

Microsemi Corp.
The diode experts

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1N941 thru 1N946B

FEATURES

- ZENER VOLTAGE $11.7V \pm 5\%$
- 1N941B, 943B, 944B, 945B HAVE JAN, JANTX, JANTXV, AND -1 QUALIFICATIONS TO MIL-S-19500/157
- S1N944B
- RADIATION HARDENED DEVICES AVAILABLE (SEE NOTE 4)
- JANS EQUIVALENT AVAILABLE VIA SCD

MAXIMUM RATINGS

Operating Temperature: -65°C to $+175^{\circ}\text{C}$.
Storage Temperature: -65°C to $+175^{\circ}\text{C}$.
DC Power Dissipation: 500 mW @ 25°C
Power Derating: 3.33 mW/ $^{\circ}\text{C}$ 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_Z MAXIMUM	TEMPERATURE RANGE	EFFECTIVE TEMPERATURE COEFFICIENT α_{VZ}
	VOLTS	mA	OHMS	mV	$^{\circ}\text{C}$	%/ $^{\circ}\text{C}$
1N941 1N941A 1N941B	11.12-12.28 11.12-12.28 11.12-12.28	7.5 7.5 7.5	30 30 30	88 181 239	0 to +75 -55 to +100 -55 to +150	.01 .01 .01
1N942 1N942A 1N942B	11.12-12.28 11.12-12.28 11.12-12.28	7.5 7.5 7.5	30 30 30	44 90 120	0 to +75 -55 to +100 -55 to +150	.005 .005 .005
1N943 1N943A 1N943B	11.12-12.28 11.12-12.28 11.12-12.28	7.5 7.5 7.5	30 30 30	18 36 47	0 to +75 -55 to +100 -55 to +150	.002 .002 .002
1N944 1N944A 1N944B	11.12-12.28 11.12-12.28 11.12-12.28	7.5 7.5 7.5	30 30 30	9 18 24	0 to +75 -55 to +100 -55 to +150	.001 .001 .001
1N945 1N945A 1N945B	11.12-12.28 11.12-12.28 11.12-12.28	7.5 7.5 7.5	30 30 30	4 9 12	0 to +75 -55 to +100 -55 to +150	.0005 .0005 .0005
1N946 1N946A 1N946B	11.12-12.28 11.12-12.28 11.12-12.28	7.5 7.5 7.5	30 30 30	1.8 3.6 4.7	0 to +75 -55 to +100 -55 to +150	.0002 .0002 .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.

11.7 VOLT TEMPERATURE COMPENSATED ZENER REFERENCE DIODES

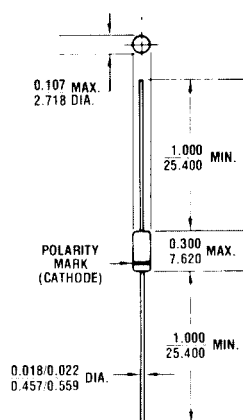


FIGURE 1

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: $300^{\circ}\text{C}/\text{W}$ (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.

1N941 thru 1N946B

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 $\pm 0.002\%/^{\circ}\text{C}$. To obtain the typical Temperature Coefficient limits for this same diode operated at a current of 6.0 mA, the new TC limits ($\%/^{\circ}\text{C}$) 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 $-0.0009\%/^{\circ}\text{C}$. The algebraic sum of $\pm 0.002\%/^{\circ}\text{C}$ and $-0.0009\%/^{\circ}\text{C}$ gives the new limits of $+0.0011\%/^{\circ}\text{C}$ and $-0.0029\%/^{\circ}\text{C}$.

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.

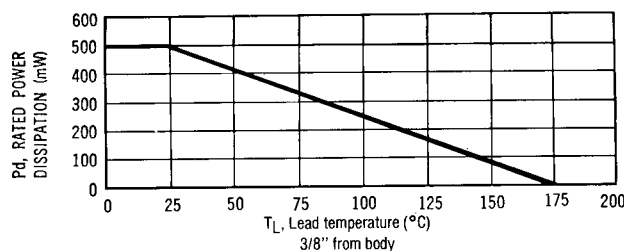


FIGURE 2 Power Derating Curve

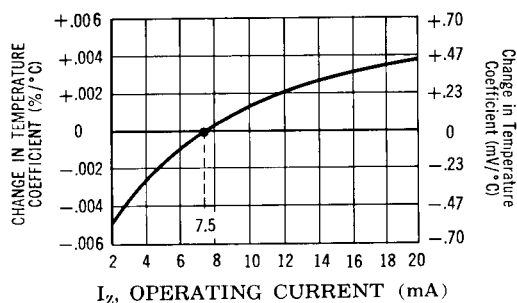


FIGURE 3 Typical change of Temperature Coefficient with Change in Operating Current.

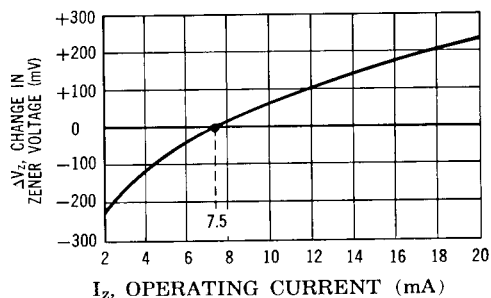


FIGURE 4 Typical change of Zener Voltage with Change in Operating Current.