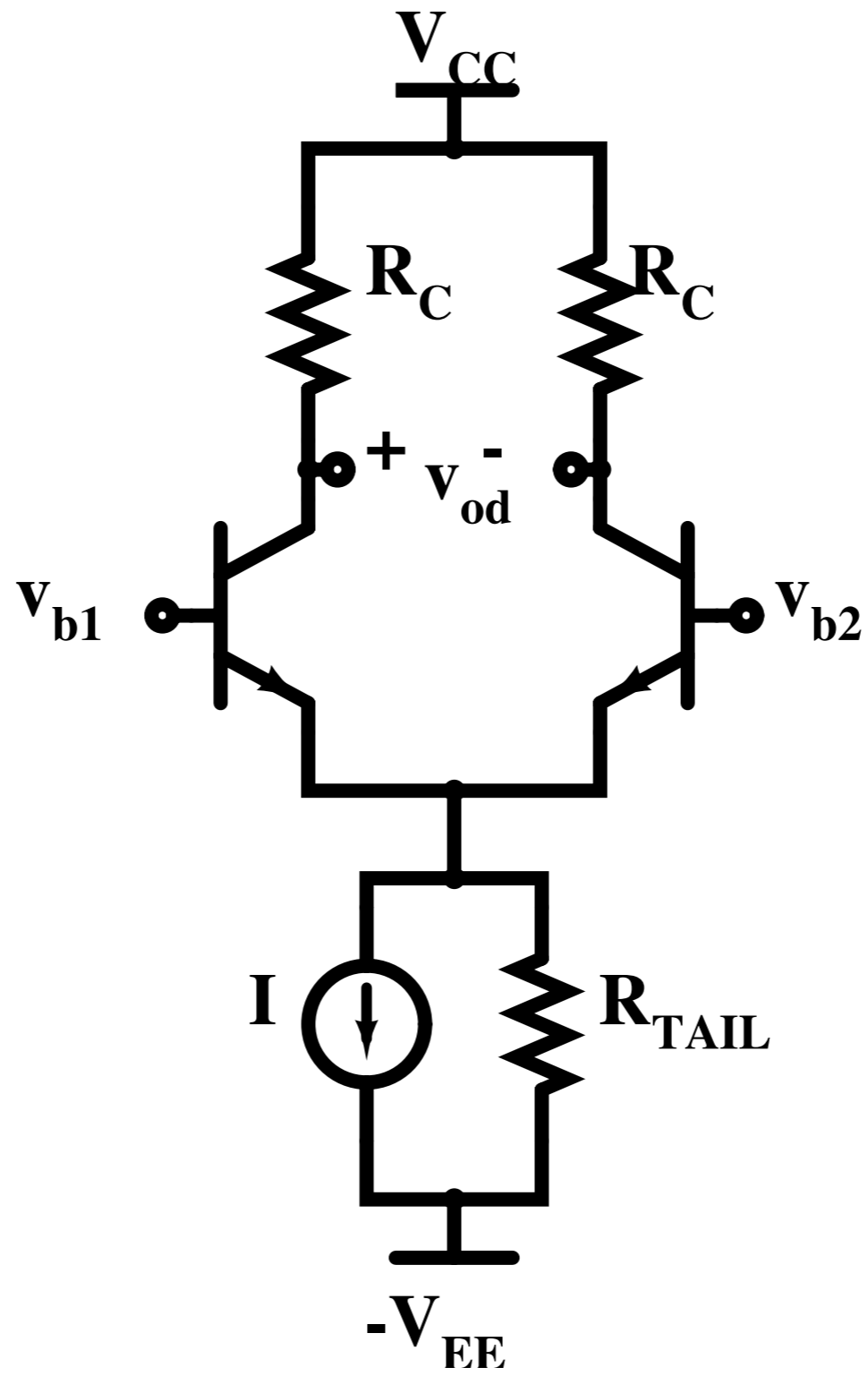
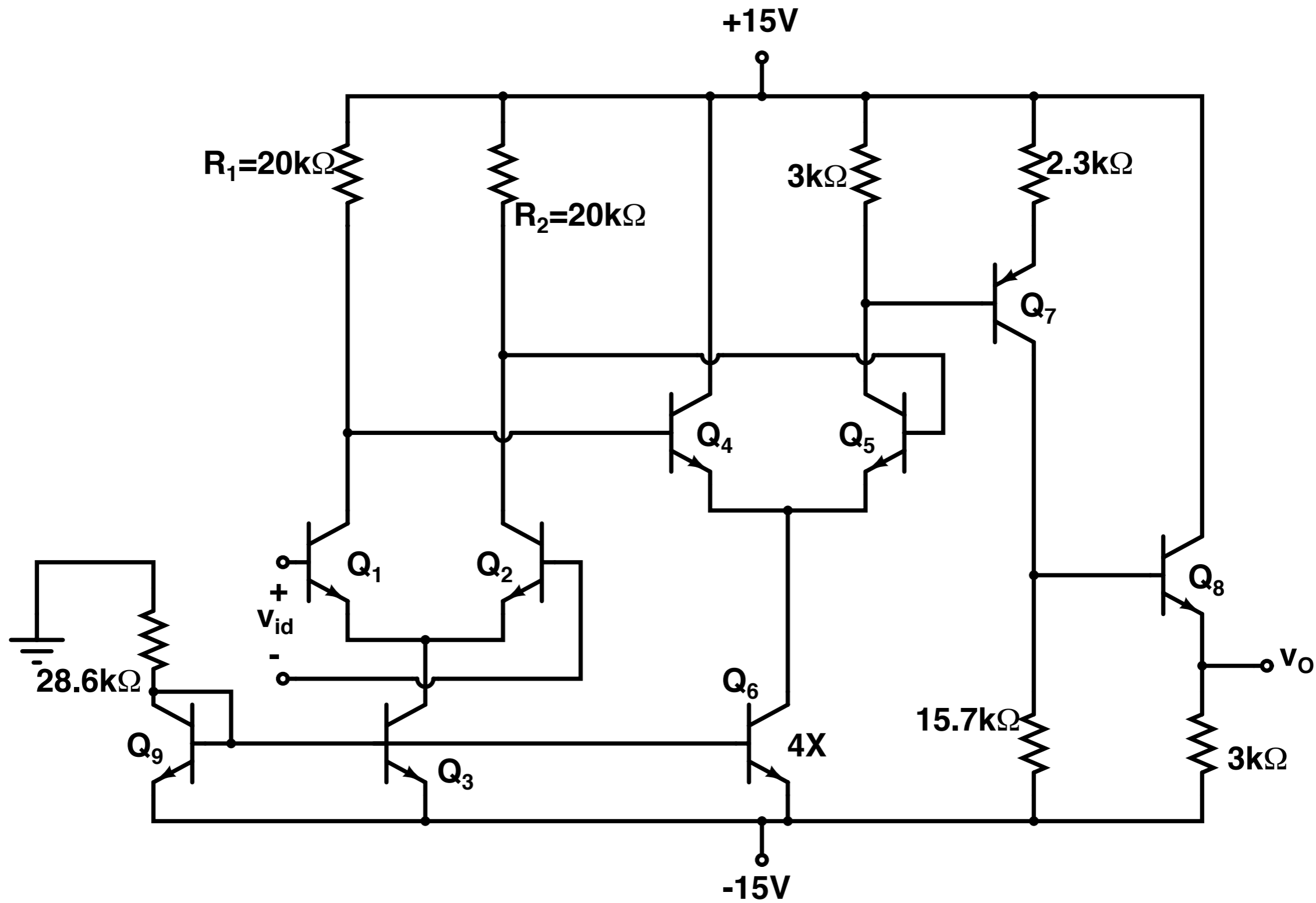
