1N935, A & B
thru
1N940, A & B

Microsemi Corp.
The diode experts

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9.0 VOLT TEMPERATURE COMPENSATED ZENER REFERENCE DIODES

FEATURES

- ZENER VOLTAGE 9.0V ± 5% (See Note 1)
- 1N935B, 937B, 938B, 939B, 940B HAVE JAN, JANTX, JANTXV, AND -1 QUALIFICATIONS TO MIL-S-19500/156
- S1N939A
- RADIATION HARDENED DEVICES AVAILABLE (SEE NOTE 5)
- JANS EQUIVALENT AVAILABLE VIA SCD

MAXIMUM RATINGS

Operating Temperature: −65°C to +175°C.
Storage Temperature: −65°C to +175°C
DC Power Dissipation: 500 mW @ 25°C.
Power Derating: 3.33 mW/°C above 25°C.

*ELECTRICAL CHARACTERISTICS

@ 25°C, unless otherwise specified

JEDEC TYPE NUMBERS	ZENER VOLTAGE V_Z @ I_{ZT} (NOTE 1 & 4)	ZENER TEST CURRENT I_{ZT}	MAXIMUM ZENER IMPEDANCE (NOTE 2) Z_{ZT}	VOLTAGE TEMPERATURE STABILITY (NOTE 3 & 4) ΔV_{ZT} MAXIMUM	TEMPERATURE RANGE	EFFECTIVE TEMPERATURE COEFFICIENT α_{VZ}
	VOLTS	mA	OHMS	mV	°C	%/°C
1N935	8.55-9.45	7.5	20	67	0 to + 75	0.01
1N935A	8.55-9.45	7.5	20	139	−55 to +100	0.01
1N935B	8.55-9.45	7.5	20	184	−55 to +150	0.01
1N936	8.55-9.45	7.5	20	33	0 to + 75	0.005
1N936A	8.55-9.45	7.5	20	69	−55 to +100	0.005
1N936B	8.55-9.45	7.5	20	92	−55 to +150	0.005
1N937	8.55-9.45	7.5	20	13	0 to + 75	0.002
1N937A	8.55-9.45	7.5	20	27	−55 to +100	0.002
1N937B	8.55-9.45	7.5	20	37	−55 to +150	0.002
1N938	8.55-9.45	7.5	20	6	0 to + 75	0.001
1N938A	8.55-9.45	7.5	20	13	−55 to +100	0.001
1N938B	8.55-9.45	7.5	20	18	−55 to +150	0.001
1N939	8.55-9.45	7.5	20	3	0 to + 75	0.0005
1N939A	8.55-9.45	7.5	20	7	−55 to +100	0.0005
1N939B	8.55-9.45	7.5	20	9	−55 to +150	0.0005
1N940	8.55-9.45	7.5	20	1.3	0 to + 75	0.0002
1N940A	8.55-9.45	7.5	20	2.7	−55 to +100	0.0002
1N940B	8.55-9.45	7.5	20	3.7	−55 to +150	0.0002

*JEDEC Registered Data

NOTE 1 When ordering devices with tighter tolerances than specified, use a nominal center voltage of 9.2V.

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. RH938A instead of 1N938A.

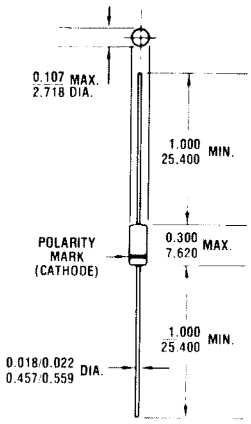

FIGURE 1

All dimensions in INCH / m.m.

MECHANICAL CHARACTERISTICS

CASE: Hermetically sealed glass case. DO-7.

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.

1N935 thru 1N940B

NOTE 5

The curve shown in Fig. 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 7.5 mA 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 6.0 mA, the new TC limits (%/°C) can be estimated using the graph in FIGURE 3.

At a test current of 6.0 mA the change in Temperature Coefficient (TC) is approximately −0.0009%/°C. The algebraic sum of ±0.005%/°C and −0.0009%/°C gives the new limits of +0.0041%/°C and −0.0059%/°C.

NOTE 6

The 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 Fig. 3 this curve can be used to estimate total voltage regulation under conditions of both varying temperature and current.

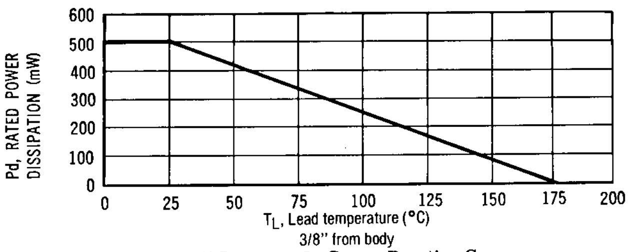

FIGURE 2 Power Derating Curve

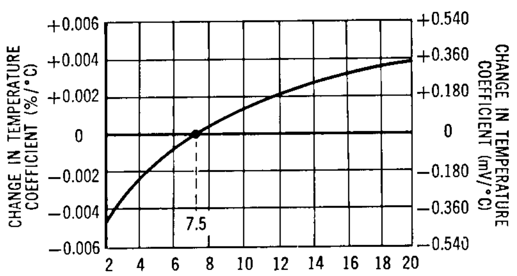

FIGURE 3 Typical change of Temperature Coefficient with Change in Operating Current.

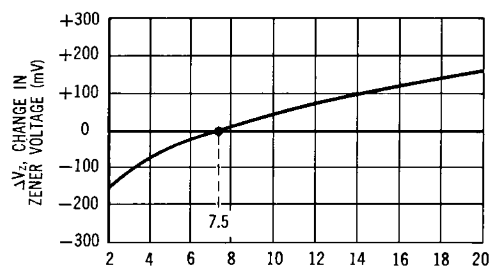

FIGURE 4 Typical change of Zener Voltage with Change in Operating Current.