OVERVIEW

The TINALab Spartan-II FPGA Development Kit provides an easy-to-use, low-cost evaluation platform for developing designs and applications based on the Xilinx Spartan-II FPGA family.

The kit can be physically connected to the User Port of TINALab II or can be used stand alone with an external power supply, a Xilinx JTAG programming cable and the free Xilinx ISE WebPACK software. The board is mounted with a 144-pin TQFP (thin quad flat-pack) Xilinx Spartan-II device (up to 100,000-gate XC2S100-5TQ144) gives users high performance, abundant logic resources, and a rich feature set. Features include block RAM, distributed RAM, 16 selectable I/O standards, and four DLLs.
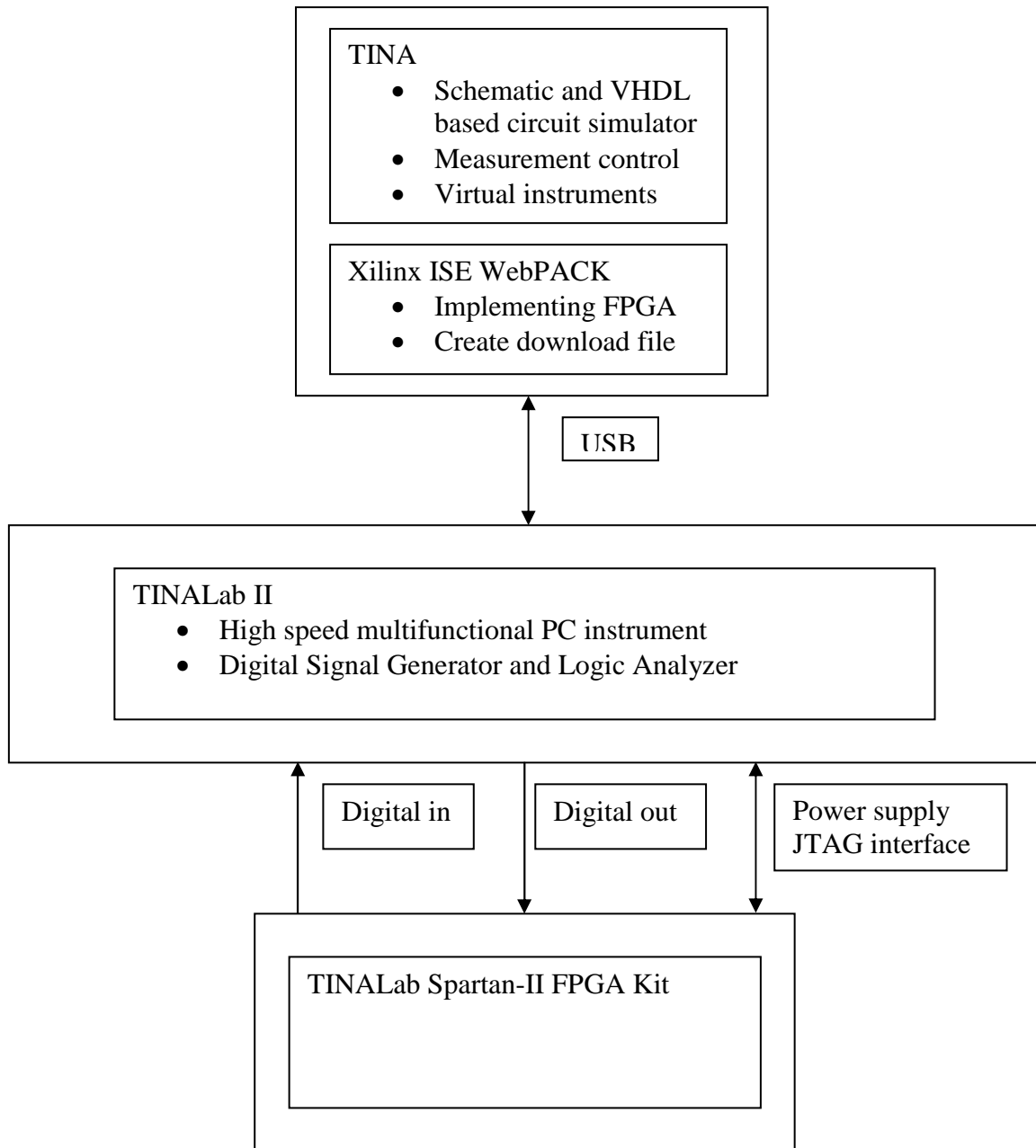
If you use TINALab Spartan-II together with TINA circuit simulation software and TINALab II High Speed Multifunction PC Instrument there is possible to develop VHDL code with simulation capabilities and after implementing, you can download your design and measure back the signals with the help of TINALab II Digital Signal Generator and Logic Analyzer. TINA provides code developing, simulation and measurement control with TINALab II, which does power supplies and signal link.

