

## How it works

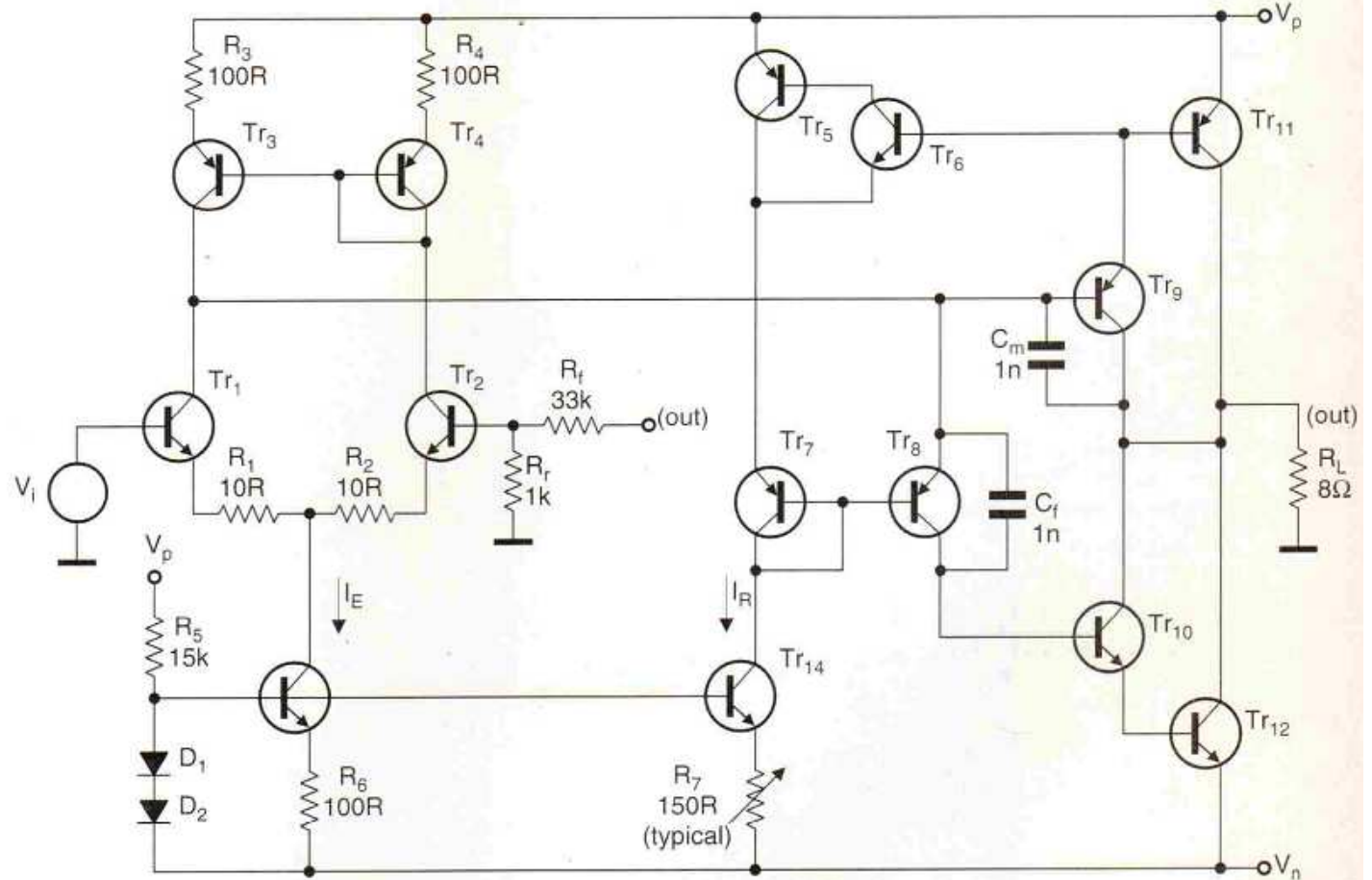
The simplified circuit diagram of the amplifier is depicted in **Fig. 1**. Its input stage, consisting of a differential transistor pair,  $Tr_{1,2}$ , and a current mirror,  $Tr_{3,4}$ , converts the differential input voltage to a single output current. This current feeds the base of driver transistor  $Tr_9$  and via the common base transistor  $Tr_8$  feeds the base of the driver transistor  $Tr_{10}$ . The driver transistors supply their emitter currents to power transistors  $Tr_{11}$  and  $Tr_{12}$  respectively.

Biasing and class-AB control are achieved by means of a bias-control loop formed by  $Tr_{6,9}$ . Due to the buffer function of  $Tr_6$  the base-emitter voltage of the power transistor  $Tr_{11}$  is isolated from the bias control loop. This is done to avoid thermal or HF switching distortion problems mentioned earlier.

This design is based on complementary n-p-n/p-n-p transistors. Their parameters can be assumed equal to make the equations easier. The class AB control is based on the well-known geometric class-AB control law,

$$I_{C8} \times I_{C9} = I_R^2 \quad (2)$$

**Fig. 1.** Simplified circuit diagram of the Class-AB amplifier featuring new driver stage.



**Fig. 2.** Complete amplifier, as used for the PSpice simulations discussed in the article.