bus

File: bus.kicad_sch

UART

File: UART.kicad_sch

IO

File: IO.kicad_sch

power

File: power.kicad_sch

PiPort

File: PiPort.kicad_sch

buffers

File: buffers.kicad_sch

P3
CONN_02X25

Left	Pin	Pin	Right
VCC	1	2	VCC
D15	3	4	D31
D14	5	6	D30
D13	7	8	D29
D12	9	10	D28
D11	11	12	D27
D10	13	14	D26
D9	15	16	D25
D8	17	18	D24
D7	19	20	D23
D6	21	22	D22
D5	23	24	D21
D4	25	26	D20
D3	27	28	D19
D2	29	30	D18
D1	31	32	D17
D0	33	34	D16
BUSERR	35	36	UDS
VPA	37	38	LDS
VMA	39	40	S2
BHE	41	42	S1
IPL2	43	44	S0
IPL1	45	46	AUXCLK3
IPL0	47	48	AUXCLK2
GND	49	50	GND

P2
CONN_02X25

Left	Pin	Pin	Right
VCC	1	2	VCC
A15	3	4	A31
A14	5	6	A30
A13	7	8	A29
A12	9	10	A28
A11	11	12	A27
A10	13	14	A26
A9	15	16	A25
A8	17	18	A24
+12V	19	20	+12V
A7	21	22	A23
A6	23	24	A22
A5	25	26	A21
A4	27	28	A20
A3	29	30	A19
A2	31	32	A18
A1	33	34	A17
A0	35	36	A16
−12V	37	38	−12V
IC3	39	40	TEND1
IC2	41	42	DREQ1
IC1	43	44	TEND0
IC0	45	46	DREQ0
AUXCLK1	47	48	AUXCLK0
GND	49	50	GND

P1
CONN_02X25

Left	Pin	Pin	Right
VCC	1	2	VCC
RD	3	4	E
WR	5	6	ST
IORQ	7	8	PHI
MREQ	9	10	INT2
M1	11	12	INT1
BUSACK	13	14	CRUCLK
CLK	15	16	CRUOUT
INT0	17	18	CRUIN
NMI	19	20	RES_IN
RES_OUT	21	22	USER8
BUSRQ	23	24	USER7
WAIT	25	26	USER6
HALT	27	28	USER5
RFSH	29	30	USER4
EIRQ7	31	32	USER3
EIRQ6	33	34	USER2
EIRQ5	35	36	USER1
EIRQ4	37	38	USER0
EIRQ3	39	40	BAI
EIRQ2	41	42	BAO
EIRQ1	43	44	IEI
EIRQ0	45	46	IEO
I2C_SCL	47	48	I2C_SDA
GND	49	50	GND

P4
BYPASS

	Pin	
BAI	4	
BAO	3	
IEI	2	
IEO	1	

Sheet: /bus/
File: bus.kicad_sch

Title:

Size: B   Date:
KiCad E.D.A. kicad (6.0.11)

Rev:
Id: 2/7

C5
0.1u

C9
0.1u

C10
0.1u

C12
0.1u

C14
0.1u

PWR_FLAG

VCC

C17
0.1u

C20
10u

C21
10u

C22
10u

PWR_FLAG

VCC

GND

Spare Components

PWR_FLAG
+12V
+12V

PWR_FLAG
−12V
−12V

H1
MountingHole

H2
MountingHole

VCC
R1
470

D1
LED

VCC
NT1
NetTie_2
ONE

NT2
NetTie_2
ZERO

TL16C550CFN   U3

VCC
44
VCC

bD0   2   D0
bD1   3   D1
bD2   4   D2
bD3   5   D3
bD4   6   D4
bD5   7   D5
bD6   8   D6
bD7   9   D7

RI   43   ONE
DCD   42   ZERO
DSR   41   ZERO
CTS   40   ZERO

bA0   31   A0
bA1   30   A1
bA2   29   A2
ONE   14   CS0
ONE   15   CS1
CS-UART   16   CS2

OUT1   38
DTR   37
RTS   36
OUT2   35

UART-CLK   18   XIN

SIN   11   RX-3.3   RX-3.3
SOUT   13   TX

19   XOUT

RXRDY   32
TXRDY   27
DDIS   26

R2   10K

TX-3.3

bWR   20   WR
ZERO   21   WR
ZERO   25   RD
bRD   24   RD
ZERO   28   ADS

R3   22K

GND

BAUDOUT   17

INTR   33
RESET   39   MR

RCLK   10

GND
22
GND

1.8432 OR 7.3728 MHz
TTL OSCILLATOR

VCC   U2   VCC
1   14
2   13
3   12
4   11
5   10
6   9
7   8

UART CLOCK

UART-CLK

GND

RESET

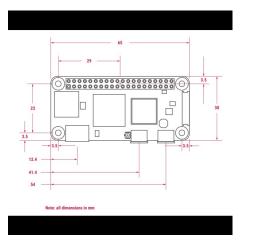bRESET   R4   1000   Q1   2N3904

GND

TL16C550FN RESET
IS ACTIVE HIGH

Sheet: /UART/
File: UART.kicad_sch

Title:

