

MSP430-H2274 development board

Users Manual



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Rev.A, July 2009

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INTRODUCTION

MSP430-H2274 header board provides easy way for developing and prototyping with the new MSP430F2274 ultralow-power, mixed signal microcontroller produced by Texas Instruments.

MSP430-H2274 has JTAG port for programming and debugging and most of the GPIOs are on extension headers where you can connect your additional circuits.

BOARD FEATURES

- CPU: MSP430F2274 mixed signal microcontroller
- JTAG connector
- JTAG Power_In and Power_Out jumpers
- 32768 Hz crystal oscillator
- Two extension connectors – HN19x1
- PCB: FR-4, 1.5 mm (0,062"), solder mask, silkscreen component print
- Dimensions: 56.2x 19.5mm (2.21x 0.77")

ELECTROSTATIC WARNING

The MSP430-H2274 board is shipped in protective anti-static packaging. The board must not be subject to high electrostatic potentials. General practice for working with static sensitive devices should be applied when working with this board.

BOARD USE REQUIREMENTS

Cables: The cable you will need depends on the programmer/debugger you use. If you use MSP430-JTAG, you will need LPT cable, if you use MSP430-JTAG-TINY or MSP-JTAG-ISO, you will need A-B USB cable, if you use MSP430-JTAG-RF, you can connect it to the USB port of your computer, or via USB cable type A – female.

Hardware: Programmer/Debugger – one of our Programmers – [MSP430-JTAG](#), [MSP430-JTAG-TINY](#), [MSP430-JTAG-ISO](#), or [MSP430-JTAG-RF](#).

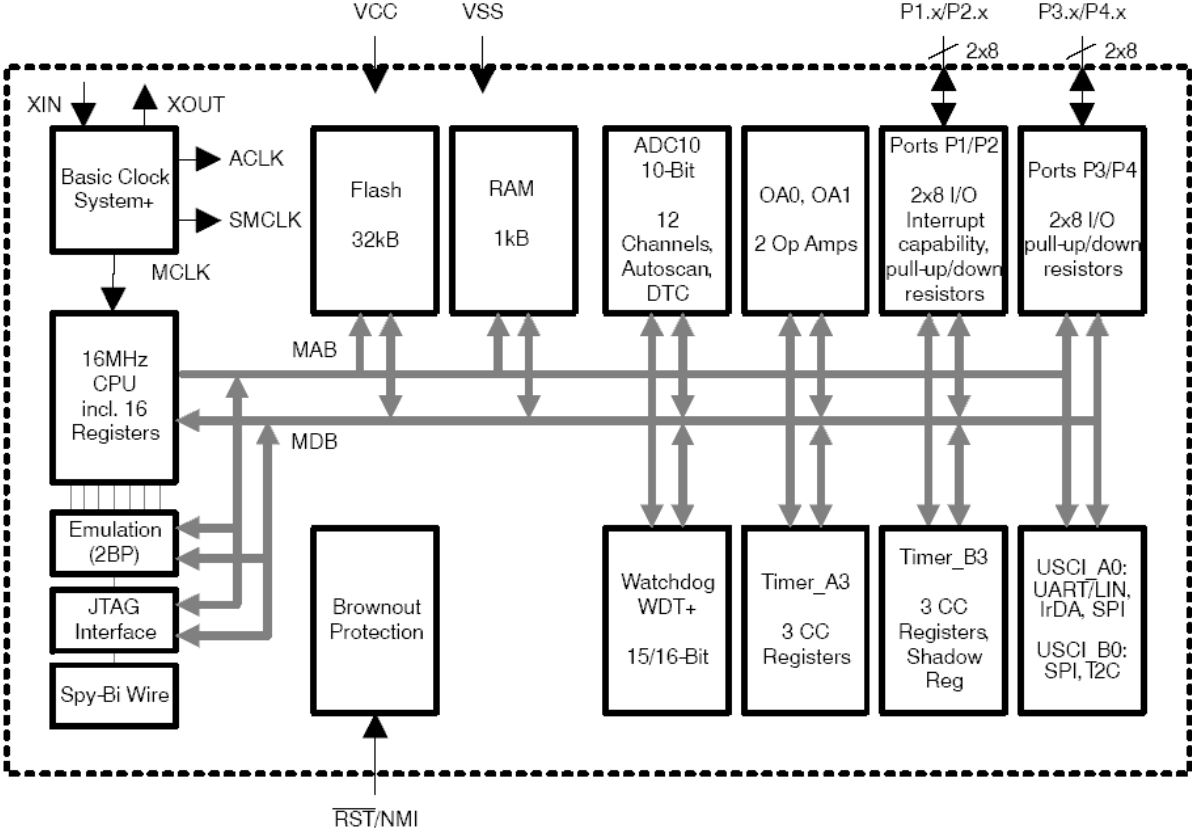
Software: MSP430 KickStart software.

