## Activity, Debug and Power LEDs

PI-ACT
DBG_LED
+5V
+3V3

R1 2k
R2 2k
R3 5.1k
R4 2k

EXT-ACT-LED

D1 Green
D2 Green
D3 Green
D4 Green

GND

J2
1
2
DNP
EXT-ACT-LED
GND

## Termination Enable Switches

S1    Switch x2
+5V
1  COM_1    NO_2  4  TERM_5v
2  COM_2    NO_1  3  TERM_GND
GND

NOTE: This diode was originally a 1N4004, however JLCPCB has a higher rated diode for a lower price

FUSE1 SM4007PL
TERMPOW    1A    D5    +5V

Terminating Resistor Power

USB_Conn
File: USB_Conn.sch

J5
DNP
PI_GPIO0  1   2
PI_GPIO1  3   4
PI_GPIO9  5   6  GND

Aux LED Connectors      Aux 5v Power Connector

## Pull-up resistors for Raspberry Pi 3.5V Signals

R5 10k   PI-ATN
R6 10k   PI-ACK
R7 10k   PI-RST
R8 10k   PI-SEL
R9 10k   PI-MSG
R10 10k  PI-C_D
R11 10k  PI-REQ
R12 10k  PI-I_O
R13 10k  PI-D7
R14 10k  PI-D6
R15 10k  PI-D5
R16 10k  PI-D4
R17 10k  PI-D3
R18 10k  PI-D2
R19 10k  PI-D1
R20 10k  PI-D0
R21 10k  PI-DP
R22 10k
+3V3

## SCSI Termination Resistors

R23 220  C-ATN
R24 220  C-ACK
R25 220  C-RST
R26 220  C-SEL
R27 220  C-BSY
R28 220  C-MSG
R29 220  C-C_D
R30 220  C-REQ
R31 220  C-I_O
R32 220  C-D7
R33 220  C-D6
R34 220  C-D5
R35 220  C-D4
R36 220  C-D3
R37 220  C-D2
R38 220  C-D1
R39 220  C-D0
R40 220  C-DP
TERM_5v
TERM_GND

R41 330  C-ATN
R42 330  C-ACK
R43 330  C-RST
R44 330  C-SEL
R45 330  C-BSY
R46 330  C-MSG
R47 330  C-C_D
R48 330  C-REQ
R49 330  C-I_O
R50 330  C-D7
R51 330  C-D6
R52 330  C-D5
R53 330  C-D4
R54 330  C-D3
R55 330  C-D2
R56 330  C-D1
R57 330  C-D0
R58 330  C-DP

## Raspberry Pi Connector

J7 +5V
1  +5V
2  GND
DNP

J1 Raspberry_Pi_2_3
+5V +5V +3V3
5V 5V 3V3 3V3

GPIO14/TXD  8    PI-D4
GPIO15/RXD  10   PI-D5
GPIO16  36   PI-D6
GPIO17  11   PI-D7
GPIO18/PWM0  12  PI-DP
GPIO19/MISO1  35  PI-ATN
GPIO20/MOSI1  38  PI-RST
GPIO21/SCLK1  40  PI-ACK
GPIO22  15   PI-REQ
GPIO23  16   PI-MSG
GPIO24  18   PI-C_D
GPIO25  22   PI-I_O
GPIO26  37   PI-BSY
GPIO27  13   PI-SEL

ID_SD/GPIO0  27   PI_GPIO0
ID_SC/GPIO1  28   PI_GPIO1
SDA/GPIO2  3    PI_SDA
SCL/GPIO3  5    PI_SCL
GCLK0/GPIO4  7    PI-ACT
GCLK1/GPIO5  29   DBG_LED
GCLK2/GPIO6  31   PI-IND
CE1/GPIO7  26   PI-TAD
CE0/GPIO8  24   PI-DTD
MISO0/GPIO9  21   PI_GPIO9
MOSI0/GPIO10  19   PI-D0
SCLK0/GPIO11  23   PI-D1
PWM0/GPIO12  32   PI-D2
PWM1/GPIO13  33   PI-D3

GND

## I2C Pinout

J4
PI_SDA  5
PI_SCL  4
+3V3  3
GND  2
+5V  1

## SCSI Bus Transceivers

IC1 SN74LS641-1DW
+5V  20  VCC   DIR  1  PI-DTD
GND  19  OE    A1   2  C-DP
PI-DP 18 B1    A2   3
17 B2   A3   4
16 B3   A4   5
15 B4   A5   6
14 B5   A6   7
13 B6   A7   8
12 B7   A8   9
11 B8   GND  10
GND   GND

Change direction based upon PI-DTD

IC3 SN74LS641-1DW
PI-TAD  1  DIR   VCC  20  +5V
PI-I_O  2  A1    OE   19  GND
PI-REQ  3  A2    B1   18  C-I_O
PI-C_D  4  A3    B2   17  C-REQ
PI-MSG  5  A4    B3   16  C-C_D
PI-BSY  6  A5    B4   15  C-MSG
7  A6    B5   14  C-BSY
8  A7    B6   13
9  A8    B7   12
10 GND   B8   11
GND   GND

