

Lecture 23 - Frequency Response of Amplifiers (I)

COMMON-SOURCE AMPLIFIER

December 1, 2005

Contents:

1. Introduction
2. Intrinsic frequency response of MOSFET
3. Frequency response of common-source amplifier
4. Miller effect

Reading assignment:

Howe and Sodini, Ch. 10, §§10.1-10.4

Key questions

- How does one assess the intrinsic frequency response of a transistor?
- What limits the frequency response of an amplifier?
- What is the "Miller effect"?

1. Introduction

Frequency domain is a major consideration in most analog circuits.

Data rates, bandwidths, carrier frequencies all pushing up.

Motivation:

- Processor speeds \uparrow
- Traffic volume $\uparrow \Rightarrow$ data rates \uparrow
- More bandwidth available at higher frequencies in the spectrum

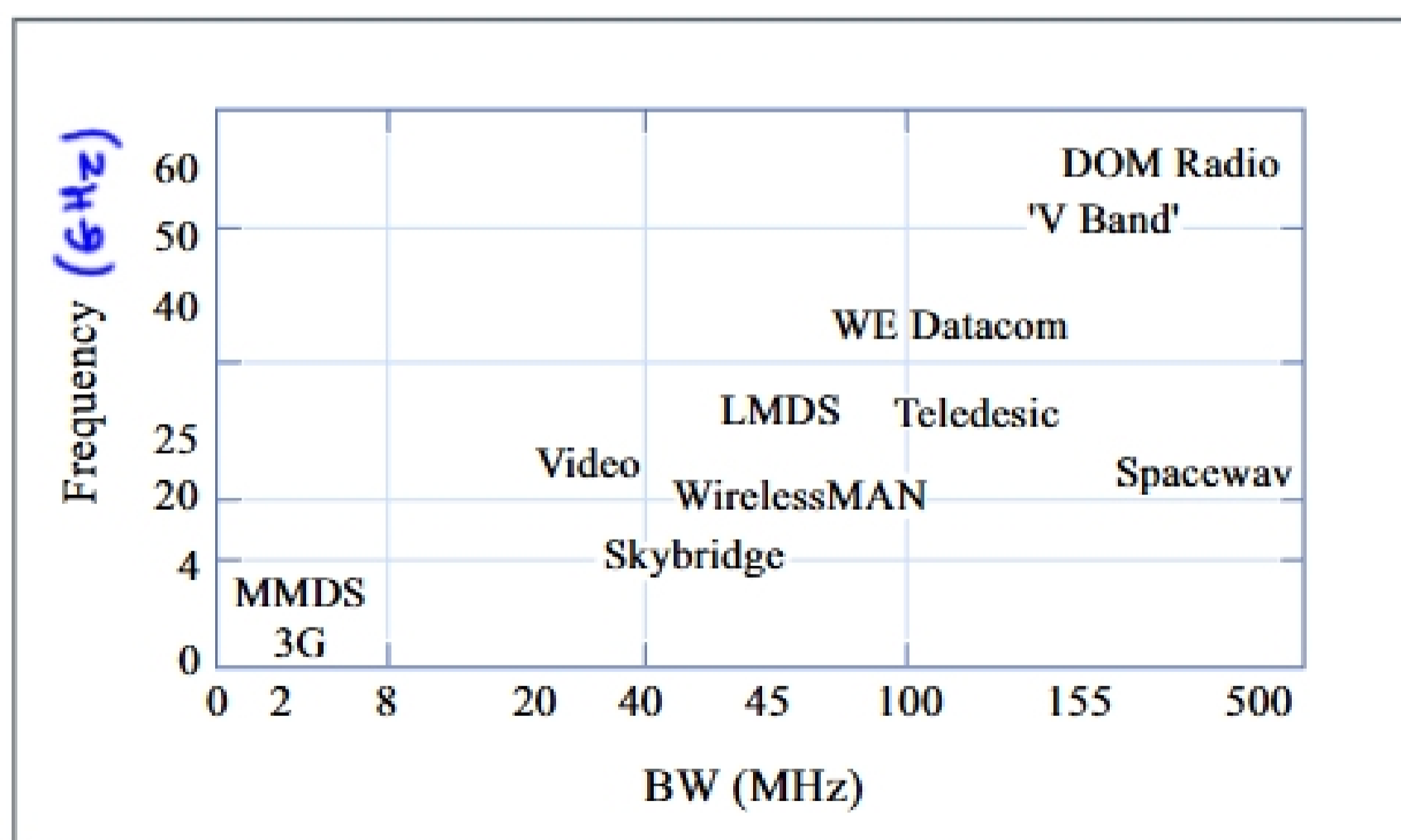


Figure by MIT OCW.