



Spartan™-3A / Spartan™-3AN

Out of the box, now what?

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Agenda

- Introduction to the Starter Kit
- Features, Capabilities, and Uses
- Pre-Loaded Demo
- Kit Contents
- Summary

Introduction

- Development kit for:
 - Spartan-3A FPGAs (HW-SPAR3A-SK-UNI-G)
 - Spartan-3AN FPGAs (HW-SPAR3AN-SK-UNI-G)
- Pre-loaded demo and many reference designs
- Enables low cost evaluation and prototyping
- Product web pages:
 - www.xilinx.com/s3astarter
 - www.xilinx.com/s3anstarter
- Available through Xilinx online store

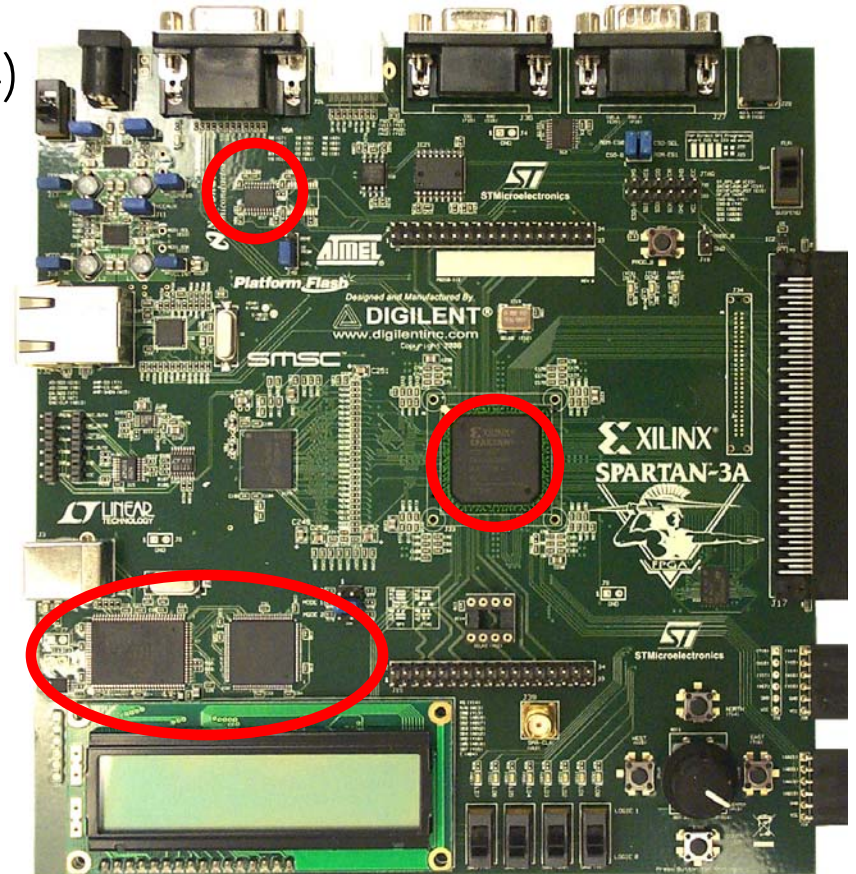


The Who and Why

- Complete, low cost design environment for:
 - Students new to Logic Design
 - Logic Designers new to FPGAs
 - FPGA Designers new to Xilinx
 - Xilinx Designers new to Spartan-3A / Spartan-3AN
- Compelling reasons to buy:
 - Rich feature set
 - Excellent value

