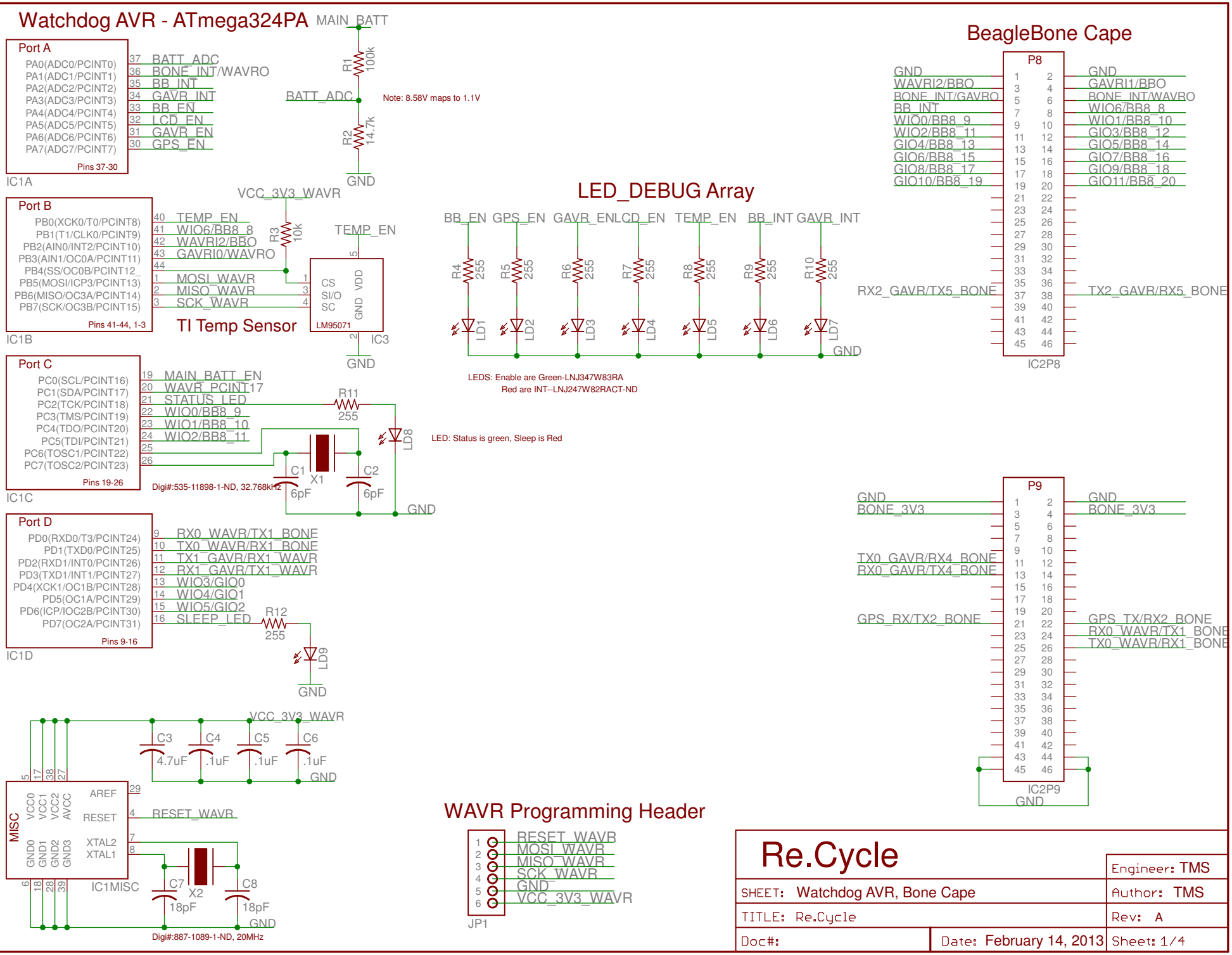
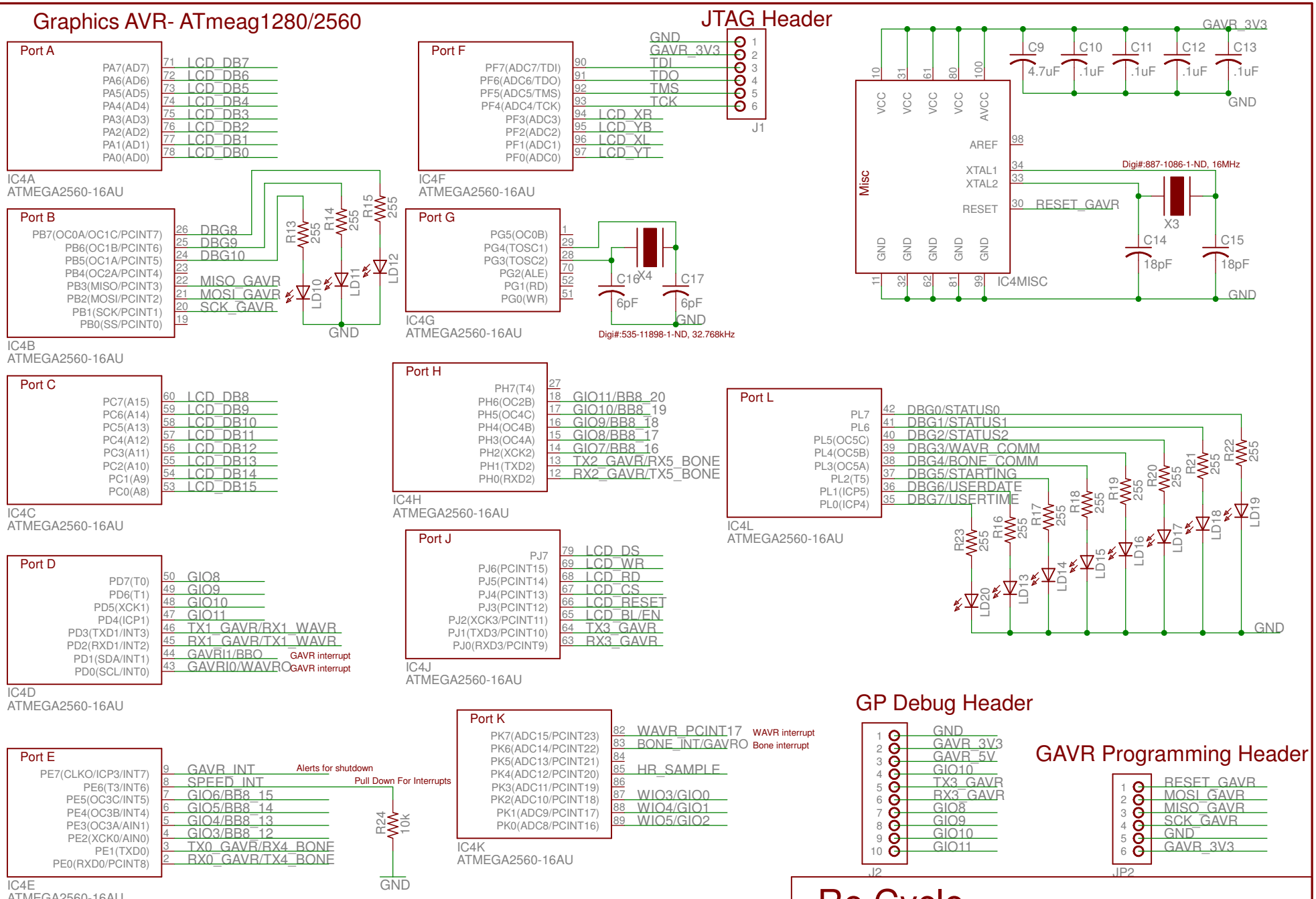
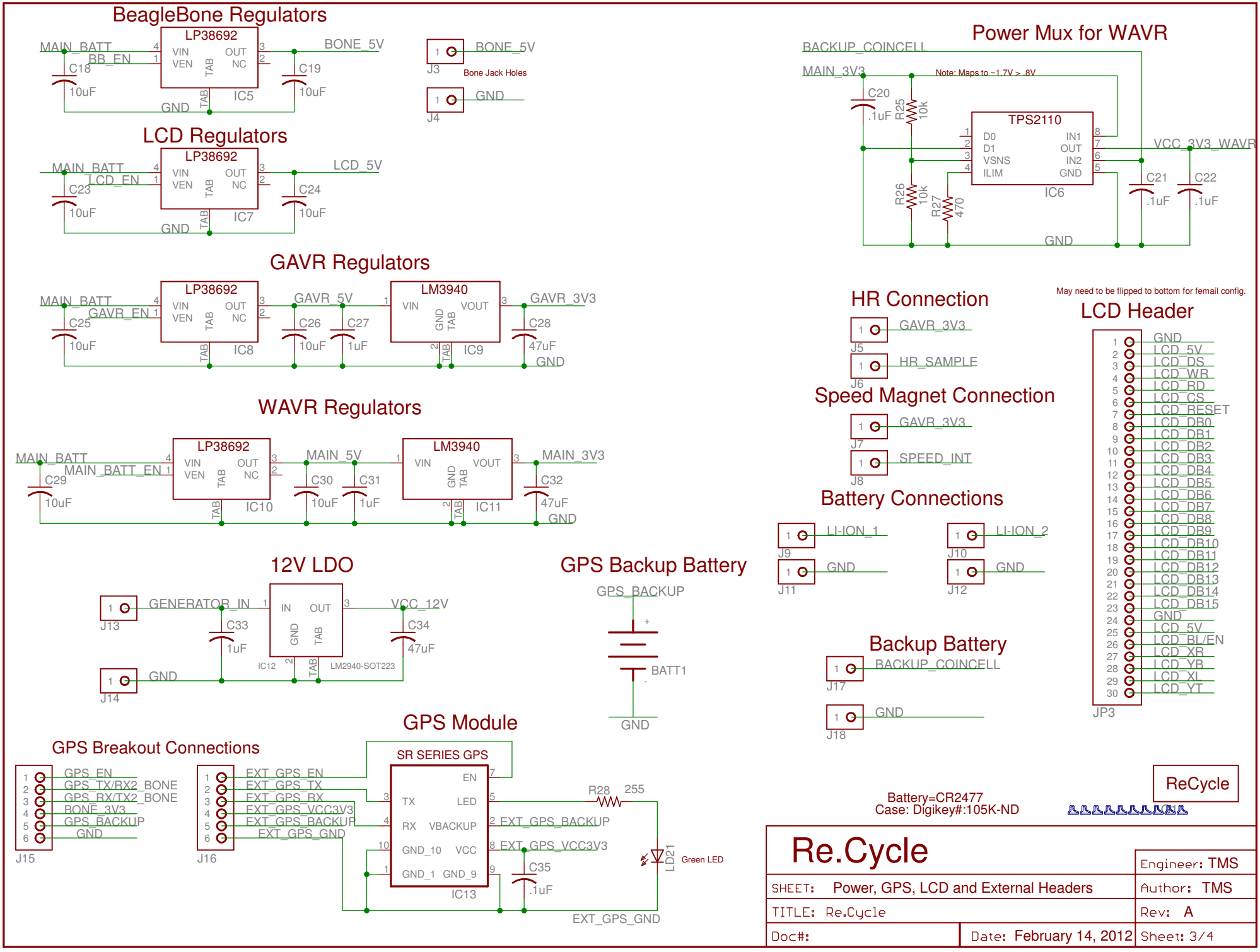

Watchdog AVR - ATmega324PA
Port A
PA0(ADC0/PCINT0)
PA1(ADC1/PCINT1)
PA2(ADC2/PCINT2)
PA3(ADC3/PCINT3)
PA4(ADC4/PCINT4)
PA5(ADC5/PCINT5)
PA6(ADC6/PCINT6)
PA7(ADC7/PCINT7)
Pins 37-30
37 BATT_ADC
36 BONE_INT/WAVRO
35 BB_INT
34 GAVR_INT
33 BB_EN
32 LCD_EN
31 GAVR_EN
30 GPS_EN
IC1A
MAIN_BATT
R1 100k
BATT_ADC
Note: 8.58V maps to 1.1V
R2 14.7k
GND
Port B
PB0(XCK0/T0/PCINT8)
PB1(T1/CLK0/PCINT9)
PB2(AIN0/INT2/PCINT10)
PB3(AIN1/OC0A/PCINT11)
PB4(SS/OC0B/PCINT12_
PB5(MOSI/ICP3/PCINT13)
PB6(MISO/OC3A/PCINT14)
PB7(SCK/OC3B/PCINT15)
Pins 41-44, 1-3
40 TEMP_EN
41 WIO6/BB8_8
42 WAVRI2/BBO
43 GAVRI0/WAVRO
44
1 MOSI_WAVR
2 MISO_WAVR
