VIVA Bluescreen, REV 1.2

Overview

The VIVA Bluescreen is a 1602 LCD driver board with four interface modes (UART, I2C, SPI, Bluetooth). The Bluescreen may be used as an accessory for microcontroller projects, a debugging tool for smartphone apps requiring Bluetooth communication, and a low-cost software development platform for the CC2541.

Powering the Device

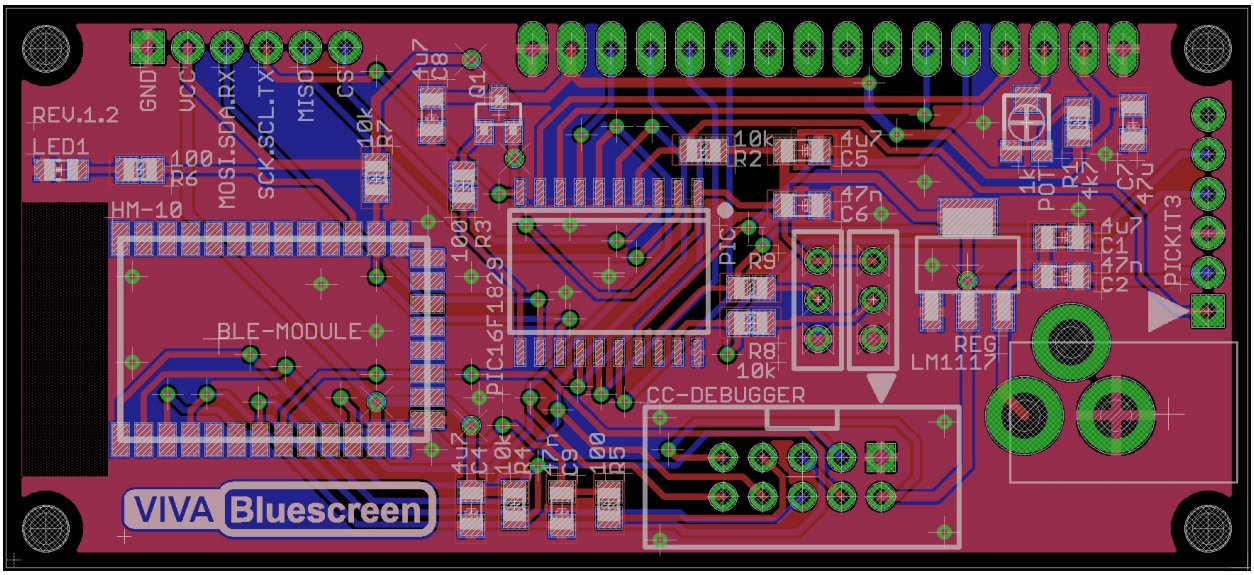
The device operates on 3.3V and can be powered through a 2.1mm DC jack, the VIVA Serial header or the PICkit3 header.

VIVA Serial Header

The Bluescreen has a six (6) pin connector which may be used to power the board and interface via UART, I2C or SPI. The serial mode can be selected using the two (2) selector switches.

Bluetooth

The Bluetooth is implemented by an HM10 module. The HM10 is fully connected to a 10-pin CC Debugger header – enabling the HM10 to be programmed and debugged. Using Texas Instrument's Code Composer Studio, the HM10 can be used as a Bluetooth packet sniffer[1].



[1] Need to add link!