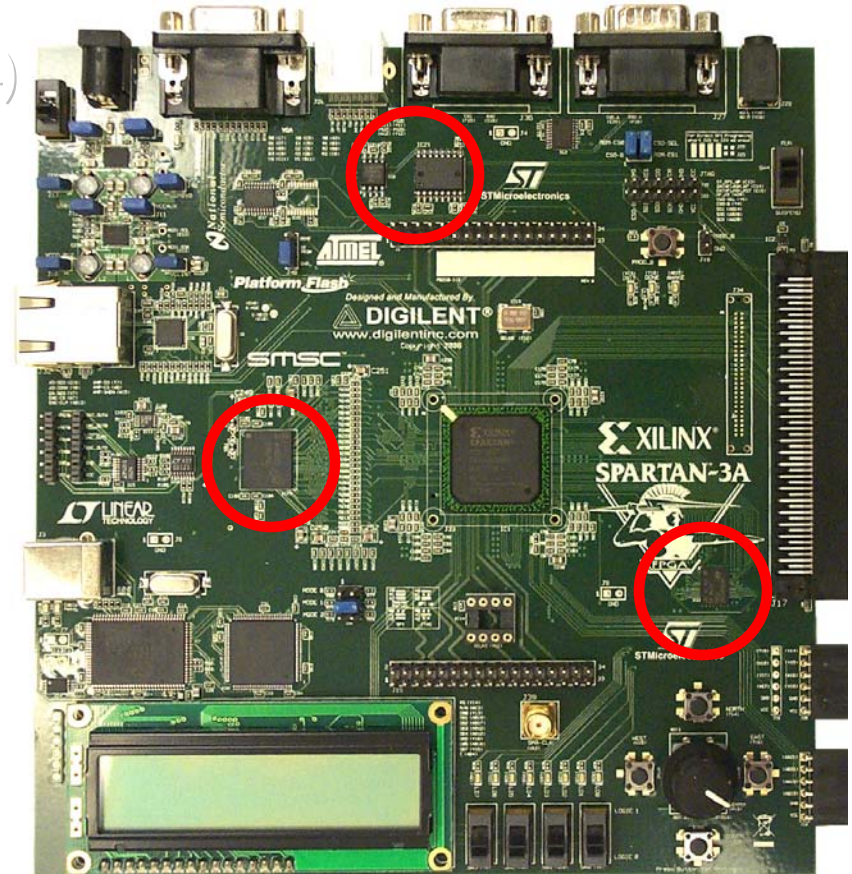
Features and Capabilities

- Xilinx Devices
 - Spartan-3A[N] (XC3S700A[N]-FG484)
 - Platform Flash (XCF04S-VOG20C)
 - Integrated USB programming
- Memory Devices
 - 32Mx16 DDR2 SDRAM
 - 32 Mbit parallel NOR flash
 - Two, 16 Mbit serial SPI flash
- Analog Interface Devices
 - 4-channel D/A converter
 - 2-channel A/D converter
 - Programmable gain AMP



