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XBee module interface + Serial expansion connector

UL = UnLoaded = normally not mounted component.

Default jumper settings are indicated in the schematic.  
However, always check jumper positions on actual boards  
since there is no guarantee that all jumpers are in default place.

### Rev PA4

Added R63-R67 and D2. Changed R62 to 330R.  
Changed Q1-Q3 to PNP. Deleted Q4-Q6.

### Rev PA3

First public rev



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TITLE: LPCXpresso Experiment Board rev PA4

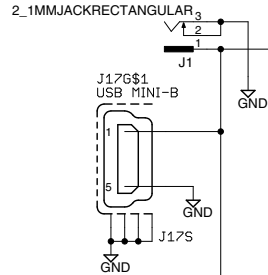
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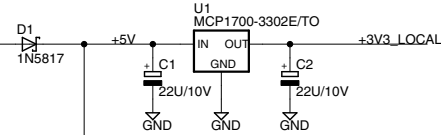
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# LPCXpresso connector

## Alternative +5V inputs

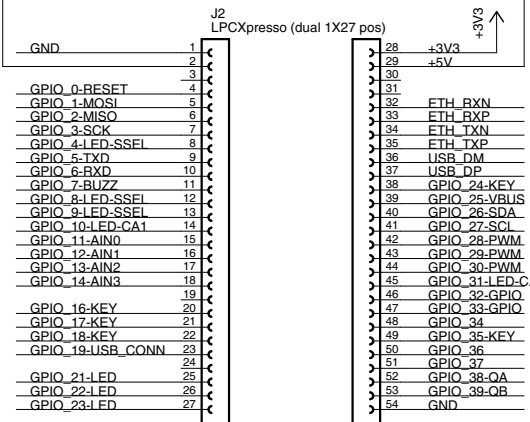


## 3.3V 250mA LDO



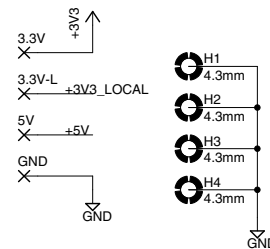
## LPCXpresso and mbed connector (pin naming is generic)

| mbed module         | LPCXpresso<br>LPC176x | LPCXpresso<br>LPC1343/111x          |
|---------------------|-----------------------|-------------------------------------|
| GND                 | GND                   | GND                                 |
| VIN (4.5-5.5V)      | VIN (4.5-5.5V)        | VIN (4.5-5.5V)                      |
| VB (battery supply) | VB (battery supply)   | not used                            |
| nR (reset)          | RESET_N               | Reset / PIO0_0                      |
| SPI1-MOSI           | P0.9 MOSI1            | PIO0_9 / MOSI / CT16B0_MAT1 / SWO   |
| SPI1-MISO           | P0.8 MISO1            | PIO0_8 / MISO / CT16B0_MAT0         |
| SPI1-SCK            | P0.7 SCK1             | PIO2_11 / SCK                       |
| GPIO                | P0.6 SSEL1            | PIO2_2 / SSEL / CT16B0_CAP0         |
| UART1-TX / I2C1-SDA | P0.0 TXD3/SDA1        | PIO1_7 / TXD / CT32B0_MAT1          |
| UART1-RX / I2C1-SCL | P0.1 RXD3/SCL1        | PIO1_6 / RXD / CT32B0_MAT0          |
| SPI2-MOSI           | P0.18 MOSI0           | PIO0_7 / CTS (LED)                  |
| SPI2-MISO           | P0.17 MISO0           | PIO2_0 / DTR                        |
| SPI2-SCL / UART2-TX | P0.15 TXD1/SCK0       | PIO2_1 / DSR                        |
| UART2-RX            | P0.16 RXD1/SSEL0      | PIO2_2 / DCD                        |
| AIN0                | P0.23 AD0.0           | TDI / PIO0_11 / AD0 / CT32B0_MAT3   |
| AIN1                | P0.24 AD0.1           | TMS / PIO1_0 / AD1 / CT32B1_CAP0    |
| AIN2                | P0.25 AD0.2           | TDO / PIO1_1 / AD2 / CT32B1_MAT0    |
| AIN3 / AOUT         | P0.26 AD0.3/AOUT      | TRST / PIO1_2 / AD3 / CT32B1_MAT1   |
| AIN4                | P1.31 AD0.4           | SWDIO / PIO1_3 / AD4 / CT32B1_MAT2  |
| AIN5                | P1.31 AD0.5           | PIO1_4 / AD5 / CT32B1_MAT3 / WAKEUP |
|                     | P0.2                  | PIO1_5 / RTS / CT32B0_CAP0          |
|                     | P0.3                  | PIO1_8 / CT16B1_CAP0                |
|                     | P0.21                 | PIO1_6 / USB_CONNECT / SCK          |
|                     | P0.22                 | SWCLK / PIO0_10 / SCK / CT16B0_MAT2 |
|                     | P0.27                 | PIO3_0                              |
|                     | P0.28                 | PIO3_1                              |
|                     | P2.13                 | PIO3_2                              |



