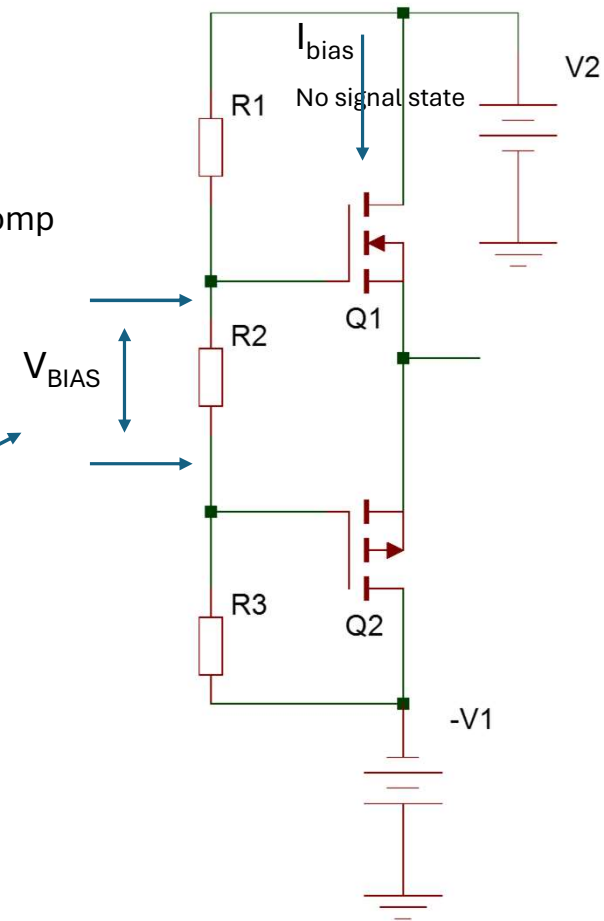


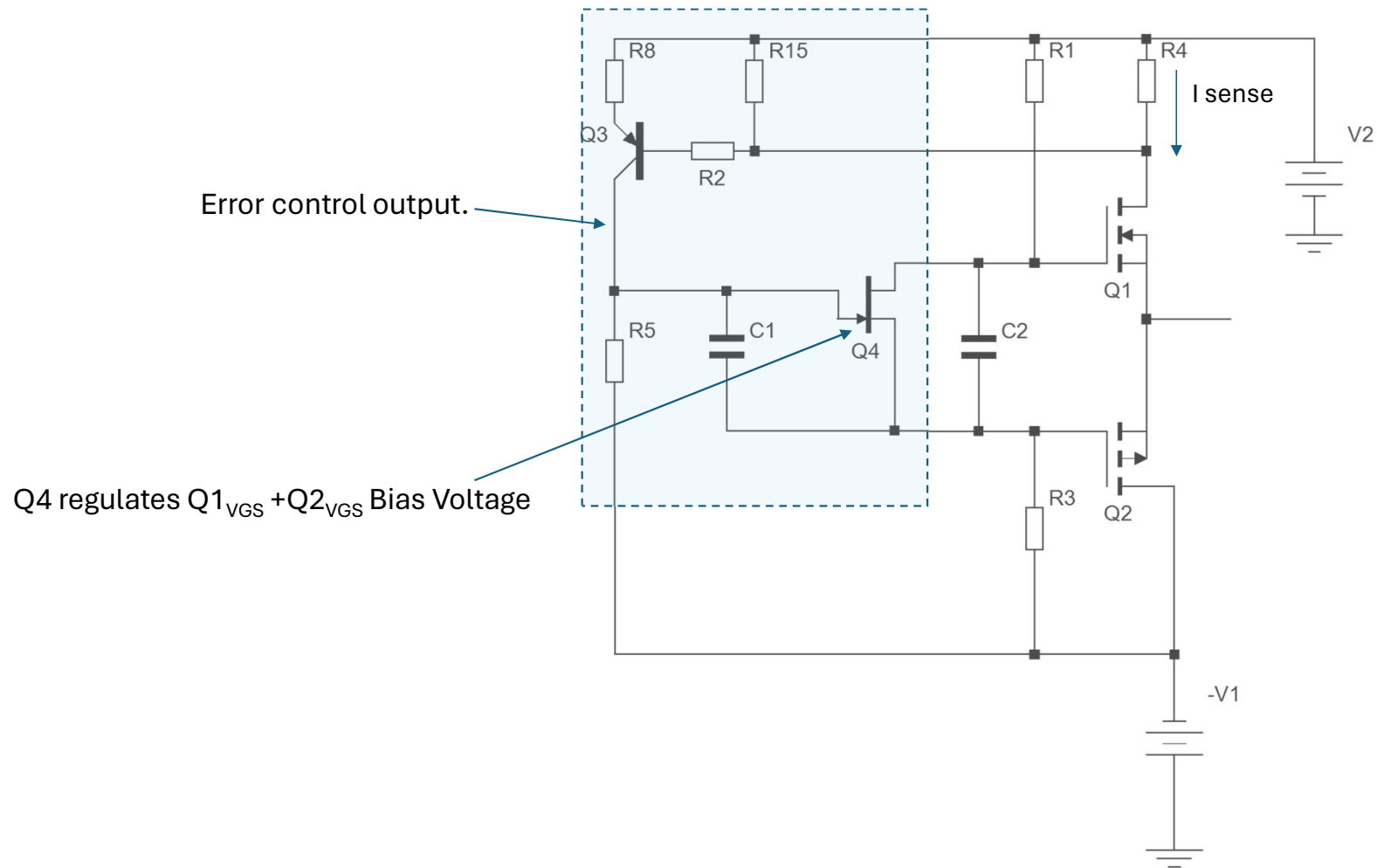
## Auto Biasing For Class AB Amplifier using MOSFETS

