Programmer Pinouts

PICkit 2

1	VPP/$\overline{\text{MCLR}}$
2	VDD Target
3	VSS (GND)
4	ICSPDAT/PGD
5	ICSPCLK/PGC
6	(Auxiliary)

MSP430 Spy Bi-Wire (14 pin header)

1	RESET (TDO/TDI)
2	VCC Tool
8	TEST
9	GND

AVR ISP-6

1	MISO
2	VCC
3	SCK
4	MOSI
5	$\overline{\text{RESET}}$
6	GND

AVR ISP-10

1	MOSI
2	VCC
3	(unused)
4	GND
5	$\overline{\text{RESET}}$
6	GND
7	SCK
8	GND
9	MISO
10	GND

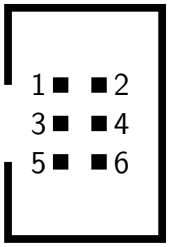
AVR JTAG

1	TCK
2	GND
3	TDO
4	VREF
5	TRS
6	nSRST
7	(unused)
8	nTRST
9	TDI
10	GND

BusPirate Mapping

BusPirate Name	ISP Name
MISO	MISO
3.3 V/5.0 V/(none)	VCC
CLK	SCK
MOSI	MOSI
CS	$\overline{\text{RESET}}$
GND	GND

Generic Boxed Header Pinout



As seen from top; numbering is equivalent to mapping via IDC connector to ribbon cable.

- PICkit 2 Programmer/Debugger User's Guide,
  `http://ww1.microchip.com/downloads/en/DeviceDoc/51553E.pdf`
- AVR ISP Header Pinouts (Batsocks),
  `http://www.batsocks.co.uk/readme/isp_headers.htm`
- AVR JTAG header pinout (JTAGtest),
  `http://www.jtagtest.com/pinouts/avr`
- JTAG (MSP430),
  `http://processors.wiki.ti.com/index.php/JTAG_(MSP430)`

PIC 16F887

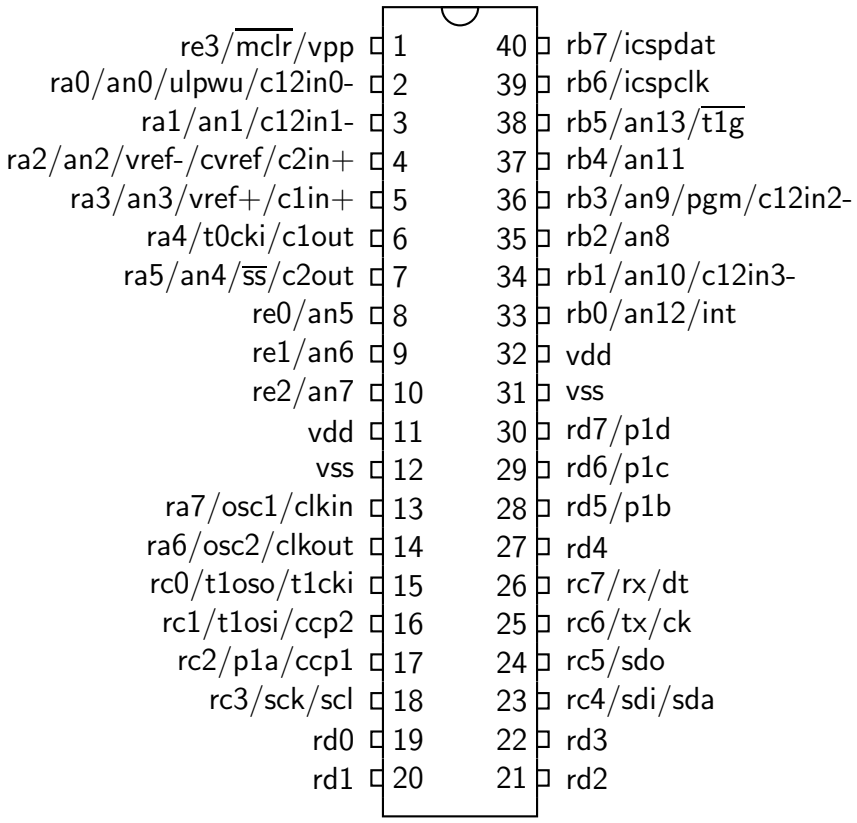
Key Electrical Specifications

2.0–5.5	V	Operating voltage range, at reduced clock speed
4.5–5.5	V	Operating voltage range, at full clock speed
± 25	mA	Maximum current per pin (absolute maximum rating)
± 95	mA	Maximum current in/out, total (absolute maximum rating)

External Components and Connections

2×	100 nF	ceramic cap	one per power input pin couple, widely considered best practice
2×	10 nF	ceramic cap	additionally if the ADC is used, one per power input pin couple

Pinout



- PIC16F882/883/884/886/887 Data Sheet
  `http://ww1.microchip.com/downloads/en/DeviceDoc/40001291H.pdf`

