

- * 071102 - STARTED WITH TK0149 DEVELOPMENT BOARD
 - REMOVED SWITCHES, BZR, VIBE, OSRAM DISPLAY ETC
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- * 071107 - Steve
 - ADD Bridge Rectifier into charge circuit.
 - Change L4 to MURATA low profile (0.9mm height) chip coil, MURATA P/N: LQH2M
 - Identify the part no. and package of P2&P3
 - Identify E1, E2, E3, E4, E5 position.
 - Identify the position and direction of OLED connector
 - Add FPC connectors
 - Clarify the pads of OLED bracket (See PCB)
- * 071119 - Chet
 - ADD INPUT POWER BRIDGE
 - ADD POWER MUX
 - ADD MANUAL RESET CIRCUIT
 - ADDED ESD PROTECTION ON BUTTON INPUTS
- * 071127 - Steve
 - ADD Test points for Production (TP1 to TP15)
 - ADD Reserve P1-matching-network component, Add RF Testpoint TP16
- * 071127 - Chet
 - Move RF testpoint outboard of matching network to allow better coverage
- 080220 - Chet
 - Move vibe control from bit 0 to bit 7 on I/O expander (bit 0 is open drain output only)
 - Ground the "ring" on the RF testpoint
 - Fix choked off VMUXED split plane that was keeping power from getting to vibe on -01
- * 080311 -03 Version
 - -03 Changes are PCB-only to make the board .8mm thick instead of 1.0mm thick.
 - In addition to the fab drawing notes, there are also trace width changes in the CC2341 RF transceiver per John Holt inputs
- * 080312 - 03 Version - Steve Changes
 - Change Y1 part number and footprint to Epson FC-145
 - Change D5 part number and footprint to SOT-23 version
 - Change L4 footprint (was too large)
- * 080512 - 04 Version Changes (all per 5/5/08 Steve Chen e-mail)
 - Delete TP16 (Antenna port testpoint)
 - Added TP17 on VBAT
 - Change Y1 footprint from FC-145 to FC-135
 - Remove E1 (big RESET F testpoint)
 - Change FPC1, FPC2 pads from 3.0mm to 3.5mm long
 - Move P2 down 1mm on layout
 - Move P3 down 3mm on layout
- * 080519 - Additional -04 Changes (Steve made)
 - Add test point on battery return (not gnd)
 - Swap pin 1 and pin 2 on P2 and P3 (hatt, vibe connectors)
 - Modify TFDU4300 silkscreen marking

TOD0:

* EVALUATE ALL PULLUPS / PULLDOWNS FOR CONTRIBUTION TO SLEEP CURRENT

per 5/5 steve e-mail

remove TP16

remove E1 (tp)

Move P2 butt conn 1mm down

Move P3 (vibe) down 3mm

make FPC1, FPC2 pads 3.5mm long (were 3.0mm)

Change Y1 package to FC-135

MAKE APPROPRIATE BOM MODS

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

TK0171-74-04 ESP WATCH SCHEMATIC

(080519A)