- Class AB MOSFET amplifier has excellent linearity and efficiency provided quiescent bias is optimal
  - Too low a bias creates crossover distortion
  - Excessive bias causes high dissipation
- Two ways to adjust for optimal bias
  - Trim and temperature comp  $V_{BIAS}$  for desired  $I_{bias}$ 
    - needs degeneration resistor, careful trimming and accurate temp comp
  - Sense  $I_{Bias}$  and regulate to appropriate  $V_{BIAS}$ 
    - Challenge to control  $I_{bias}$  during large signal amplification

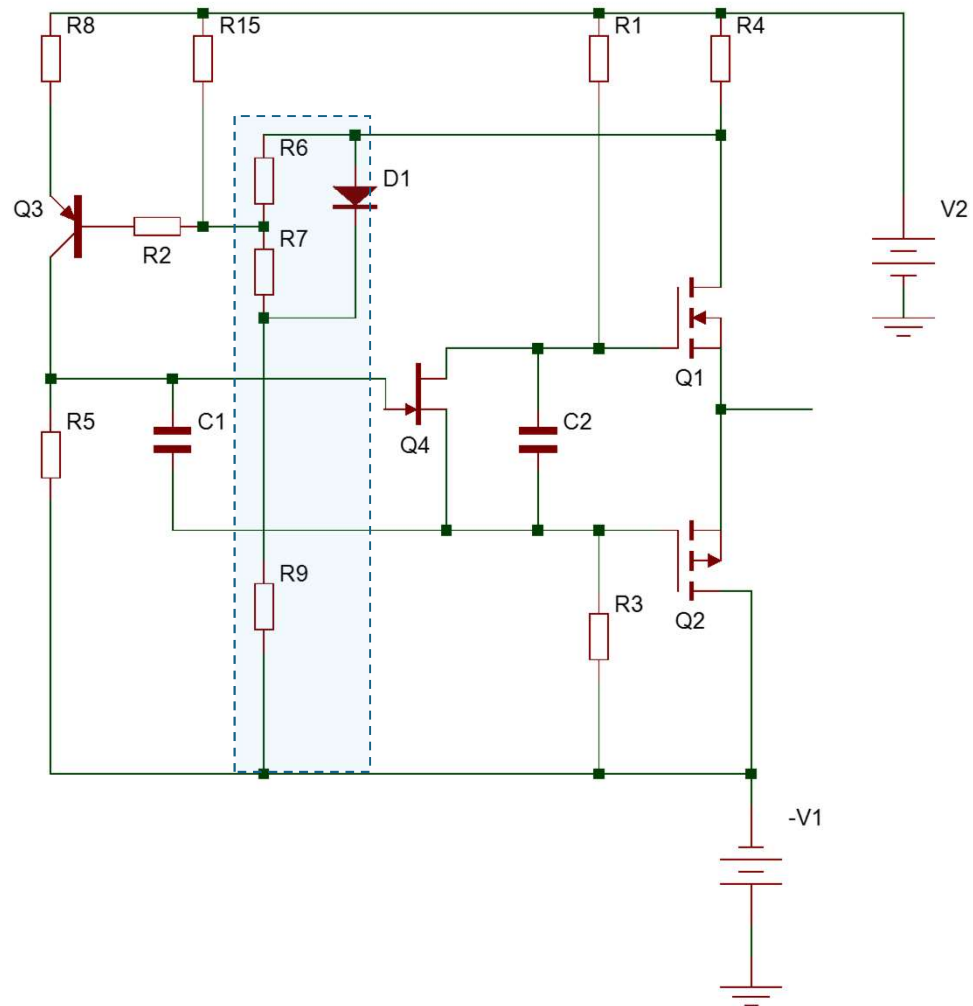
$$V_{BIAS} = V_{Q1\_GS} + V_{Q2\_GS}$$



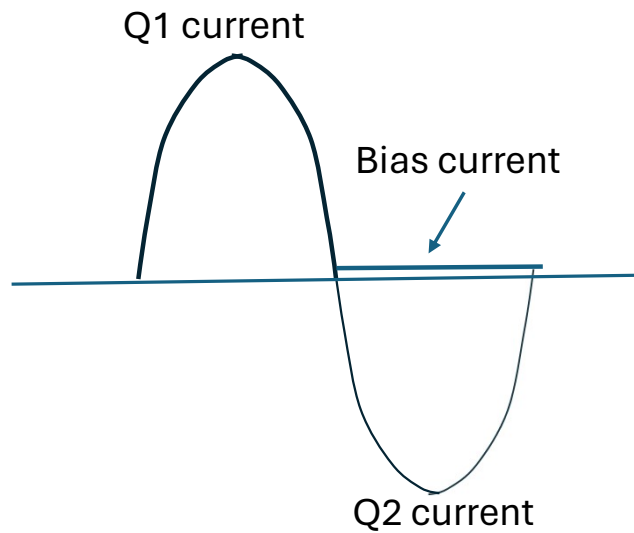
## Discrete implementation of bias regulator



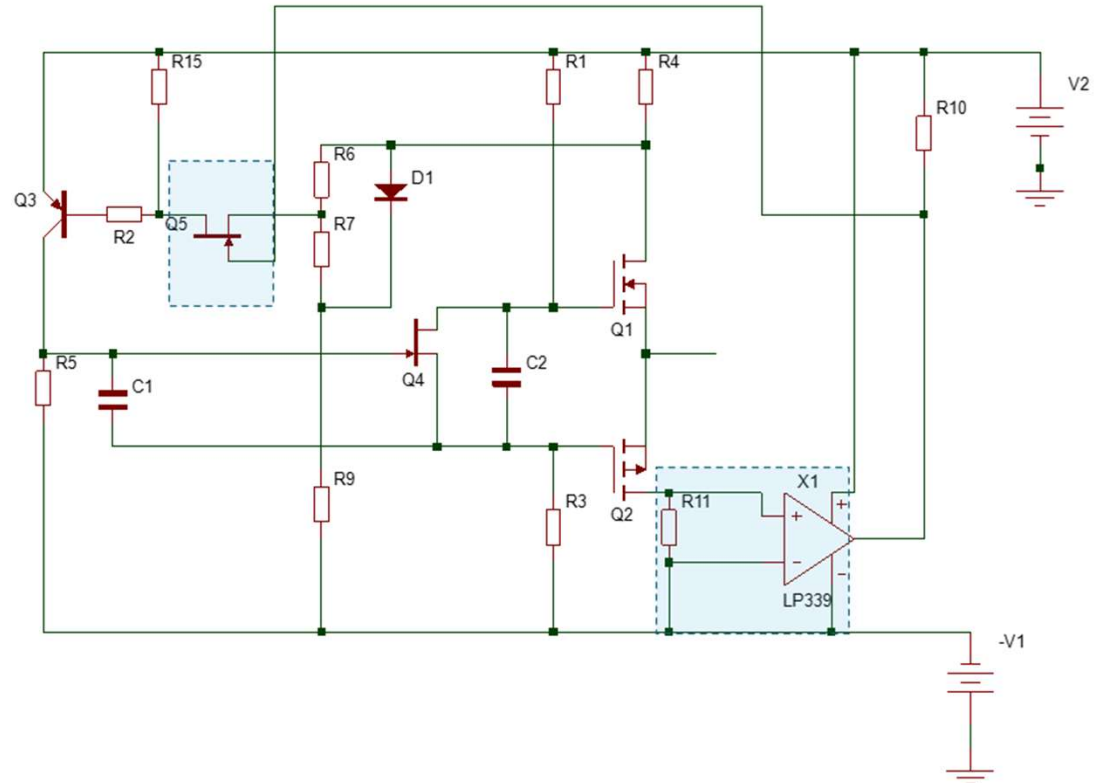
Reducing Q3 threshold to lower R4 value  
Increases efficiency and waveform headroom capacity