Forty-two user I/O signals from the FPGA are connected to user headers. The board includes the XCF01S ISP configuration Xilinx Platform Flash, a JTAG header, and a configuration mode connector, an on-board socketed clock oscillator, VGA, PS2, RS-232 serial port, four seven-segment LEDs, user LEDs, slide switches, and push buttons.
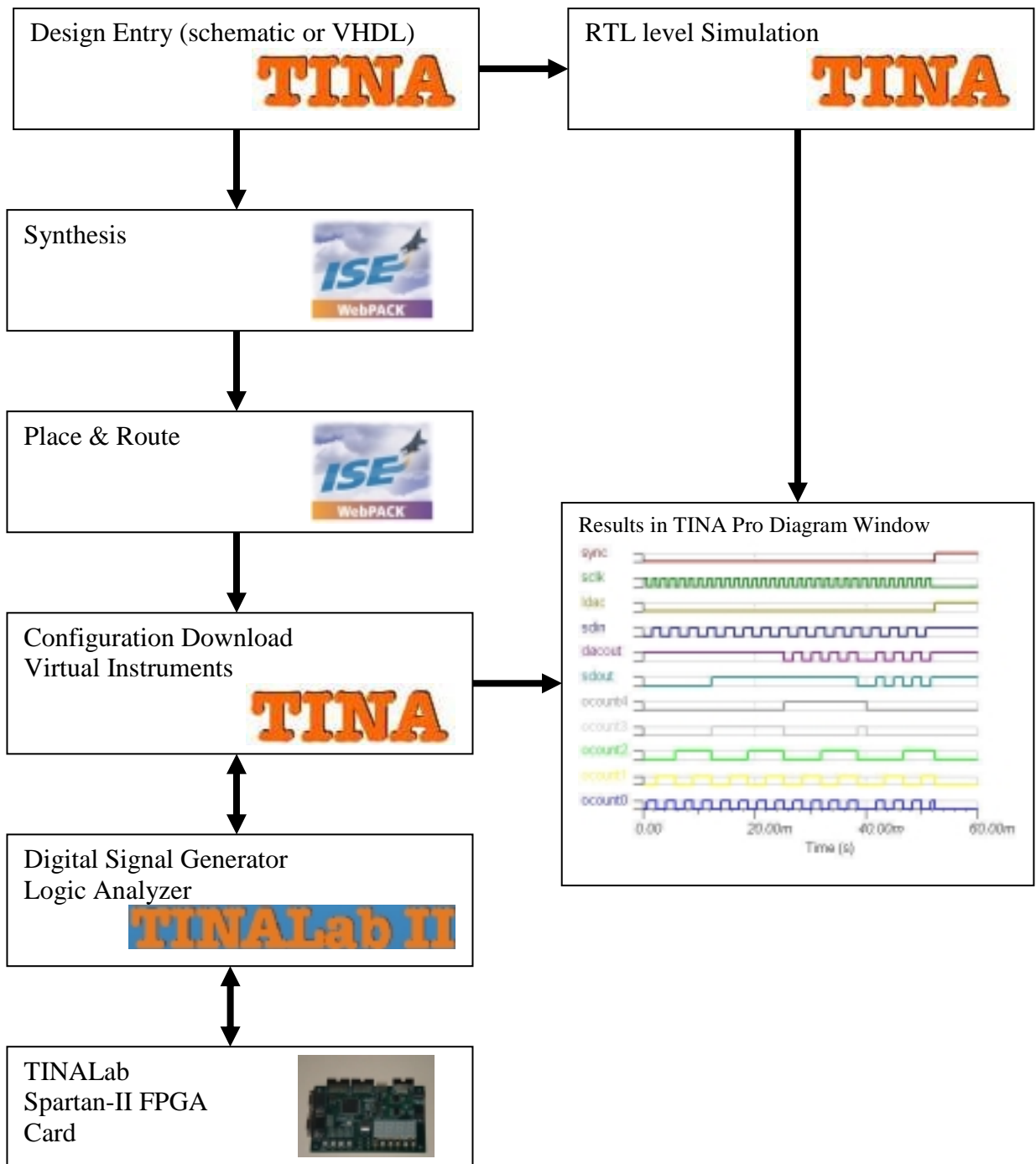
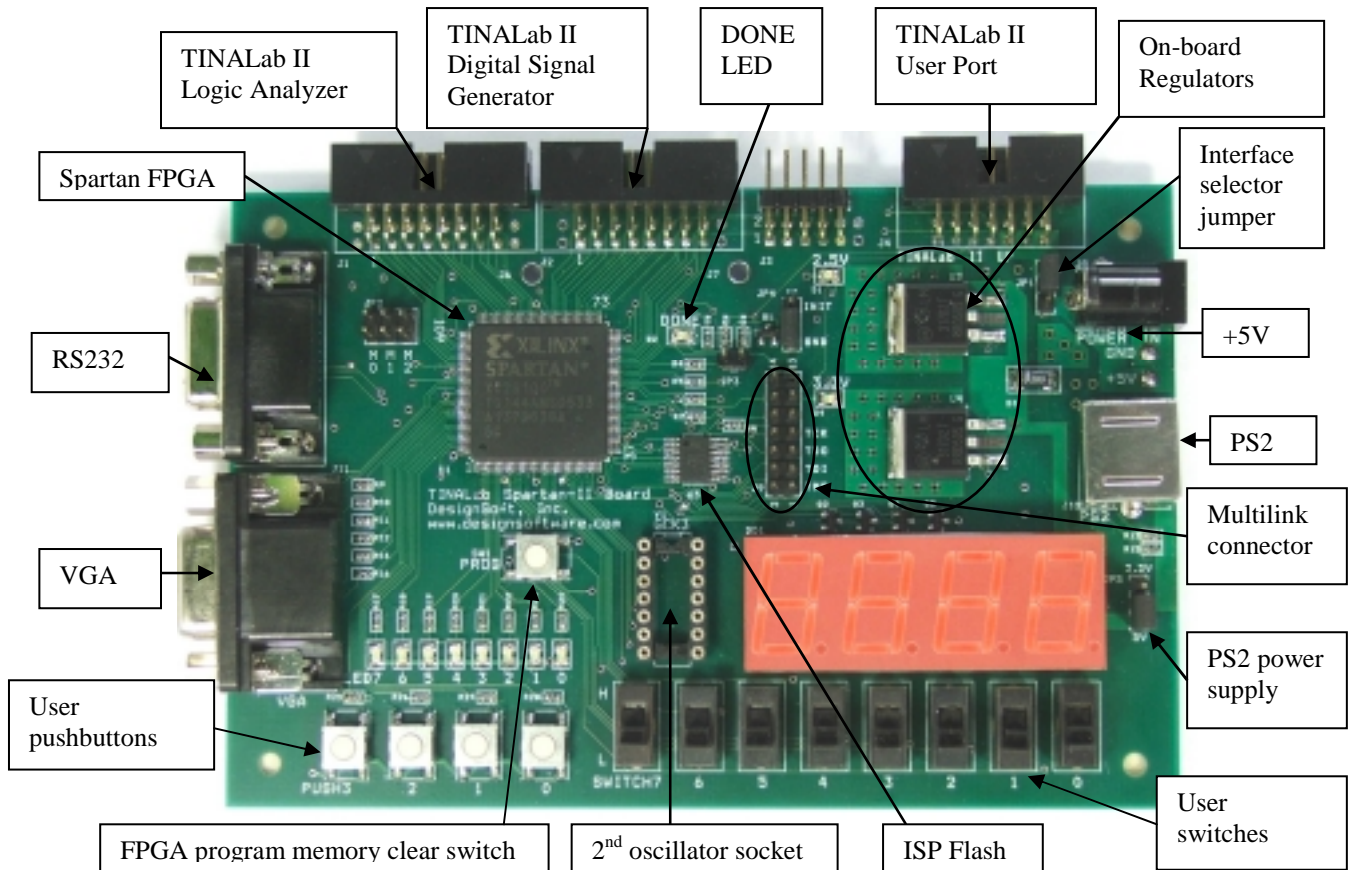# HIGHLIGHTS OF TINALAB SPARTAN-II FPGA DEVELOPMENT BOARD

