1N821, A, -1 thru 1N829, A, -1 DO-35

ALSO AVAILABLE IN SURFACE MOUNT

Microsemi Corp.
The diode experts

SCOTTSDALE, AZ
For more information call:
(602) 941-6300

6.2 & 6.55 VOLT TEMPERATURE COMPENSATED ZENER REFERENCE DIODES

FEATURES

- ZENER VOLTAGE 6.2 V AND 6.55 V
- 1N821, 823, 825, 827 AND 829 HAVE JAN, JANTX, JANTXV-1 QUALIFICATIONS TO MIL-S-19500/159
- JANS EQUIVALENT AVAILABLE VIA SCD
- ALSO AVAILABLE IN DO-7 PACKAGE

MAXIMUM RATINGS

Operating Temperatures: – 65°C to + 175°C
Storage Temperatures: – 65°C to + 175°C
DC Power Dissipation: 475 mW @ 25°C
Derating: 3.16 mW/°C above 25°C

*ELECTRICAL CHARACTERISTICS

@ 25°C, unless otherwise specified

JEDEC TYPE NUMBER	ZENER VOLTAGE (Note 1 and 4) V_Z @ I_{ZT}	ZENER TEST CURRENT I_{ZT}	MAXIMUM ZENER IMPEDANCE (Note 3 and 4) Z_{ZT}	VOLTAGE TEMPERATURE STABILITY (ΔV_{ZT} MAX) –55° to +100° (Note 3 and 4)	EFFECTIVE TEMPERATURE COEFFICIENT α_{VZ}
	VOLTS	mA	OHMS	mV	%/°C
1N821	5.9 - 6.5	7.5	15	96	0.01
1N821A	5.9 - 6.5	7.5	10	96	0.01
1N822†	5.9 - 6.5	7.5	15	96	0.01
1N823	5.9 - 6.5	7.5	15	48	0.005
1N823A	5.9 - 6.5	7.5	10	48	0.005
1N824†	5.9 - 6.5	7.5	15	48	0.005
1N825	5.9 - 6.5	7.5	15	19	0.002
1N825A	5.9 - 6.5	7.5	10	19	0.002
1N826	6.2 - 6.9	7.5	15	20	0.002
1N827	5.9 - 6.5	7.5	15	9	0.001
1N827A	5.9 - 6.5	7.5	10	9	0.001
1N828	6.2 - 6.9	7.5	15	10	0.001
1N829	5.9 - 6.5	7.5	15	5	0.0005
1N829A	5.9 - 6.5	7.5	10	5	0.0005

† Double Anode; Electrical Specifications Apply Under Both Bias Polarities.
*JEDEC Registered Data

NOTE 1 When ordering devices with tighter tolerances than specified, use a nominal V_Z voltage of 6.2 V.

NOTE 2 Measured by superimposing 0.75 mA ac rms on 7.5 mA DC @ 25°C.

NOTE 3 The maximum allowable change observed over the entire temperature range i.e., the diode voltage will not exceed the specified mV change at any discrete temperature between the established limits.

NOTE 4 Voltage measurements to be performed 15 seconds after application of DC current.

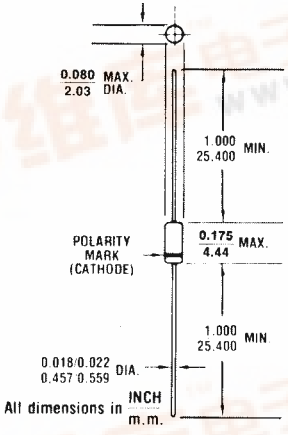

FIGURE 1

MECHANICAL CHARACTERISTICS

CASE: Hermetically sealed glass case. DO-35 (DO-204AH).
FINISH: All external surfaces are corrosion resistant and leads solderable.
THERMAL RESISTANCE: 250°C/W junction to lead at 0.375-inches from body. Metallurgically bonded DO-35's exhibit less than 100°C/W at zero distance from body.
POLARITY: Diode to be operated with the banded end positive with respect to the opposite end.
WEIGHT: 0.2 grams.
MOUNTING POSITION: Any

The curve shown in Figure 3 is typical of the diode series and greatly simplifies the estimation of the Temperature Coefficient (TC) when the diode is operated at currents other than 7.5 mA.

EXAMPLE: A diode in this series is operated at a current of 7.5mA and has specified Temperature Coefficient (TC) limits of ±0.005%/°C. To obtain the typical Temperature Coefficient limits for this same diode operated at a current of 6.0mA, the new TC limits (%/°C) can be estimated using the graph in FIGURE 3.

At a test current of 6.0mA the change in Temperature Coefficient (TC) is approximately −0.0006%/°C. The algebraic sum of ±0.005%/°C and −0.0006%/°C gives the new estimated limits of +0.0044%/°C and −0.0056%/°C.

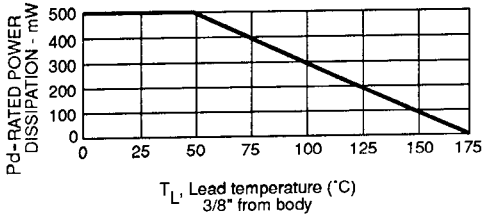

FIGURE 2 POWER DERATING CURVE

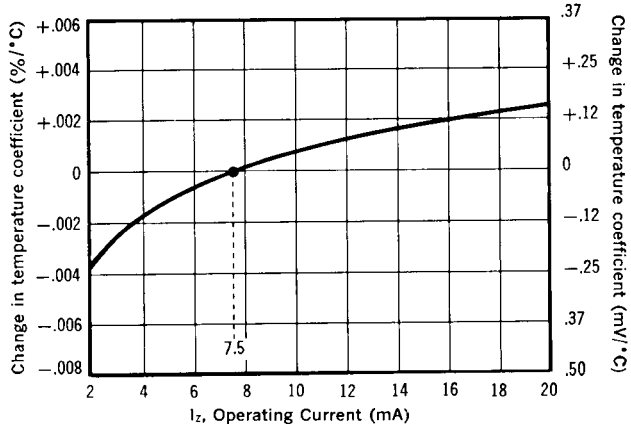

FIGURE 3

TYPICAL CHANGE OF TEMPERATURE COEFFICIENT WITH CHANGE IN OPERATING CURRENT

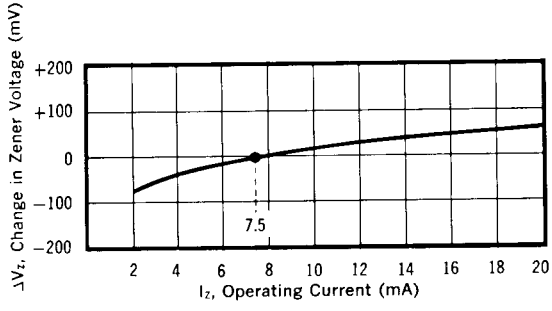

FIGURE 4

TYPICAL CHANGE OF ZENER VOLTAGE WITH CHANGE IN OPERATING CURRENT

This curve in Figure 4 illustrates the change of diode voltage arising from the effect of impedance. It is in effect an exploded view of the zener operating region of the I-V characteristic.

In conjunction with Figure 3, this curve can be used to estimate total voltage regulation under conditions of both varying tem-