56
1N5757B	75	2	255	0.1	53	5	+60

\*JEDEC Registered Data. The Type Number indicates 5% Tolerance. (See Note 1.)

**NOTES:**

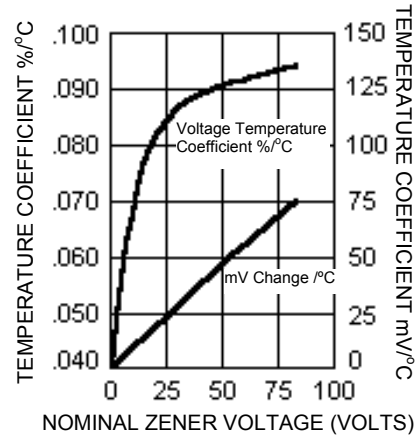
1. Devices listed have a +/-5% voltage tolerance on nominal V<sub>Z</sub> with a B suffix. An A suffix is +/-10% and no suffix is +/-20%. Suffix C denotes a +/-2% tolerance and suffix D denotes a +/-1% tolerance.
2. All static parameters measured under pulsed conditions, t<sub>p</sub> = 300 μs.
3. Dynamic Impedance is derived by measuring the ac voltage when superimposing an ac rms current of 0.2 mA at 1000 Hz on to the dc level of I<sub>ZT</sub>.

**GRAPHS**



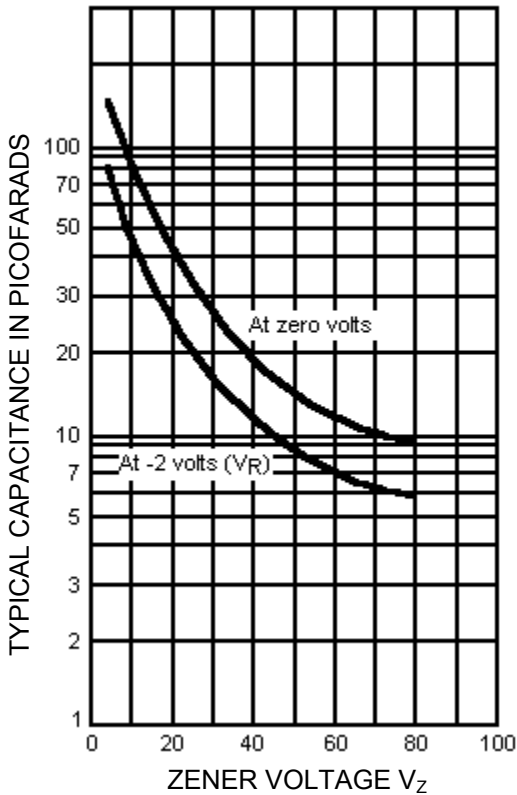
$T_L$  - LEAD TEMPERATURE ( $^{\circ}\text{C}$ ) 3/8" FROM BODY or  
 $T_A$  ON FR4 PC BOARD

**FIGURE 1**  
POWER DERATING CURVE



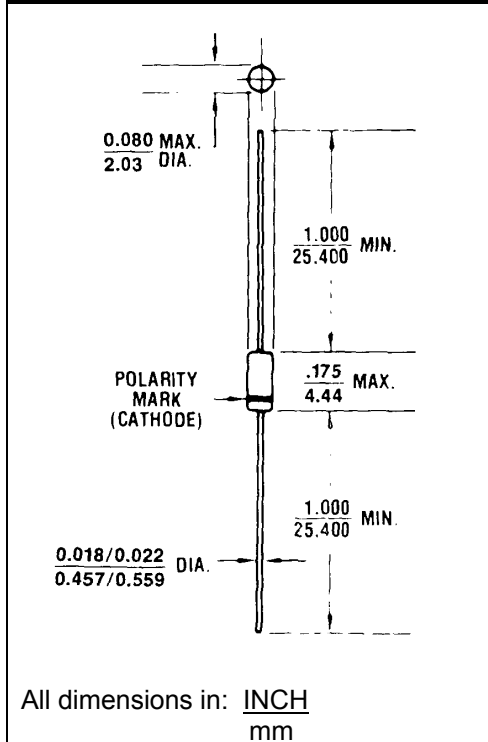
**FIGURE 2**  
ZENER VOLTAGE TEMPERATURE  
COEFFICIENT vs. ZENER VOLTAGE

CAPACITANCE vs.  $V_Z$  CURVE



**FIGURE 3**

**PACKAGE DIMENSIONS**





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