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Pin Designations

PIC16F1829

PDIP, SOIC, TSSOP

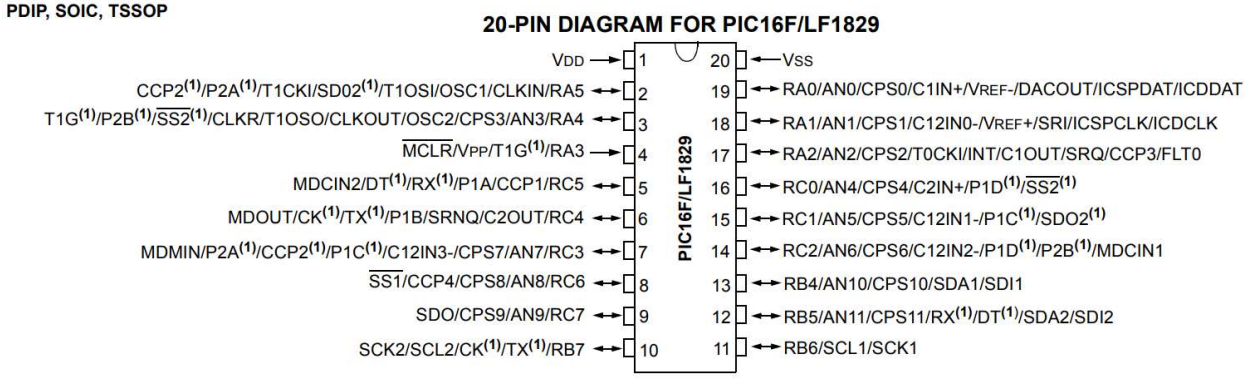


Figure 1 - Pinout Diagram (source: microchip.com)

Pin #	PIC16 Pin Name	Destination	Description	NOTE
1	VDD	VDD	Power	
2	RA5	VIVA.5	Serial Interface	SPI.MISO
3	RA4	VIVA.6	Serial Interface	SPI.CS
4	RA3	MCLR		
5	RC5	BLE.TX	BLE UART	
6	RC4	BLE.RX	BLE UART	
7	RC3	LCD.D7	LCD Data	
8	RC6	LCD.E	LCD Enable	
9	RC7	LCD.RS	LCD Register Select	
10	RB7	VIVA.4	Serial Interface	UART.TX; I2C.SCL; SPI.SCK
11	RB6	LCD.PWR	Switch LCD Power	Low = LCD “on”
12	RB5	VIVA.3	Serial Interface	UART.RX; I2C.SDA; SPI.MOSI
13	RB4	BLE.SK	BLE System Key	Allows PIC to key HM10
14	RC2	LCD.D6	LCD Data	
15	RC1	LCD.D5	LCD Data	
16	RC0	LCD.D4	LCD Data	
17	RA2	LCD.RW	LCD Read/Write	
18	RA1	B3 (ICSPC)	Button	Button Pulls Down
19	RA0	B4 (ICSPD)	Button	Button Pulls Down
20	VSS	GND	Ground	

VIVA Serial Header

Pin #	Pin Name	PIC16 Pin Name	Functions
1	GND	-	
2	VDD	-	Use to power the Bluescreen. (3.3V ONLY!)
3	VIVA.3	RB5	UART.RX; I2C.SDA; SPI.MOSI
4	VIVA.4	RB7	UART.TX; I2C.SCL; SPI.SCK
5	VIVA.5	RA5	SPI.MISO
6	VIVA.6	RA4	SPI.CS