ATmega 328P

Key Electrical Specifications

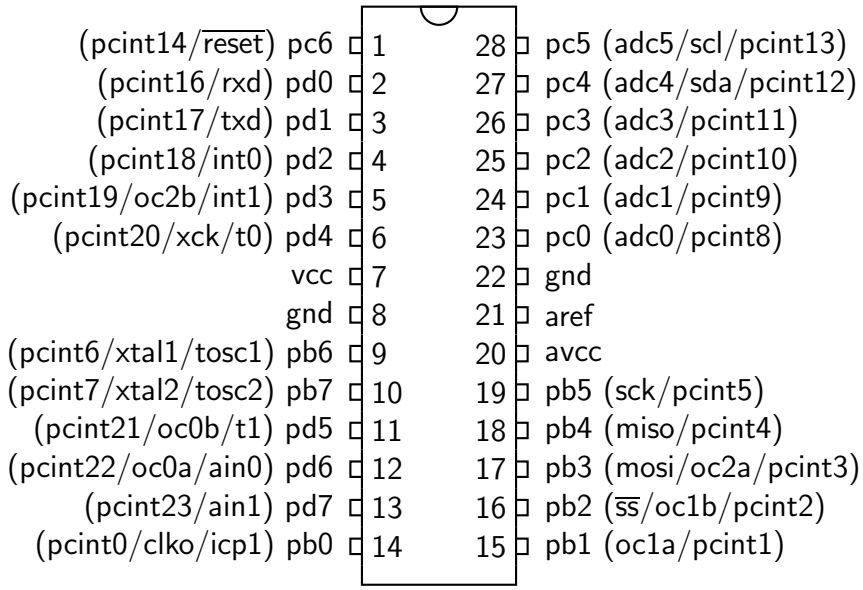
1.8–5.5	V	Operating voltage range, at reduced clock speed
4.5–5.5	V	Operating voltage range, at full clock speed
± 40	mA	Maximum current per pin (absolute maximum rating)
± 200	mA	Maximum current in/out, total (absolute maximum rating)

External Components and Connections

1×	10 kΩ	resistor	between RESET and VCC
1×	100 nF	ceramic cap	between VCC and GND
1×	100 nF	ceramic cap	between AREF and GND if ADC is used

- AVCC and VCC should be externally connected; if the ADC is actually used, use a low pass filter (see datasheet), otherwise connect directly.
- If the fuse bits are set accordingly, then an external clock source/oscillator/resonator may also be required to even program the device.

Pinout



- Datasheet Summary
  `http://www.atmel.com/Images/Atmel-42735-8-bit-AVR-Microcontroller-ATmega328-328P_Summary.pdf`
- Datasheet Complete
  `http://www.atmel.com/Images/Atmel-42735-8-bit-AVR-Microcontroller-ATmega328-328P_datasheet.pdf`

MSP430 G2553

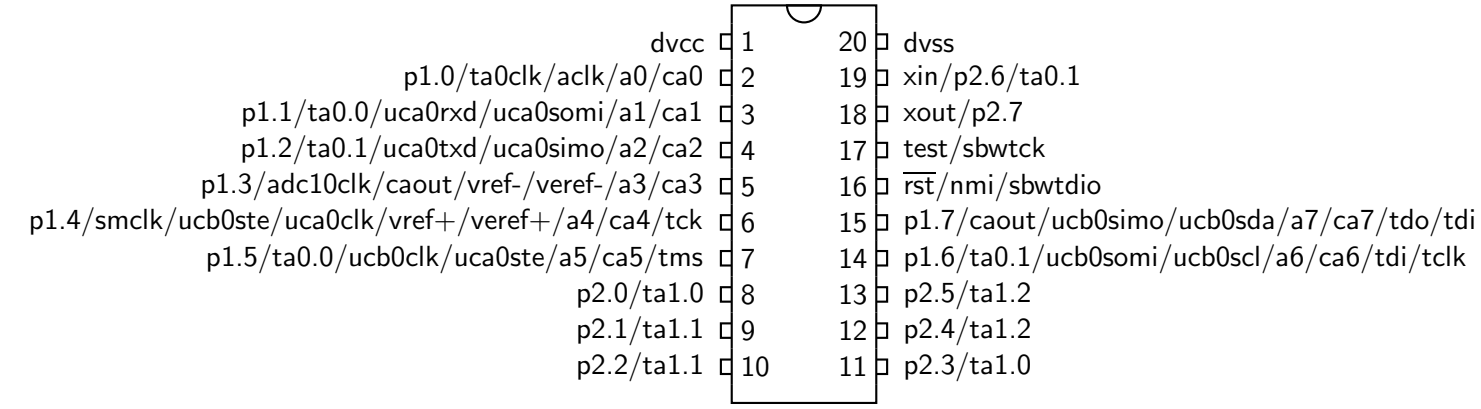
Key Electrical Specifications

1.8–**3.6**	V	Operating voltage range, at full clock speed
± ???	mA	Maximum current per pin
± 48	mA	Maximum current in/out, total

External Components and Connections

1×	47 kΩ	resistor	between RESET and VCC
1×	2.2 nF	ceramic cap	between RESET and GND
1×	100 nF	ceramic cap	between VCC and GND
1×	10 μF	electrolytic cap	between VCC and GND (only for ADC?)

Pinout



- MSP430G2x53 MSP430G2x13 Mixed Signal Microcontroller Datasheet
  `http://www.ti.com/lit/ds/symlink/msp430g2553.pdf`
- MSP430x2xx Family User's Guide
  `http://www.ti.com/lit/ug/slau144j/slau144j.pdf`