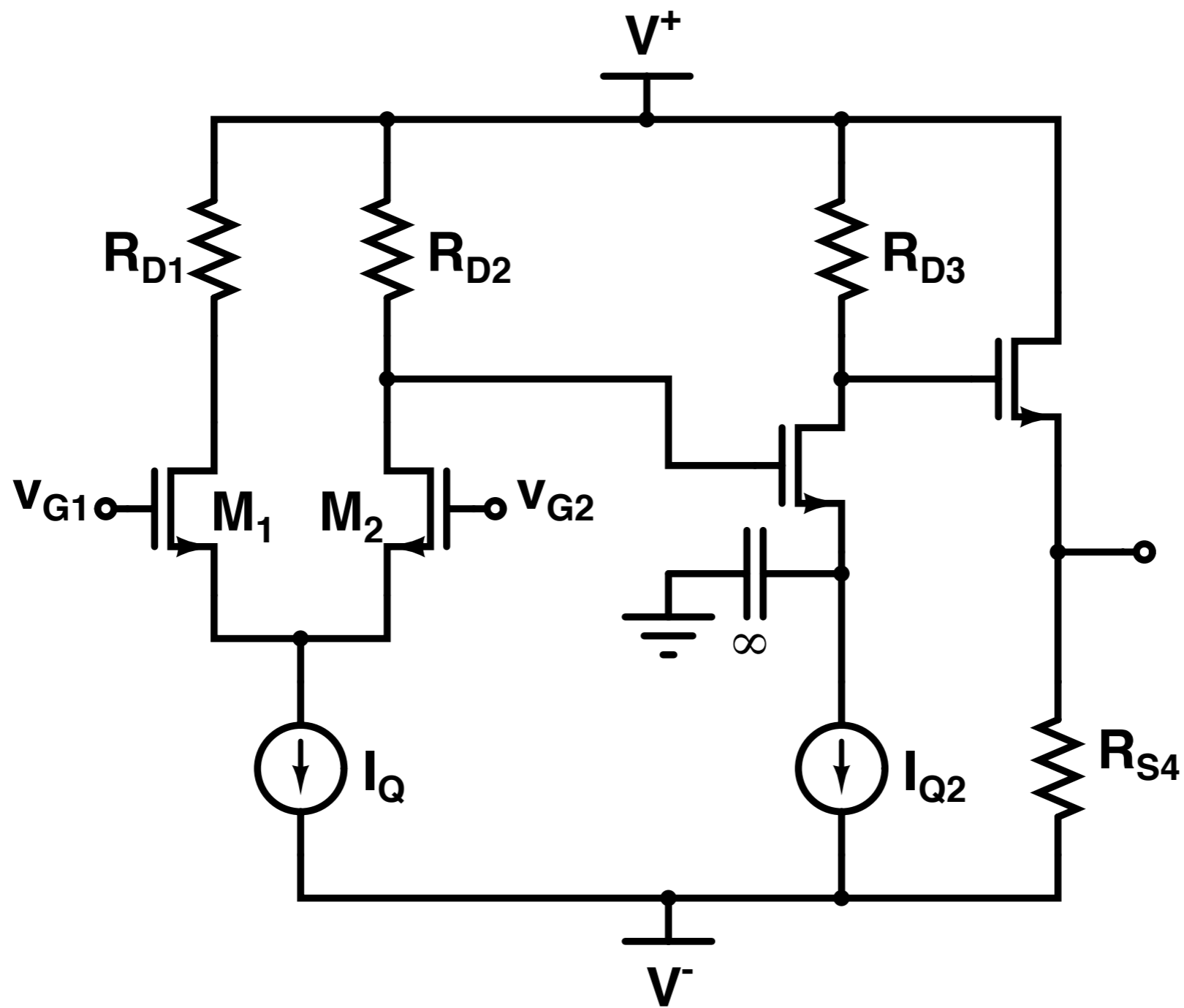


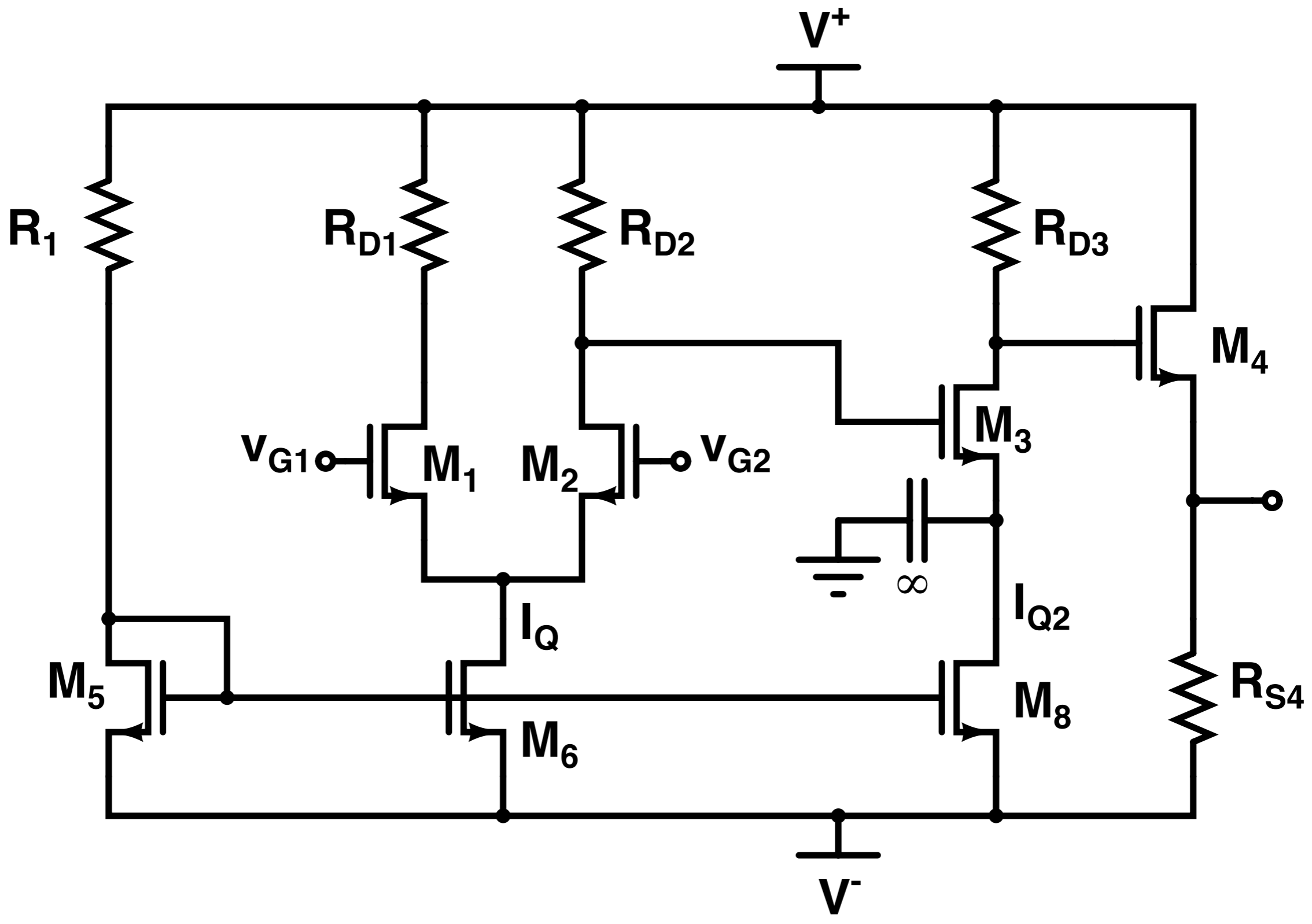
