Lecture 19

↳ refer to the printout on Transistor Amp. Config.

Darlington Pair

Note:

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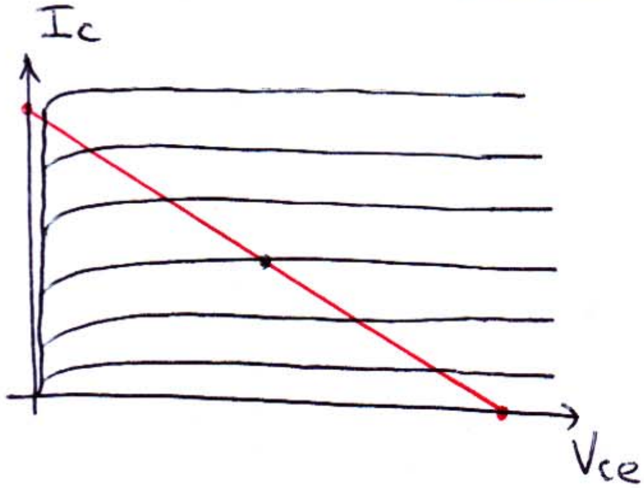
Power in transistors



class A amplifiers

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pros :

cons :

class B

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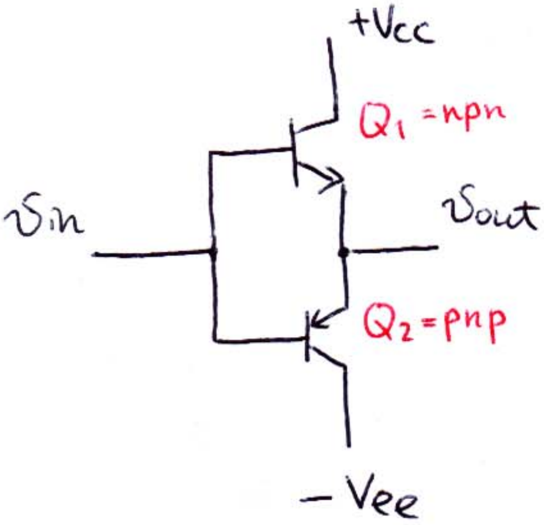
pros :

cons :

class C

-

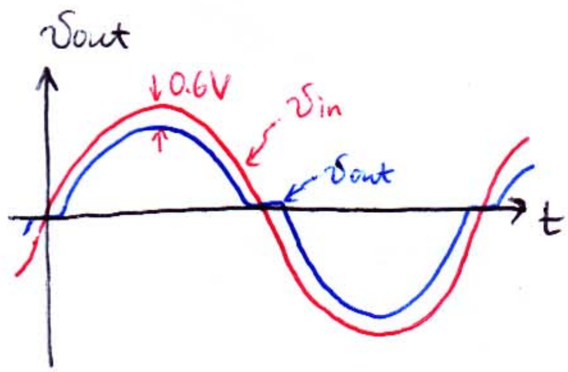
Notes on push-pull complimentary stage



- "complimentary" = both npn & pnp used
- "push-pull" only one transistor is ON (active), the other is OFF
- this is class B amplifier

- Note: both transistors cannot have forward biased be-juction simultaneously: $V_{be_1} = V_{be_2} = v_{in} - v_{out}$ b/c they are complementary

- $G \sim 1$ for volt. , can have $G \gg 1$ for current

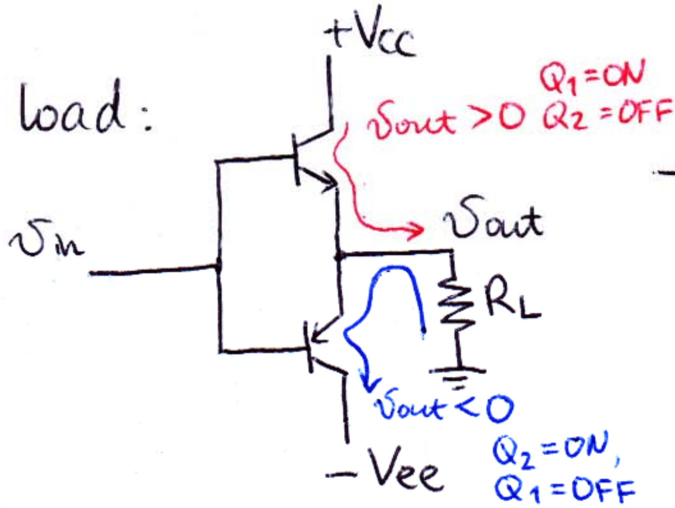


← Lab Manual, Fig 6.36

Note: there will be no cross-over distortons if no load is attached.

