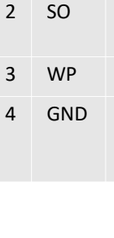
Power Supply

- VCC – Positive Voltage
- VSS/GND – Ground/Negative Voltage
- Common Voltage: 5V/3.3V/1.7V/1.2V
- All components should have a same ground reference.
- Laptop/PC is not a common GND

UART/Serial Port

- Usually 3 or 4 pin header

Serial Adapter Target
TX ---------- RX
RX ---------- TX
GND ---------- GND
It is never TX-TX or RX-RX.

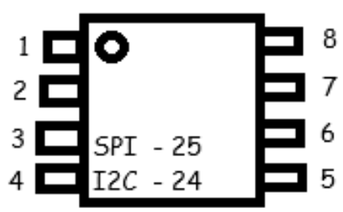


Voltage level and Common ground is important

Common Baudrate:
115200,9600,57600,38400

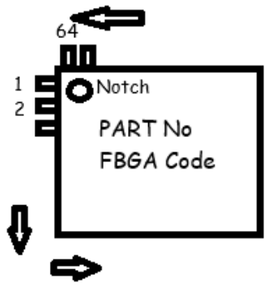
Flash/EEPROM

EEPROM – SPI(25Lxx) I2C(24Lxx)
Flash – SPI(25Qxx)



Memory-FTDI Mapping

Pin	SPI	I2C	FTDI /SPI	FTDI /I2C	Pin	SPI	I2C	FTDI /SPI	FTDI /I2C
1	CS	A0	AD3	GND	8	VCC	VCC	VCC	VCC
2	SO	A1	AD2	GND	7	HOLD	WP	VCC	VCC
3	WP	A2	VCC	GND	6	SCK	SCK	AD0	AD0
4	GND	GND	GND	GND	5	SI	SDA	AD1	AD1 / AD2



Pin identification

FT232H Pin Mapping

FTDI	UART	SPI	I2C	JTAG	SWD
AD0	TX	SCK	SCK	TCK	SCK
AD1	RX	MOSI	SDA	TDI	SDIO
AD2	RTS	MISO	SDA	TDO	SDIO
AD3	CTS	CS		TMS	
AD4	DTR				

Connect AD1/AD2 for SDIO/SDA

20-Pin Debug Connection

VCC	TRST	TDI	SWD/ TMS	SCK/ TCK	RTCK	SWO/ TDO	RESET	NC	NC
VCC	GND	GND	GND	GND	GND	GND	GND	GND	GND

10-Pin ST-Link Connection

RST	SWIM	GND	3.3V	5V
SCK	SWD	GND	3.3V	5V

10-pin Debug Connection

VCC	GND	GND	KEY	GND
SWD/ TMS	SCK/ TCK	SWO/ TDO	TDI	nRESET

Active Low: Enable by GND
Active High: Enable by VCC
Upperscore in pin label means it is active low

Multimeter:

- Voltage: Measured between two point
- Current: Measured in series between source and device
- Continuity: To see if two points are electrically connected
- Power = Voltage X Current

- **General tips:**
- Typical Temperature: 250-350C
- Always Tin your iron after done
- Heat the pad and not the pin/solder
- If it smells like barbecue, you're doing it wrong
- Don't touch PCB with bare hand
- Double check connections twice before powering

Hardware Hacking CheatsheetV2

@marunmagesh

Useful Commands

Serial:

screen /dev/ttyUSBx (COMx) <baudrate>
close screen: CTRL+X – K– Y
log: -L -Logfile <Log_file_name>

flashrom

flashrom -p ft2232_spi:type=<FT232H/FT2232H>
-r <filename> - Read flash
-w <filename> - Write flash
-c <chipname> - To use flash chip name

openocd

openocd -f interface/<dev.cfg>
-f target/<target.cfg>
In linux it is in usr\local\share\openocd\scripts\

Open session: telnet localhost:4444
Halt the CPU: halt
Reset the CPU: reset
Init the CPU: init
Flash info: flash info bank <id>
Flash dump: flash dump_image <file>
<address><size>

GDB

Start gdb: gdb-multiarch
Select arch: set arch <arm/mips>
Connect to target: target remote
<localhost>:3333
Breakpoint: break <address>
Register: info register
Print memory: x/<nf>
n- no of byte f – format character(a/c/x/s/o)

I2C:

I2cdetect -y 1

File:

vbindiff <file1> <file2>
hexdump -C <file>
<target>-objdump -D -b binary -marm <file>