Differential Amplifiers & Active Loads

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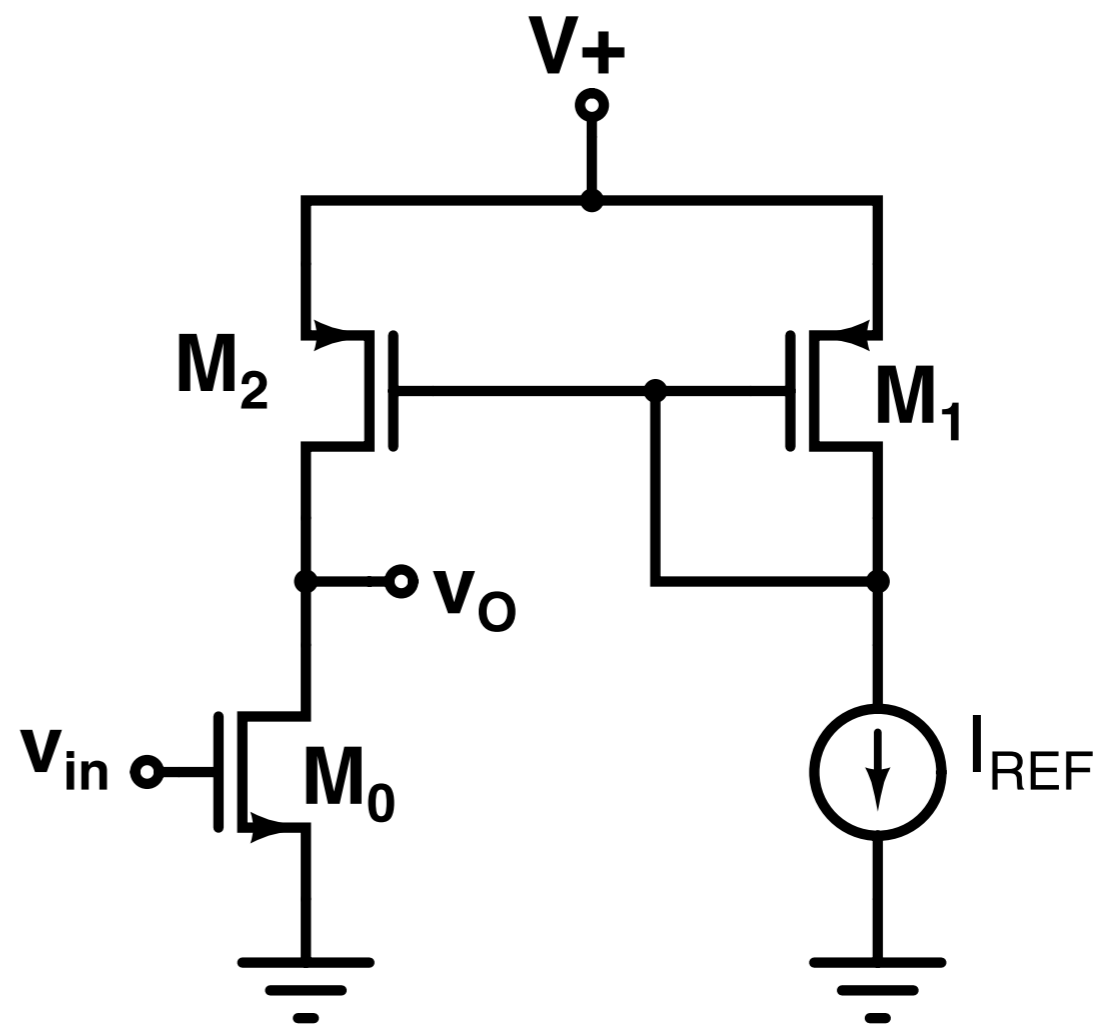
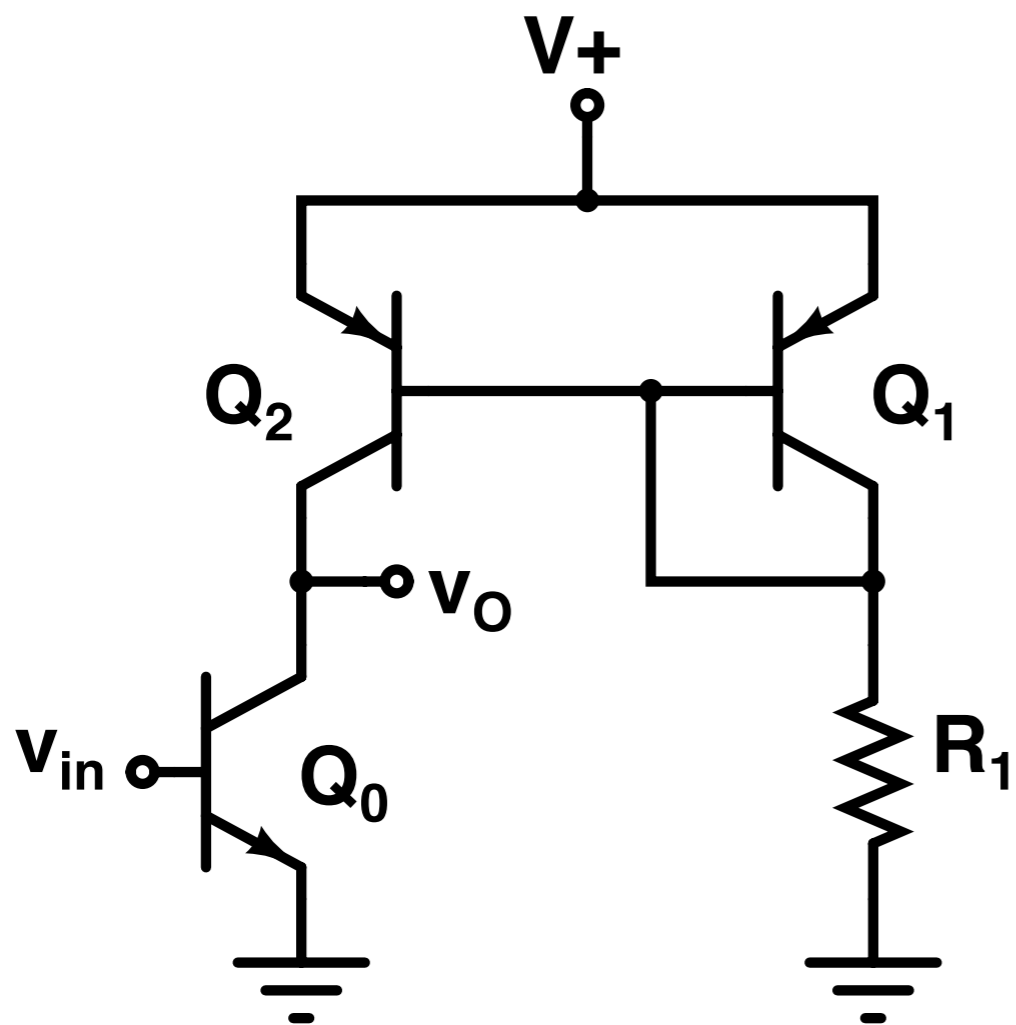