PROCESSOR FEATURES

MSP430-H2274 board use ultralow-power mixed signal microcontroller with two built-in 16-bit timers, a universal serial communication interface, 10-bit A/D converter with integrated reference and data transfer controller (DTC), two general-purpose operational amplifiers, 32 GPIO with these features:

- 32KB + 256B Flash Memory
- 1KB RAM
- Low Supply Voltage Range: 1.8 V to 3.6 V
- Ultralow Power Consumption
 - Active Mode: 270 μ A at 1 MHz, 2.2 V
 - Standby Mode: 0.7 μ A
 - Off Mode (RAM Retention): 0.1 μ A
- Ultrafast Wake-Up From Standby Mode in Less Than 1 μ s
- 16-Bit RISC Architecture, 62.5-ns Instruction Cycle Time
- Basic Clock Module Configurations:
 - Internal Frequencies up to 16 MHz With Four Calibrated Frequencies to $\pm 1\%$
 - Internal Very-Low-Power Low-Frequency Oscillator
 - 32-kHz Crystal
 - High-Frequency Crystal 16 MHz
 - Resonator
 - External Digital Clock Source
 - External Resistor
- 16-Bit Timer_A With Three Capture/Compare Registers
- 16-Bit Timer_B With Three Capture/Compare Registers
- Universal Serial Communication Interface
 - Enhanced UART Supporting Auto-Baudrate Detection (LIN)
 - IrDA Encoder and Decoder
 - Synchronous SPI
 - I²C™
- 10-Bit 200-ksps Analog-to-Digital (A/D) Converter With Internal Reference, Sample-and-Hold, Autoscan, and Data Transfer Controller
- Two Configurable Operational Amplifiers
- Brownout Detector
- Serial Onboard Programming, No External Programming Voltage Needed
Programmable Code Protection by Security Fuse
- Bootstrap Loader
- On Chip Emulation Module

BLOCK DIAGRAM



MEMORY ORGANIZATION

		MSP430F2274
Memory Main: interrupt vector Main: code memory	Size Flash	32KB Flash 0FFFFh-0FFC0h
	Flash	0FFFFh-08000h
Information memory	Size Flash	256 Byte 010FFh-01000h
	Flash	
Boot memory	Size ROM	1KB 0FFFh-0C00h
	ROM	
RAM	Size	1KB
		05FFh-0200h
Peripherals	16-bit	01FFh-0100h
	8-bit	0FFh-010h
	8-bit SFR	0Fh-00h

