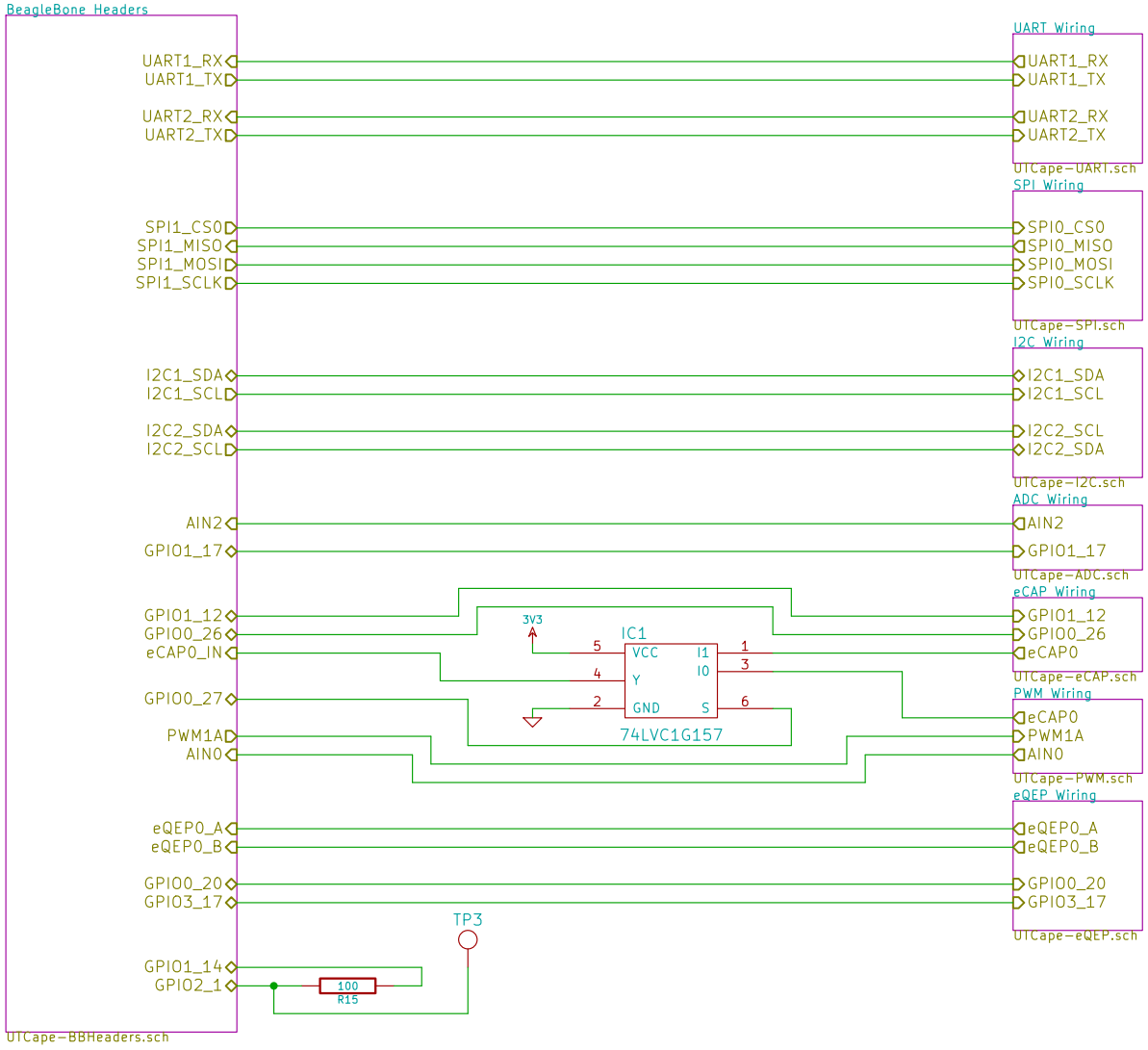



**Notes:**

1. Is IC1 really needed, or am I just not seeing a second eCAP input?

open source hardware

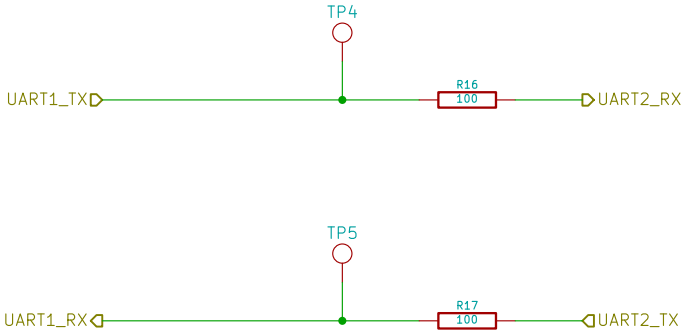


https://github.com/graycatlabs/UTCape

**Gray Cat Labs**
**http://graycat.io**

| | | |
|---|---|---|
| File: UTCape.sch | | |
| Sheet: / | | |
| Title: UTCape | | |
| Size: A4 | Date: 24 mar 2015 | Rev: 1 |
| KiCad E.D.A. | | Id: 1/9 |

