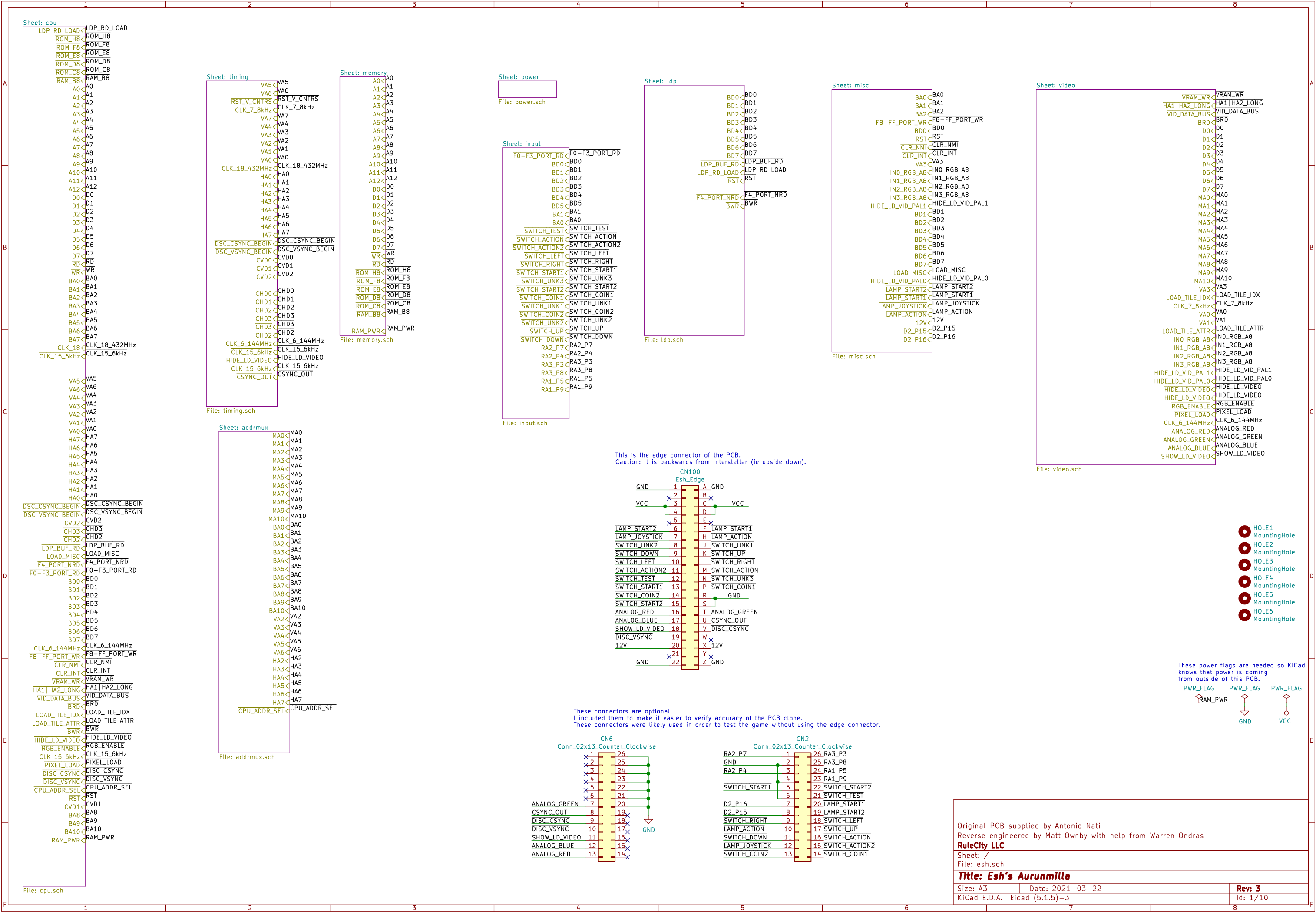




Sheet: memory

A0

A1

A2

A3

A4

A5

A6

A7

A8

A9

A10

A11

A12

D0

D1

D2

D3

D4

D5

D6

D7

WR

RD

ROM_H8

ROM_F8

ROM_E8

ROM_D8

ROM_C8

RAM_B8

RAM_PWR

File: memory.sch

Sheet: power

File: power.sch

Sheet: ldp

BD0

BD1

BD2

BD3

BD4

BD5

BD6

BD7

LDP_BUF_RD

LDP_RD_LOAD

RST

F4_PORT_NRD

BWR

File: ldp.sch

Sheet: input

F0-F3_PORT_RD

BD0

BD1

BD2

BD3

BD4

BD5

BA1

BA0

SWITCH_TEST

SWITCH_ACTION

SWITCH_ACTION2

SWITCH_LEFT

SWITCH_RIGHT

SWITCH_START1

SWITCH_UNK3

SWITCH_START2

SWITCH_COIN1

SWITCH_UNK1

SWITCH_COIN2

SWITCH_UNK2

SWITCH_UP

SWITCH_DOWN

RA2_P7

RA2_P4

RA3_P3

RA3_P8

RA1_P5

RA1_P9

File: input.sch

Sheet: misc

BA0

BA1

BA2

F8-FF_PORT_WR

BD0

RST

CLR_NMI

CLR_INT

VA3

IN0_RGB_A8

IN1_RGB_A8

IN2_RGB_A8

IN3_RGB_A8

HIDE_LD_VID_PAL1

HIDE_LD_VID_PAL0

BD1

BD2

BD3

BD4

BD5

BD6

BD7

LOAD_MISC

HIDE_LD_VID_PALO

LAMP_START2

LAMP_START1

LAMP_JOYSTICK

LAMP_ACTION

12V

D2_P15

D2_P16

File: misc.sch

Sheet: video

VRAM_WR

HA1|HA2_LONG

VID_DATA_BUS

BRD

D0

D1

D2

D3

D4

D5

D6

D7

MA0

MA1

MA2

MA3

MA4

MA5

MA6

MA7

MA8

MA9

MA10

VA3

LOAD_TILE_IDX

CLK_7_8kHz

VA0

VA1

LOAD_TILE_ATTR

IN0_RGB_A8

IN1_RGB_A8

IN2_RGB_A8

IN3_RGB_A8

HIDE_LD_VID_PAL1

HIDE_LD_VID_PALO

HIDE_LD_VIDEO

HIDE_LD_VIDEO

RGB_ENABLE

PIXEL_LOAD

CLK_6_144MHz

ANALOG_RED

ANALOG_GREEN

ANALOG_BLUE

SHOW_LD_VIDEO

File: video.sch

This is the edge connector of the PCB.
