The reverse current is a function of the reverse voltage V_{R+} but for most practical purposes is zero until the reverse voltage approaches V_Z, the PN junction breakdown voltage, at which time the reverse current increases very rapidly. Since the reverse current is small for $V_R < V_Z$, but great for $V_R > V_Z$ each of the current regions is specified by a different symbols. For the leakage current region, i.e. non-conducting region, between 0 volts and V_Z, the reverse current is denoted by the symbol I_R; but for the zener control region, $V_R \geq V_Z$, the reverse current is denoted by the symbol I_Z. I_R is usually specified at a reverse voltage $V_R \approx 0.8\ V_Z$.

The PN junction breakdown voltage, V_Z, is usually called the zener voltage, regardless whether the diode is of the zener or avalanche breakdown type. Commercial zener diodes are available with zener voltages from about 2.4V to 200V. For most applications the zener diode is operated well into the breakdown region (I_{ZT} to I_{ZM}). Most manufacturers give an additional specification of I_{ZK} (= 5.0 mA in Figure 1.6) to indicate a minimum operating current to assure reasonable regulation.

This minimum current I_{ZK} varies in the various types of zener diodes and, consequently, is given on the data sheets. The maximum zener current I_{ZM} should be considered the maximum reverse current recommended by the manufacturer. Values of I_{ZM} are also given in the data sheets for all types.

Between the limits of I_{ZK} and I_{ZM}, which are 5 mA and 1400 mA (1.40 Amps) in the example of Figure 1-6, the voltage across the diode is essentially constant, and $\approx V_Z$. This plateau region has, however, a large positive slope such that the precise value of reverse voltage will change slightly as a function of I_Z. For any point on this plateau region one may calculate an impedance using the incremental magnitudes of the voltage and current. This impedance is usually called the zener impedance Z_Z, and is specified for most zener diodes. Most manufacturers measure the maximum zener impedance at two test points on the plateau region. The first is usually near the knee of the zener plateau, Z_{ZK}, and the latter point near the midrange of the usable zener current excursion. Two such points are illustrated in Figure 1-6.

This section was intended to introduce the reader to a few of the major terms used with zener diodes. A complete description of these terms may be found in chapter four. In chapter four a full discussion of zener leakage, D.C. breakdown, zener impedance, temperature coefficients, and many other topics may be found.