Lecture 10

Reference Design Inverter Schematics: Microcontroller & Communication Circuits

Objectives:

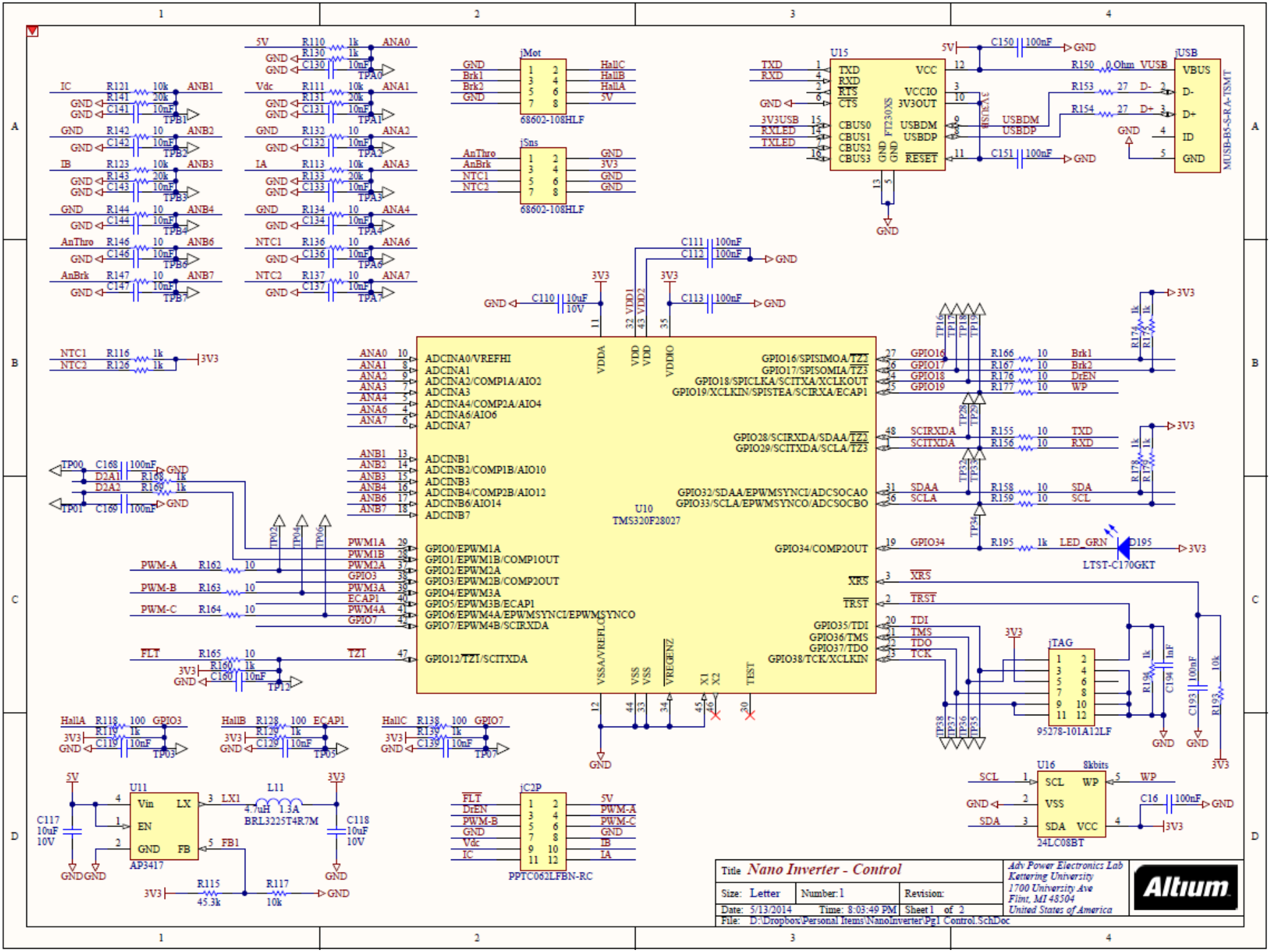
- Discuss Analog-to-Digital (A2D) conversion, the sample-and-hold process, and a basic R-2R Digital-to-Analog (D2A) circuit for obtaining a digital value.
- Discuss Nyquist-Shannon Sampling Theorem and the concept of aliasing.
- Examine RC filter values, cut-off frequencies, and phase distortion of sampled control signals.
- Discuss other peripheral circuits for the digital signal processor (DSP), such as the external EEPROM, communication circuits, and step-down supply.
- Discuss debugging circuits for monitoring digital or analog DSP signals.

Keywords:

Analog-to-Digital (A2D) conversion
Digital-to-Analog (D2A) conversion
R-2R Resistive Ladder circuit
Nyquist-Shannon Sampling Theorem
Signal Aliasing
RC filter response
External EEPROM
RS-232 serial communication
JTAG & ICSP programming ports
Digital Signal Processor (DSP)
Inter-Integrated Circuit (I2C) bus
Serial Peripheral Interface (SPI) bus

Overview of Inverter Control Schematics

Discuss the different sections of the schematic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