| LPCXpresso<br>LPC1343/111x                         | LPCXpresso<br>LPC176x                              | mbed module         |
|--|--|---------------------|
| VOUT (+3.3V out) if self powered, else +3.3V input | VOUT (+3.3V out) if self powered, else +3.3V input | VOUT (3.3V out)     |
| not used   | not used   | VU (5.0V USB out)   |
| not used   | not used   | IF+                 |
| not used   | not used   | IF-                 |
| not used   | not used   | RD- (Ethernet)      |
| not used   | not used   | RD+ (Ethernet)      |
| not used   | not used   | TD- (Ethernet)      |
| not used   | not used   | TD+ (Ethernet)      |
| not used   | not used   | D- (USB)            |
| USB_DM PIO2_4 for LPC111x                          |  | D+ (USB)            |
| USB_DP PIO2_5 for LPC111x                          |  | CAN-RD              |
| PIO0_1/CLKOUT/CT32B0_MAT2                          | CAN_RX2  | CAN-TD              |
| PIO0_3 / USB_VBUS                                  | CAN_TX2  | CAN-TD              |
| PIO0_5 / SDA                                       | P0.5 TXD2/SDA2                                     | UART3-TX / I2C2-SDA |
| PIO0_4 / SCL                                       | P0.10 RXD2/SCL2                                    | UART3-RX / I2C2-SCL |
| PIO1_9 / CT16B1_MAT0                               | P0.11 PWM1.1                                       | PWMOUT0             |
| PIO1_10 / AD6 / CT16B1_MAT1                        | P2.1 PWM1.2  | PWMOUT1             |
| PIO1_11 / AD7                                      | P2.2 PWM1.3  | PWMOUT2             |
| PIO2_3 / RI  | P2.3 PWM1.4  | PWMOUT3             |
| PIO2_4 PIO3_4 for LPC111x                          | P2.4 PWM1.5  | PWMOUT4             |
| PIO2_5 PIO3_5 for LPC111x                          | P2.5 PWM1.6  | PWMOUT5             |
|  | P2.6   |                     |
|  | P2.7   |                     |
|  | P2.8   |                     |
|  | P2.10  |                     |
|  | P2.11  |                     |
|  | P2.12  |                     |
|  | GND  |                     |

Note: See User's Manual for information about pinning for all different LPCXpresso target boards!



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TITLE: LPCXpresso Experiment Board rev PA4

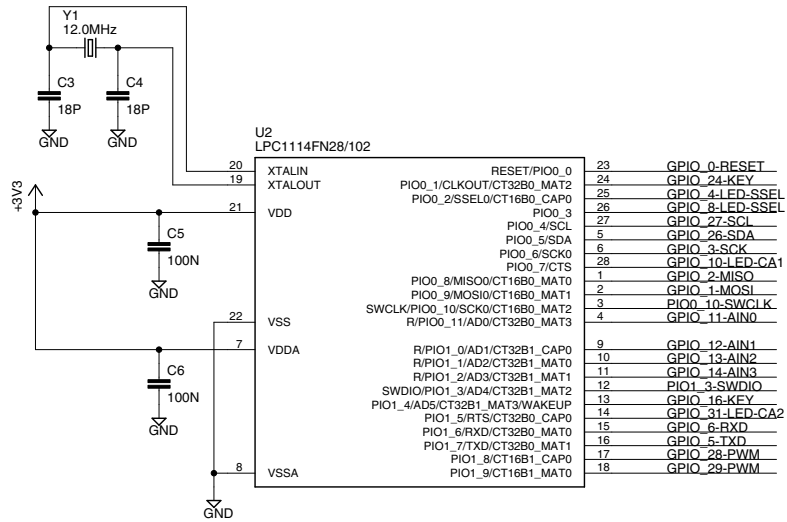
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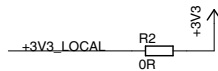
Sheet: 2/7