3 SCK_WAVR
IC1B
VCC_3V3_WAVR
R3 10k
TEMP_EN
TI Temp Sensor
LM95071
CS
SI/O
SC
VDD
GND
IC3
GND
Port C
PC0(SCL/PCINT16)
PC1(SDA/PCINT17)
PC2(TCK/PCINT18)
PC3(TMS/PCINT19)
PC4(TDO/PCINT20)
PC5(TDI/PCINT21)
PC6(TOSC1/PCINT22)
PC7(TOSC2/PCINT23)
Pins 19-26
19 MAIN_BATT_EN
20 WAVR_PCINT17
21 STATUS_LED
22 WIO0/BB8_9
23 WIO1/BB8_10
24 WIO2/BB8_11
25
26
IC1C
R11 255
LD8
LED: Status is green, Sleep is Red
C1 6pF
X1
C2 6pF
Digi#:535-11898-1-ND, 32.768kHz
GND
Port D
PD0(RXD0/T3/PCINT24)
PD1(TXD0/PCINT25)
PD2(RXD1/INT0/PCINT26)
PD3(TXD1/INT1/PCINT27)
PD4(XCK1/OC1B/PCINT28)
PD5(OC1A/PCINT29)
PD6(ICP/IOC2B/PCINT30)
PD7(OC2A/PCINT31)
Pins 9-16
9 RX0_WAVR/TX1_BONE
10 TX0_WAVR/RX1_BONE
11 TX1_GAVR/RX1_WAVR
12 RX1_GAVR/TX1_WAVR
13 WIO3/GIO0
14 WIO4/GIO1
15 WIO5/GIO2
