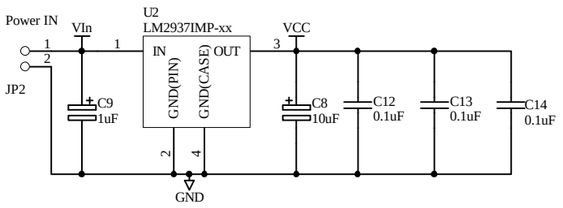
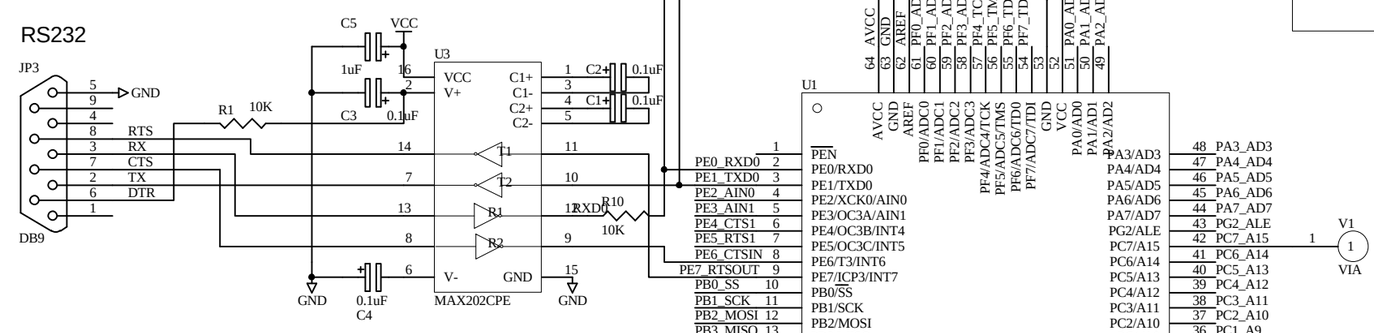
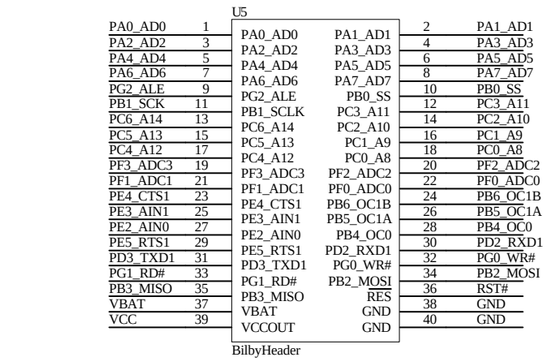
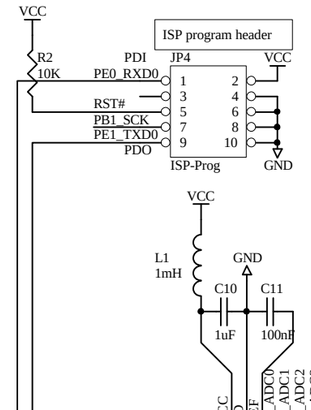
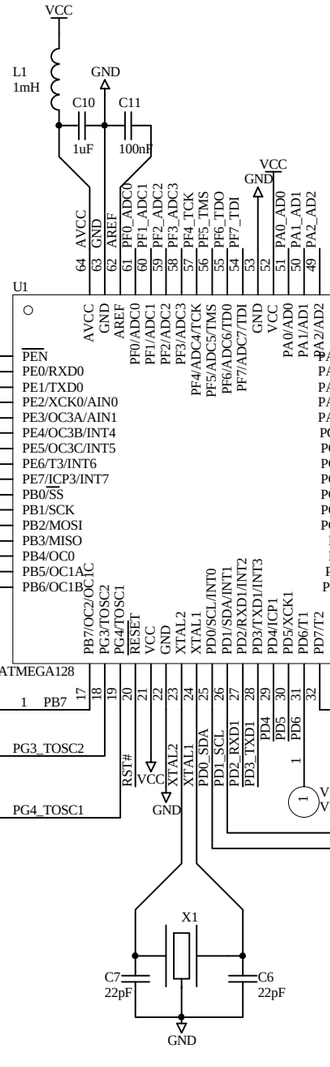
LaTrobe University
Electronic Engineering Department
Power Supply Configuration:
VCC = 5Volts
U1 is ATMEGA128L-AI etc
U2 is LM2937IMP-5.0
U4 is MAX3232
X3 is 32768Hz crystal,
No U4, U6 and X2 are not loaded











