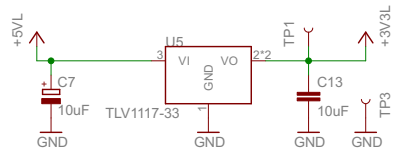
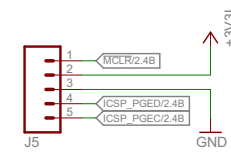


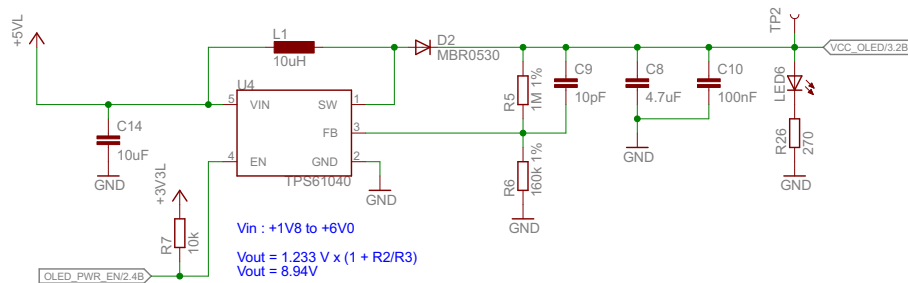
## Local 3V3 linear regulator from external supply