# LPC1114 in DIL28

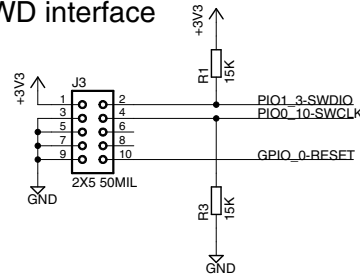
Mount only when working with LPC1114 in DIL28 package



Create +3.3V from local voltage regulator



SWD interface



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TITLE: LPCpresso Experiment Board rev PA4

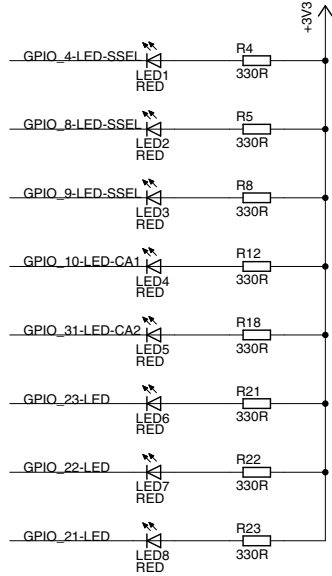
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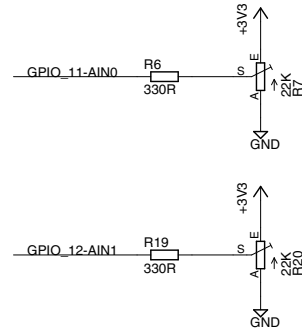
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# Through Hole Components, part 1

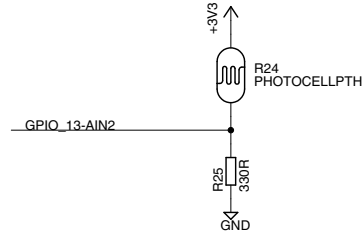
## 8 RED LEDs



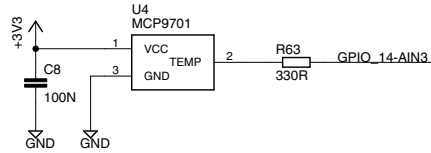
## 2 Analog Inputs



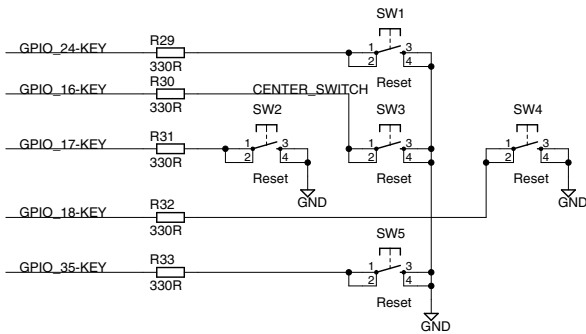
## Light Sensor



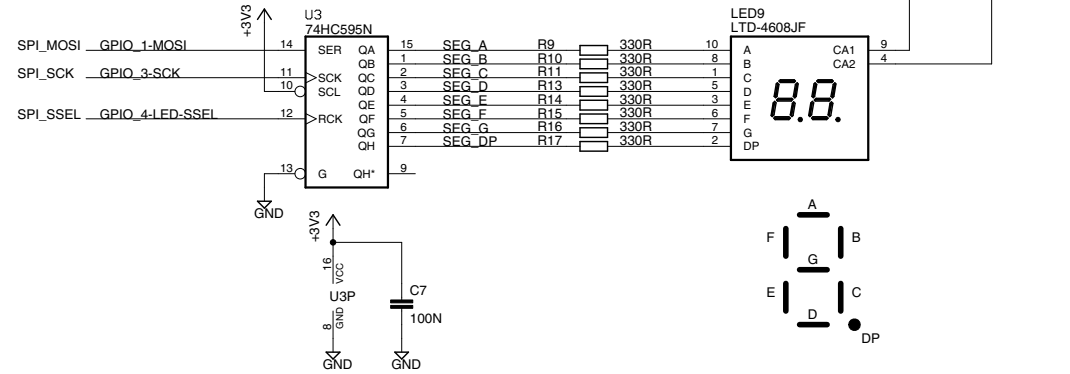
## Temperature Sensor



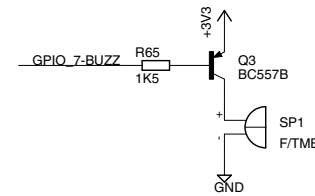
## 5 push-buttons in joystick configuration