Change direction based upon the TAD signal

IC2 SN74LS641-1DW
+5V  20  VCC   DIR  1  PI-DTD
GND  19  OE    A1   2  C-D7
PI-D7 18 B1    A2   3  C-D6
PI-D6 17 B2    A3   4  C-D5
PI-D5 16 B3    A4   5  C-D4
PI-D4 15 B4    A5   6  C-D3
PI-D3 14 B5    A6   7  C-D2
PI-D2 13 B6    A7   8  C-D1
PI-D1 12 B7    A8   9  C-D0
PI-D0 11 B8    GND  10
GND

Change direction based upon PI-DTD

IC4 SN74LS641-1DW
PI-IND  1  DIR   VCC  20  +5V
PI-SEL  2  A1    OE   19  GND
PI-RST  3  A2    B1   18  C-SEL
PI-ACK  4  A3    B2   17  C-RST
PI-ATN  5  A4    B3   16  C-ACK
6  A5    B4   15  C-ATN
7  A6    B5   14
8  A7    B6   13
9  A8    B7   12
10 GND   B8   11
GND   GND

Change direction based upon the IND signal

Note the original RaSCSI design calls the DIR pin "ATOB"
Enable Input ("G") is active low, so always grounded.

## DB-25 SCSI Connector

J6 CONNFLY DB-25
GND
MH1

C-REQ  1   1    14  14  GND
C-MSG  2   2    15  15  C-C_D
C-I_O  3   3    16  16  C-ATN
C-RST  4   4    17  17  C-ATN
C-ACK  5   5    18  18  C-SEL
C-BSY  6   6    19  19  C-SEL
GND    7   7    20  20  C-DP
C-D0   8   8    21  21  C-D1
GND    9   9    22  22  C-D2
C-D3   10  10   23  23  C-D4
C-D5   11  11   24  24  TERMPOW
C-D6   12  12   25  25
C-D7   13  13
MH2

MH2   GND

## Mounting Holes

H1 Hole1    H2 Hole2    H3 Hole3    H5 Hole4
GND   GND   GND   GND

H4 Hole5   H6 Hole6

## Images

X1 MacX5 Dogcow
X3 MacX6 Dogcow
X8 Pi    X2 Dogcow
X7 Pi    X4 Dogcow

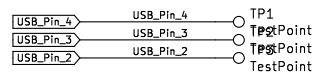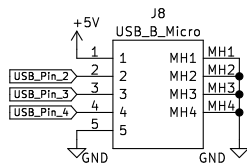## Connectors

File: Connectors.sch

This card include bus transceiver logic to allow a Raspberry Pi to connect to a vintage Macintosh SCSI port. (It may work with other systems as well)

This design is based upon GIMONS's Target/Initiator design
http://retropc.net/gimons/rascsi/

This is the "FULLSPEC" version of the board that can work as a SCSI target OR initiator

Thank you to everyone who has worked on this project!!

## RaSCSI – 68kmla Edition
28-Dec-2020

2.4

J8
USB_B_Micro

+5V

| 1 | 1 | MH1 | MH1 |
| 2 | 2 | MH2 | MH2 |
| 3 | 3 | MH3 | MH3 |
| 4 | 4 | MH4 | MH4 |
| 5 | 5 | | |

USB_Pin_2
USB_Pin_3
USB_Pin_4

GND                    GND

USB_Pin_4          USB_Pin_4         TP1
                                      TestPoint
USB_Pin_3          USB_Pin_3         TP2
                                      TestPoint
USB_Pin_2          USB_Pin_2         TP3
                                      TestPoint

Pins 2,3,4 are not used. However, if there aren't any traces connected
to them, they fall off very easily. These test points dont' serve any
function other than adding more copper to Pins 2,3,4

SCSI Ribbon Cable

J3 — Conn_02x25_Odd_Even

C-D0 C-D1 C-D2 C-D3 C-D4 C-D5 C-D6 C-D7 C-DP GND GND GND TERMPOW GND GND C-ATN C-BSY C-ACK C-RST C-MSG C-SEL C-C-D C-REQ C-I_O

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50

1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49

GND

J9 — Conn_02x25_Odd_Even

+5V GND GND C-I_O C-RST GND C-ATN GND GND GND GND GND GND GND GND +5V PB_SCSIID_4 PB_SCSIID_1

49 47 45 43 41 39 37 35 33 31 29 27 25 23 21 19 17 15 13 11 9 7 5 3 1

50 48 46 44 42 40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2

+5V GND C-REQ C-C-D C-SEL C-MSG C-ACK C-BSY TERMPOW C-DP C-D7 C-D6 C-D5 C-D4 C-D3 C-D2 C-D1 C-D0 GND +5V PB_LED_Pin PB_SCSIID_2

**Remove pins 9, 10 and 27**

SCSI PowerBook Ribbon Cable

JP1
SolderJumper_2_Bridged
1  2  EXT-ACT-LED

PB_LED_Pin        4
PB_SCSIID_1       3   J10
PB_SCSIID_2       2   Conn_01x04_Male
PB_SCSIID_4       1