UART1 and UART2 are just wired together, TX on one and RX on the other
No need to get much fancier than that



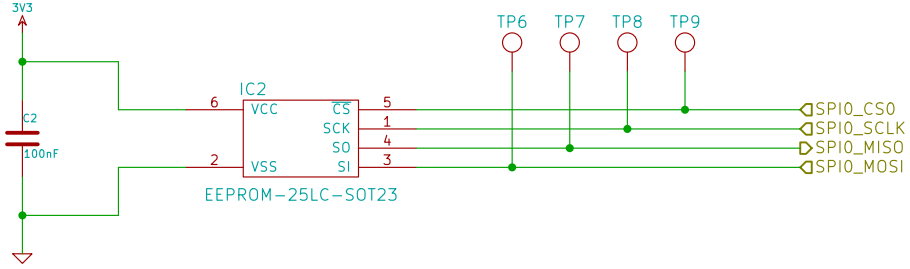

**Notes:**

1. Should this include CTS/RTS flow control?



| | | |
|---|---|---|
| File: UTCape-UART.sch | | |
| Sheet: /UART Wiring/ | | |
| *Title:* UART Unit Test Wiring | | |
| Size: A4 | *Date: 24 mar 2015* | *Rev:* |
| KiCad E.D.A. | | Id: 2/9 |

Test SPI by writing some data to the EEPROM on SPI0 then reading it back



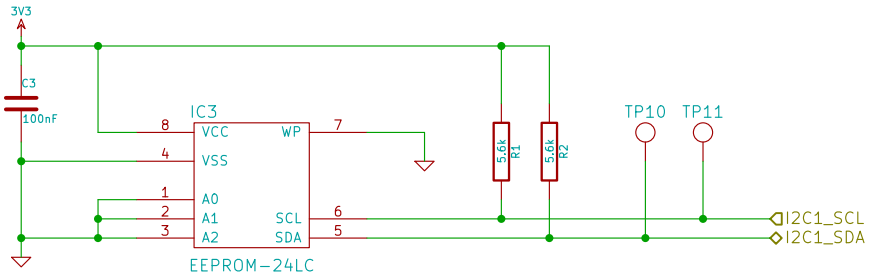

**Notes:**

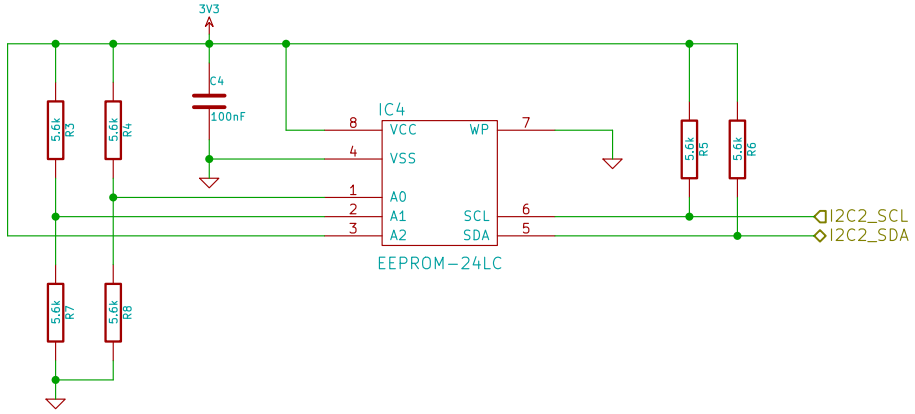
1. Software should randomize start address to prolong EEPROM life



| | | |
|---|---|---|
| File: UTCape-SPI.sch | | |
| Sheet: /SPI Wiring/ | | |
| Title: SPI Unit Test Wiring | | |
| Size: A4 | Date: 24 mar 2015 | Rev: |
| KiCad E.D.A. | | Id: 3/9 |

