1N941 thru 1N946B

Microsemi Corp.
The diode experts

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11.7 VOLT TEMPERATURE COMPENSATED ZENER REFERENCE DIODES

FEATURES

- ZENER VOLTAGE 11.7V ± 5%
- 1N941B, 943B, 944B, 945B HAVE JAN, JANTX, JANTXV, AND -1 QUALIFICATIONS TO MIL-S-19500/157
- SIN944B
- RADIATION HARDENED DEVICES AVAILABLE (SEE NOTE 4)
- 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 3)	ZENER TEST CURRENT I_{ZT}	MAXIMUM ZENER IMPEDANCE (NOTE 1) Z_{ZT}	VOLTAGE TEMPERATURE STABILITY (NOTE 2 & 3) ΔV_{ZT} MAXIMUM	TEMPERATURE RANGE	EFFECTIVE TEMPERATURE COEFFICIENT α_{VZ}
	VOLTS	mA	OHMS	mV	°C	%/°C
1N941	11.12-12.28	7.5	30	88	0 to + 75	.01
1N941A	11.12-12.28	7.5	30	181	−55 to +100	.01
1N941B	11.12-12.28	7.5	30	239	−55 to +150	.01
1N942	11.12-12.28	7.5	30	44	0 to + 75	.005
1N942A	11.12-12.28	7.5	30	90	−55 to +100	.005
1N942B	11.12-12.28	7.5	30	120	−55 to +150	.005
1N943	11.12-12.28	7.5	30	18	0 to + 75	.002
1N943A	11.12-12.28	7.5	30	36	−55 to +100	.002
1N943B	11.12-12.28	7.5	30	47	−55 to +150	.002
1N944	11.12-12.28	7.5	30	9	0 to + 75	.001
1N944A	11.12-12.28	7.5	30	18	−55 to +100	.001
1N944B	11.12-12.28	7.5	30	24	−55 to +150	.001
1N945	11.12-12.28	7.5	30	4	0 to + 75	.0005
1N945A	11.12-12.28	7.5	30	9	−55 to +100	.0005
1N945B	11.12-12.28	7.5	30	12	−55 to +150	.0005
1N946	11.12-12.28	7.5	30	1.8	0 to + 75	.0002
1N946A	11.12-12.28	7.5	30	3.6	−55 to +100	.0002
1N946B	11.12-12.28	7.5	30	4.7	−55 to +150	.0002

*JEDEC Registered Data

NOTE 1 Measured by superimposing 0.75 mA ac rms on 7.5 mA DC @ 25°C.

NOTE 2 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 3 Voltage measurements to be performed 15 seconds after application of DC current.

NOTE 4 Designate Radiation Hardened devices with "RH" prefix instead of "1N", i.e. RH944B instead of 1N944B.

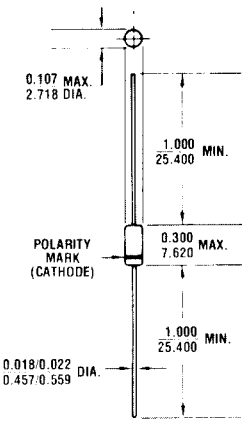

FIGURE 1
All dimensions in INCH / m.m.

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.

NOTE 4

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 7.5 mA and has specified Temperature Coefficient (TV) limits of ±0.002%/°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 ±0.002%/°C and −0.0009%/°C gives the new limits of +0.0011%/°C and −0.0029%/°C.

NOTE 5

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.

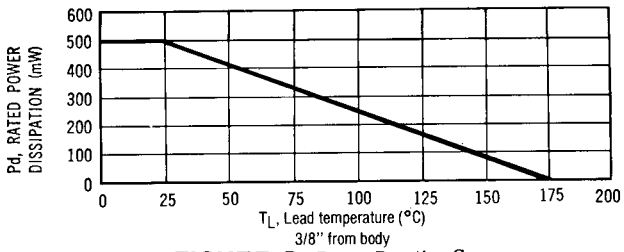

FIGURE 2 Power Derating Curve

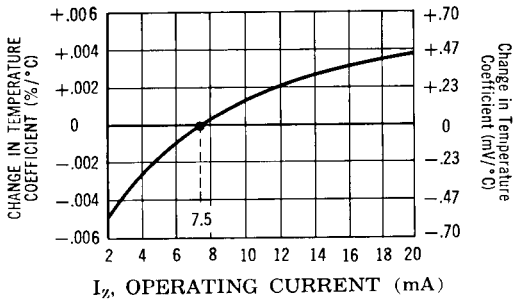

FIGURE 3 Typical change of Temperature Coefficient with Change in Operating Current.

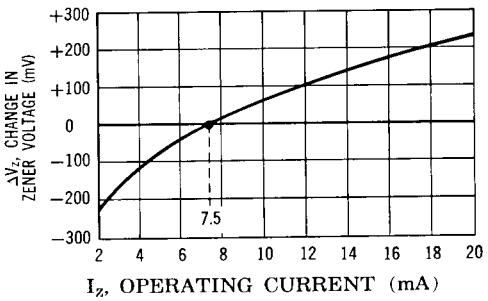

FIGURE 4 Typical change of Zener Voltage with Change in Operating Current.