

Microsemi Corp.
The diode experts

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

FEATURES

- ZENER VOLTAGE 6.2V AND 6.55 V
- 1N821, 823, 825, 827 AND 829 HAVE JAN, JANTX, JANTXV AND -1 QUALIFICATIONS TO MIL-S-19500/159
- S1N827A
- 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: 250 mW @ 25°C ambient
Derating: 1.67 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	19	0.002
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**

2

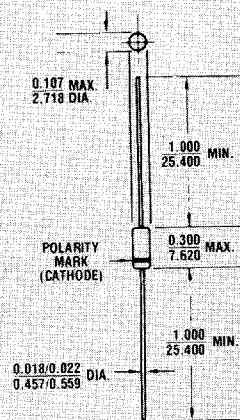


FIGURE 1

All dimensions in INCH
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 thru 1N829A 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 $-0.0056\%/^{\circ}\text{C}$.

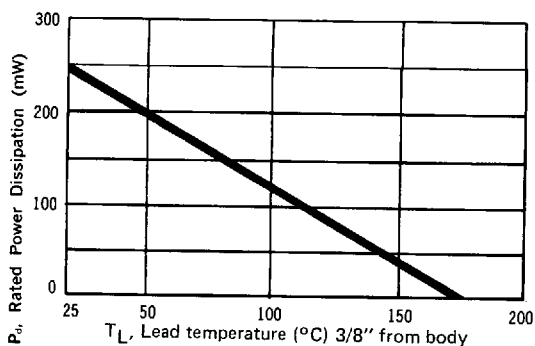


FIGURE 2
POWER DERATING CURVE

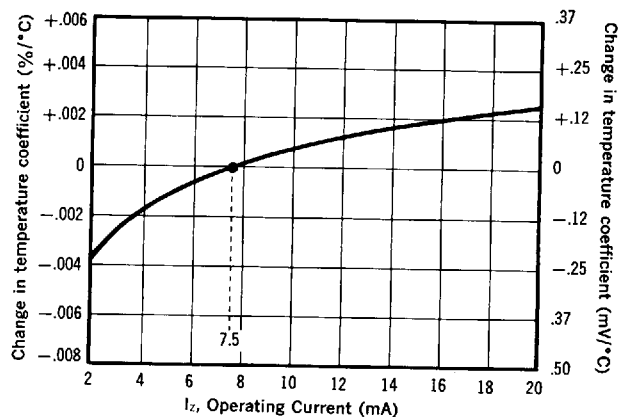


FIGURE 3
TYPICAL CHANGE OF TEMPERATURE COEFFICIENT
WITH CHANGE IN OPERATING CURRENT

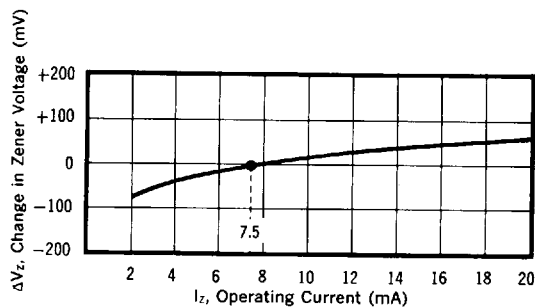


FIGURE 4
TYPICAL CHANGE OF ZENER VOLTAGE WITH
CHANGE IN OPERATING CURRENT

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.