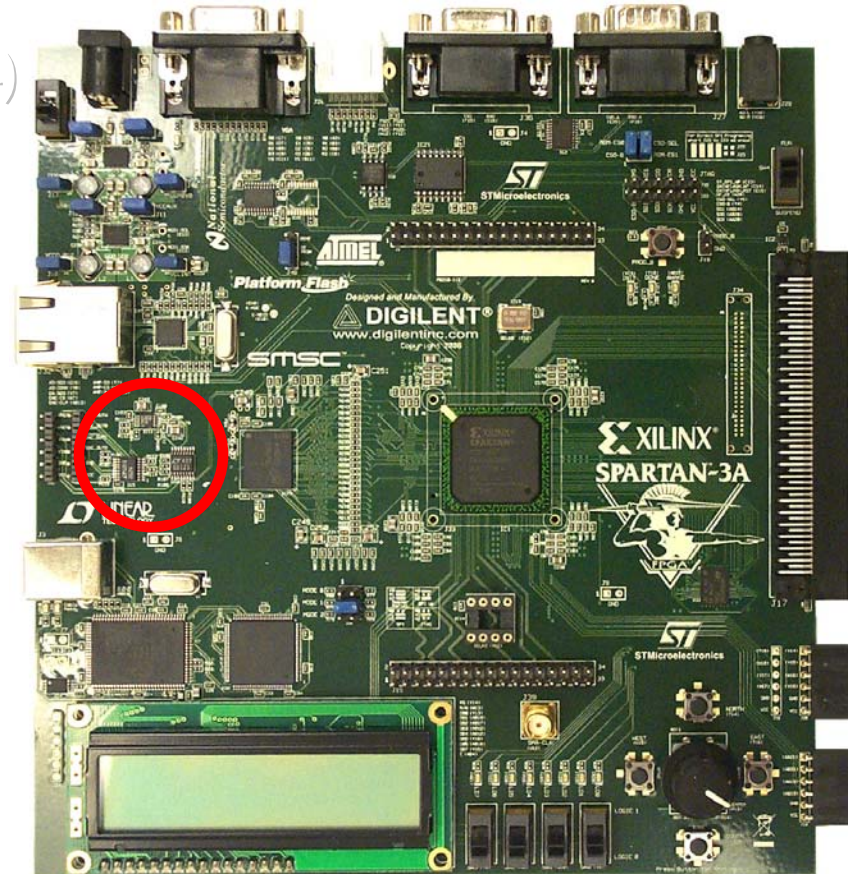
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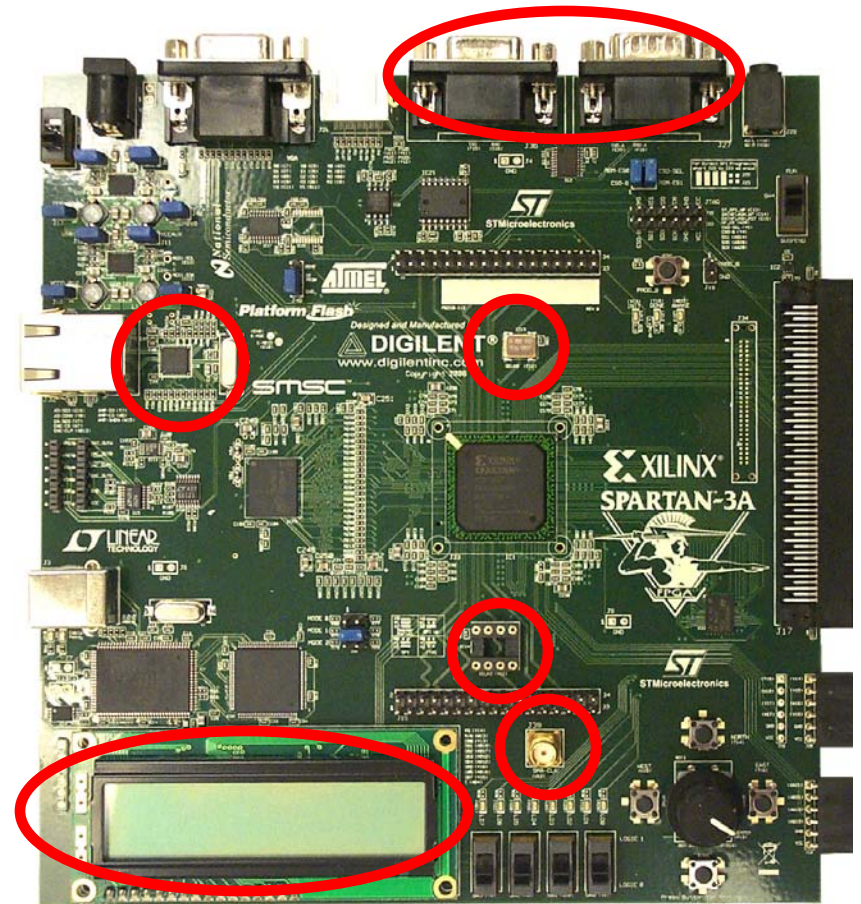
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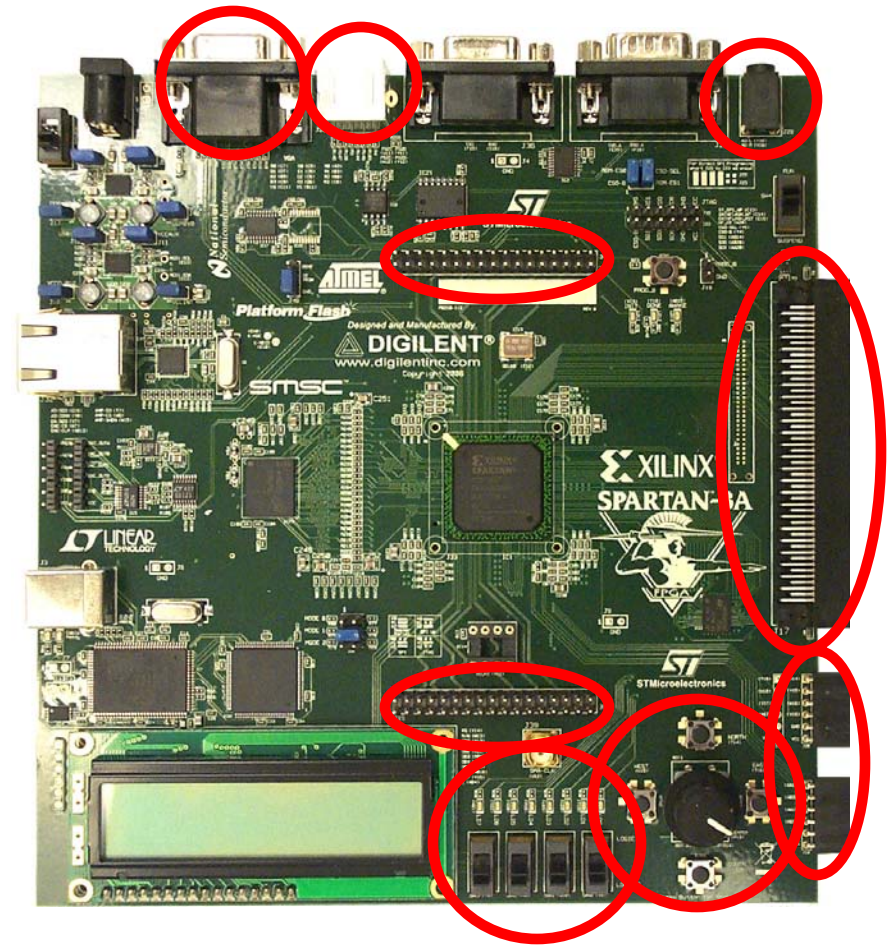
Features and Capabilities

