

Microsemi Corp.
The diode experts

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**1N821 & A
thru
1N829 & A
DO-35**

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 RATINGSOperating Temperatures: -65°C to $+175^{\circ}\text{C}$ Storage Temperatures: -65°C to $+175^{\circ}\text{C}$ DC Power Dissipation: 250 mW @ 25°C ambientDerating: 1.67 mW/ $^{\circ}\text{C}$ 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 STABILITY (ΔV_{zT} MAX) -55°C to $+100^{\circ}\text{C}$ (Note 3 and 4)	EFFECTIVE TEMPERATURE COEFFICIENT α_{Vz}
	VOLTS	mA		OHMS	
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 6.35 V.

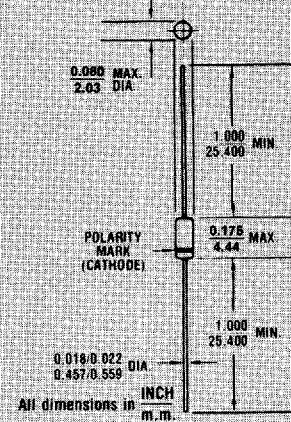
NOTE 2 Measured by superimposing 0.75 mA ac rms on 7.5 mA DC @ 25°C .

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.

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

(2)

**MECHANICAL
CHARACTERISTICS**

CASE: Hermetically sealed glass case, DO-35 (DO-204A).

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

THERMAL RESISTANCE: $150^{\circ}\text{C}/\text{W}$ (Typical) junction to lead at 0.375-inches from body. Metallurgically bonded DO-35's exhibit less than $100^{\circ}\text{C}/\text{W}$ 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

1N821 thru 1N829A DO-35

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

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

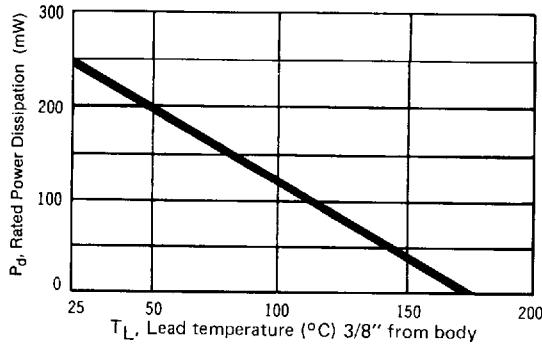


FIGURE 2
POWER DERATING CURVE

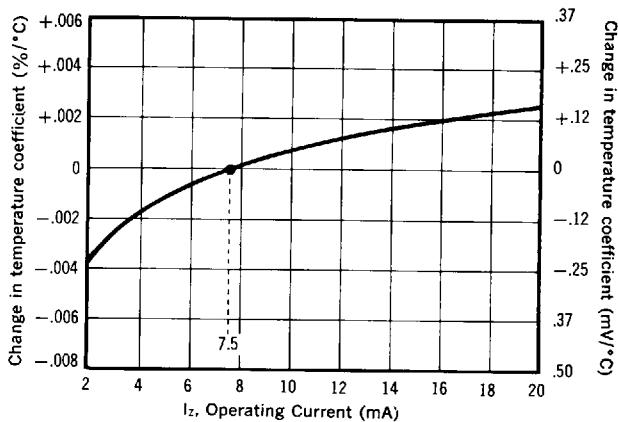


FIGURE 3
TYPICAL CHANGE OF TEMPERATURE COEFFICIENT
WITH CHANGE IN OPERATING CURRENT

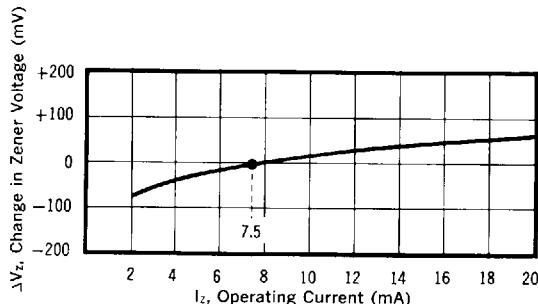


FIGURE 4
TYPICAL CHANGE OF ZENER VOLTAGE WITH
CHANGE IN OPERATING CURRENT

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.