Altium
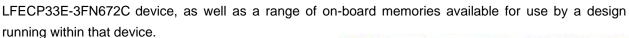
Altium - 12-400-NB2DSK01 - NANOBOARD NB2 WITH LATTICE ECP

Product Overview:

Altium's Desktop NanoBoard NB2DSK01 is a unique, reconfigurable hardware platform that can be used as a system prototyping and development platform, as an educational hands-on teaching tool, or as a complete test bed for FPGA-based embedded system design.

The NanoBoard NB2 architecture is unique in that target programmable devices are housed on plug-in swappable daughter boards, to provide a truly FPGA vendor-independent development board. Altium's LatticeECP3 daughter board DB32 provides an LFECP33E-3FN672C device, as well as a range of on-board memories available for use by a design running within that device.

The NanoBoard NB2 provides application-specific plug-in peripheral boards to give complete flexibility in system architecture and provide a simple and cost-effective method for rapid prototyping of hardware concepts.

The NanoBoard NB2 caters for the use of up to three peripheral boards, and is delivered with the following standard peripheral boards:

➢ Audio/Video Peripheral Board (PB01)

   • Composite and S-Video output and capture, 24-bit VGA output, high-performance I2S stereo audio codec

➢ Mass Storage Peripheral Board (PB02)

   • Compact Flash, SD card slot, ATA hard-drive interfaces

➢ USB-IrDA-Ethernet Peripheral Board (PB03)

- 10/100 Ethernet interface, USB 2.0 interface, 4Mbits/sec IrDA

<u>Kit Contents:</u>

Following are included with NanoBoard NB2DSK01:

The NanoBoard NB2 includes a 12-month subscription to an Altium Designer Soft Design license which is linked to the NanoBoard in the box. This license option provides functionality to quickly start designing FPGA-based embedded systems, including:

- ➢ FPGA design entry in C, Open Bus, Schematic, VHDL and Verilog
- ➢ VHDL simulation engine, integrated debugger and waveform viewer
- ➢ Support for a range of 32-bit soft processors for use in FPGA design
- ➢ A rich set of royalty-free IP core libraries including peripherals and user-configurable custom logic
- ➢ Full software development tool chain with libraries and source code
- ➢ Programmable FPGA-based instruments for hardware debug and Deployment
- ➢ Support for importing third-party FPGA IP cores, developing and reusing IP libraries

<u>Key Features of Altium NanoBoard NB2:</u>

Altium's Desktop NanoBoard NB2DSK01 has the following features:

- Integrated colour TFT LCD panel (320x240) with touch screen that facilitates dynamic application interaction.
- Stereo analog audio system with high-quality on-board amplifiers, mixer, line in/out and stereo speakers
- Standard communication interfaces – RS-232 serial, CAN,PS/2 mini-DIN
- SD card reader – for additional I/O flexibility including the ability to download a variety of files
- Four channel, 8-bit ADC and 10-bit DAC, I2C-compatible
- User definable PDA-style push button switches that function as generic design inputs
- General purpose switches and LEDs
- Programmable clock, 6 to 200 MHz
- Power sensing system allows real-time monitoring of system and device power consumption
- SPI Real-Time Clock with 3V battery back-up
- Onboard memory accessible by NanoTalk Controller – 256K x 32-bit common-bus SRAM (1MB), 16M x 32-bit common-bus SDRAM (64MB), 16M x 16-bit common-bus 3.0V Page Mode Flash memory (32MB), 256K x 32-bit independent SRAM (1MB)
- Dual User Board JTAG headers for direct interaction
- Home/Reset button – Home button enables firmware to take control of TFT panel; Reset provides NanoBoard reset functionality
- NanoTalk Controller – manages real time proprietary communication with Altium Designer, the board, and the NanoBoard firmware using a Xilinx® Spartan-3TM (XC3S1500-4FG676C) controller with JTAG accessible Flash configuration PROM

- Master-Slave connectors for chaining multiple development boards – allowing multiple-FPGA system development
- Board ID memory – 1-Wire® ID system uniquely identifies each daughter board and peripheral board
- Power – Dual 5V DC power daisy-chain connectors with power switch, 5V DC power output connector, power supply test points for all supply levels available on the board, four GND points
- High-speed PC interconnection through USB 2.0

Key Features of Lattice ECP Daughter board DB32:

Altium's Lattice ECP daughter board DB32 provides an LFECP33E-3FN672C device, as well as a range of on-board memories available for use by a design running within that device.

