INFORMAL REVISION HISTORY

* 080829
- STARTED WITH TK0171-74-01
- Remove original IO for PUSHBUTTON2 and PUSHBUTTON3. use Debug_Data and Debug_clk for these two button
- Remove original IO for PUSHBUTTON4, PUSHBUTTON4 is defined as PUSHBUTTON2 & PUSHBUTTON3 are simultaneously pressed.
- Add RGB LED, use P2.1, P1.3, P1.5 to control it.

* 080907
- Change the Antenna to TYCO 2.4G type (GEN2 HUB Antenna).
- Add I2C interface LED controller PCA9633 to control RGB LED.
- Add two buttons, separate button board from mainboard.
- Change R31 to 1K to increase charging current (0.8A)
- Remove Diode Bridge from charging circuit and add power in connector.
- Change the manual reset circuit with "ESP button plus Key 5"

*081105
- Change R31 to 1.6K to decrease the charge current to 0.5A
- Change RGB LED part number and connection.
- Change L1 to 5.1nH.
- Add two BAT54C for keypad I/O multiplex
- Change battery connector to 1.5mm pitch.
- Add SS12 in front of power input.

1 - COVER
2 - CC2431, IRDA, FLASH
3 - PWR SUPPLIES, SWITCH I/O
4 - CHARGER & GAS GAUGE
5 - OLED CONNECTOR, BUZZ, VIBE DRIVE

