

**XILINX PLD**

- Devices
- Development Boards
- Programmers & Debuggers
- Datasheets

**Sockets & Adapters**

- Test & Burn-in Sockets
- Programming Adapters

**Products**

- 8 Bit MCUs
- 32 Bit MCUs
- CPLD & FPGA
- Memory
- Signal Processors
- Data Converters
- Interface
- Power Management
- Peripherals
- Programmers & Debuggers
- Development Boards
- Sockets & Adapters
- Modules
- Discrete Components

**Open3S250E Package A**

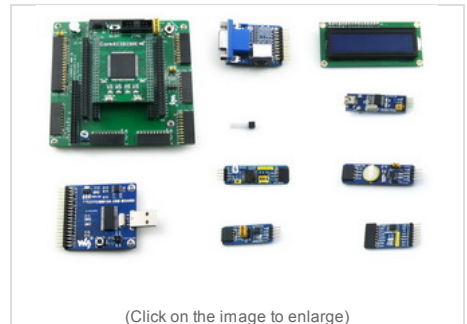
Primary Attribute

Part Number	Open3S250E Package A	<a href="#">order</a>
Manufacturer	Waveshare	
Remarks		

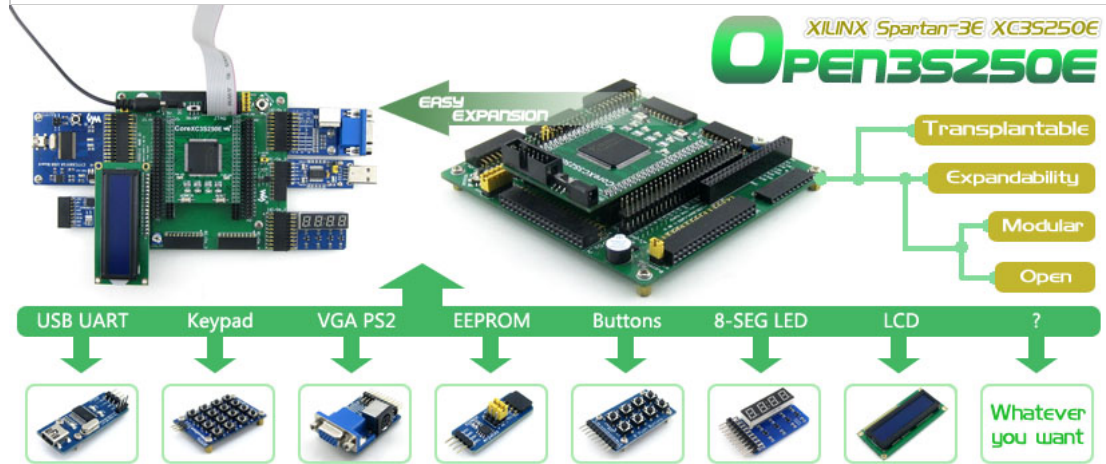
Pricing

Price List (All prices are in US dollars)				
Price Break	@ 1Unit	@ 2Units	@ 3Units	@ 4Units
Unit Price	73.99	71.79	70.29	69.59
Extended Price	73.99	143.58	210.87	278.36

Product Photos



FPGA development board designed for XILINX Spartan-3E series, features the XC3S250E onboard, and integrates various standard interfaces, pretty easy for peripheral expansions.