16 SLEEP_LED
IC1D
R12 255
LD9
GND
VCC_3V3_WAVR
C3 4.7uF
C4 .1uF
C5 .1uF
C6 .1uF
GND
MISC
VCC0
VCC1
VCC2
AVCC
GND0
GND1
GND2
GND3
AREF
RESET
XTAL2
XTAL1
29
4 RESET_WAVR
7
8
IC1MISC
C7 18pF
X2
C8 18pF
GND
Digi#:887-1089-1-ND, 20MHz
LED_DEBUG Array
BB_EN GPS_EN GAVR_EN LCD_EN TEMP_EN BB_INT GAVR_INT
R4 255
R5 255
R6 255
R7 255
R8 255
R9 255
R10 255
LD1
LD2
LD3
LD4
LD5
LD6
LD7
GND
LEDS: Enable are Green-LNJ347W83RA
Red are INT--LNJ247W82RACT-ND
WAVR Programming Header
1 RESET_WAVR
2 MOSI_WAVR
3 MISO_WAVR
4 SCK_WAVR
5 GND
6 VCC_3V3_WAVR
JP1
BeagleBone Cape
P8
GND
WAVRI2/BBO
BONE_INT/GAVRO
BB_INT
WIO0/BB8_9
WIO2/BB8_11
GIO4/BB8_13
GIO6/BB8_15
GIO8/BB8_17
GIO10/BB8_19
GND
GAVRI1/BBO
BONE_INT/WAVRO
WIO6/BB8_8
WIO1/BB8_10
GIO3/BB8_12
GIO5/BB8_14
