REVISION HISTORY
Rev.A-C: see revision C schematic
Rev.F14: switch to dsPIC33EP512GP806 part (Summer 2014)
  reverse/fix SDI/SDO to DAC
  investigate which I2C and SPI peripheral to use
  add secondary OSC and consider adding xtal input
  export RTCC pin to header
  GPIO control over peripheral power pins

LCD-CHAR-MODULE-NHD0208AZ

TODO:
  fix at least three significant errors
  add supply current monitor jumpers
  re-eval which pins to send to breakout headers

more physical space between ICSP and H2-H4
improved silkscreen info on board

I2C

Place SD card interface here.

MCLR#
RFO

FTDI
RTS#
RXD
TXD
5V USB
CTS#
GND
FTDI-TTL232-3V3

MCUTX
MCURX
USB5V

Reserve JP1.1 for
USB 5V power input

PWRCONN1_3MM

PORT B
VDD 10 +3V3
+VDD 26
VDD 38
VDD 57
VCAP 56
AVDD 19
MCLR 7 MCLR#
PGED3/AN0/VREF+/RPI32/RB0 16 VREF+
PGEC3/AN1/VREF-/RPI33/RB1 15 VREF-
AN2/C2IN2-/RPI34/RB2 14 VPOT
AN3/C2IN1+/RPI35/RB3 13 VLM60
AN4/C1IN2-/RPI36/RB4 12 RB4
AN5/C1IN1+/RPI37/RB5 11 RB5
PGEC1/AN6/RPI38/RB6 17 PGEC
PGED1/AN7/RPI39/RB7 18 PGED
AN8/PMA6/RPI40/RB8 21 RPGA
AN9/PMA7/RPI41/RB9 22 RPGB
TMS/AN10/CVREF/PMA13/RPI42/RB10 23 MCURX
TDO/AN11/PMA12/RPI43/RB11 24 MCUTX
TCK/AN12/PMA11/RPI44/RB12 27 SW2
TDI/AN13/PMA10/RPI45/RB13 28 SW1
AN14/PMA1/RPI46/RB14 29 LED2
AN15/PMA0/RPI47/RB15 30 LED3_HB

PORT C
OSC1/RPI60/RC12 39 LCDRS
PGED2/SOSCI/C3IN3-/RPI61/RC13 47 OSC1
PGEC2/SOSCO/C3IN1-/T1CK/RPI62/RC14 48 OSC2
OSC2/CLKO/RC15 40 SW3

PORT D
INT0/RP64/RD0 46 RD0
RP65/RD1 49 RD1
RP66/RD2 50 RD2
PMBE/RP67/RD3 51 RD3
PMWR/RP68/RD4 52 SDO
PMRD/RP69/RD5 53 SCK
C3IN2-/RP70/RD6 54 RD6
C3IN1+/RP71/RD7 55 RD7
RTCC/RPI72/RD8 42 RD8
ADSA1/RPI73/RD9 43 SDI
ASCL1/PMCS2/RPI74/RD10 44 LCDE
PMCS1/RPI75/RD11 45 LCDRW

PORT E
AN24/PMD0/RP80/RE0 60 LCDD0
AN25/PMD1/RPI81/RE1 61 LCDD1
AN26/PMD2/RP82/RE2 62 LCDD2
AN27/PMD3/RPI83/RE3 63 LCDD3
AN28/PMD4/RP84/RE4 64 LCDD4
AN29/PMD5/RP85/RE5 1 LCDD5
AN30/PMD6/RP86/RE6 2 LCDD6
AN31/PMD7/RP87/RE7 3 LCDD7

PORT F
RP96/RF0 58 RF0
RP97/RF1 59 RF1
RP98/RF2 34 RF2
RP99/RF3 33 RF3
SDA2/PMA9/RP100/RF4 31 LED1
SCL2/PMA8/RP101/RF5 32 CANRXD
RP102/RF6 35 CANTXD

PORT G
SCL1/RG2 37 SCL
SDA1/RG3 36 SDA
C1IN3-/SCK2/PMA5/RP118/RG6 4 SD_SCK
C1IN1-/SDI2/PMA4/RPI119/RG7 5 SD_MISO
C2IN3-/SDO2/PMA3/RP120/RG8 6 SD_MOSI
C2IN1-/PMA2/RPI121/RG9 8 SD_CS#

AVSS 20
VSS 41
VSS 25
VSS 9

DSPIC33FP512GP806U-1/PT

SV1
MCLR# 1
VICP 2
GND 3
PGED 4
PGEC 5
PGLVP 6

JP4

SCL SDA

+3V3

MCLR#
R0 10k
SPST RESET
P$1 P$2
C0 10u
GND

C1 0.1u GND
R10 1k5 R9 1k5
C4 C3 C2 C5 0.1u
GND GND GND GND GND

IC3 LM2937
VRAW IN O +3V3
GND
C6 0.1u C7 10u
R1 1k5
3.3V LED
GND GND GND GND

JP1
USB5V1
VRAW
VCC
X2

LED1 LED2 LED3_HB LED3
R2 R3 R4 1k5

XTAL OSC1 OSC2
OSC1 OSC2
C9 C8
GND

RD2
U4 MCP49X2-SL
C100 0.1u +3V3 C103 10u
GND GND
SHDN# 9
LDAC# 8
SCK 4 VDD VA 14 DACA
SDI 5
CS# 1 VB 10 DACB
DACCS#
SJ3 GND SCK SDO
SJ5
VREFA 13
VREFB 11
VREF+ SJ6
GND
C101 0.1u DACA GND
C102 0.1u DACB GND

VLM4128 SJ1
VRAW
VLM4128 C21 0.1u GND
VREF+ C16 0.1u GND
VPOT C14 0.1u +3V3 GND
POT
IC2 LM4128
VIN VO VREF+
EN
VSS GND
RD1 SJ4 +3V3

VLM60
IC1 LM60M
VS VO
GND
C15 0.1u GND
R5 470
C20 0.1u +3V3 GND
VPOT

U3 MAX3051
GND 8 RS TXD 1 CANTXD
CANH 7 CANH GND 2 GND
CANL 6 CANL VCC 3 +3V3
SHDN 5 SHDN RXD 4 CANRXD
RD3 SJ2 GND

SW1 SPST P$1 P$2
SW2 SPST P$1 P$2
GND

LCD CHAR MODULE
K
A
DB7 LCDD7
DB6 LCDD6
DB5 LCDD5
DB4 LCDD4
DB3 LCDD3
DB2 LCDD2
DB1 LCDD1
DB0 LCDD0
E LCDE
R/W LCDRW
RS LCDRS
VO
VDD
VSS
U5 GND

+3V3
R6 30k
C2000 0.1u
R7 470
GND +3V3

C12 0.1u GND +3V3

SW3
RPGA A
GND GND
RPGB B
S$0

CAN1
GND 1
CANH 2
CANL 3
CANL 4
CANH 5
GND 6
JP3
CANH R8 120

CAN2
GND 1
CANH 2
CANL 3
CANL 4
CANH 5
GND 6

H3
GND 1
+3V3 2
DACA 3
DACB 4
VREF- 5
RD3 6
RB4 7
RB5 8

H1
RF0 1
RF1 2
RF2 3
RF3 4
SDI 5
SDO 6
SCK 7
+3V3 8

H2
RD0 1
RD1 2
RD2 3
RD6 4
RD7 5
RD8 6
SDA 7
SCL 8

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