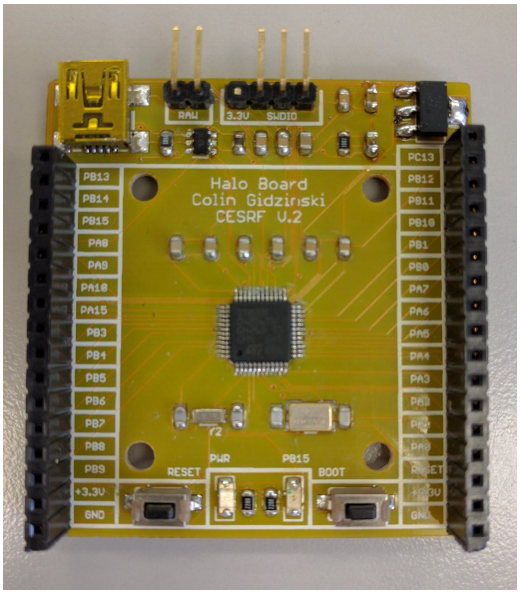
Halo Main V.2

September 14, 2016

Product Overview

Halo Main is a multi purpose hardware platform intended for applications that a variety of different needs and many GPIO pins. Multiple different MCU's can be used with the board to change what features are present.



Hardware

- 28 GPIO
- 4.5V to 10V with 800ma
- Boot and Reset Buttons
- Power LED
- USB Port for Power and Data
- 1x 17 Pin Headers for GPIO
- 1x 16 Pin Headers for GPIO
- ISP Port for ST-LINK

Details

- Halo mini can be programmed through an ST-Link V2 using the connection at the top or usb if the MCU supports it.
- Main MCU can be swapped out to other versions depending on what the job requires.
    - STM32F042 MCU (48Mhz) Crystal-less USB
    - STM32F103 MCU (72Mhz) Standard
    - STM32L052 MCU (32Mhz) Low Power
- Most pins can be reassigned to other functions such as ADC, I/O, etc.

Board and Schematic Repo

- https://github.com/cgidzinski/CesrfBoard

Parts List

Part	Value	Package	Description
C1	10uf	0805	Capacitor
C2	0.1uf	0805	Capacitor
C3	0.1uf	0805	Capacitor
C4	0.1uf	0805	Capacitor
C5	0.1uf	0805	Capacitor
C6	1uf	0805	Capacitor
C7	0.1uf	0805	Capacitor
C8	22uf	0805	Capacitor
C9	6pf	0805	Capacitor
C10	6pf	0805	Capacitor
C11	18pf	0805	Capacitor
C12	18pf	0805	Capacitor
C13	10uf	0805	Capacitor
C14	0.01uf	0805	Capacitor
C15	0.1uf	0805	Capacitor
C16	4.7uf	0805	Capacitor
D1	Power	1206	LEDs
D2	PB15	1206	LEDs
IC1	STM32F103	TQFP48	MCU **OR**
IC1	STM32F042	TQFP48	MCU **OR**
IC1	STM32L052	TQFP48	MCU **OR**
J1	Header	1X04	Header 4
J3	Header	1X02	Header 2

J4	USB-MINIB	USB-MINIB	Mini-USB "B"
J5	Header	1X17	Header 17
J6	Header	1X16	Header 16
L1	220Ω EMI	0805	Ferrite Bead (BLM18PG221SN1D)
R1	10K	0805	Resistor
R2	220	0805	Resistor
R3	220	0805	Resistor
R5	1.5K	0805	Resistor
S1	BOOT	SMD	NO switch
S2	RESET	SMD	NO switch
U1	1117-3.3V	SOT223	Voltage Regulator LM1117
VD1	USBLC6-2SC6	SOT-23-6L	2 Line ESD PROTECTION
Y1	8Mhz	5X3	Main Crystal
Y2	32Khz	3.2X1.5	RTC Crystal

Notes

STM32cubeMX software can be used to help select pin functionality and create base code and then edited in the free version of Keil.

Arduino Software With STM32F103

https://github.com/rogerclarkmelbourne/Arduino_STM32/wiki/Installation

Errata

- ISP Pin 3.3V is not connected
- +3.3V Label on right header is actually 5V