GIO7/BB8_16
GIO9/BB8_18
GIO11/BB8_20
RX2_GAVR/TX5_BONE
TX2_GAVR/RX5_BONE
IC2P8
P9
GND
BONE_3V3
TX0_GAVR/RX4_BONE
RX0_GAVR/TX4_BONE
GPS_RX/TX2_BONE
GND
BONE_3V3
GPS_TX/RX2_BONE
RX0_WAVR/TX1_BONE
TX0_WAVR/RX1_BONE
IC2P9
GND
Re.Cycle
SHEET: Watchdog AVR, Bone Cape
TITLE: Re.Cycle
Doc#:
Date: February 14, 2013
Engineer: TMS
Author: TMS
Rev: A
Sheet: 1/4

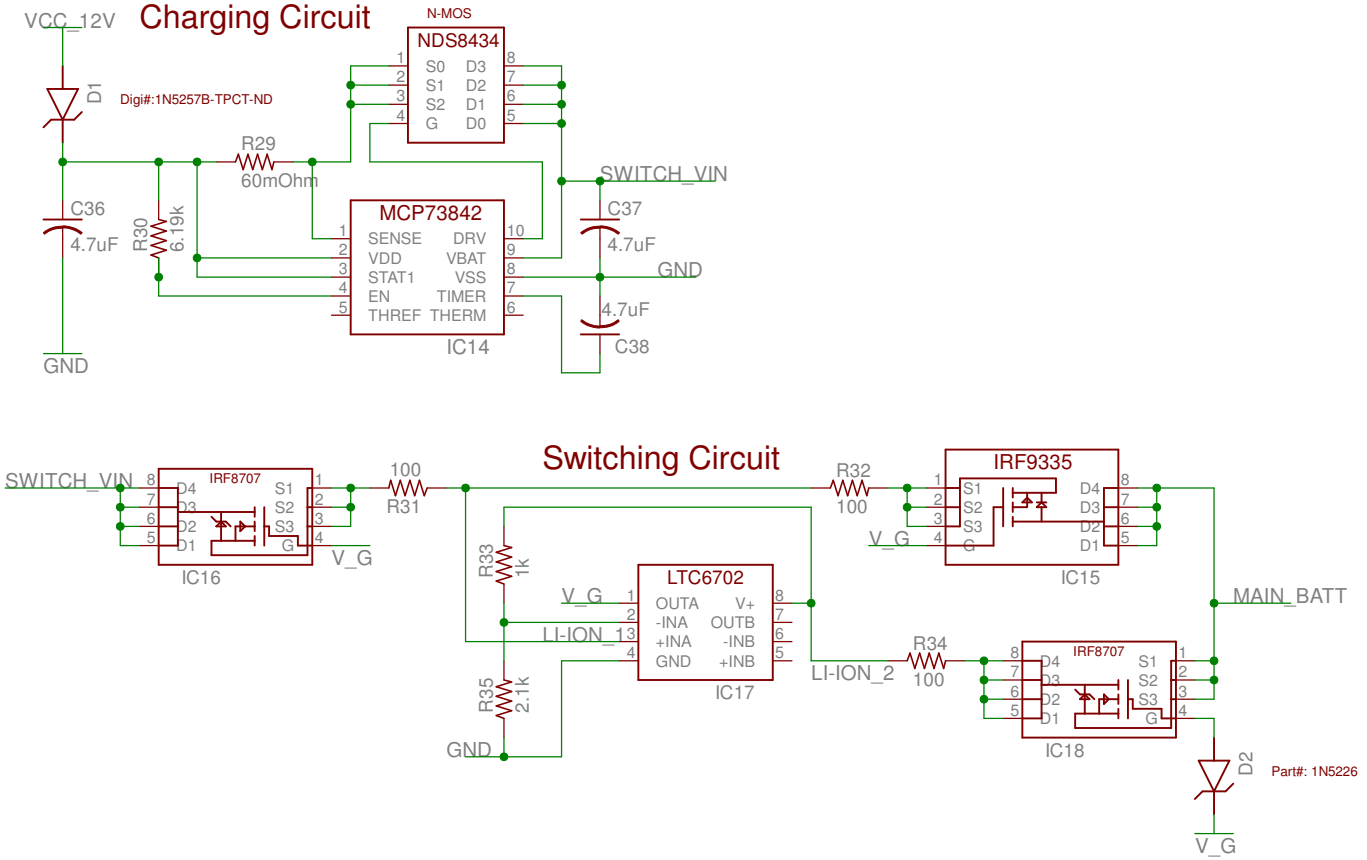
Graphics AVR- ATmeag1280/2560



Re.Cycle

SHEET: Graphics AVR	Engineer: TMS
TITLE: Re.Cycle	Author: TMS
Doc#:	Rev: A
Date: February 14, 2013	Sheet: 2/4


BeagleBone Regulators
LP38692
MAIN_BATT
BB_EN
BONE_5V
C18
10uF
C19
10uF
IC5
GND
J3
Bone Jack Holes
J4
LCD Regulators
LCD_EN
LCD_5V
C23
C24
IC7
GAVR Regulators
GAVR_EN
GAVR_5V
LM3940
GAVR_3V3
C25
C26