Asynchronouus Serial Communications - RS485/RS232
Bilby Header PIN#: Description
23 PE4_CTS1
29 PE5_RTS1 or RS485 Driver Enable
30 PD2_RXD1
31 PD3_TXD1

Serial Peripheral Interface - SPI
Bilby Header PIN#: Description
10 PB0_SS
11 PB1_SCLK
34 PB2_MOSI
35 PB3_MISO

Analog to Digital Converter (ADC):
ADC Pins are available via Port F.
Only 4 ADC lines appear on the 40Pin header as
the other 4 share their function with the jtag debugger.
19 PF3_ADC3
20 PF2_ADC2
21 PF1_ADC1
22 PF0_ADC0
JP5 JTAG PIN#1 PF4_ADC4
JP5 JTAG PIN#3 PF6_ADC6
JP5 JTAG PIN#5 PF5_ADC5
JP5 JTAG PIN#9 PF7_ADC7

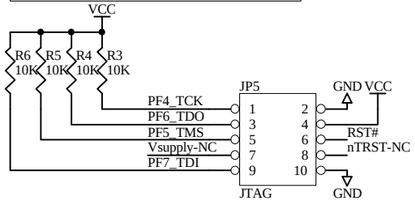
An External 16 bit Address Bus can be used.
By latching AD0..AD7, using the PG2_ALE as
the latch control, we form the address bus A0..A7.
Pins PC0_A8 to PC7_A15 form the non-multiplexed
address lines A8..A15. A15 is available on via V1.
PG1_RD# is an active low read strobe, and
PG0_WR# is an active low write strobe

Pulse Width Modulation of certain pins is
available with certain timer configurations
The ATMEGA128 has 2 x 16-Bit timers & 2 x 8-bit timers capable of
PWM.
The ATMEGA2561.. has 4 x 8-bit pwm, 6 x 16bit PWM
Refer MCU Chip Datasheets for pinout info

X1 can be one of several Crystals loaded to suit the microprocessor
and the application. Stocked Crystals include 1.8432MHz, 4MHz,
4.33619MHz, 4.9152MHz, 8MHz, 11.0592MHz, 14.7432MHz,
15.360MHz,
16MHz.