I2C can be tested be writing data to the EEPROM on I2C1 and then reading it back




Optional cape ID EEPROM

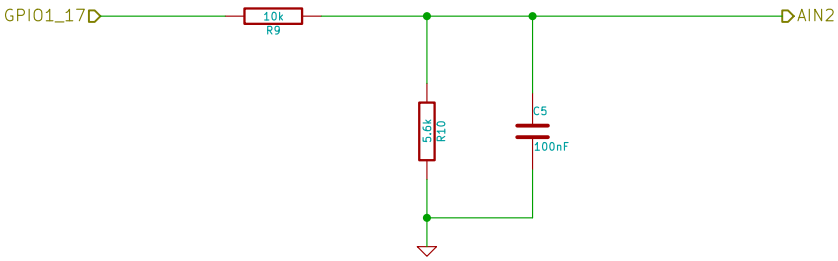
**Notes:**

1. The cape ID EEPROM isn't good for testing because the BBB muxes the I2C2 pins at boot, whereas the I2C1 pins must be muxed from userspace before using
2. Software should randomize start address to prolong EEPROM life



| | | |
|---|---|---|
| File: UTCape-I2C.sch | | |
| Sheet: /I2C Wiring/ | | |
| Title: I2C Unit Test Wiring | | |
| Size: A4 | Date: 24 mar 2015 | Rev: |
| KiCad E.D.A. | | Id: 4/9 |

Test ADC by confirming AIN2 reads 0V when GPIO0_26 is low,
and about 1.18V when GPIO0_26 is high



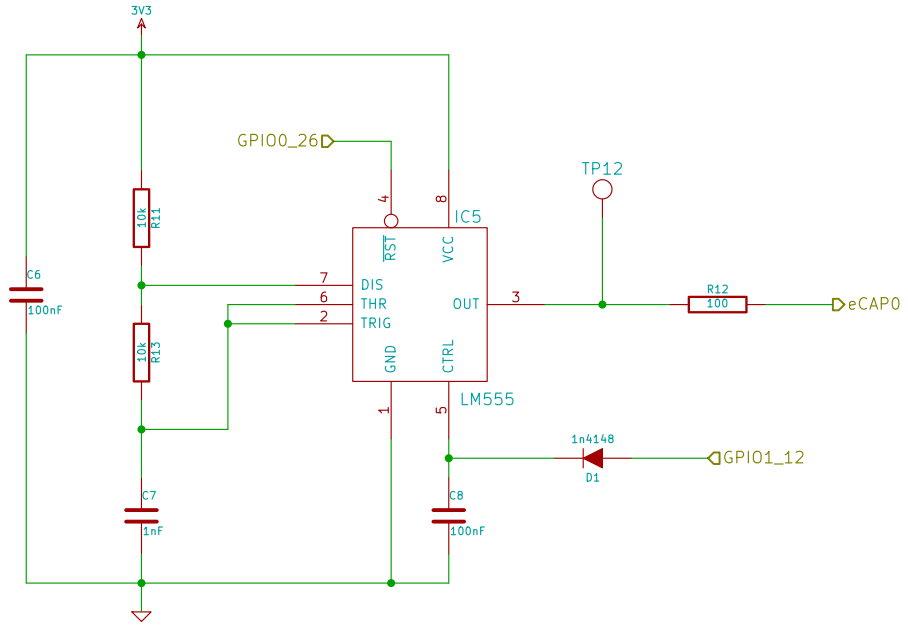

**Notes:**

1.



| | | |
|---|---|---|
| File: UTCape-ADC.sch | | |
| Sheet: /ADC Wiring/ | | |
| *Title:* ADC Unit Test Wiring | | |
| Size: A4 | *Date: 24 mar 2015* | *Rev:* |
| KiCad E.D.A. | | Id: 5/9 |

When GPIO1_12 is high eCAP0 should measure 21kHz,
when GPIO1_12 is low it should measure 36kHz

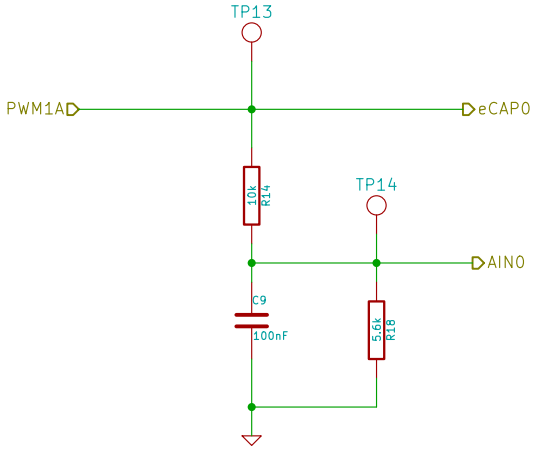



**Notes:**

1. GPIO0_26 must be set high to enable the astable circuit to test the eCAP.
   It can be set low when not in use to avoid noise coupling