C27
C28
47uF
1uF
IC8
IC9
WAVR Regulators
MAIN_BATT_EN
MAIN_5V
MAIN_3V3
C29
C30
C31
C32
IC10
IC11
12V LDO
GENERATOR_IN
VCC_12V
J13
C33
C34
IC12
LM2940-SOT223
J14
GPS Backup Battery
GPS_BACKUP
BATT1
GPS Module
GPS Breakout Connections
GPS_EN
GPS_TX/RX2_BONE
GPS_RX/TX2_BONE
BONE_3V3
GPS_BACKUP
J15
EXT_GPS_EN
EXT_GPS_TX
EXT_GPS_RX
EXT_GPS_VCC3V3
EXT_GPS_BACKUP
EXT_GPS_GND
J16
SR SERIES GPS
EN
TX
LED
RX
VBACKUP
GND_10
VCC
GND_1
GND_9
IC13
R28
255
EXT_GPS_BACKUP
EXT_GPS_VCC3V3
C35
.1uF
LD21
Green LED
Power Mux for WAVR
BACKUP_COINCELL
MAIN_3V3
Note: Maps to ~1.7V > .8V
C20
.1uF
R25
10k
TPS2110
D0
D1
VSNS
ILIM
IN1
OUT
IN2
GND
VCC_3V3_WAVR
R26
10k
R27
470
C21
.1uF
C22
.1uF
IC6
HR Connection
GAVR_3V3
J5
HR_SAMPLE
J6
Speed Magnet Connection
GAVR_3V3