- Peripheral Devices
 - Ethernet 10/100 PHY
 - Two RS232 ports
 - 16-character, 2-line LCD
 - 50 MHz oscillator, two user clocks
- Connectors
 - 15-pin VGA port (12-bit color)
 - Stereo mini-jack (PWM audio)
 - Buttons, switches, and LEDs
 - 100-pin expansion port
 - 6-pin expansion connectors
 - 24 user I/O on standard headers
 - PS/2 mouse/keyboard port



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Starter Kit Uses

- Prototype new ideas rapidly
 - Simple designs with on-board devices
 - Complex designs using expansion connectors
 - Over 20 expansion modules available
- Evaluate silicon features
 - Authentication using Device DNA serial number
 - Enhanced configuration modes and MultiBoot
 - Aggressive power management
 - Source synchronous interfaces

Pre-Loaded Demo

- The source for this demo is available for download from the reference design page
- For technical details, please see separate reference design documentation
- The demo generates audio-visual output and allows for user interaction
 - Manipulate bitmapped image in real time
 - MultiBoot to other FPGA configurations
 - Suspend mode

Pre-Loaded Demo Details

- PicoBlaze processes user inputs and programs the hardware peripherals to generate outputs
 - Video text from character mode video controller
 - Video bitmaps stored in parallel flash, and transformed using resampling
 - Audio waveforms stored in serial flash, played back using digital I/O with XAPP154 technique
- User interface provided by on-screen menus

Kit Contents

- This product includes
 - Development board
 - Universal power supply
 - Evaluation software
 - Programming cable
- Product documentation and reference designs available for download from the Xilinx website



Summary

- The Spartan-3A / Spartan-3AN Starter Kit is a complete development solution for instant access to capabilities of the Spartan-3 Generation
- Xilinx Part Number:
 - Spartan-3A FPGAs (HW-SPAR3A-SK-UNI-G)
 - Spartan-3AN FPGAs (HW-SPAR3AN-SK-UNI-G)
- Product web pages:
 - www.xilinx.com/s3astarter
 - www.xilinx.com/s3anstarter
 - Product features and documentation
 - Reference designs



In Case of Emergency

- The board is shipped with all four non-volatile memory devices pre-programmed
 - 4-Mbit Xilinx platform flash, xcf04s holds board test
 - 16-Mbit Atmel serial flash, at45db161d holds demos
 - 16-Mbit ST serial flash, m25p16 holds audio
 - 32-Mbit ST parallel flash, m29dw323 holds graphics
- If you wish to restore the board to its original configuration, follow these steps...

Initial State Restore (1)

- Remove ALL jumpers
- Install jumpers at J9, J10, J11, J12, J13, J40, J41, and J42 to connect the power supplies
- Install three jumpers on J26 as shown on the board to select master serial configuration mode
- Install one jumper on J46, connecting CE_PROM to GND to enable the Platform Flash device

Initial State Restore (2)

- Turn on power; use iMPACT in JTAG mode to program xcf04s device with xcf04s.mcs file
- At this point, you may cycle power or press the PROG button to confirm the board test design loads from the Platform Flash using master serial configuration mode
- Remove the jumper from J46 to disable the Platform Flash device

Initial State Restore (3)

- Install one jumper on J16 to hold PROG# asserted for DirectSPI programming in iMPACT
- Install two jumpers on J1, so they are horizontal, selecting the ST serial flash for SPI configuration
- Install four jumpers, shorting J25 to J23 as shown on the board, to enable DirectSPI programming
- Use iMPACT in DirectSPI mode to program m25p16 device with st25p16.mcs file

Initial State Restore (4)

- Rotate jumpers on J1 by 90 degrees, so they are vertical, selecting the Atmel serial flash for SPI configuration
- Use iMPACT in DirectSPI mode to program at45db161d device with at45db161.mcs file
- Remove one jumper from J26, to select SPI configuration mode, as shown on the board

Initial State Restore (5)

- Remove the four jumpers that short J25 to J23
- Connect the RS232 DCE port on the board to a PC using a standard serial cable and open the supplied HyperTerminal session
- Remove the jumper on J16 to de-assert PROG#
- In HyperTerminal, press the "4" key to initiate a MultiBoot to the parallel flash programmer

Initial State Restore (6)

- In HyperTerminal, press "E" to erase the parallel flash. Press "Y" to confirm the erase
- In Hyperterminal, press "P" to program the device
- Use "Send Text File" from the HyperTerminal Transfer menu, enable the file filter to show "All files (*.*)" and select the m29dw323.mcs file
- The programming may take up to 30 minutes

Initial State Restore (7)

- When parallel flash programming is complete, press the rotary knob
- The board is now restored to the original state and the power-on demo should be running
- If you have a Spartan-3AN Starter Kit, you may also want/need to restore the ISF demo design; consult the demo design documentation on the Spartan-3AN Reference Design web page