

**FEATURES**

- ZENER VOLTAGE 11.7V ± 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°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) $\Delta V_z$ MAXIMUM	TEMPERATURE RANGE	EFFECTIVE TEMPERATURE COEFFICIENT $\alpha_{Vz}$
	VOLTS	mA	OHMS	mV	°C	%/°C
1N941 1N941A 1N941B	11.12-12.28	7.5	30	88	0 to +75 -55 to +100 -55 to +150	.01 .01 .01
1N942 1N942A 1N942B	11.12-12.28	7.5	30	44	0 to +75 -55 to +100 -55 to +150	.005 .005 .005
1N943 1N943A 1N943B	11.12-12.28	7.5	30	18	0 to +75 -55 to +100 -55 to +150	.002 .002 .002
1N944 1N944A 1N944B	11.12-12.28	7.5	30	9	0 to +75 -55 to +100 -55 to +150	.001 .001 .001
1N945 1N945A 1N945B	11.12-12.28	7.5	30	4	0 to +75 -55 to +100 -55 to +150	.0005 .0005 .0005
1N946 1N946A 1N946B	11.12-12.28	7.5	30	1.8	0 to +75 -55 to +100 -55 to +150	.0002 .0002 .0002

\*JEDEC Registered Data

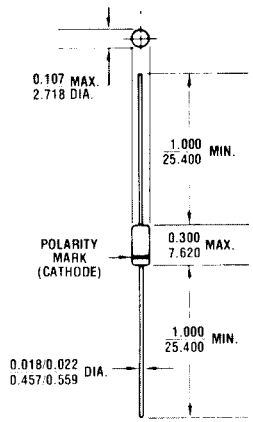
**NOTE 1** Measured by superimposing 0.75 mA ac rms on 7.5 mA DC @ 25°C.

**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°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.

# 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.

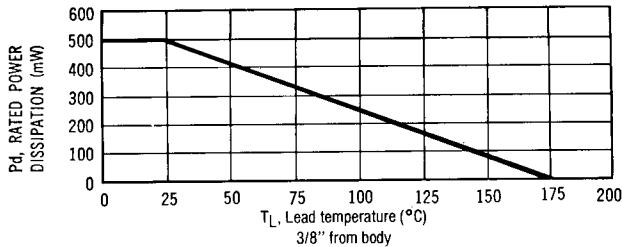


FIGURE 2 Power Derating Curve

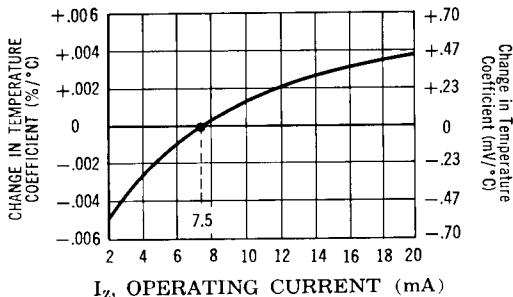


FIGURE 3 Typical change of Temperature Coefficient with Change in Operating Current.

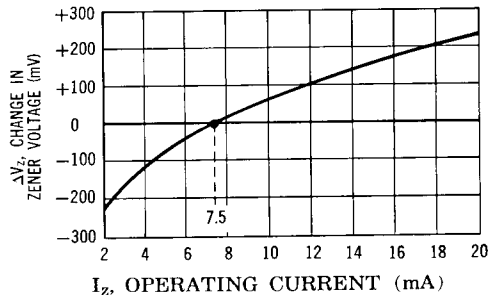


FIGURE 4 Typical change of Zener Voltage with Change in Operating Current.