**1.5**

**Darlington**-Pair Amplifier

***Character****istic*

The main characteristics of the Darlington-Pair amplifier are: i) Its input impedance is very high. ii) Its output impedance is very low iii) Its voltage gain is approximately equal to unity. iv) Its current gain is very very high. The Darlington-Pair amplifier is shown in Figure 1.41.

to+Vcc

***Fig. 1.41. The Darlington-Pair amplifier* Supp**ose B, and B2 are the current gains of each transistor.

Now, Ic = ici + Iċ2 .

Ic = BilB1 + B21B2 w Ice Bilgi + BZ(IE) *C*: IP2 - 161) Ic= Bilgi+B2(b + 1) 181 : le = 13:+1) ) Ic= Bilbi+ B.Balbi +'B2/Bq4 Ic= Ibi[Bi+B2+ Biß2].

Ic = Bi + B2+ BIB2 min **IB1**

Thus, Bert. = B1 + B2+ BiB2.

If Bi= 100 = B2, then Berf = 100 + 100 + 100 x 100

Bere = 10200.

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Since its current gain is very high, the Darlington-Pair amplifier is termed a super-beta transistor.

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