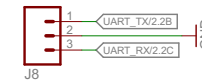
## ICSP Interface Programing & Debuging



## DC/DC Converter to 9V for OLED Screen

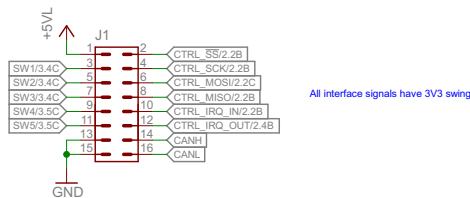


## UART Connector For debug purposes



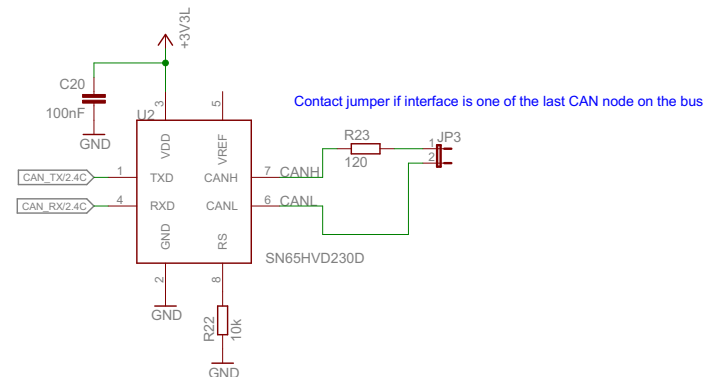
## Main extension board connector

To be used with microBoard main or legacy Igreboards



## CAN Interface

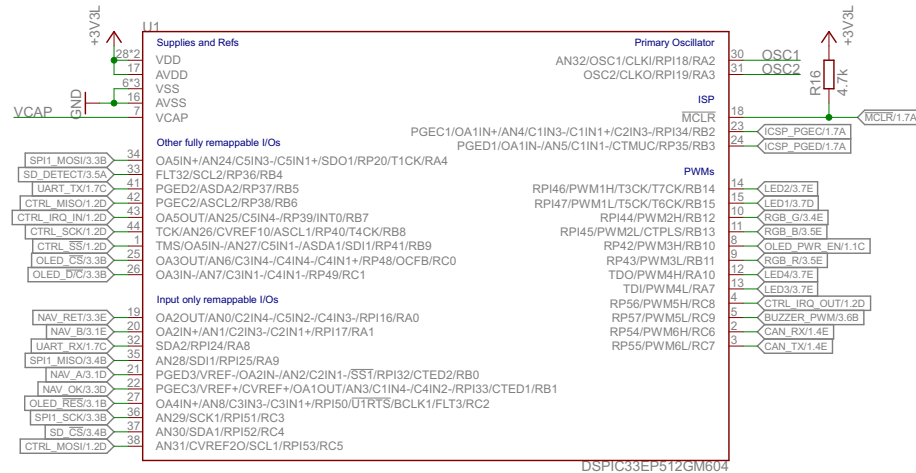
For Igrebot's legacy boards



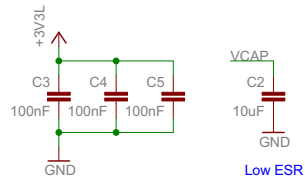
**I GREBOT**

microBoard\_HMI 1/3  
Power Supplies & Interfaces  
Paul Monsinjon  
01/11/2014 15:23:43

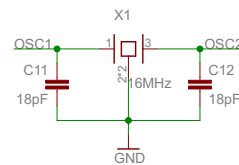
## dsPIC33E Microcontroller



## Decoupling capacitors



## Crystal oscillator



## Functions & Peripherals Assignment

### Peripheral Pin Select Mapping :

**SPI2: (slave) Control interface from main board (up to 15MHz)**

RP41 (CTRL\_SS) : SS2 - SPI2 Slave Select (RPINR23)  
 RP40 (CTRL\_SCK) : SCK2 - SPI2 Clock Input (RPINR22)  
 RP53 (CTRL\_MOSI) : SDI2 - SPI2 Data Input (RPINR22)  
 RP38 (CTRL\_MISO) : SDO2 - SPI2 Data Output (RP38R = 0x08)

**QE11 : Quadrature Encoder 1 for navigation scrolling**

RP32 (NAV\_A) : QE11 Phase A (RPINR14)  
 RP17 (NAV\_B) : QE11 Phase B (RPINR14)

**INT1 & INT2 : External Interrupts 1 and 2 for Navigation Switches**

RP93 (NAV\_OK) : INT1 - External Interrupt 1  
 RP16 (NAV\_RET) : INT2 - External Interrupt 2

**C1 : ECAN Controller 1 for CAN Bus Interface**

RP55 (CAN\_TX) : C1TX - CAN1 Transmit (RP55R = 0x0E)  
 RP54 (CAN\_RX) : C1RX - CAN1 Receive (RPINR26)

**U1 : UART Controller 1 for Debug Interface**

RB5 (UART\_TX) : U1TX - UART1 Transmit (RP24R = 0x01)  
 RP24 (UART\_RX) : U1RX - UART1 Receive (RPINR18)

### Peripherals Hard-mapping :

**INT0: External Interrupt 0 for Control interface interrupt (IN)**

RB7 (CTRL\_IRQ\_IN) : INT0 - External Interrupt 0

**SPI1: (master) SD Card & OLED Screen control (up to 25MHz)**

RA4 (SPI1\_MOSI) : SD01 - SPI1 Serial Output  
 RA9 (SPI1\_MISO) : SD11 - SPI1 Serial Input  
 RC3 (SPI1\_SCK) : SCK1 - SPI1 Clock Input

**PWM1 to PWM5 :**

RB15 (LED1) : PWM1L  
 RB14 (LED2) : PWM1H  
 RA7 (LED3) : PWM4L  
 RA10 (LED4) : PWM4H  
 RB10 (OLED\_PWR\_EN) : PWM3H is OFF (PENH of IOCON3 = 0)  
 RB11 (RGB\_R) : PWM3L  
 RB12 (RGB\_G) : PWM2H  
 RB13 (RGB\_B) : PWM2L  
 RC9 (BUZZER\_PWM) : PWM5L  
 RC8 (CTRL\_IRQ\_OUT) : PWM5H is OFF (PENH of IOCON5 = 0)

