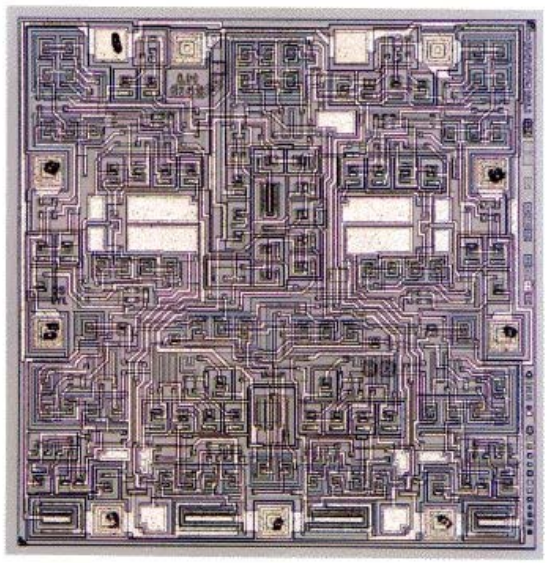
6.5 The Common Source Amp with Active Loads

Reading Assignment: *pp. 582-587*

Amplifiers are frequently made as **integrated circuits** (e.g., op-amps).



Although both BJTs and MOSFET integrated circuit amplifiers are implemented as ICs, we find that MOSFETs amplifiers are almost **exclusively** implemented as integrated circuits (i.e., **rarely** are MOSFET amps made of "discrete" components).

Making integrated circuit amplifiers has many positives, but a few negatives:

Positives:

The amplifier circuit can be quite **complex**, yet still **small and inexpensive**. Thus, **current sources** are "no big deal".

Negatives:

We **cannot** make large capacitors (i.e., **COUS**), so that DC blocking capacitors are not possible—this makes **bias solutions more complex**, particularly for multi-stage amplifiers.

Additionally, it if difficult to make **resistors** in integrated circuits. Instead, we use "resistors" constructed from transistors—so-called "**active loads**".

HO: Enhancement loads

HO: The Common Source Amp with an Active Load

The **sensitivity** problem of the previous circuit can be solved using a **current source** as a "load"

HO: The Common Source Amp with a Current Source