1N2620, A, B (SILICON) thru 1N2624, A, B

9.3 V ± 5.0%

Temperature-compensated zener reference diodes utilizing an oxide-passivated junction for long-term voltage stability. Construction consists of welded hermetically sealed metal and glass case.

CASE 52
(DO-13)

MAXIMUM RATINGS

Junction Temperature: –55 to +175°C

Storage Temperature: -65 to +175°C

DC Power Dissipation: 750 mW @ T_A = 25°C

MECHANICAL CHARACTERISTICS

CASE: Hermetically sealed, welded metal and glass

DIMENSIONS: See outline drawing.

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

POLARITY: Cathode to case

WEIGHT: 1.5 Grams (approx)

MOUNTING POSITION: Any

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

JEDEC Type No.	Maximum Voltage Change ΔV_Z (Volts) (Note 1)	Test Temperature °C	Temperature Coefficient %/°C (Note 1)	Maximum Dynamic Impedance Z_{ZT} (Ohms) (Note 2)
V_Z = 9.3 V ±5.0%* @ I_{ZT} = 10 mA				
1N2620	0.070	0, +25, +75	0.01	15
1N2621	0.035		0.005	
1N2622	0.014		0.002	
1N2623	0.007		0.001	
1N2624	0.003		0.0005	
1N2620A	0.144	-55, 0, +25, +75, +100	0.01	15
1N2621A	0.072		0.005	
1N2622A	0.029		0.002	
1N2623A	0.014		0.001	
1N2624A	0.007		0.0005	
1N2620B	0.191	-55. 0, +25, +75, +100, +150	0.01	15
1N2621B	0.095		0.005	
1N2622B	0.038		0.002	
1N2623B	0.019		0.001	
1N2624B	0.010		0.0005	

*Tighter-tolerance units available on special request.

CAPACITANCE (C) = 75 to 200 pF @ 90% of V_Z

FORWARD BREAKDOWN VOLTAGE (V_f) = 100 to 800 V

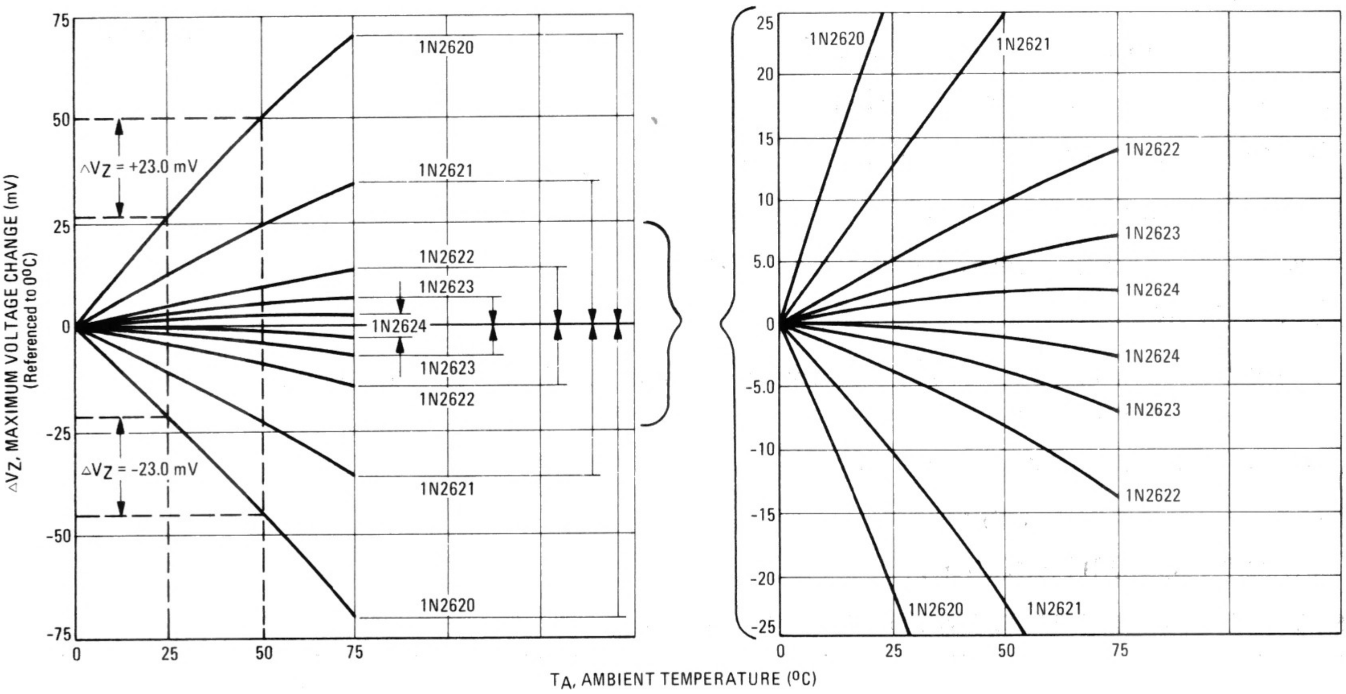
1N2620, A, B thru 1N2624, A, B (continued)