Size: B   Date:
KiCad E.D.A. kicad (6.0.11)

Rev:
Id: 4/7

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Micro CD Card

Micro HDMI Port

Single Core Processor

Micro USB Slot

Micro Power Slot

Raspberry Pi Zero Pinout

3V3	GPIO 2			5V
SDA	GPIO 2			5V
SCL	GPIO 3			Ground
GPCLK0	GPIO 4		GPIO 14	TXD
	Ground		GPIO 15	RXD
	GPIO 17		GPIO 18	PCM_CLK
	GPIO 27			Ground
	GPIO 22		GPIO 23	
	3V3		GPIO 24	
MOSI	GPIO 10			Ground
MISO	GPIO 9		GPIO 25	
SCLK	GPIO 11		GPIO 8	CE0
	Ground		GPIO 7	CE1
ID_SD	GPIO 0		GPIO 1	ID_SC
	GPIO 5			Ground
	GPIO 6		GPIO 12	PWM0
PWM1	GPIO 13			Ground
PCM_FS	GPIO 19			GPIO
	GPIO 26		GPIO 20	PCM_DIN
	Ground		GPIO 21	PCM_DOUT

J2
I2C EN

1	I2C_SDA
2	
3	
4	I2C_SCL

J1
Pi−Port
41   44

1	2	VCC
3	4	VCC
5	6	GND
7	8	
GND 9	10	
11	12	
13	14	GND
15	16	
17	18	GND
19	20	
21	22	
23	24	
GND 25	26	
27	28	
29	30	GND
31	32	
33	34	GND
35	36	
37	38	
GND 39	40	

42   43

J3
SER EN

RX−3.3	1
	2
	3
TX−3.3	4

Orange pi ZERO 2W v1.1

3.3V		5V
PI8	TWI1_SDA	GND
PI7	TWI1_SCL	
PI13	PWM3/UART4_TX	UART0_TX	PH0
GND		UART0_RX	PH1
PH2	UART5_TX		PI1
PH3	UART5_RX		GND
PI5	TWI0_SCL/UART2_TX	PWM4/UART4_RX	PI14
3.3V			PH4
PH7	SPI1_MOSI		GND
PH8	SPI1_MISO	TWI0_SDA/UART2_RX	PI6
PH6	SPI1_CLK	SPI1_CS0	PH5
GND		SPI1_CS1	PH9
PI10	TWI2_SDA/UART3_RX	TWI2_SCL/UART3_TX	PI9
PI0			GND
PI15			PI11
PI12	PWM2	PWM1	GND
PI2			PC12
PI16			PI4
GND			PI3

65
29
23
3.5
30
3.5
12.4
3.5   3.5
41.4
54

Note: all dimensions in mm

Z80 BUS INTERFACE

74LS244   U13

A0	2 I0a	O0a 18	bA0
A1	4 I1a	O1a 16	bA1
A2	6 I2a	O2a 14	bA2
A3	8 I3a	O3a 12	bA3
A4	11 I0b	O0b 9	bA4
A5	13 I1b	O1b 7	bA5
A6	15 I2b	O2b 5	bA6
A7	17 I3b	O3b 3	bA7

ZERO — 1 OEa
19 OEb

VCC 20
GND 10
GND

74LS245   U14

D0	2 A0	B0 18	bD0
D1	3 A1	B1 17	bD1
D2	4 A2	B2 16	bD2
D3	5 A3	B3 15	bD3
D4	6 A4	B4 14	bD4
D5	7 A5	B5 13	bD5
D6	8 A6	B6 12	bD6
D7	9 A7	B7 11	bD7

RD — 1 A->B
CS-UART — 19 CE

VCC 20
GND 10
GND

RES_IN — 1
2
RES_OUT — 3
J9
RESET SEL

VCC

74LS244   U15

	2 I0a	O0a 18	bRESET
	4 I1a	O1a 16	
	6 I2a	O2a 14	
	8 I3a	O3a 12	
IORQ	11 I0b	O0b 9	bIORQ
M1	13 I1b	O1b 7	bM1
WR	15 I2b	O2b 5	bWR
RD	17 I3b	O3b 3	bRD

ZERO — 1 OEa
19 OEb

VCC 20
GND 10
GND

Note: Buffers and Transceivers
respond to IO and MEM cycles

IO SELECTION CIRCUIT

Note: Inhibit Board Operation
During Interrupts
M1 = low, IORQ = low

IO PORT ADDR

SET IO PORT

10K
RN1

Note: IO Address Port $A8–$AF
1–2 =off – A7 (high)
3–4 =on – A6 (low)
5–6 =off – A5 (high)
7–8 =on – A4 (low)
9–10 =off – A3 (high)

U21
VCC P=R
P0
P1
P2
P3
P4
P5
P6
P7
R0
R1
R2
R3
R4
R5
R6
R7
G GND
74LS688

bM1
bA3
bA4
bA5
bA6
bA7
bIORQ
CS-UART
RESET
ZERO
SW1
VCC

VCC
R5
470
D2
LED
CS-UART