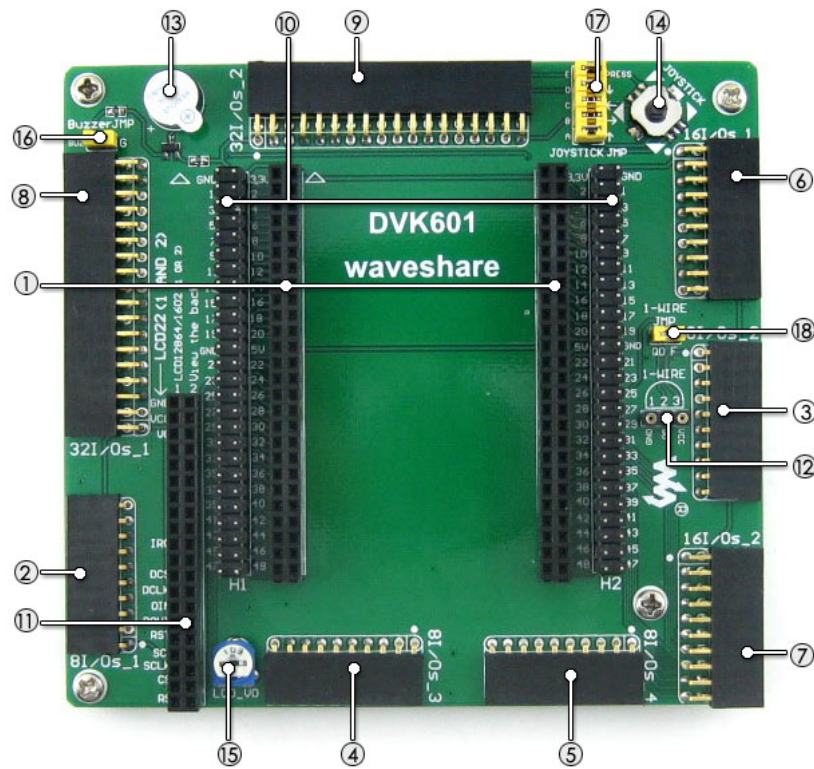


**Overview**

Open3S250E is an FPGA development board that consists of the mother board DVK601 and the FPGA core board Core3S250E.

Open3S250E supports further expansion with various optional accessory boards for specific application. The modular and open design makes it the ideal for starting application development with XILINX Spartan-3E series FPGA devices.

**What's on the mother board**



1. **FPGA CPLD core board connector:** for easily connecting core boards which integrate an FPGA CPLD chip onboard
2. **8I/Os\_1 interface,** for connecting accessory boards/modules
3. **8I/Os\_2 interface,** for connecting accessory boards/modules
4. **8I/Os\_3 interface,** for connecting accessory boards/modules
5. **8I/Os\_4 interface,** for connecting accessory boards/modules
6. **16I/Os\_1 interface,** for connecting accessory boards/modules
7. **16I/Os\_2 interface,** for connecting accessory boards/modules
8. **32I/Os\_1 interface,** for connecting accessory boards/modules
9. **32I/Os\_2 interface,** for connecting accessory boards/modules

All the I/O interfaces above:

- capable of being simulated as USART, I2C, SPI, PS/2, etc.
- capable of driving devices such as FRAM, FLASH, USB, Ethernet, etc.

#### 10. FPGA expansion connectors

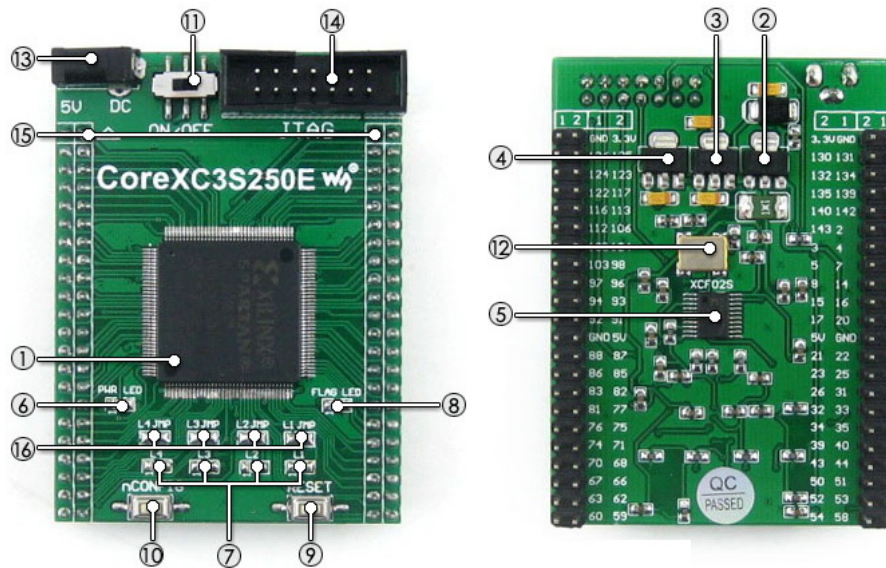
- FPGA pins are accessible on expansion connectors
  - for connecting SDRAM accessory board
11. **LCD interface,** for connecting LCD22, LCD12864, LCD1602
  12. **ONE-WIRE interface:** easily connects to ONE-WIRE devices (TO-92 package), such as temperature sensor (DS18B20), electronic registration number (DS2401), etc.
  13. **Buzzer**
  14. **Joystick:** five positions
  15. **Potentiometer:** for LCD22 backlight adjustment, or LCD12864, LCD1602 contrast adjustment
  16. **Buzzer jumper**
  17. **Joystick jumper**
  18. **ONE-WIRE jumper**