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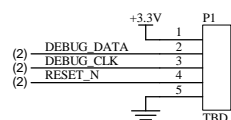
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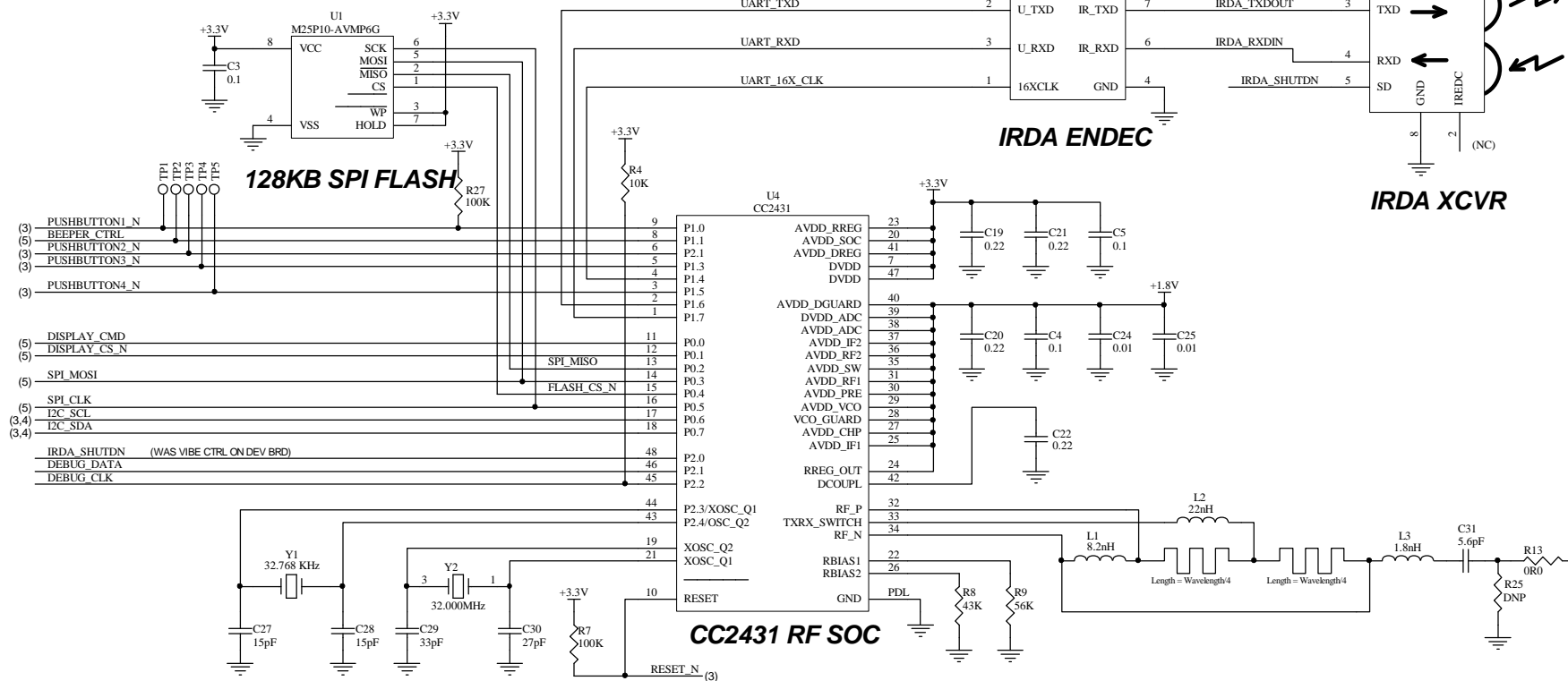
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Title			
SCHEMATIC, ESP GEN 3 WATCH			
Size	Number	Revision	
B	TK0171-74-04	-	
Date:	24-Nov-2008	Sheet 1 of	5
File:	D:\Workshop\ESP3rd Research\Design\Numbers\Watch\TK0171-22-04 ESP Watch.Dbb		

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.

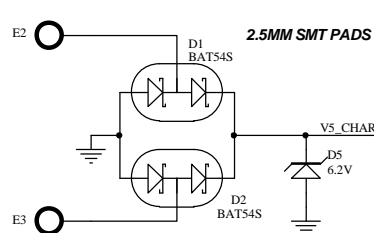


CC2431 PGM & DEBUG CONNECTIONS



CC2431, IRDA & FLASH

Title		
SCHEMATIC, ESP GEN 3 WATCH		
Size	Number	Revision
B	TK0171-74-04	-
Date:	24-Nov-2008	Sheet 2 of 5
File:	D:\Workshop\ESP3rd Research\Design\Nokia Watch\TK0171-22-04_ESP_Watch.Dtb	