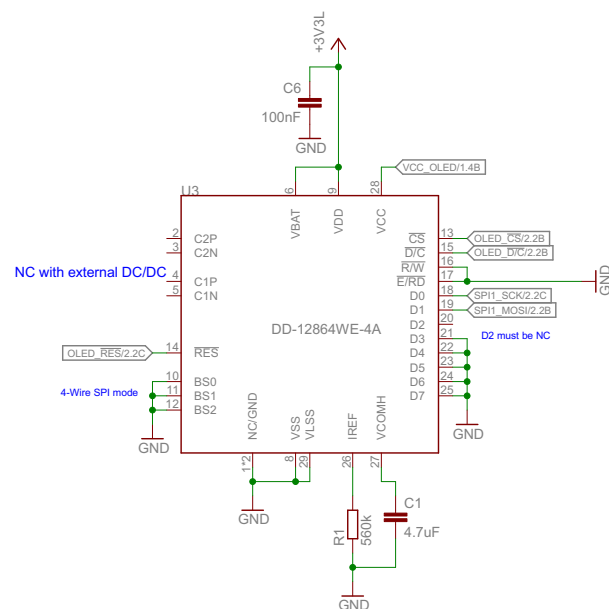
### No-peripheral I/Os (PORTx & LATx) :

RC0 (OLED\_CS) : Output  
 RC1 (OLED\_DC) : Output  
 RC2 (OLED\_RES) : Output  
 RB10 (OLED\_PWR\_EN) : Output  
 RC4 (SD\_CS) : Output  
 RB4 (SD\_DETECT) : Input  
 RC8 (CTRL\_IRQ\_OUT) : Output

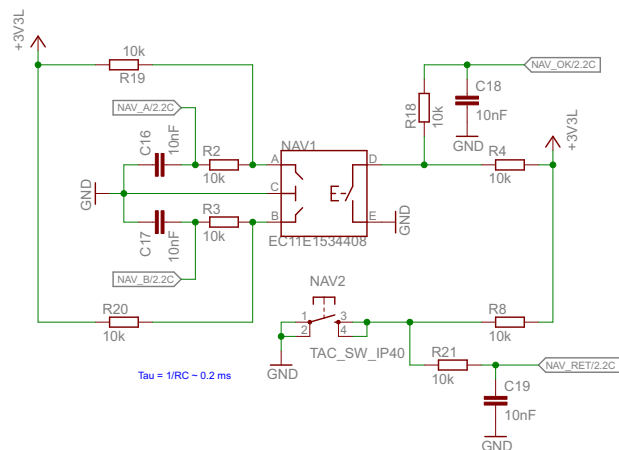
**I GREBOT**

microBoard_HMI	2/3
Microcontroller	
Paul Monsinjon	
01/11/2014 15:23:43	

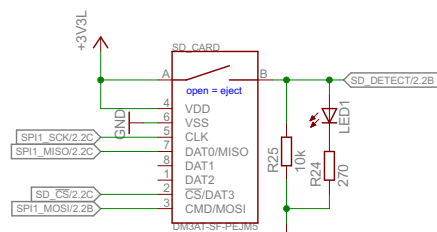
128x64 OLED Screen



Navigation encoder + 2 switches  
RC filter debouncing

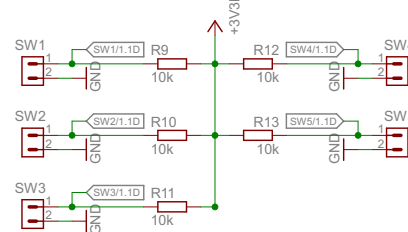


Micro-SD Card slot



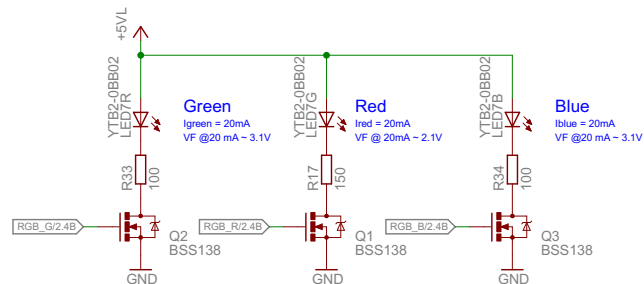
## Front panel switches or feedback

- 1x Emergency Feedback
- 1x Team color selection
- Static values (no debounce)



## Front panel LEDs

1x powerful RGB led  
4x classic LEDs



## Piezoelectric Sounder