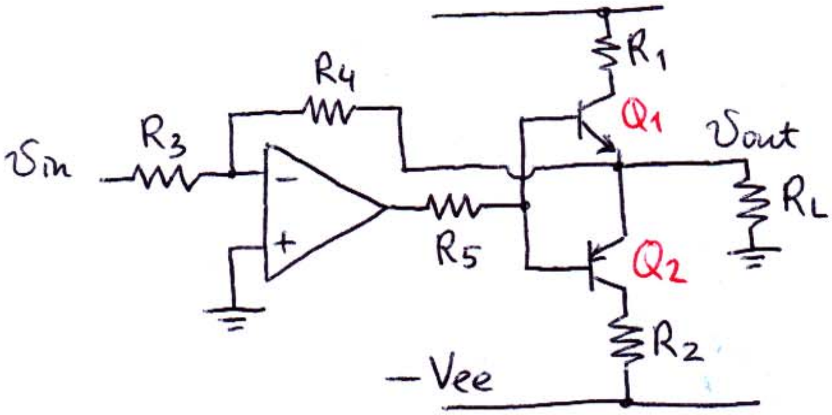
Q: why? A: no current can flow thru both $Q_{1,2}$, => $I_e \sim 0$, $V_{be} \sim 0$

with load:



- the current flows in the direction of emitter arrows for half the cycle, the other transistor is OFF

Push-pull amp with negative feedback to fix cross-over dist.



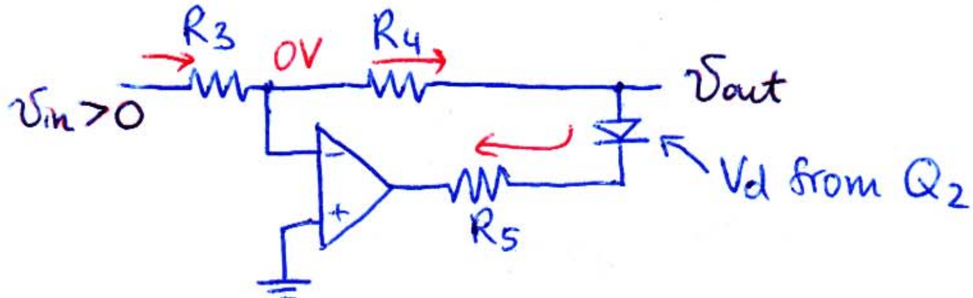
- basic idea: eliminate 0.6V diode drop using negative feedback

← Lab Manual, Fig 6.37 Exp. 6.10

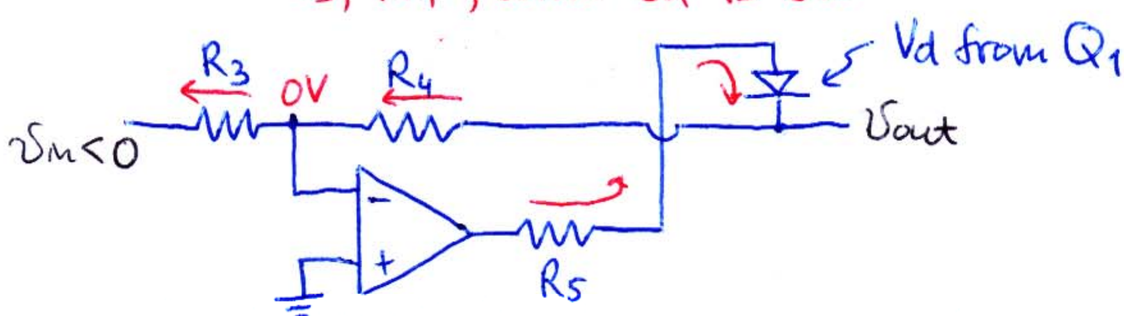
Steps to understanding this circuit:

1) negative feedback keeps $v_- = v_+$

2) when $v_{in} > 0$, the current flows to the right across R_3, R_4, and Q_2 is ON



3) when $v_{in} < 0$, the current flows to the left thru R_3, R_4, and Q_1 is ON



In both cases $v_{out} = -R_4 \cdot I = -R_4 \frac{v_{in}}{R_3}$

i.e. Vd does not come into the expression