MAXIMUM VOLTAGE CHANGE versus AMBIENT TEMPERATURE

(With I_{ZT} = 10 mA ±0.01 mA) (See Note 3)

1N2620 thru 1N2624

FIGURE 1a FIGURE 1b

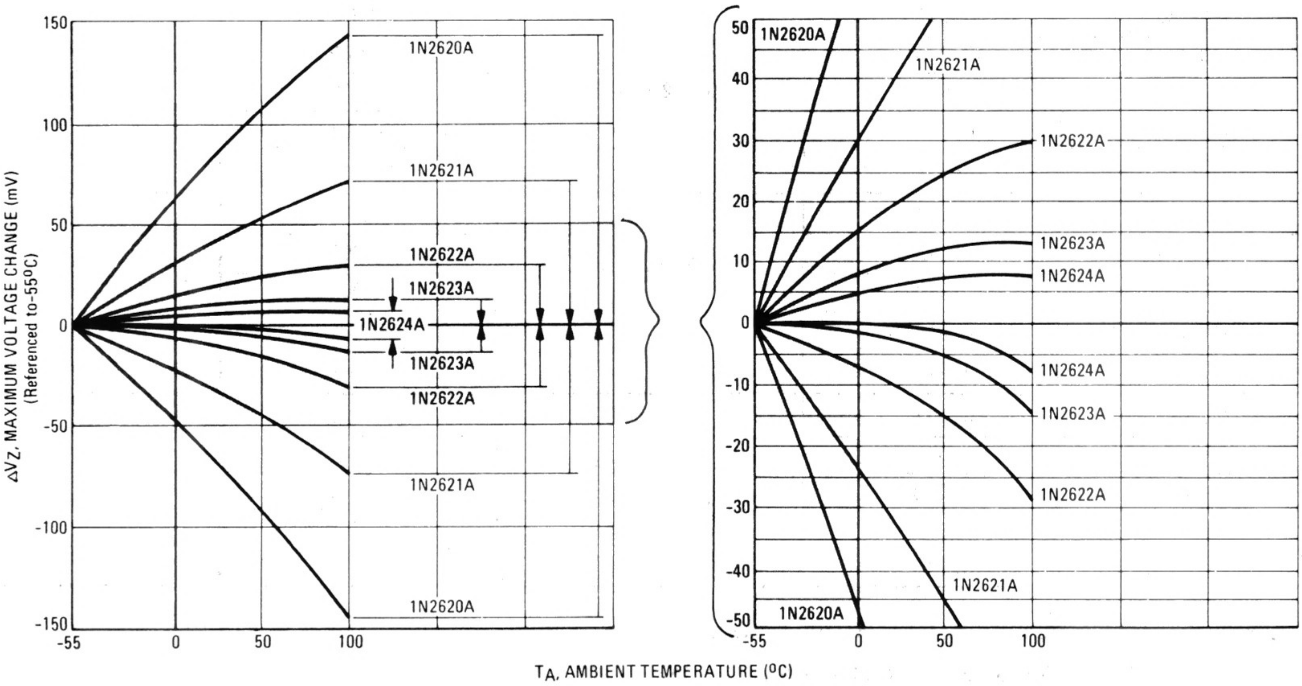


MAXIMUM VOLTAGE CHANGE versus AMBIENT TEMPERATURE

(With I_{ZT} = 10 mA ±0.01 mA) (See Note 3)

1N2620A thru 1N2624A

FIGURE 2a FIGURE 2b



MAXIMUM VOLTAGE CHANGE versus TEMPERATURE

(with I_{ZT} = 10 mA ±0.01 mA) (See Note 4)