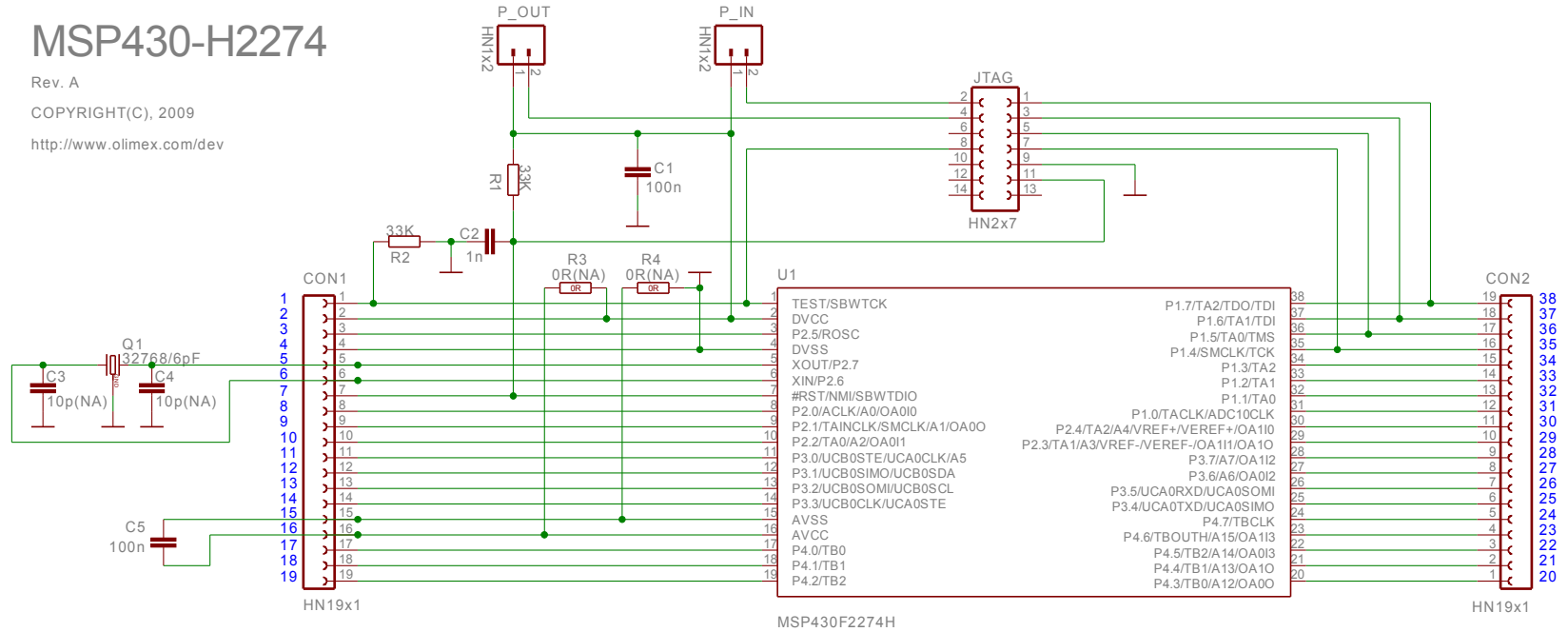
MSP430-H2274

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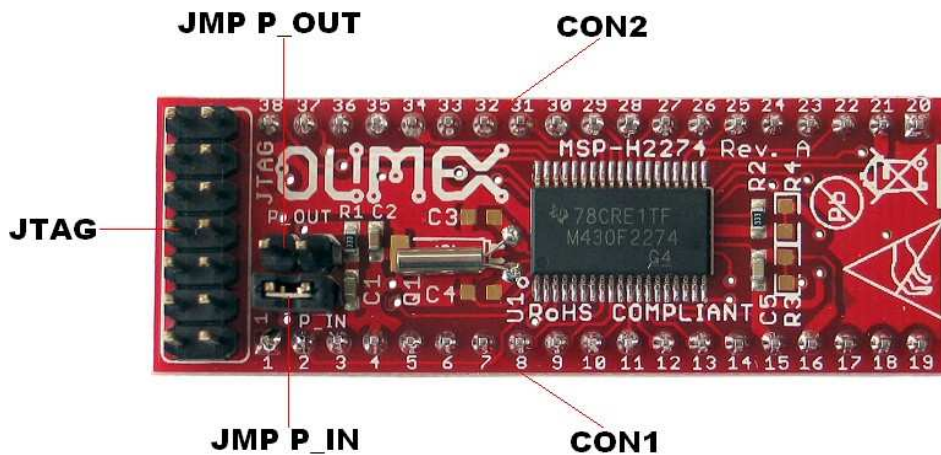
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BOARD LAYOUT



POWER SUPPLY CIRCUIT

MSP430-H2274 power supply depends on the state of jumpers P_IN and P_OUT. VCC_IN goes on JTAG connector pin 2 and VCC_OUT goes on JTAG connector pin 4.

RESET CIRCUIT

MSP430-H2274 reset circuit includes pin 11 of JTAG connector, pin 7 of Extension connector - CON1, MSP430F2274 pin 7.

CLOCK CIRCUIT

Quartz crystal 32768MHz is connected to MSP430F2274 pin 5 (XOUT/P2.7) and pin 6 (XIN/P2.6).

JUMPER DESCRIPTION

Power In jumper:

P_IN jumper connects power supply from JTAG connector to Header board. When this jumper cap is placed you can program the microcontroller even without any other external supply. Note that if the Header board is placed in target circuit, you have to ensure that your circuit doesn't draw more than few milliamperes current or the power supply may decrease due to the JTAG port current limitations. P_IN is useful and must be used mostly to program your header board when it's not put on your target circuit socket.