The Daughter Board DB32 has the following features:

➢ Lattice ECP FPGA (LFECP33E-3FN672C

➢ On-board memories available for use by FPGA design:

  o 256K x 32-bit common-bus SRAM (1MByte)
  o 16M x 32-bit common-bus SDRAM (64MByte)
  o 16M x 16-bit common-bus Flash memory (32MByte)
  o Dual 256K x 16-bit independent SRAM (512KByte each)

➢ 1-Wire® memory device used to store board ID and related information
➢ Three 100-way connectors for attachment to NB2DSK01 motherboard. These connectors provide:

  o Interface to resources on the NB2DSK01 motherboard and plugged-in peripheral boards
  o SPI bus interface
  o I2C bus interface
  o 1-Wire bus interface
  o JTAG, power and additional control lines from the motherboard.

Ordering Information

Products:

Part Number	Manufacturer	Farnell P/N	Newark P/N
12-400-NB2DSK01-DB32	Altium	1714410	25R5628

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Associated Products:

Part Number	Manufacturer	Description	Farnell P/N	Newark P/N
Daughter Board	Altium	LatticeECP	1714416	10R0251
ADAPTER	Altium	JTAG USB	1714426	10R0257
M25P80	ST Micro	Flash Memory	1099669	26M1754
MAX3232EUE	Maxim	RS-232 Transceiver	1379769	68K4632
CAN Bus	Maxim	Transceiver	NA	24R9638
ADC	Maxim	ADC-IC	NA	68K9410
DAC	Maxim	DAC IC	NA	78C3271
Amplifier	Maxim	Current Sense	NA	67K5237
FPGA	Xilinx	Spartan 3	1762476	22M4732
Flash Memory	Spansion	Flash	1567823	42K8611
Switch	Maxim	Switch Addressable	96B0597	1379761
Power Supply	Maxim	Power Supply IC	NA	67K4263

Similar Products:

Part Number	Manufacturer	Description	Support Device	Farnell P/N	Newark P/N
12-401-NB2DS-K01-DB30	Altium	NANOBOARD KIT NB2 SPARTAN-3	Spartan 3	1714409	25R5626
12-400-NB2DSK01-DB31	Altium	NANOBOARD KIT NB2, CYCLONE II	Cyclone II	1714407	25R5627

Document List:

Datasheets:

Part Number	Description	Size
LFECP33E-3FN672C	LatticeECP3 Family Datasheet	1.8MB
DS2406	Dual Addressable Switch Plus 1Kb Memory	240KB
MT48LC16M16A2TG	Common-Bus SDRAM	2.9MB
S29GL256N11FFIV10	Common-Bus Flash memory	4.8MB
MAX8860	Linear Regulator	168KB
MAX1831	Voltage Regulator	106KB

Application Notes:

File Name	Size
TN1178 LatticeECP3 sysCLOCK PLL/DLL Design and Usage Guide	1.4MB
TN1182 LatticeECP3 sysDSP Usage Guide	865KB
TN1194 LatticeECP3 Marvell XAUI 10 Gbps Physical Layer Interoperability	735KB
TN1180 LatticeECP3 High-Speed I/O Interface	1.9MB

Hardware & Software:

File Name	Size
Download the latest release of Altium Designer Viewer	129MB
Download the Altium Instrument Dashboard	31.7MB
Autotrax Freeware Version Download	821KB
Easytrax Freeware Download	485 KB