HUB Lite SCHEMATIC

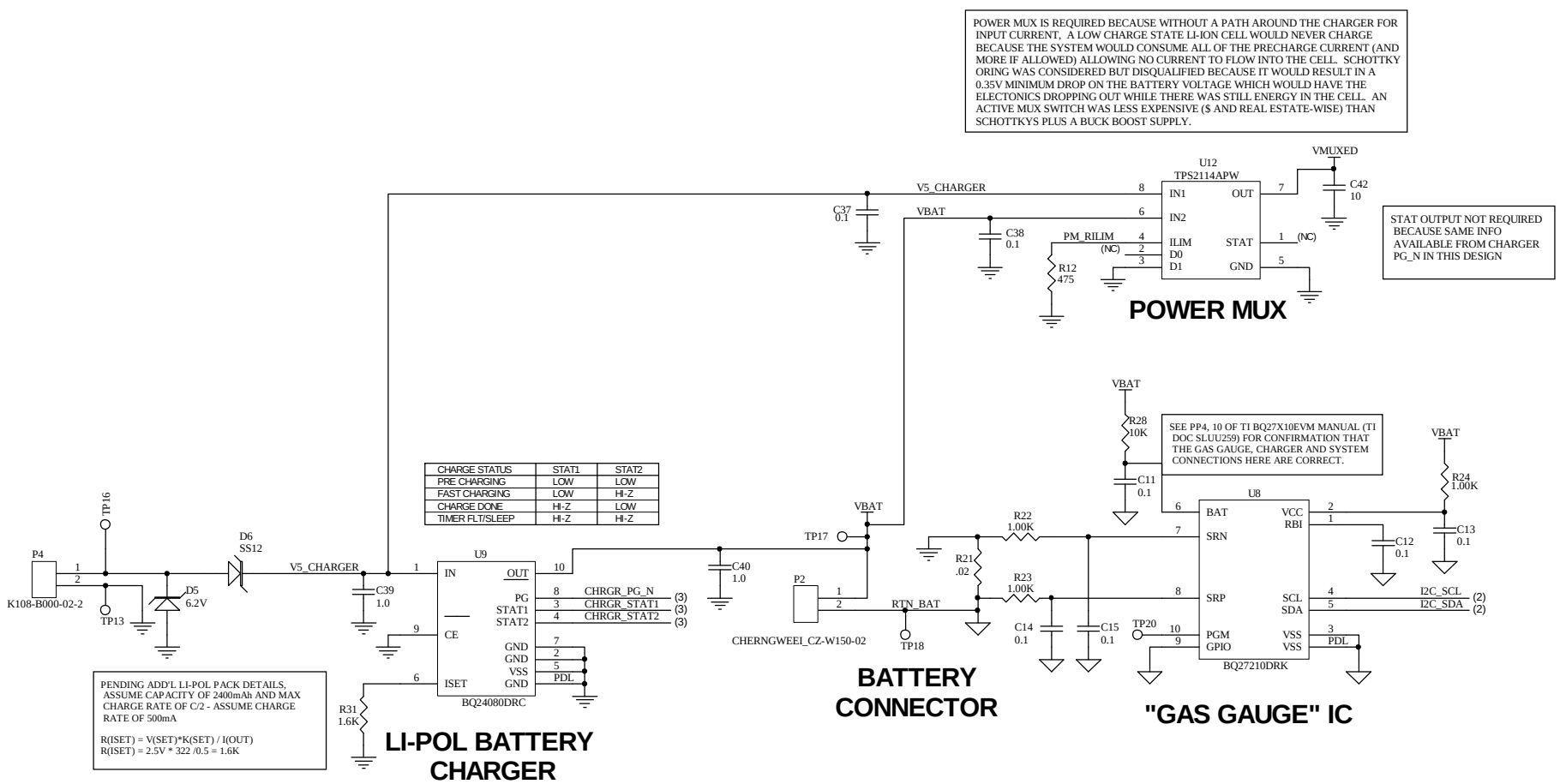
Sht03_Power
Sht03_Power.Sch

Sht04_Battery_Interface
Sht04_Battery_Interface.Sch

Sht02_CC2431
Sht02_CC2431.Sch

Sht05_OLED_Interface
Sht05_OLED_Interface.Sch

Title: HUBLITE MAIN BOARD		
Size: B	Number: COVER	Revision: V2
Date: 13-Feb-2009		Sheet of
File: D:\Workshop\ESP\3rd Research\HUB Lite\Design V2.0\hubliteV2.0.ddb		Drawn By:

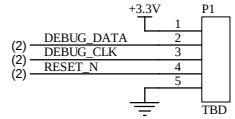


BATTERY CHARGER, GAS GAUGE & POWER MUXING

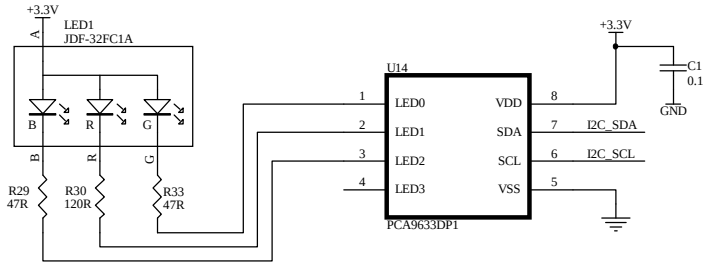
4

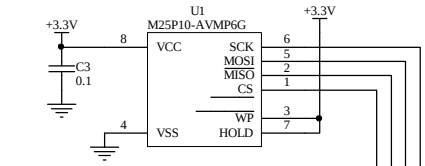
Title: HUBLITE MAIN BOARD		
Size: B	Number: BATTERY	Revision: V2
Date: 13-Feb-2009	Sheet of	
File: D:\Workshop\ESP\3rd Research\HUB Lite\Design V2.0\hubliteV2.0.ddb		

DNP IN PRODUCTION BUT NEED TO PUT A SMALL BUT SOFTWARE DEVELOPMENT FRIENDLY HEADER FOOTPRINT ON THE BOARD. POSSIBLY A SMT FOOTPRINT THAT COULD ALSO BE BED OF NAILS FRIENDLY FOR PRODUCTION PROGRAMMING.