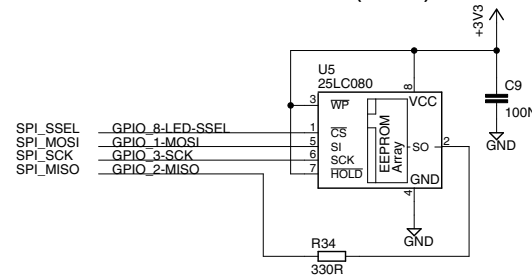
## Shift register to 7-segment LED



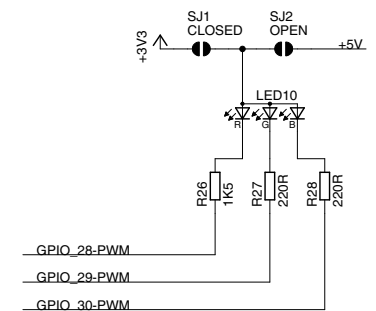
## Buzzer



## SPI-FLASH (8kbit)



## RGB-LED



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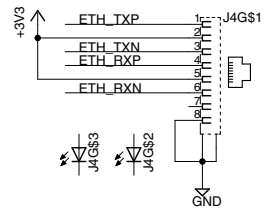
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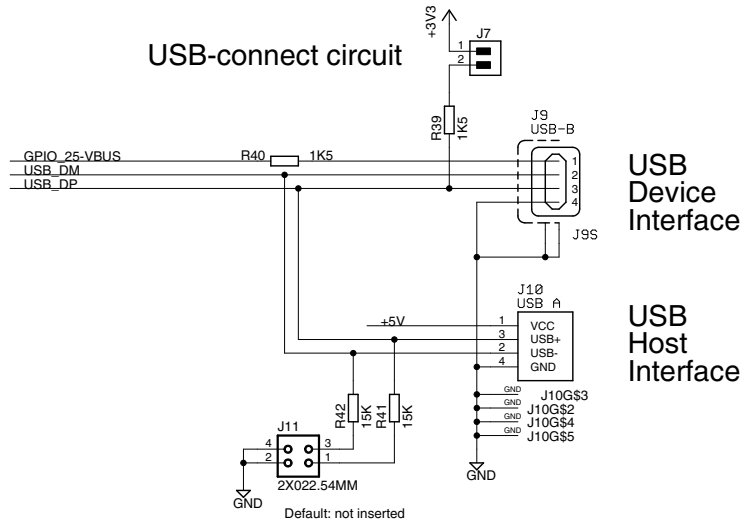
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# Through Hole Components, part 2