- Xilinx XC2S50-5TQ144 or XC2S100-5TQ144 FPGA, system performance supported up to 200MHz operation
- Xilinx XCF01S 1Mbit Platform Flash Configuration PROM for non-volatile designs
- JTAG-programmable
- On-board 1A voltage regulators (2.5V core, 3.3V I/O)
- JTAG programming port
- 50MHz SMD crystal oscillator
- Socket for a second oscillator
- 92 user I/O's routed to on-board devices and three expansion connectors
- 9-pin RS-232 Serial Port
- PS/2-style mouse/keyboard port
- 6-bit, 64-colour VGA display port
- Ladder R/2R 4-bit DAC
- 8 individual LEDs
- 4-digit seven-segment display
- 4 momentary-contact pushbuttons
- 8 slide switches

TINALAB SPARTAN-II DEVELOPMENT KIT CONNECTED TO TINALAB II

TINA
- Schematic and VHDL based circuit simulator
- Measurement control
- Virtual instruments

Xilinx ISE WebPACK
- Implementing FPGA
- Create download file

USB

TINALab II
- High speed multifunctional PC instrument
- Digital Signal Generator and Logic Analyzer

Digital in

Digital out

Power supply
JTAG interface

TINALab Spartan-II FPGA Kit

VHDL DESIGN FLOW

| Design Entry (schematic or VHDL) **TINA** | → | RTL level Simulation **TINA** |

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| Synthesis **ISE WebPACK** |

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| Place & Route **ISE WebPACK** |

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| Configuration Download Virtual Instruments **TINA** | → | Results in TINA Pro Diagram Window |

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| Digital Signal Generator Logic Analyzer **TINALab II** |

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| TINALab Spartan-II FPGA Card |

ONBOARD HEADERS AND CONNECTORS

J1	**TINALab II Logic Analyzer** Note, if you do not use the Logic Analyzer then J1 can be used as generic User I/O.
J2	**TINALab II Digital Signal Generator Connector** Note, if you do not use the Digital Signal Generator then J2 can be used as generic User I/O.
J3	**User I/O** Note, - that if you apply Slave Parallel configuration mode then J3 is the byte-wide data and miscellaneous control during the configuration.
J4	**TINALab II User Port Connection**
J5	**9-pin RS232 serial port**
J6, J7	**N.C.**
J8	**External power supply connector (+5V)**
J9	**Multilink connector (JTAG, configuration link, JTAG chain broker)**
J10	**PS2 port**
J11	**VGA port**
JP1	**Power supply and configuration jumper** Close pin 1-2 to be powered by TINALab II, 2-3 by external +5V.
JP2	**FPGA configuration jumpers**
JP3	**R/2R Ladder DAC output**
JP4	**PROM interface jumper**
JP5	**PS2 port supply voltage jumper**

| TINALab II FPGA Kit Overview | DesignSoft Inc. |
| REV. D | www.designsoftware.com |