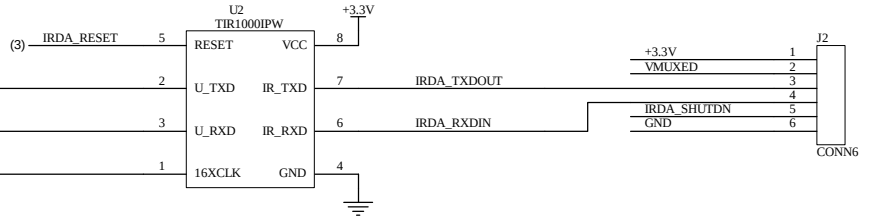


CC2431 PGM & DEBUG CONNECTIONS

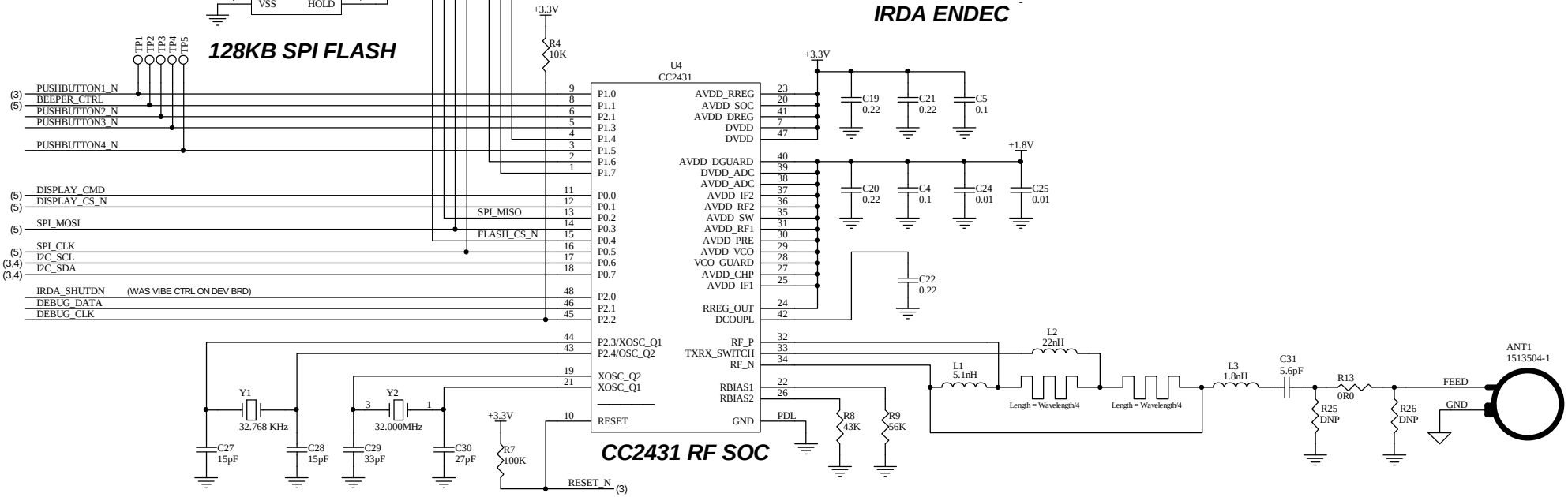




128KB SPI FLASH



IRDA ENDEC

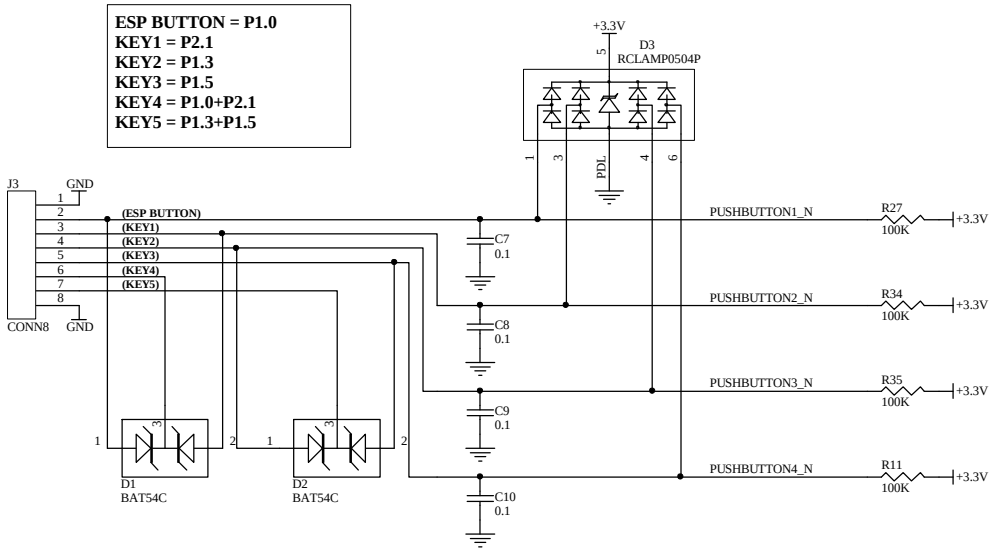


CC2431 RF SOC

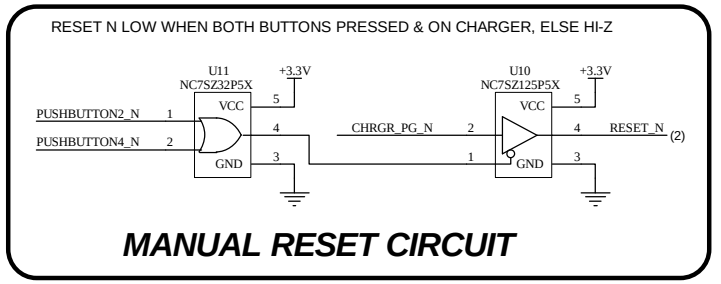
2

CC2431, IRDA & FLASH

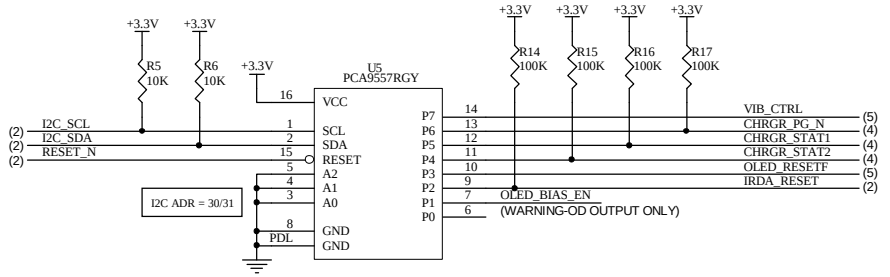
Title: **HUBLITE MAIN BOARD**		
Size: B	Number: **CC2431**	Revision: **V2**
Date: 13-Feb-2009	Sheet of	
File: D:\Workshop\ESP\3rd Research\HUB Lite\Design V2.0\hubliteV2.0.ddb		