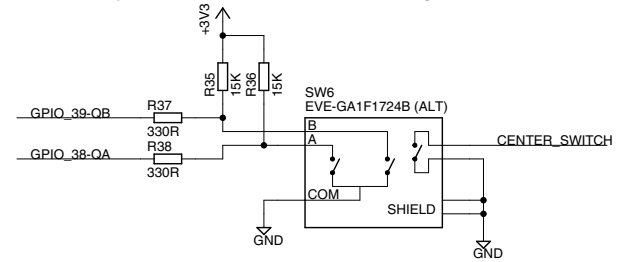
### RJ45 Ethernet Connector



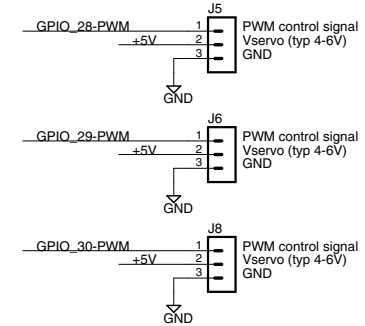
### USB-connect circuit



### Rotary switch - Quadrature signals



### PWM outputs to servos



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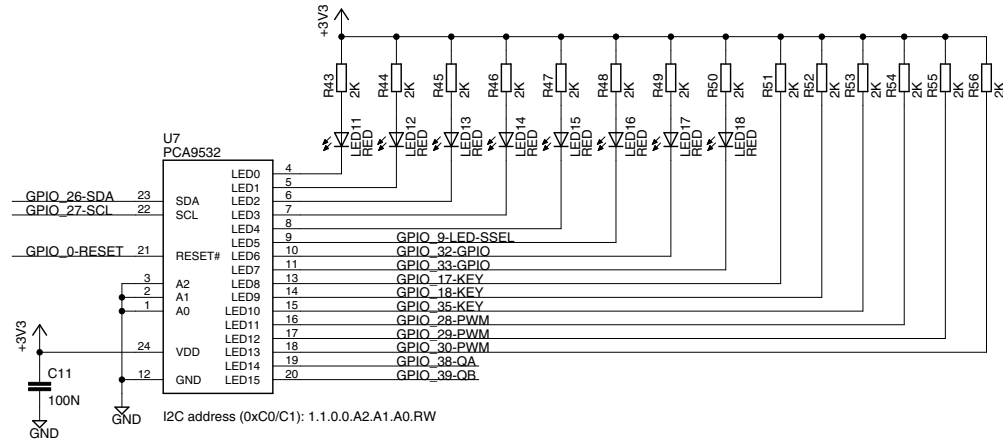
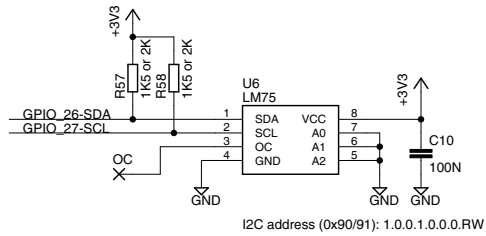
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# Surface Mounted Components

## LM75 I2C Temperature Sensor



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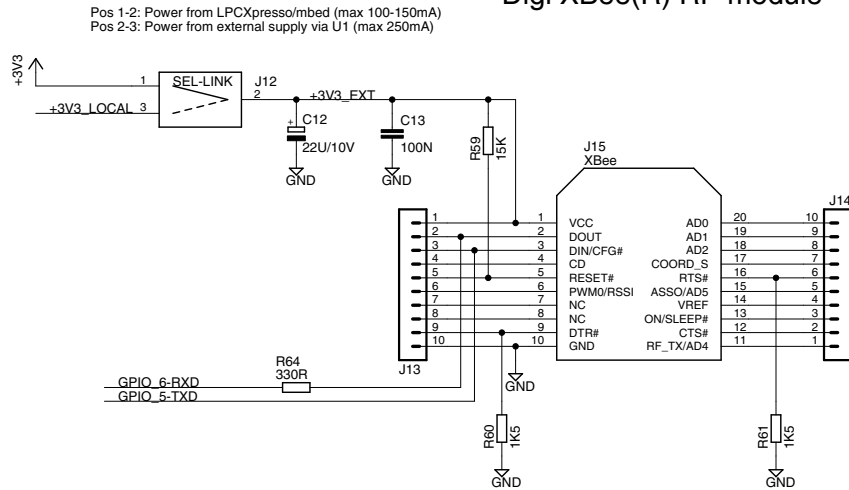
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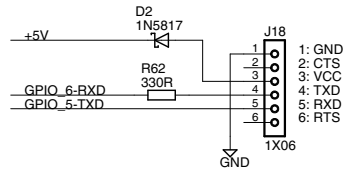
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## XBee module interface and Serial expansion connector

### Digi XBee(R) RF-module



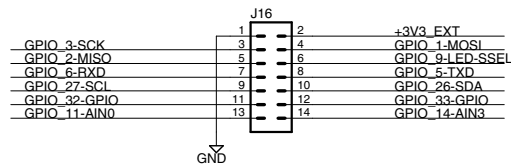
### FTDI UART-to-USB Connector



### Serial Expansion Connector

|                          |
|--------------------------|
| 1: GND                   |
| 3: SPI-SCK (output)      |
| 5: SPI-MISO (input)      |
| 7: UART-RX (input)       |
| 9: I2C-SCL (output)      |
| 11: GPIO (bidirectional) |
| 13: AIN0/GPIO (input)    |

|                             |
|-----------------------------|
| 2: VCC (3.3V, max 250mA)    |
| 4: SPI-MOSI (output)        |
| 6: SPI-SSEL (output)        |
| 8: UART-TX (output)         |
| 10: I2C-SDA (bidirectional) |
| 12: GPIO (bidirectional)    |
| 14: AIN3/AOUT/GPIO (input)  |



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