PENDING ADD'L LI-POL PACK DETAILS,
ASSUME CAPACITY OF 400mAh AND MAX
CHARGE RATE OF C/2 - ASSUME CHARGE
RATE OF 170mA

$R(SET) = V(SET) * K(SET) / I(OUT)$
 $R(SET) = 2.5V * 322 / 0.17 = 4.75K$

CHARGE STATUS	STAT1	STAT2
PRE CHARGING	LOW	LOW
FAST CHARGING	LOW	HI-Z
CHARGE DONE	HI-Z	LOW
TIMER FLT/SLEEP	HI-Z	HI-Z

LI-POL BATTERY CHARGER

BATTERY CONNECTOR

POWER MUX

"GAS GAUGE" IC

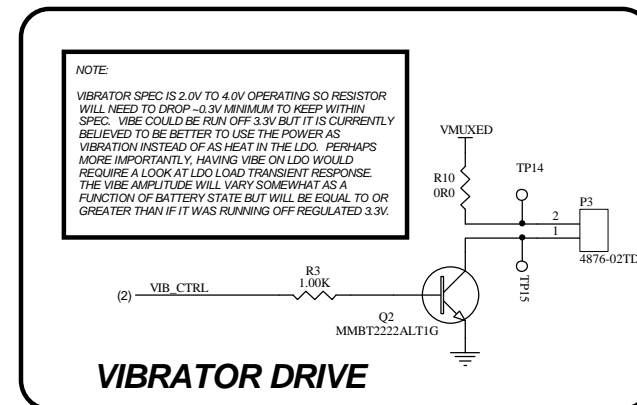
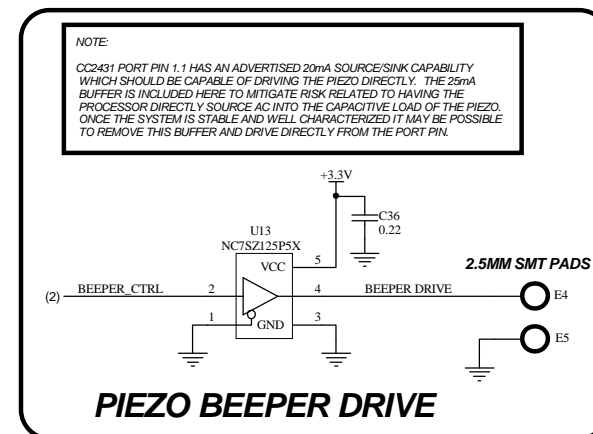
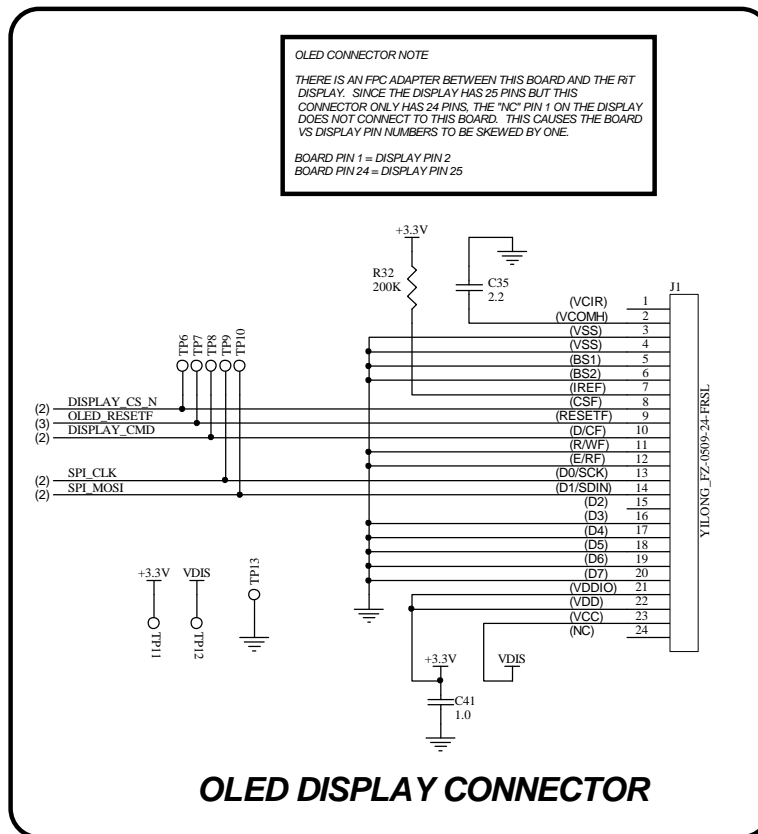
POWER MUX IS REQUIRED BECAUSE WITHOUT A PATH AROUND THE CHARGER FOR INPUT CURRENT, A LOW CHARGE STATE LI-ION CELL WOULD NEVER CHARGE BECAUSE THE SYSTEM WOULD CONSUME ALL OF THE PRECHARGE CURRENT (AND MORE IF ALLOWED) ALLOWING NO CURRENT TO FLOW INTO THE CELL. SCHOTTKY ORING WAS CONSIDERED BUT DISQUALIFIED BECAUSE IT WOULD RESULT IN A 0.35V MINIMUM DROP ON THE BATTERY VOLTAGE WHICH WOULD HAVE THE ELECTRONICS DROPPING OUT WHILE THERE WAS STILL ENERGY IN THE CELL. AN ACTIVE MUX SWITCH WAS LESS EXPENSIVE (\$ AND REAL ESTATE-WISE) THAN SCHOTTKYS PLUS A BUCK BOOST SUPPLY.

STAT OUTPUT NOT REQUIRED
BECAUSE SAME INFO
AVAILABLE FROM CHARGER
PG_N IN THIS DESIGN

SEE PP4, 10 OF TI BQ27X10EVM MANUAL (TI
DOC SLUU259) FOR CONFIRMATION THAT
THE GAS GAUGE, CHARGER AND SYSTEM
CONNECTIONS HERE ARE CORRECT.

BATTERY CHARGER, GAS GAUGE & POWER MUXING

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B	TK0171-74-04	-	
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OLED DISPLAY, BEEPER & VIBRATOR I/O

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SCHEMATIC, ESP GEN 3 WATCH		
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B	TK0171-74-04	-
Date:	24-Nov-2008	Sheet 5 of 5
File:	D:\Workshop\ESP3rd Research\Design\Nokia Watch\TK0171-22-04_ESP_Watch.Dtb	