Slides Week 1, ECS 105, Spring 2001, A. R. Neureuther

Microelectronics Devices and Circuits

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Overview

Scope of EE 104 Value Added by Circuits



Course Goal

Build a Solid Foundation for Designing the Analog Subsytems in ICs

Analog Circuit Example



Fig. 7. Die photograph of the prototype ADC.

Digital Integrated Circuits

Overview and Circuit Value Added

Device Layout



Capacitance Analysis



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Device Capacitance



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Device Current



Device I versus V



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MOS Small Signal Model



Biopolar Layout



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Bipolar Physics



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Overview and Circuit Value Added

Biopolar I versus V



(b)

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Bipolar Models





Small Signal Amplifiers



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Phasors



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Overview and Circuit Value Added

Frequency Response – Bode Plot



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Overview and Circuit Value Added

Miller Approximation



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Overview and Circuit Value Added

Amplifier Configurations



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Multistage Amplifiers



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Share Current - Cascode



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Current Sources



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Voltage Sources



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Added © F

Complete Analog Circuits



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Laboratory 353 Cory

- MicroLinear BiCOMS Chip Set
- Device Characterization HP 4145
- SPICE Models and Circuit Analysis
- Characterization of Basic Amplifiers
- Frequency Response of Multistage
- Current and Voltage Sources