10-4-4 PUSH–PULL CONVERTER (DERIVED FROM STEP-DOWN CONVERTER)

Figure 10-13*a* shows the circuit arrangement for a push–pull dc–dc converter where the push–pull inverter of Chapter 8 is used to produce a square-wave ac at the input of the high-frequency transformer. The PWM switching scheme described by Fig. 10-5 is used to regulate the output voltage. A center-tapped secondary is used, which results in only one diode voltage drop on the secondary side.

In Fig. 10-13*a*, when T_1 is on, D_1 conducts and D_2 gets reverse biased. This results in $v_{oi} = (N_2/N_1)V_d$ in Fig. 10-13*b*. Therefore, the voltage across the filter inductor is given as

$$v_L = \frac{N_2}{N_1}V_d - V_o \qquad 0 < t < t_{on} \tag{10-22}$$

and i_L through D_1 increases linearly as shown by Fig. 10-13*b*.

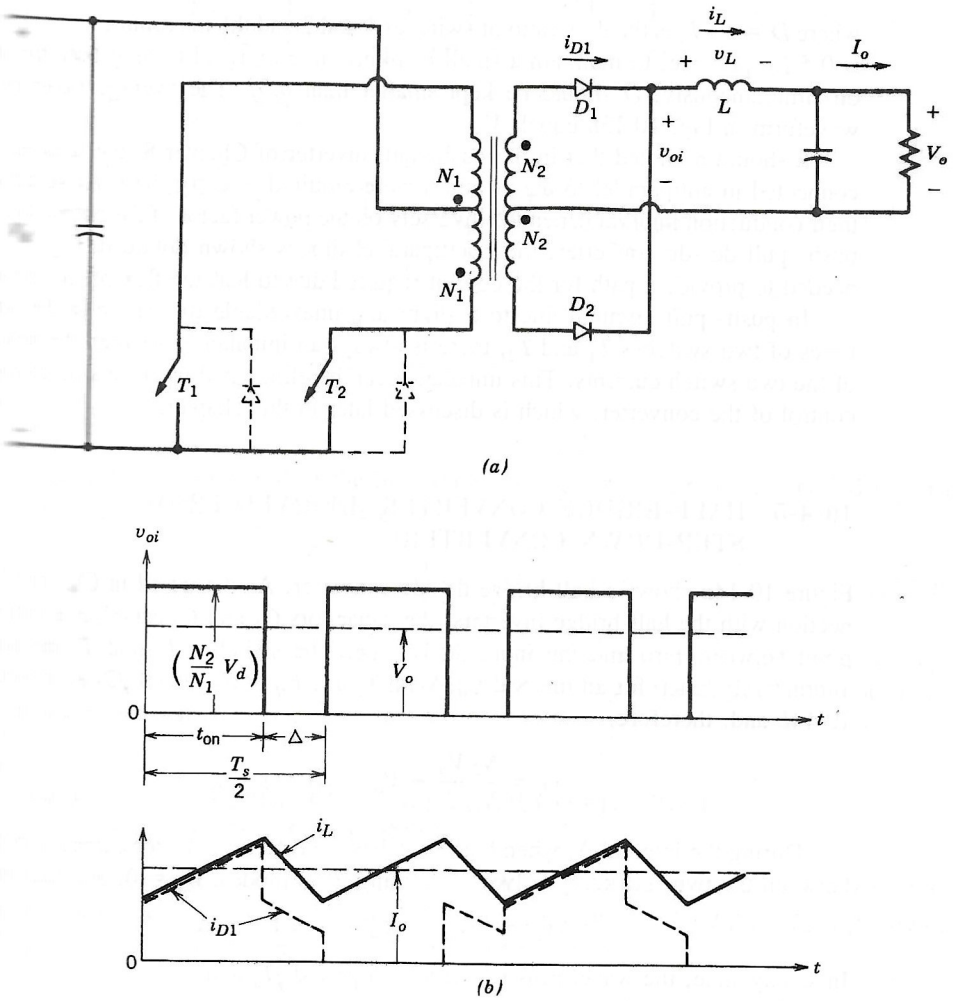

Figure 10-13 Push–pull converter.