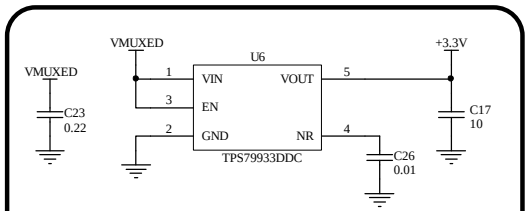
BUTTON FPC CONNECTIONS



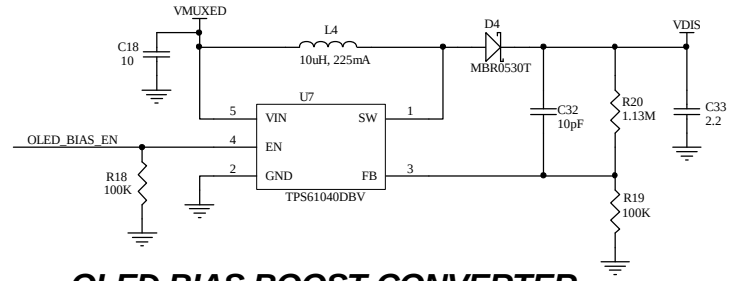
MANUAL RESET CIRCUIT



I2C I/O EXPANDER



3.3V LDO REGULATOR



OLED BIAS BOOST CONVERTER

3

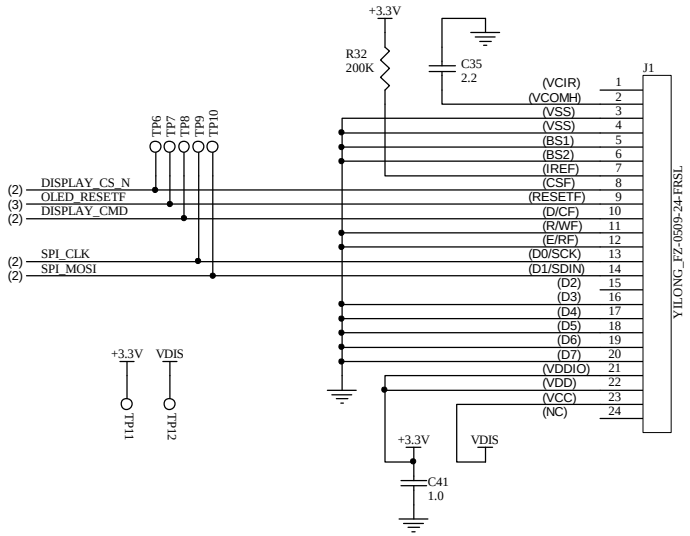
3.3V LDO, OLED BIAS SUPPLY AND SWITCH CONNECTORS

Title: HUBLITE MAIN BOARD		
Size: B	Number: POWER	Revision: V2
Date: 13-Feb-2009		Sheet of
File: D:\Workshop\ESP\3rd Research\HUB Lite\Design V2.0\hubliteV2.0.ddb		

OLED CONNECTOR NOTE

THERE IS AN FPC ADAPTER BETWEEN THIS BOARD AND THE RIT DISPLAY. SINCE THE DISPLAY HAS 25 PINS BUT THIS CONNECTOR ONLY HAS 24 PINS, THE "NC" PIN 1 ON THE DISPLAY DOES NOT CONNECT TO THIS BOARD. THIS CAUSES THE BOARD VS DISPLAY PIN NUMBERS TO BE SKEWED BY ONE.

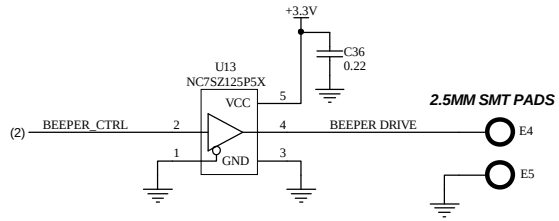
BOARD PIN 1 = DISPLAY PIN 2
BOARD PIN 24 = DISPLAY PIN 25



OLED DISPLAY CONNECTOR

NOTE:

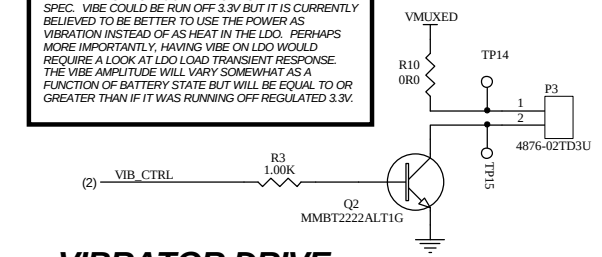
CC2431 PORT PIN 1.1 HAS AN ADVERTISED 20mA SOURCE/SINK CAPABILITY WHICH SHOULD BE CAPABLE OF DRIVING THE PIEZO DIRECTLY. THE 25mA BUFFER IS INCLUDED HERE TO MITIGATE RISK RELATED TO HAVING THE PROCESSOR DIRECTLY SOURCE AC INTO THE CAPACITIVE LOAD OF THE PIEZO. ONCE THE SYSTEM IS STABLE AND WELL CHARACTERIZED IT MAY BE POSSIBLE TO REMOVE THIS BUFFER AND DRIVE DIRECTLY FROM THE PORT PIN.



