

1N746 thru 1N759A, -1, e3 and 1N4370 thru 1N4372A, -1, e3 DO-35

Silicon 500 mW Zener Diodes

## **DESCRIPTION**

The popular 1N746 thru 1N759A and 1N4370 thru 1N4372A series of 0.5 watt Zener Voltage Regulators provides a selection from 2.4 to 12 volts in standard 5% or 10% tolerances as well as tighter tolerances identified by different suffix letters 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 as well as RoHS Compliant by adding an "e3" suffix. Microsemi also offers numerous other Zener products to meet higher and lower power applications.

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

#### **FEATURES**

- JEDEC registered 1N746 thru 1N759A and 1N4370 thru 1N4372A series
- Internal metallurgical bond option available by adding a "-1" suffix similar to military devices
- Commercial Surface Mount equivalents available as MLL746 to MLL759A and MLL4370 to MLL4372A including the "-1" suffix in the DO-213AA MELF style package (consult factory for others)
- RoHS Compliant devices available by adding "e3" suffix
- DO-7 glass body axial-leaded Zener equivalents are also available

## **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
- Steady-State Power: 0.5 watts at  $T_L < 50^{\circ}C$  3/8 inch (10 mm) from body or 0.48 W at  $T_A \le 25^{\circ}$ C when mounted on FR4 PC board as described for thermal resistance above (also see Figure 1)
- Forward voltage @200 mA: 1.1 volts
- Solder Temperatures: 260 °C for 10 s (max)



## APPLICATIONS / BENEFITS

- Regulates voltage over a broad operating current and temperature range
- Selection from 2.4 to 12 V
- Standard voltage tolerances are plus/minus 5% with A suffix identification and 10 % with no 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
- Minimal capacitance (see Figure 3)
- Inherently radiation hard as described in Microsemi MicroNote 050

### MECHANICAL AND PACKAGING

- CASE: Hermetically sealed axial-lead glass DO-35 (DO-204AH) package
- TERMINALS: Tin-Lead or RoHS Compliant annealed matte-Tin plating 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



# 1N746 thru 1N759A, -1, e3 and 1N4370 thru 1N4372A, -1, e3 DO-35

## Silicon 500 mW Zener Diodes

ELECTRICAL CHARACTERISTICS* @ 25°C							
JEDEC TYPE NO.	NOMINAL ZENER VOLTAGE	ZENER TEST CURRENT	MAXIMUM ZENER IMPEDANCE	MAXIMUM REVERSE CURRENT $I_R$ @ $V_R = 1$ VOLT		MAXIMUM ZENER CURRENT	TYPICAL TEMP COEFF. OF ZENER
(NOTE1)	V <sub>z</sub> @ I <sub>ZT</sub> (NOTE 2)	I <sub>ZT</sub>	Z <sub>ZT</sub> @ I <sub>ZT</sub> (NOTE 3)	@25ºC	@+150ºC	I <sub>ZM</sub> (NOTE 4)	VOLTAGE ανz
	VOLTS	mA	OHMS	μА	μА	mA	%/°C
1N4370	2.4	20	30	100	200	150	085
1N4371	2.7	20	30	75	150	135	080
1N4372	3.0	20	29	50	100	120	075
1N746	3.3	20	28	10	30	110	066
1N747	3.6	20	24	10	30	100	058
1N748	3.9	20	23	10	30	95	046
1N749	4.3	20	22	2	30	85	033
1N750	4.7	20	19	2	30	75	015
1N751	5.1	20	17	1	20	70	+/010
1N752	5.6	20	11	1	20	65	+.030
1N753	6.2	20	7	.1	20	60	+.049
1N754	6.8	20	5	.1	20	55	+.053
1N755	7.5	20	6	.1	20	50	+.057
1N756	8.2	20	8	.1	20	45	+.060
1N757	9.1	20	10	.1	20	40	+.061
1N758	10.0	20	17	.1	20	35	+.062
1N759	12.0	20	30	.1	20	30	+.062

\* JEDEC Registered Data

- NOTE 1: Standard tolerance on JEDEC types shown is +/- 10%. Suffix letter A denotes +/- 5% tolerance; suffix letter C denotes +/- 2%; and suffix letter D denotes +/- 1% tolerance.
- NOTE 2: Voltage measurements to be performed 20 seconds after application of dc test current.
- NOTE 3: Zener impedance derived by superimposing on I<sub>ZT</sub>, a 60 cps, rms ac current equal to 10% I<sub>ZT</sub> (2mA ac). See MicroNote 202 for typical zener Impedance variation with different operating currents.
- **NOTE 4:** Allowance has been made for the increase in  $V_Z$  due to  $Z_Z$  and for the increase in junction temperature as the unit approaches thermal equilibrium at the power dissipation of 400 mW.

## **GRAPHS**

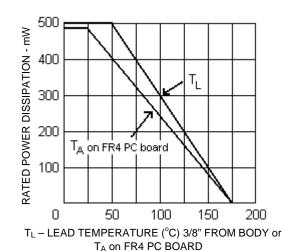


FIGURE 1 POWER DERATING CURVE

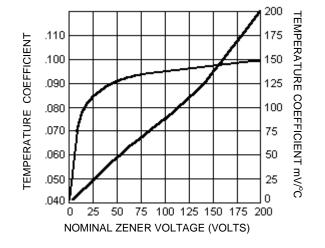


FIGURE 2

ZENER VOLTAGE TEMPERATURE COEFFICIENT vs. ZENER VOLTAGE



# 1N746 thru 1N759A, -1, e3 and 1N4370 thru 1N4372A, -1, e3 DO-35

## Silicon 500 mW Zener Diodes

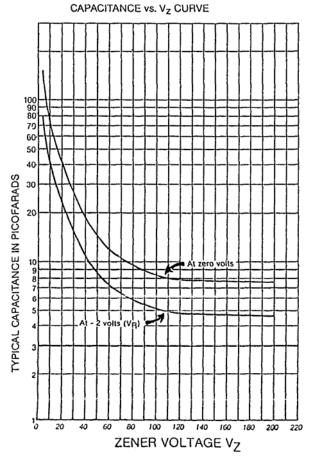


FIGURE 3
CAPACITANCE vs. ZENER VOLTAGE
(TYPICAL)