1N2620B thru 1N2624B

FIGURE 3a

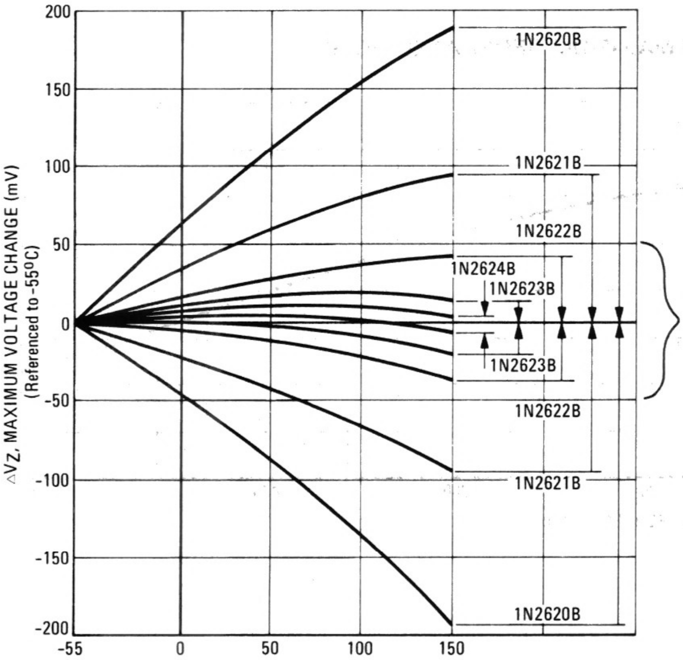
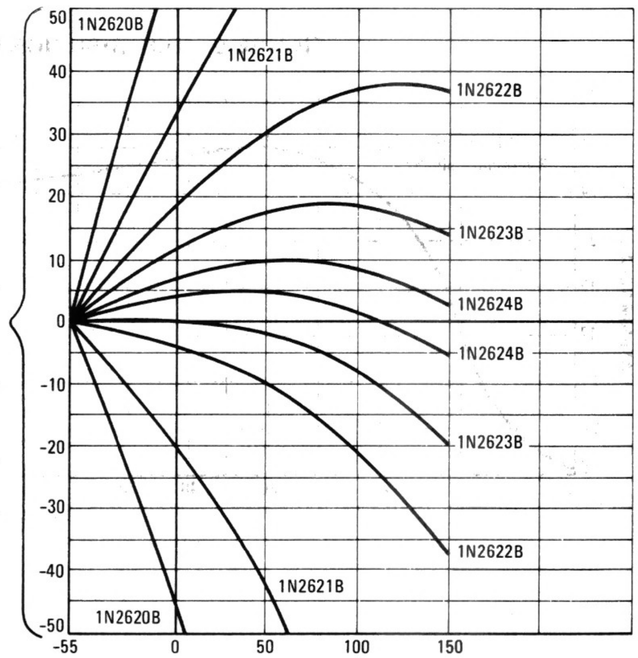


FIGURE 3b



T_A, AMBIENT TEMPERATURE (°C)

FIGURE 4 – ZENER CURRENT versus MAXIMUM VOLTAGE CHANGE (at specified temperatures)
(See Note 4)

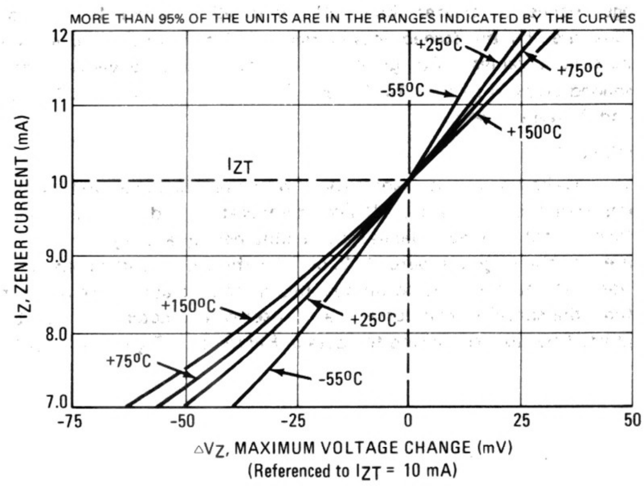


FIGURE 5 – MAXIMUM ZENER IMPEDANCE versus ZENER CURRENT
(See Note 2)

