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[noForth website](#)

MSP430F149 Mini-V3 board with noForth 149

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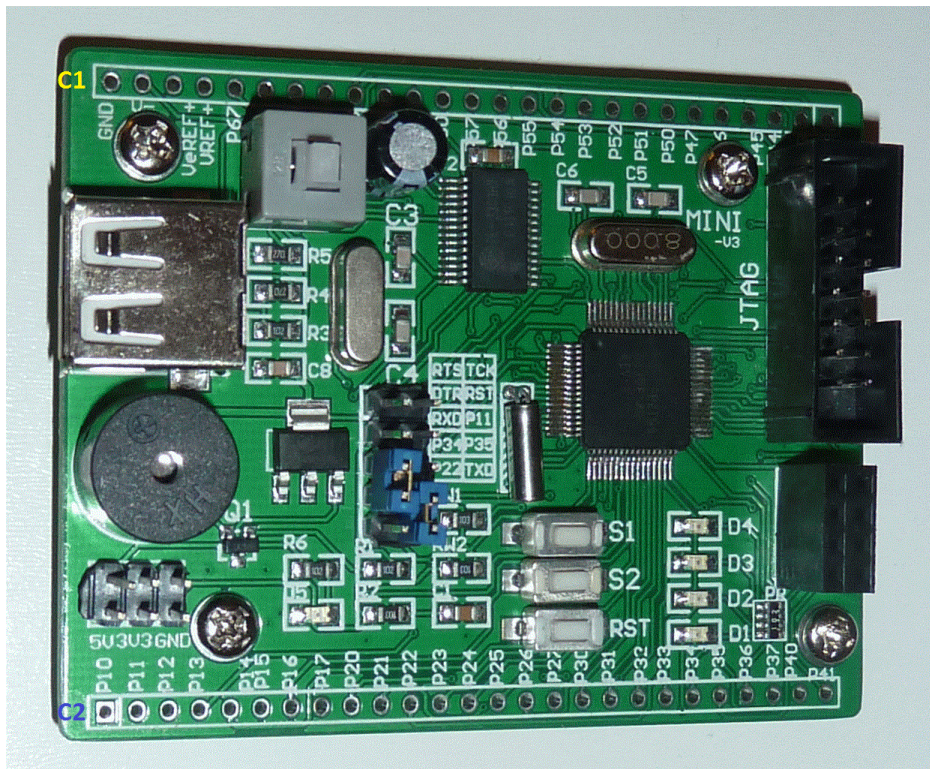
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In this text we refer to these two documents:

- SLAS272F.PDF "MSP430x13x, MSP430x14x, MSP430x14x1 mixed signal microcontroller"
- SLAU049F.PDF "MSP430x1xx Family User's Guide"

1. MSP430F149 Mini-V3 board with noForth 149



Dimensions: 7.1 cm x 5.5 cm x 1.7 cm)

Weight: 22 g - Price: ca. \$14

top seller store - BOB Trading

- Aliexpress - Product ID: 1435988683
MSP430F149 single chip microcomputer minimum system board
- DX - Model: 269600
Msp430f149 Mcu Minimum System Core Development Board

RS232/USB driver

The USB chip on the mini-v3 board is the PL2303hx. It needs a specific driver under Windows. Unzip [this file](#) and execute "PL2303_Prolific_DriverInstaller_v1.11.0.exe". Windows 8 and higher do not support the PL2303hx USB-chip. If you have a modern Windows a communication module with an PL2303TA chip could be a solution.

The UART0 with jumpers on JBSL (blue) is used for RS232.

i/o port connections on Mini-V3 board

Port 1

Digital i/o, TimerA i/o

P1.0	SW S0
P1.1	SW S1/Bootloader TX
P1.2	...
P1.3	NRF24L01
P1.4	NRF24L01
P1.5	...
P1.6	...
P1.7	...

Port 2

Digital i/o, TimerA i/o

P2.0	Led
P2.1	Led
P2.2	Led/Bootloader RX
P2.3	Led
P2.4	...
P2.5	...
P2.6	...
P2.7	...

Port 3

Digital i/o, UART0, UART1

P3.0	...
P3.1	...
P3.2	...
P3.3	...
P3.4	TX0/USB
P3.5	RX0/USB
P3.6	TX1
P3.7	RX1

Port 4

Digital i/o, TimerB i/o

P4.0	...
P4.1	...
P4.2	...
P4.3	...
P4.4	...
P4.5	...
P4.6	...
P4.7	...

