common-emitter amplifier is inherently high, but can be lowered by applying negative feedback.[3] As a result, the output resistance becomes inversely proportional to the transconductance, g_m, and the feedback factor,

$$R_{out} = \frac{1}{g_m \beta} \qquad (1)$$

In order to obtain a closed-loop gain of 34, the feedback factor must be 1/34.

For an output resistance of 30mΩ the transconductance should be approximately 1000A/V. This requires a cascade of at least three gain stages: an input transconductance stage and two current gain stages.

How it works

The simplified circuit diagram of the amplifier is depicted in **Fig. 1**. Its input stage, consisting of a differential tran-
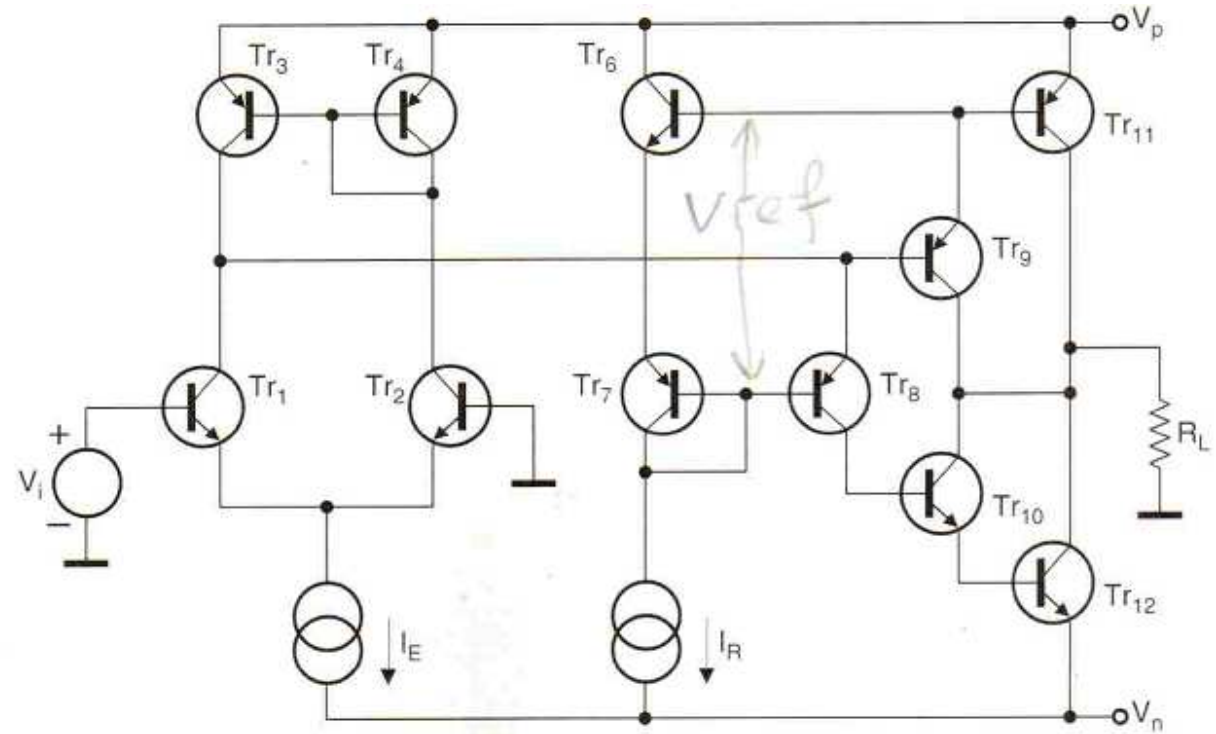

Fig. 1. Simplified circuit diagram of the Class-AB amplifier featuring new driver stage.