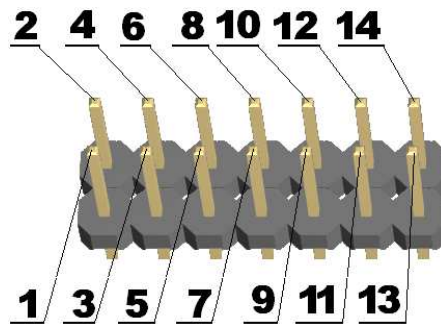
Power Out jumper:

P_OUT jumper connects power from Header board to JTAG connector. When this jumper cap is placed, the power supply of JTAG connector will follow the power supply of Header board. This is useful when your Header board (target circuit) works at lower than +3,3V power supply.

Note: P_IN and P_OUT jumper caps should not be placed at the same time.

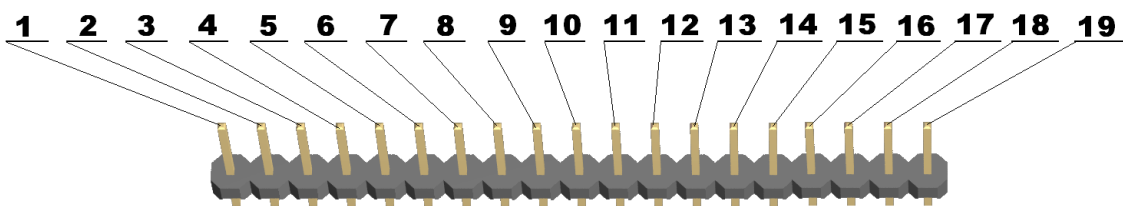
CONNECTOR DESCRIPTIONS

JTAG



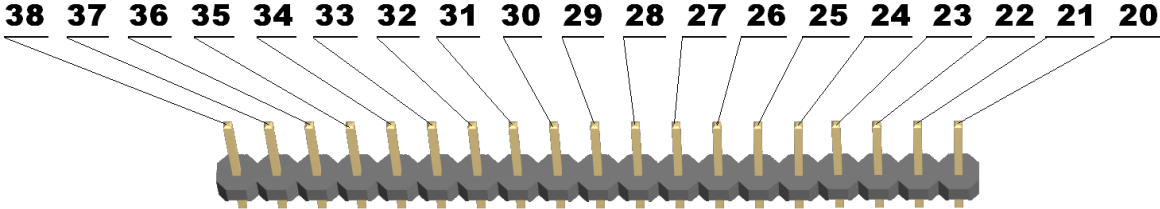
Pin #	Signal Name	Pin #	Signal Name
1	TDO	2	VCC_IN
3	TDI	4	VCC_OUT
5	TMS	6	NC
7	TCK	8	TEST/SBWICK
9	GND	10	NC
11	#RST/NMI	12	NC
13	NC	14	NC

CON1



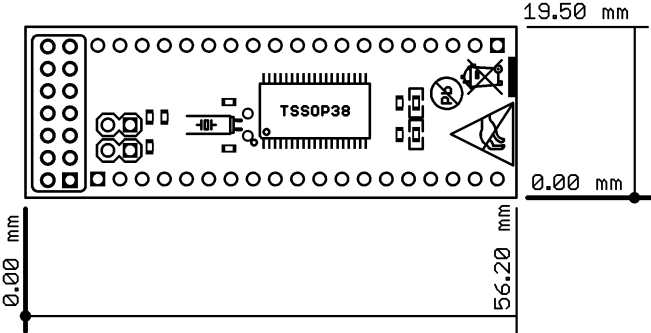
Pin #	Signal Name	Pin #	Signal Name
1	TEST/SBWICK	2	DVCC
3	P2.5	4	DVSS
5	XOUT/P2.7	6	XIN/P2.6
7	#RST/NMI	8	P2.0
9	P2.1	10	P2.2
11	P3.0	12	P3.1
13	P3.2	14	P3.3
15	AVSS	16	AVCC
17	P4.0	18	P4.1
19	P4.2		

CON2



Pin #	Signal Name	Pin #	Signal Name
20	P4.3	21	P4.4
22	P4.5	23	P4.6
24	P4.7	25	P3.4
26	P3.5	27	P3.6
28	P3.7	29	P2.3
30	P2.4	31	P1.0
32	P1.1	33	P1.2
34	P1.3	35	P1.4/TCK
36	P1.5/TMS	37	P1.6/TDI
38	P1.7/TDO		

MECHANICAL DIMENSIONS



AVAILABLE DEMO SOFTWARE

- MSP430-H2274_Blinking_Led

ORDER CODE

MSP430-H2274 - assembled and tested

How to order?

You can order to us directly or by any of our distributors.

Check our web www.olimex.com/dev for more info.

Revision history:

REV.A - create July 2009

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