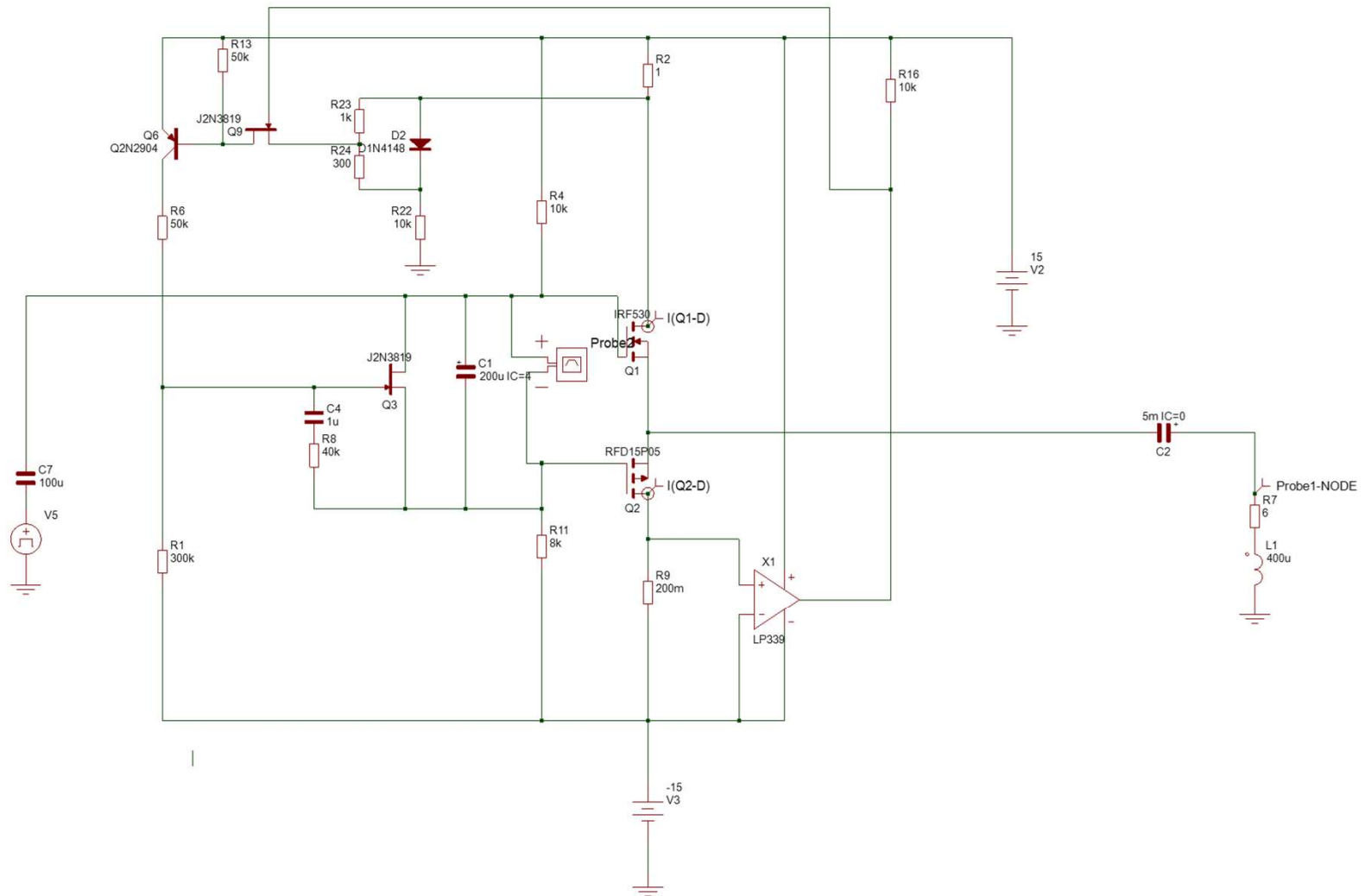
Sense Quiescent  $i$  of Q1 when Q2 is conducting above quiescent  $i$



Bias current is only monitored (Q5 on) when Q2 is conducting above bias threshold – the feedback is averaged by C2



# Complete Design



Q1 current

Q2 current

Output voltage

Regulated bias