HM-10

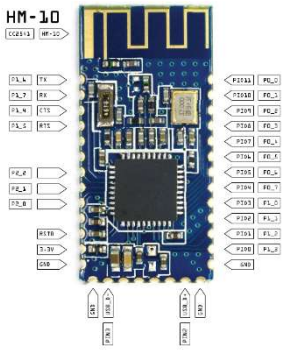
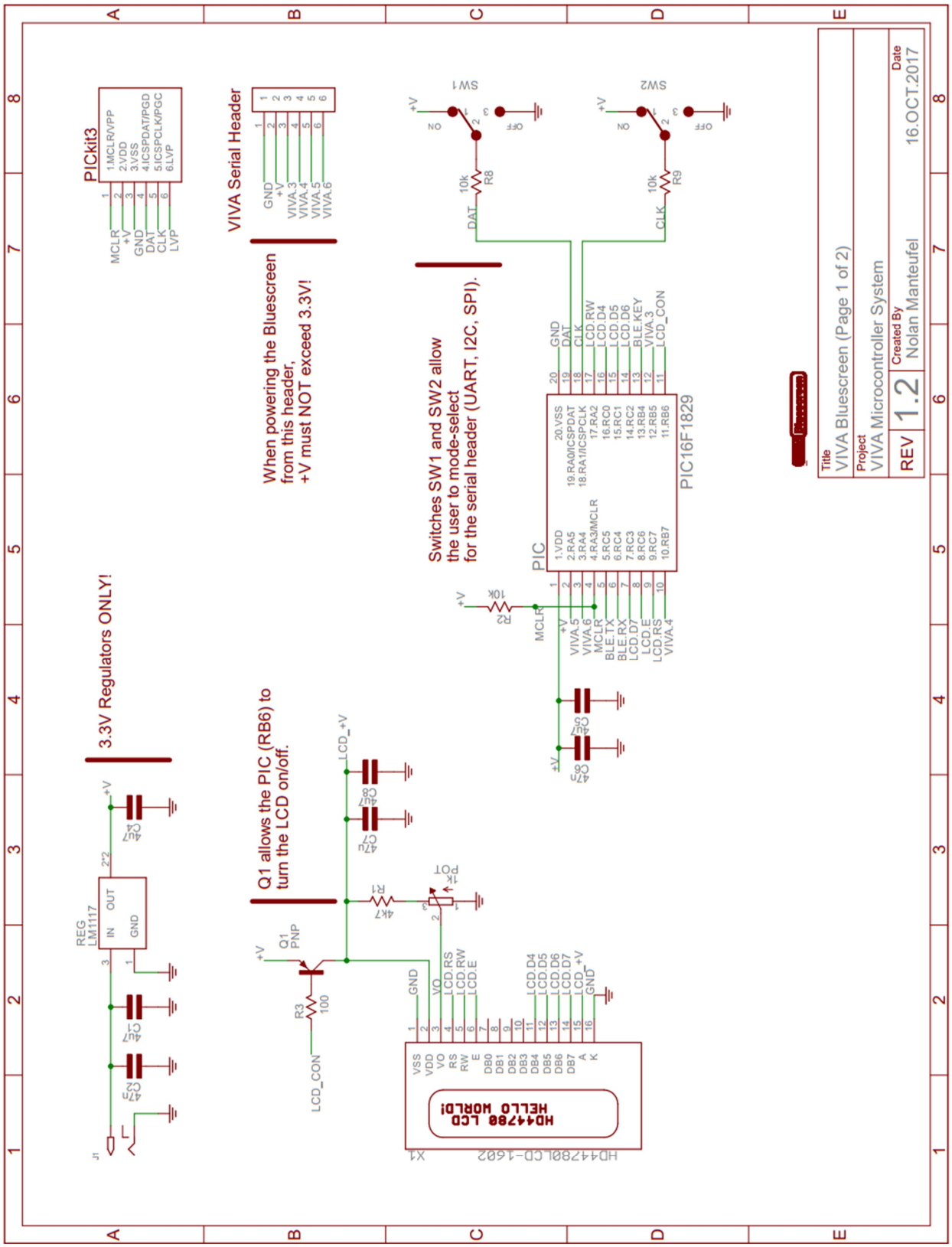