For jumpers 16-18:

- short the jumper to connect to I/Os used in example code
- open the jumper to connect to other custom pins via jumper wires

The DVK601 supports a wide range of different core boards, therefore, some of the interfaces may be Not-Connected and useless while connecting to certain core board. For instance, while connecting to Core3S250E, the '1' 8I/Os\_3' and '15' 8I/Os\_4' are Not-Connected.

### What's on the Core3S250E



1. **XC3S250E**: the XILINX Spartan-3E FPGA device which features:
  - o **Operating Frequency**: 50MHz
  - o **Operating Voltage**: 1.15V~3.3V
  - o **Package**: QFP144
  - o **I/Os**: 80
  - o **LEs**: 250K
  - o **RAM**: 216kb
  - o **DCMs**: 4
  - o **Debugging/Programming**: supports JTAG
2. **AMS1117-3.3**, 3.3V voltage regulator
3. **AMS1117-2.5**, 2.5V voltage regulator
4. **AMS1117-1.2**, 1.2V voltage regulator
5. **XCF02S**, onboard serial FLASH memory, for storing code
6. **Power indicator**
7. **LEDs**
8. **FPGA initialization indicator**
9. **Reset button**
10. **nCONFIG button**: for re-configuring the FPGA chip, the equivalent of power resetting
11. **Power switch**
12. **50M active crystal oscillator**
13. **5V DC jack**
14. **JTAG interface**: for debugging/programming
15. **FPGA pins expander**, VCC, GND and all the I/O ports are accessible on expansion connectors for further expansion
16. **LED jumpers**

## Photos



Open3S250E Development Board



Open3S250E Development Board



Open3S250E Development Board  
back view



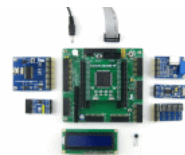
Mother Board DVK601



FPGA core board Core3S250E



FPGA core board Core3S250E



Connecting to various peripherals



Connecting to LCD12864



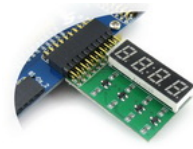
Connecting to LCD1602



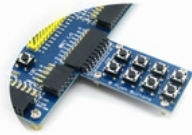
Connecting to RS232 Board



Connecting to USB UART Board



Connecting to 8 SEG LED Board



Connecting to 8 Push Buttons



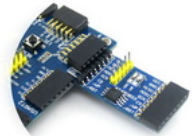
Connecting to 4x4 Keypad



Connecting to EEPROM Board



Multi peripherals connected to one interface



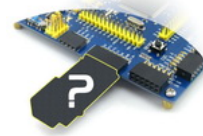
Connecting to DataFlash Board



Connecting to CY7C68013A USB Board



Connecting to VGA PS2 Board



Connecting to any accessory board you need

**Note:** The Open3S250E does NOT integrate any programming/debugging function, a programmer/debugger is required.

## Examples

The Open3S250E FPGA development board comes with various examples codes for the supported peripherals, which give you a quick start to develop your own application.