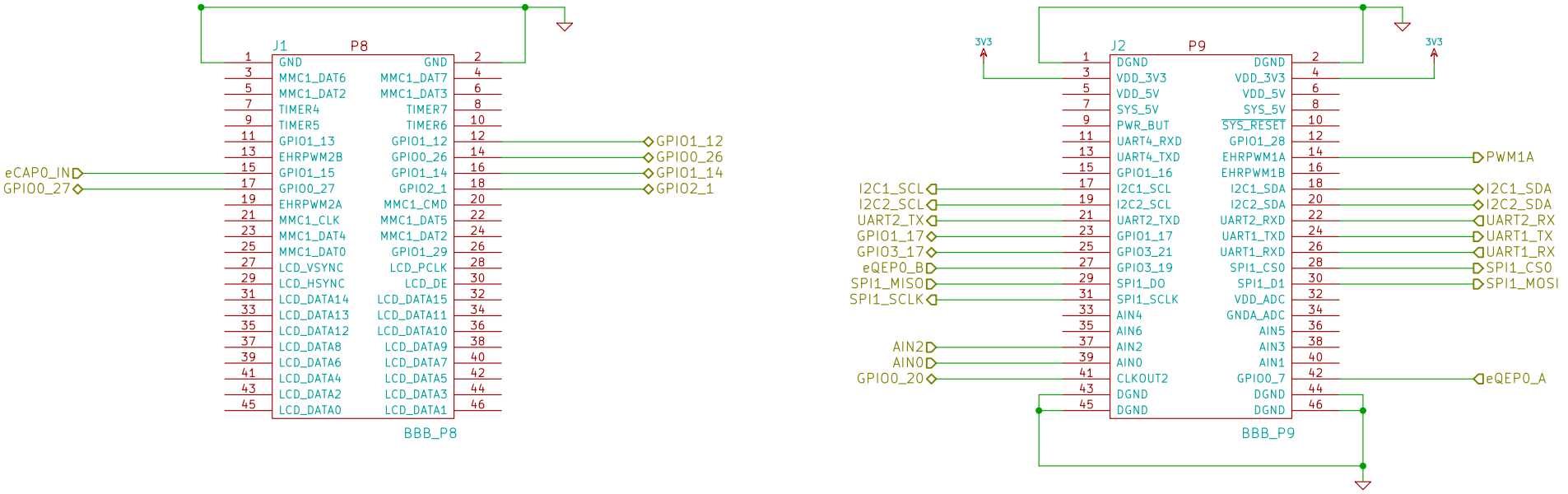


| | | |
|---|---|---|
| File: UTCape-eCAP.sch | | |
| Sheet: /eCAP Wiring/ | | |
| Title: eCAP Unit Test Wiring | | |
| Size: A4 | Date: 24 mar 2015 | Rev: |
| KiCad E.D.A. | | Id: 6/9 |



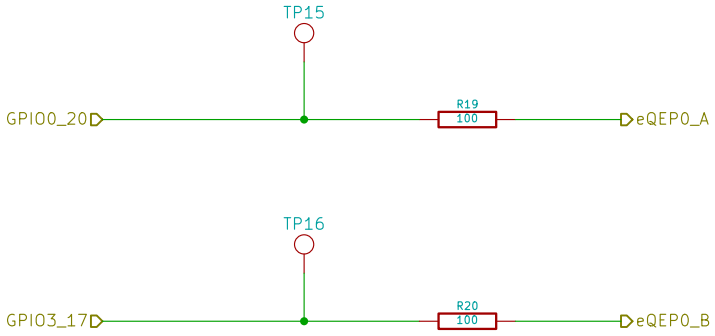



| | | |
|---|---|---|
| File: UTCape-PWM.sch | | |
| Sheet: /PWM Wiring/ | | |
| *Title:* PWM Unit Test Wiring | | |
| Size: A4 | *Date: 24 mar 2015* | *Rev:* |
| KiCad E.D.A. | | Id: 7/9 |






| | | |
|---|---|---|
| File: UTCape-BBHeaders.sch | | |
| Sheet: /BeagleBone Headers/ | | |
| Title: BeagleBone Headers | | |
| Size: A4 | Date: 24 mar 2015 | Rev: |
| KiCad E.D.A. | | Id: 8/9 |






| | | |
|---|---|---|
| File: UTCape-eQEP.sch | | |
| Sheet: /eQEP Wiring/ | | |
| *Title:* eQEP Unit Test Wiring | | |
| Size: A4 | *Date: 24 mar 2015* | *Rev:* |
| KiCad E.D.A. | | Id: 9/9 |