J7
SPEED_INT
J8
Battery Connections
LI-ION_1
J9
GND
J11
LI-ION_2
J10
GND
J12
Backup Battery
BACKUP_COINCELL
J17
GND
J18
May need to be flipped to bottom for femail config.
LCD Header
GND
LCD_5V
LCD_DS
LCD_WR
LCD_RD
LCD_CS
LCD_RESET
LCD_DB0
LCD_DB1
LCD_DB2
LCD_DB3
LCD_DB4
LCD_DB5
LCD_DB6
LCD_DB7
LCD_DB8
LCD_DB9
LCD_DB10
LCD_DB11
LCD_DB12
LCD_DB13
LCD_DB14
LCD_DB15
GND
LCD_5V
LCD_BL/EN
LCD_XR
LCD_YB
LCD_XL
LCD_YT
JP3
Battery=CR2477
Case: Digikey#:105K-ND
ReCycle
Re.Cycle
Engineer: TMS
SHEET: Power, GPS, LCD and External Headers
Author: TMS
TITLE: Re.Cycle
Rev: A
Doc#:
Date: February 14, 2012
Sheet: 3/4



Re.Cycle		Engineer: TMS
SHEET: Battery Charging and Switching		Author: TMS
TITLE: Re.Cycle		Rev: A
Doc#:	Date: February 18, 2013	Sheet: 4/4