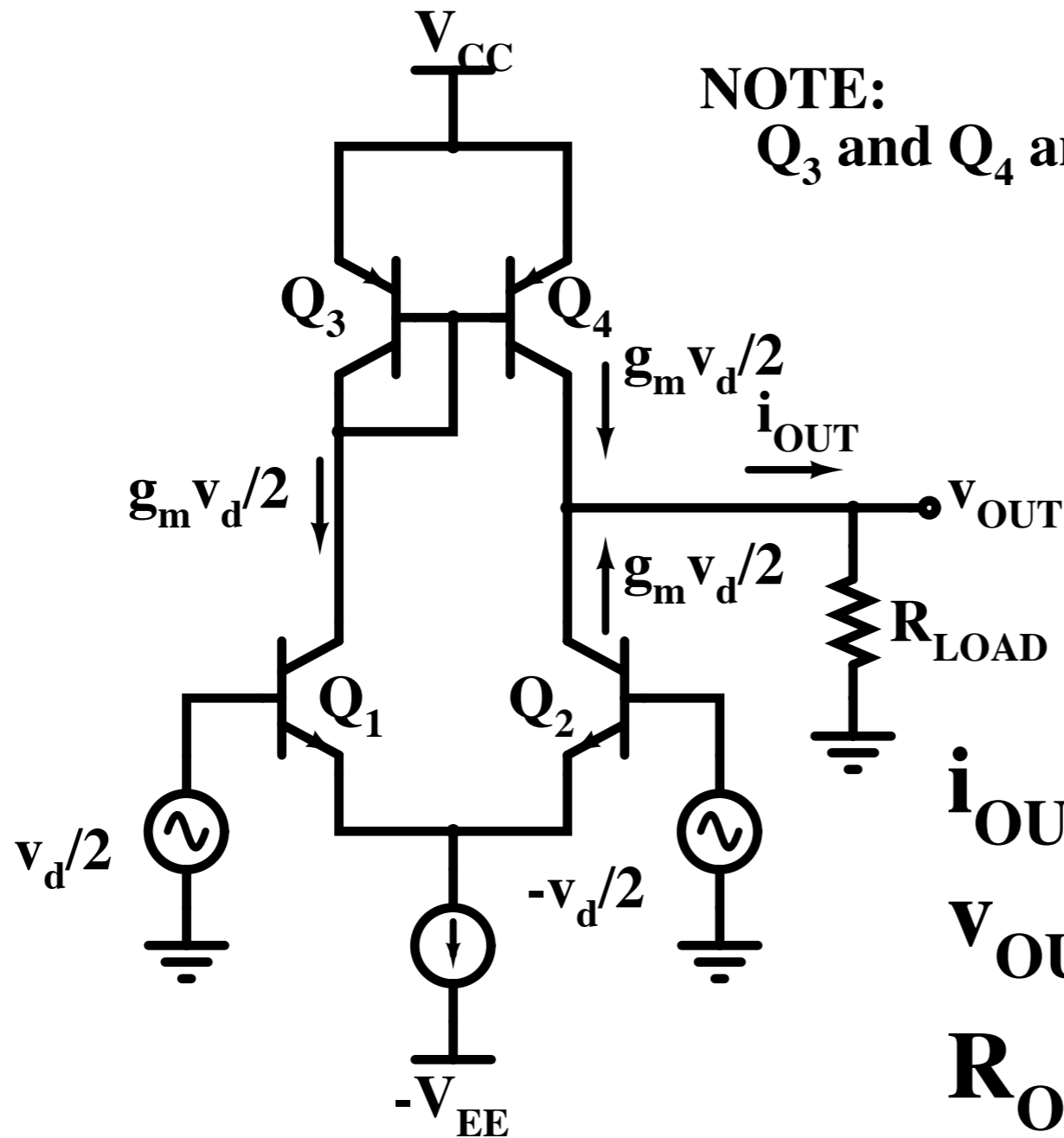




Simple active load



Differential amplifier with active load



NOTE:

Q_3 and Q_4 are PNP BJTs

$$i_{OUT} = g_m v_d$$

$$v_{OUT} = i_{OUT} R_O$$

$$R_O = R_{LOAD} || r_{O2} || r_{O4}$$