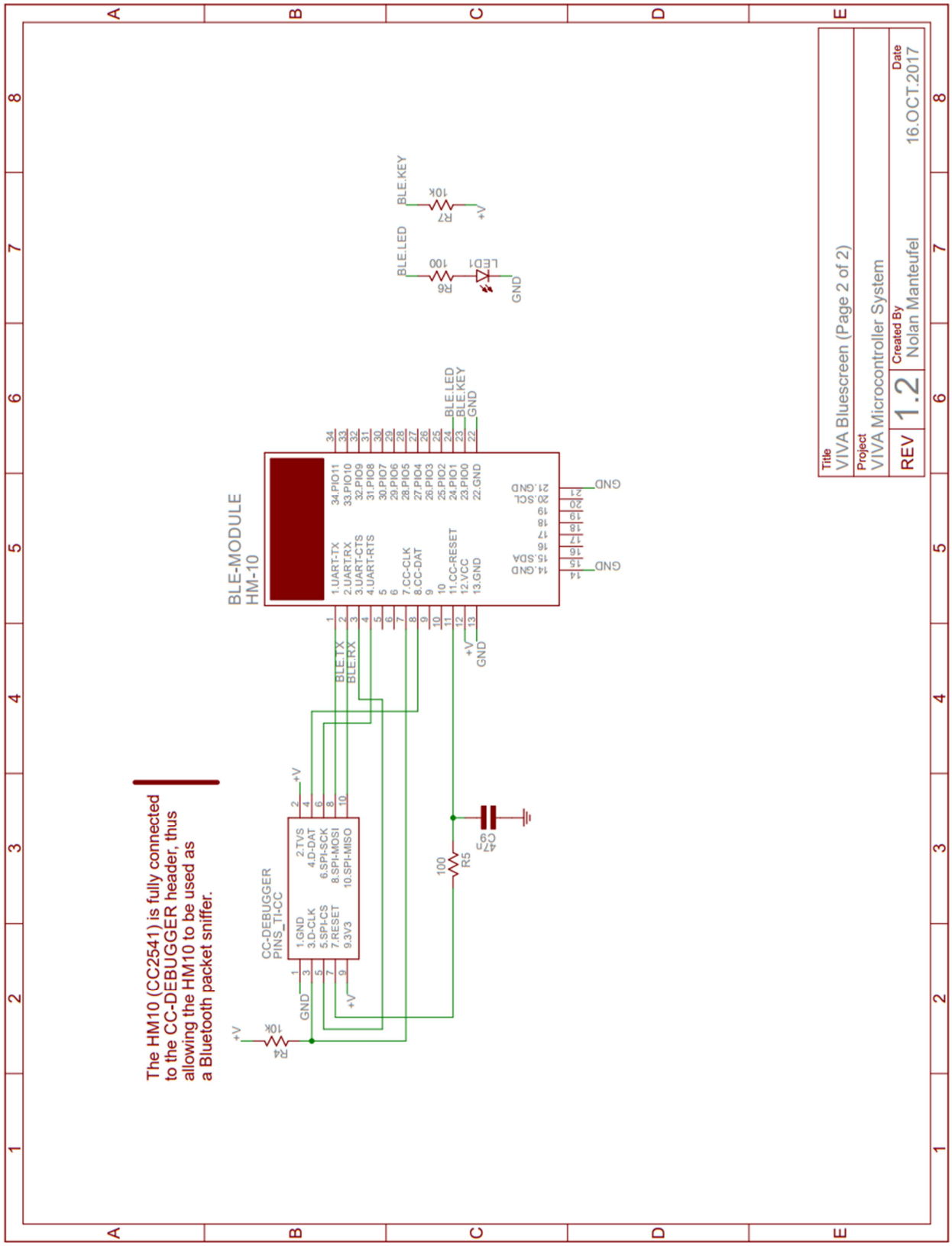
Figure 2 - Pinout Diagram (source: github.com/nickswalker/ble-dev-kit/wiki/HM-10-Pinout)

HM-10 Pin #	HM-10 Pin Name	CC2541 Pin Name	PIC16 Pin Name	Note
1	TX	P1.6	RC5	CC-Debugger (P8, SPI.MOSI)
2	RX	P1.7	RC4	CC-Debugger (P10, SPI.MISO)
3	CTS	P1.4		CC-Debugger (P5, SPI.CS)
4	RTS	P1.5		CC-Debugger (P6, SPI.SCK)
5				
6				
7		P2.2		CC-Debugger (P3, D-CLK)
8		P2.1		CC-Debugger (P4, D-DAT)
9		P2.0		
10				
11		RESET		CC-Debugger (P7, RESET)
12	3v3			
13	GND			
14	GND			
15		SDA		
16				
17				
18				
19				
20		SCL		
21	GND			
22	GND			
23	PIO0	P1_3	RB4	HM10 System Key
24	PIO1	P1_2		HM10 System LED / PIC Digital Output
25	PIO2	P1_1		
26	PIO3	P1_0		
27	PIO4	P0_7		
28	PIO5	P0_6		
29	PIO6	P0_5		
30	PIO7	P0_4		
31	PIO8	P0_3		
32	PIO9	P0_2		
33	PIO10	P0_1		
34	PIO11	P0_0		

Schematic (page 1)



Schematic (page 2)



Notes