PIEZO BEEPER DRIVE

NOTE:

VIBRATOR SPEC IS 2.0V TO 4.0V OPERATING SO RESISTOR WILL NEED TO DROP ~0.3V MINIMUM TO KEEP WITHIN SPEC. VIBE COULD BE RUN OFF 3.3V BUT IT IS CURRENTLY BELIEVED TO BE BETTER TO USE THE POWER AS VIBRATION INSTEAD OF AS HEAT IN THE LDO. PERHAPS MORE IMPORTANTLY, HAVING VIBE ON LDO WOULD REQUIRE A LOOK AT LDO LOAD TRANSIENT RESPONSE. THE VIBE AMPLITUDE WILL VARY SOMEWHAT AS A FUNCTION OF BATTERY STATE BUT WILL BE EQUAL TO OR GREATER THAN IF IT WAS RUNNING OFF REGULATED 3.3V.

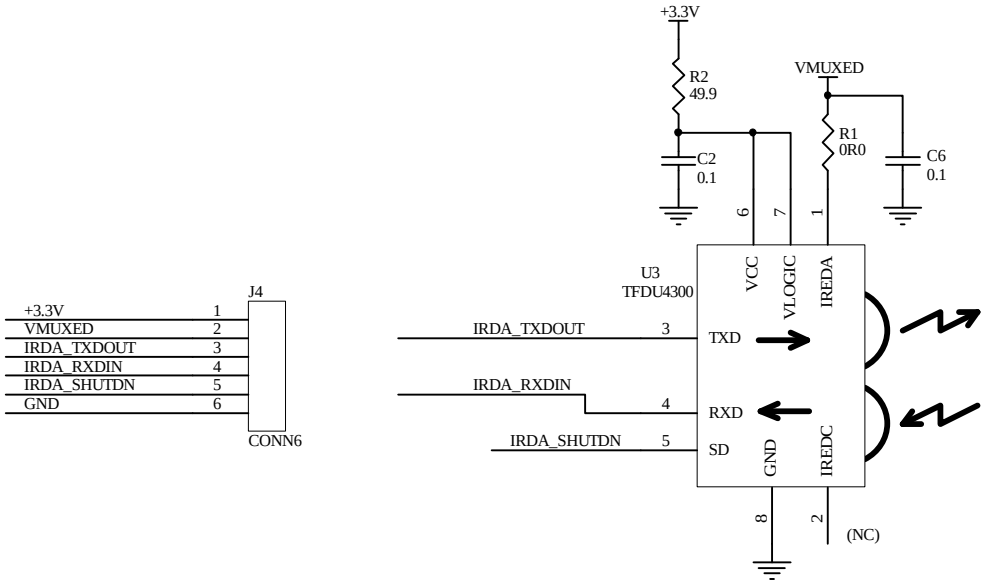


VIBRATOR DRIVE

5

OLED DISPLAY, BEEPER & VIBRATOR I/O

Title: HUBLITE MAIN BOARD		
Size: B	Number: OLED	Revision: V2
Date: 13-Feb-2009	Sheet of	
File: D:\Workshop\ESP\3rd Research\HUB Lite\Design V2.0\hubliteV2.0.ddb	Drawn By:	


+3.3V
R2
49.9
VMUXED
R1
0R0
C2
0.1
C6
0.1
6
7
1
U3
TFDU4300
VCC
VLOGIC
IREDA
IRDA_TXDOUT
3
TXD
IRDA_RXDIN
4
RXD
IRDA_SHUTDN
5
SD
GND
IREDC
8
2
(NC)
J4
+3.3V 1
VMUXED 2
IRDA_TXDOUT 3
IRDA_RXDIN 4
IRDA_SHUTDN 5
GND 6
CONN6

IRDA XCVR