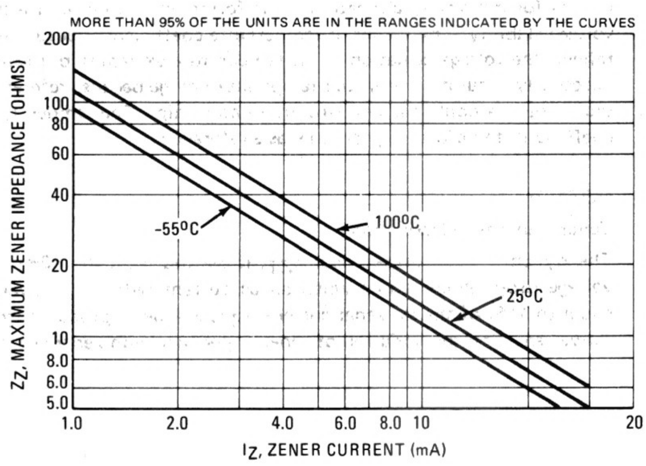
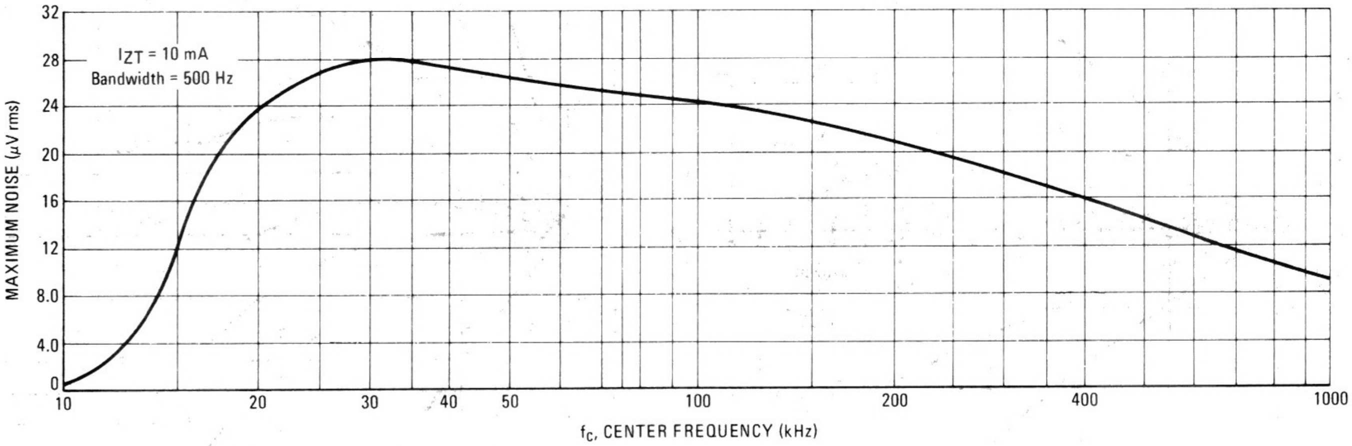


FIGURE 6 — DISTRIBUTION OF MAXIMUM GENERATED NOISE



NOTE 1:

Voltage Variation (ΔV_Z) and Temperature Coefficient.

All reference diodes are characterized by the "box method". This guarantees a maximum voltage variation (ΔV_Z) over the specified temperature range, at the specified test current (I_{ZT}), verified by tests at indicated temperature points within the range. This method of indicating voltage stability is now used for JEDEC registration as well as for military qualification. The former method of indicating voltage stability — by means of temperature coefficient — accurately reflects the voltage deviation at the temperature extremes, but is not necessarily accurate within the temperature range because reference diodes have a nonlinear temperature relationship. The temperature coefficient, therefore, is given only as a reference.

NOTE 2:

Zener Impedance Derivation

The dynamic zener impedance, Z_{ZT}, is derived from the 60-Hz ac voltage drop which results when an ac current with an rms value equal to 10% of the dc zener current, I_{ZT}, is superimposed on I_{ZT}. Curves showing the variation of zener impedance with zener current for each series are given in Figure 5. A cathode-ray tube curve-trace test on a sample basis is used to ensure that each zener characteristic has a sharp and stable knee region.

NOTE 3:

These graphs can be used to determine the maximum voltage change of any device in the series over any specific temperature range. For example, a temperature change from +25 to +50°C will cause a voltage change no greater than +23 mV or −23 mV for 1N2620, as illustrated by the dashed lines in Figure 1. The boundaries given are maximum values. For greater resolution, expanded views of the shaded areas in Figures 1a, 2a, and 3a are shown in Figures 1b, 2b, and 3b respectively.

NOTE 4:

The maximum voltage change, ΔV_Z, in Figure 4 is due entirely to the impedance of the device. If both temperature and I_{ZT} are varied, then the total voltage change may be obtained by adding ΔV_Z in Figure 4 to the ΔV_Z in Figure 1, 2, or 3 for the device under consideration. If the device is to be operated at some stable current other than the specified test current, a new set of characteristics may be plotted by superimposing the data in Figure 4 on Figure 1, 2, or 3.