Port 5

Digital i/o, UART1 SPI mode

P5.0	...
P5.1	...
P5.2	...
P5.3	...
P5.4	...
P5.5	...
P5.6	...
P5.7	...

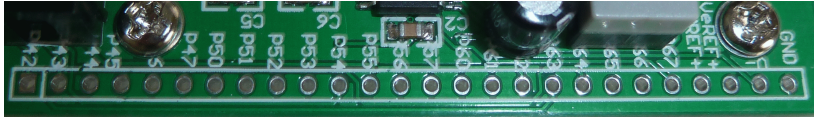
Port 6

Digital i/o, analog inputs

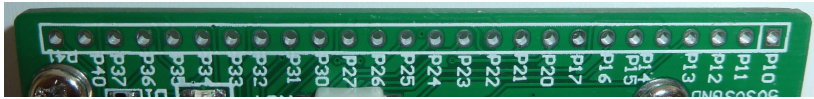
P6.0	...
P6.1	...
P6.2	NRF24L01
P6.3	NRF24L01
P6.4	NRF24L01
P6.5	NRF24L01
P6.6	...
P6.7	Beeper

Connectors on Mini-V3 board

P1 = P1, P2, P3, P4
P2 = P4, P5, P6, Vref, Gnd
USB = USB power annex pseudo RS232
S1 = 5 Volt power on/off
JP1 = NRF24L01
JP2 = JTAG
JPower = Gnd, 3.3V and 5V
JBSL = Bootloader P1.1 and P2.2



Connector C1: All connections are clearly visible.
P53 = P5 pin 3; V- = ADC negative referentie; GND = Ground pin.



Connector C2: All connections are clearly visible.
P10 = P1 pin 0.

Hardware on Mini-V3 board

- 4-LEDs on P2.0 t/m P2.3
- Beeper on P6.7
- 2 switches on P1.0 .. P1.1
- Reset switch S2
- Connection for NRF24L01 on P1 and P6

2. MSP430F149 i/o ports

Addresses

The MSP430F149 port registers are memory mapped. An overview:

	P1	P2	P3	P4	P5	P6	Function
PxIN	20	28	18	1C	30	34	In
PxOUT	21	29	19	1D	31	35	Out
PxDIR	22	2A	1A	1E	32	36	Direction
PxIFG	23	2B	-	-	-	-	Interrupt flag
PxIES	24	2C	-	-	-	-	Interrupt edge on
PxIE	25	2D	-	-	-	-	Interrupt on
PxSEL	26	2E	1B	1F	33	37	Select

See: SLAS272F.PDF under "peripheral file map", page 20-23.

PxDir

PxDIR = 0 Floating input
PxDIR = 1 Output

The port register functions are documented in SLAU049F.PDF page 9.2.3.
Texas Instruments recommends to configure unconnected i/o pins as Output.

PxSEL

The PxSEL register is used to assign a special function to an i/o pin. In this way, for example, the ADC can be activated. See SLAU272F.PDF page 40.

PxSEL = 0 Normal i/o
PxSEL = 1 Special function

UART

Registers ME1 and ME2 are used to link the UARTs to the physical i/o bits, see SLAU049F.PDF page "13-27".

3. MSP430F149 RAM & ROM

RAM 0200 - 09FF
FlashROM 1100 - FFFF

4. MSP430F149 interrupt vectors

FFDE End of free Flash

FFE0 ...
FFE2 P2
FFE4 USART1 TX
FFE6 USART1 RX
FFE8 P1
FFEA TIMER A3 CCR1 CCR2
FFEC TIMER A3 CCR0
FFEE ADC12

FFF0 USART0 TX
FFF2 USART0 RX
FFF4 WATCHDOG
FFF6 COMPARATOR
FFF8 TIMER B7 CCR1 CCR2 CCR3 ...
FFFA TIMER B7 CCR0
FFFC NMI
FFFE RESET

See SLAS272F.PDF page 13 for details.

5. Processor registers in noForth

All processor registers (R0..R15) have their own name in noForth assembler:

PC	RP	(SP in TI texts!)	SR	CG	MSP430 system registers
SP	IP	TOS	DOX	NXT	noForth system registers
W	DAY	SUN	MOON		Registers, locally used by noForth
XX	YY	ZZ			Unused (free) registers

