



Microsemi Corp.

The diode experts



SCOTTSDALE, AZ

For more information call:
(602) 941-6300

**1N821, A, -1
thru
1N829, A, -1
DO-7**

FEATURES

- ZENER VOLTAGE 6.2 V AND 6.55 V
- 1N821, 823, 825, 827 AND 829 HAVE JAN, JANTX, JANTXV, JANS, AND -1 QUALIFICATIONS TO MIL-S-19500/159
- RADIATION HARDENED DEVICES AVAILABLE (SEE NOTE 5)
- ALSO AVAILABLE IN DO-35 PACKAGE
- JANS EQUIVALENT AVAILABLE VIA SCD

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_z , 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 6.35V.

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.

NOTE 5 Designate Radiation Hardened devices with "RH" prefix instead of "1N", i.e., RH829A instead of 1N829A.

**6.2 & 6.55 VOLT
TEMPERATURE
COMPENSATED
ZENER REFERENCE
DIODES**

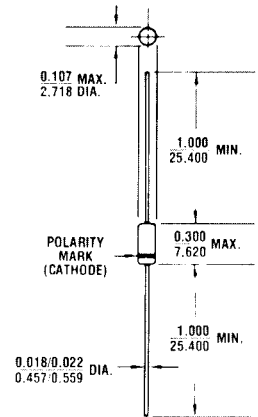


FIGURE 1

All dimensions in $\frac{\text{INCH}}{\text{m.m}}$

MECHANICAL CHARACTERISTICS

CASE: Hermetically sealed glass case, DO-7 (DO-204AA).

FINISH: All external surfaces are corrosion resistant and leads solderable.

THERMAL RESISTANCE: 300°C/W (Typical) junction to lead at 0.375-inches 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

1N821, A, -1 thru 1N829, A, -1 DO-7

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 $\pm 0.005\%/^{\circ}\text{C}$. To obtain the typical Temperature Coefficient limits for this same diode operated at a current of 6.0mA, the new TC limits ($\%/^{\circ}\text{C}$) can be estimated using the graph in FIGURE 3.

At a test current of 6.0mA the change in Temperature Coefficient (TC) is approximately $-0.0006\%/^{\circ}\text{C}$. The algebraic sum of $\pm 0.005\%/^{\circ}\text{C}$ and $-0.0006\%/^{\circ}\text{C}$ gives the new estimated limits of $+0.0044\%/^{\circ}\text{C}$ and $-0.0056\%/^{\circ}\text{C}$.

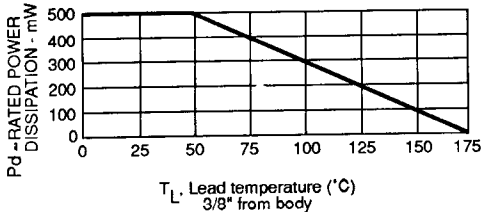


FIGURE 2 POWER DERATING CURVE

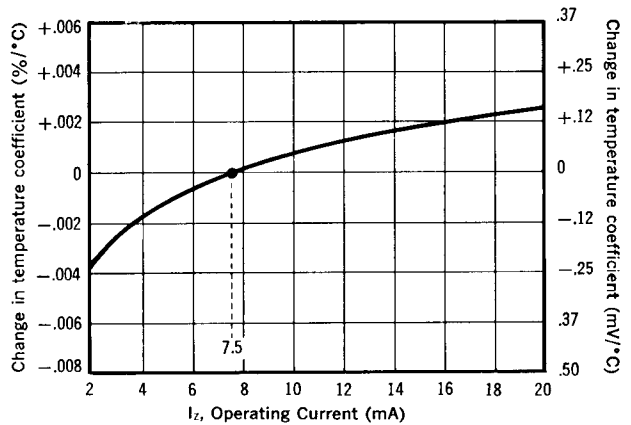


FIGURE 3
TYPICAL CHANGE OF TEMPERATURE COEFFICIENT
WITH CHANGE IN OPERATING CURRENT

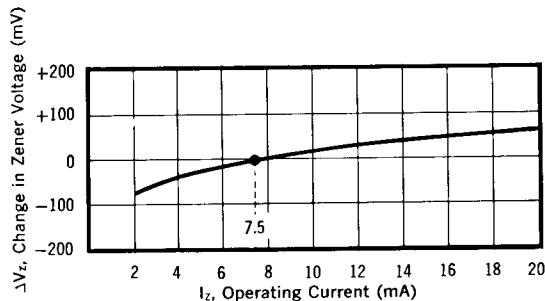


FIGURE 4
TYPICAL CHANGE OF ZENER VOLTAGE WITH
CHANGE IN OPERATING CURRENT

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 temperature and current.