CodeVision Programming Wizard Board Information:
CHIP:
ATMEGA128
7.372800 MHz
EXTERNAL STATIC RAM (SRAM)
0-32K Bytes available via Bilby Header
(64K if pin PC7/AD15 wired from Via V1).
Multiplexed Address/Data bus on portA 0..7.
Non Multiplexed Address bus on Port C 0..7.
ALE - Address Latch Enable - PG2_ALE.
Write Strobe - PG0_WR#; Read Strobe - PG1_RD#
PORTS:
Normally Port A & C - Inputs - Pull ups enabled - if not used for external SRAM bus.
Port B - B0 out 1, b1 out 0, b2 out 0
Port D - d0 in t, d1 out 0, d2 in t, d3 out 0, d4-d6 in p
Port E - e0 in t, e1 out 0, e2-4 in t, e5 out 0, e6 in t1, e7 out 0
Port F - F0..7, in - t
Port G - G0 out 1, g1 out 1, g2 out 0, g3 out 0, g4 in t
1 WIRE - None
2 WIRE - None
LCD - None
EXTERNAL IRQ -
INT0 - Disabled - Used by DS1307 if installed - SDA
INT1 - Disabled - Used by DS1307 if installed - SCL
INT2 - Disabled - Used by RXD1
INT3 - Disabled - Used by TXD1
INT4 - ENABLED - CTS1 in
INT5 - Disabled - RTS1 Out on port PE5
INT6 - ENABLED - CTS0 In
INT7 - Disabled - RTS0 Out on port PE7
Timers:
IF (DS1307 is fitted and with square wave output)
Timer2 - Clock Source - T2 Falling Edge
interrupt on overflow
ELSE IF 32768Hz crystal in X3 THEN
Timer0 - Clock Source TOSC1
Clock Value: TOSC1 (no divisor)
Interrupt on overflow enabled
OTHER TIMERS - NO SPECIFIC USES - CAN BE USED FOR PWM ETC
USART0
RX & RX Interrupt Enabled, 8 byte buffer.
TX & TX Interrupt Enabled, 8 byte buffer.
9600 baud, 8 data, 1 stop, No Parity.
USART1
RX & RX Interrupt Enabled, 8 byte buffer.
TX & TX Interrupt Enabled, 8 byte buffer.
9600 baud, 8 data, 1 stop, No Parity.
I2C Port D
SCL Bit: PD1.
SDA Bit: PD0.
DS1307 RTC - YES.
SQWE Yes - Square Wave Enabled -> Port D7/T2.
ANALOG COMPARATOR
Enabled
Bandgap V Ref
Analog Comparator Interrupt
Interrupt On Out Toggle
ANALOG TO DIGITAL CONVERTER (ADC)
ADC Enabled
VREF: Internal, Cap on Aref
Auto Scan Inputs YES
First : 0, Last 3 - All ADC inputs may be used. Access ADC4..7 via JTAG header
SERIAL PERIPHERAL INTERFACE (SPI)
SPI ENABLED
SPI CLOCK RATE - 1MHz
SPI TYPE - SPI MASTER

JTAG HEADER
FOR ON CHIP DEBUGGING
VIA AVR JTAG ICE mkII



MicroController Unit (MCU)-
Power Supply Rails, CPU &
Clock Speed Options:

2.7-5.5V ATMEGA128L 0-8MHz

4.5-5.5V ATMEGA128 0-16MHz

1.8-5.5V ATMEGA1281V 0-4MHz
2.7-5.5V ATMEGA1281V 0-8MHz

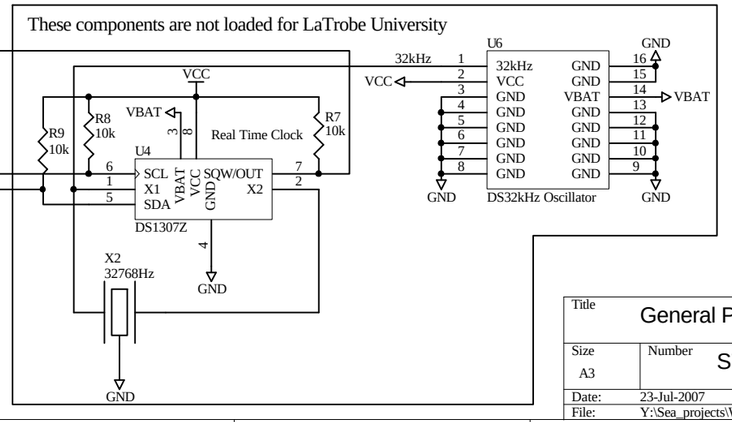
1.8-5.5V ATMEGA2561V 0-2MHz
2.7-5.5V ATMEGA2561V 0-8MHz

2.7-5.5V ATMEGA1281 0-8MHz
4.5-5.5V ATMEGA1281 0-16MHz

4.5-5.5V ATMEGA2561 0-16MHz

All MCU packages are 64 Pin TQFP

AI suffix for 60/40 tin/lead



Component Values:
C1..C5, C11..C14 0.1uf 0603 16V
C8..C10 = 1uf 0805 16V
R1..R10 = 10K 0603
L1 = 1mH

Title	General Purpose MCU - Bilby - (C) SEA.NET.AU	
Size A3	Number S7005_7	Revision Rev 2.2.0.57
Date: 23-Jul-2007	Sheet1 of 1	
File: Y:\Sea_projects\Wombat\DingoDB9_LTU.sch	Drawn By: Paul Main	