Peripheral	Description	Interface	Verilog	VHDL
AT24CXX	EEPROM	I2C	Y	Y
FM24CXX	FRAM	I2C	Y	Y
AT45DBXX	DATAFLASH	SPI	Y	
PCF8563	RTC	I2C	Y	
PCF8591	4xAD, 1xDA	I2C	Y	
DS18B20	Temperature sensor	1-WIRE	Y	
SP3232	Serial communication	UART	Y	Y
SP3485	Serial communication	UART	Y	Y
PL2303	USB TO UART	UART	Y	Y
CY7C68013A	USB DEVICE	I/Os		Y
Buzzer	Sound device	1/I/O (PWM)	Y	Y
PS/2 keyboard	Input device	PS/2	Y	Y
Single buttons	Input device	----	Y	Y
4x4 keypad	Input device	8/I/Os	Y	Y
Joystick	Input device	5/I/Os	Y	Y
LED	Display device	----	Y	Y
8 SEG LED	Display device	13/I/Os	Y	Y
VGA monitor	Display device	VGA	Y	Y
Character LCD	Display device	11/I/Os	Y	Y
Graphic LCD	Display device	11/I/Os	Y	Y

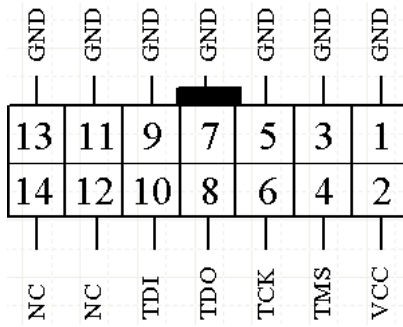
## Debugging/Programming Interface

The Open3S250E FPGA development board integrates JTAG interface for programming/debugging.

### JTAG Signal Names & Description

Pin	Signal Name	Description
1	GND	Signal ground
2	VCC(TRGT)	Target power supply
3	GND	Signal ground
4	TMS	JTAG state machine control
5	GND	Signal ground
6	TCK	Clock signal
7	GND	Signal ground
8	TDO	Data from device
9	GND	Signal ground
10	TDI	Data to device
11	GND	Signal ground
12	NC	
13	GND	Signal ground
14	NC	



**JTAG Header Pinout****Development Resources**

The Open3S250E FPGA development board comes with a User Guide CD including development resources listed as below:

- Related software (Xilinx ISE 12 - **supports Winxp/Win7, doesn't support Win8**)
- Demo code (Verilog, VHDL)
- Schematic (PDF)
- FPGA development documentations

**Package Contains**

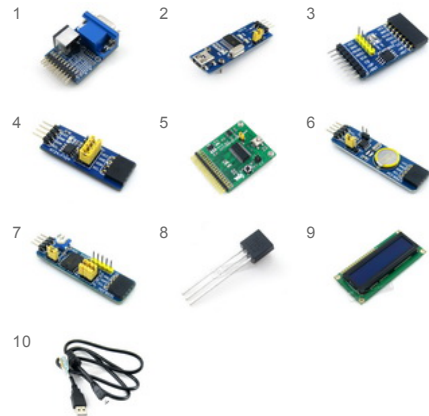
The "Standard Package" and "Accessory Boards Package" below are included.

**Standard Package**

1. Open3S250E development board x 1
2. 4-pin wire x 2
3. 2-pin wire x 2
4. USB power cable x 1
5. User guide CD x 1

**Accessory Boards Package**

1. VGAPS2 Board x 1
2. PL2303 USB UART Board (mini) x 1
3. AT45DBXX DataFlash Board x 1
4. FM24CLXX FRAM Board x 1
5. CY7C68013A USB Board (mini) x 1
6. PCF8563 RTC Board x 1
7. PCF8591 AD DA Board x 1
8. DS18B20 x 1
9. LCD1602 (3.3V Blue Backlight) x 1
10. USB type A plug to mini-B plug cable x 1

**Customers Who Bought This Item Also Bought**

XILINX PLD



XILINX Programm器和 Debuggers