Caution: It is backwards from Interstellar (ie upside down).

CN100

Esh_Edge

GND

1

2

3

4

5

6

LAMP_START2

LAMP_JOYSTICK

SWITCH_UNK2

SWITCH_DOWN

SWITCH_LEFT

SWITCH_ACTION2

SWITCH_TEST

SWITCH_START1

SWITCH_COIN2

SWITCH_START2

ANALOG_RED

ANALOG_BLUE

SHOW_LD_VIDEO

DISC_VSYNC

12V

GND

21

22

A GND

B

C

D

E

F LAMP_START1

H LAMP_ACTION

J SWITCH_UNK1

K SWITCH_UP

L SWITCH_RIGHT

M SWITCH_ACTION

N SWITCH_UNK3

P SWITCH_COIN1

R

S

T ANALOG_GREEN

U CSYNC_OUT

V DISC_CS_SYNC

W

X 12V

Y

Z GND

These connectors are optional.
I included them to make it easier to verify accuracy of the PCB clone.
These connectors were likely used in order to test the game without using the edge connector.

CN6

Conn_02x13_Counter_Clockwise

1

2

3

4

5

6

7

CSYNC_OUT

DISC_CS_SYNC

DISC_VSYNC

SHOW_LD_VIDEO

ANALOG_BLUE

ANALOG_RED

13

26

25

24

23

22

21

20

19

18

17

16

15

14

GND

CN2

Conn_02x13_Counter_Clockwise

RA2_P7

GND

RA2_P4

SWITCH_START1

7

D2_P16

D2_P15

SWITCH_RIGHT

LAMP_ACTION

SWITCH_DOWN

LAMP_JOYSTICK

SWITCH_COIN2

13

26

25

24

23

22

21

20

19

18

17

16

15

14

These power flags are needed so KiCad knows that power is coming from outside of this PCB.

PWR_FLAG

PWR_FLAG

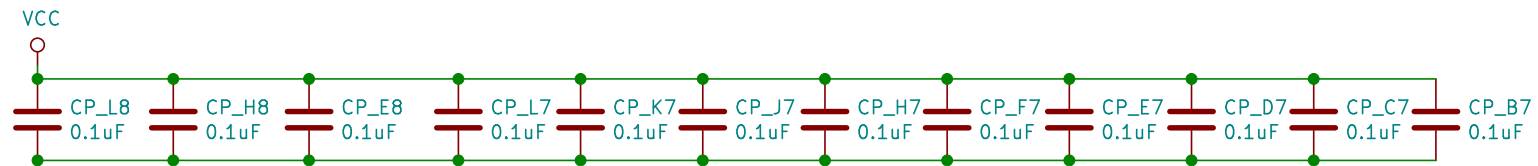
PWR_FLAG

RAM_PWR

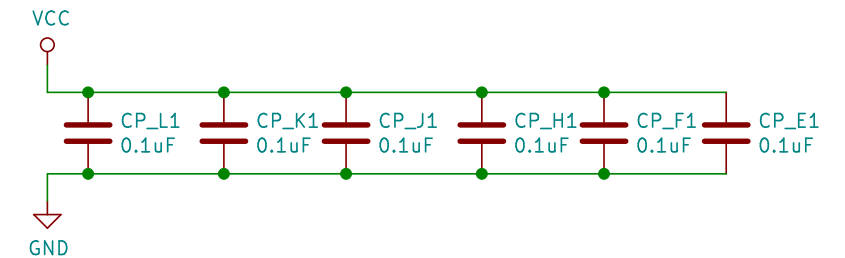
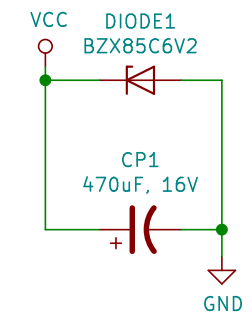
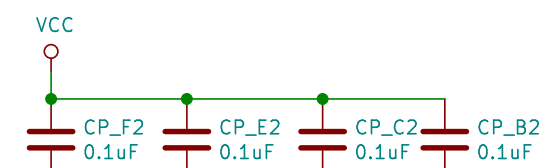
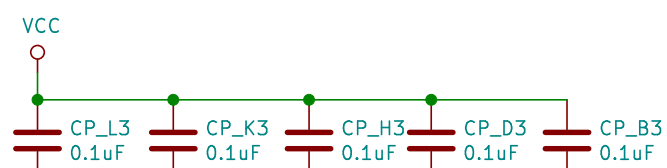
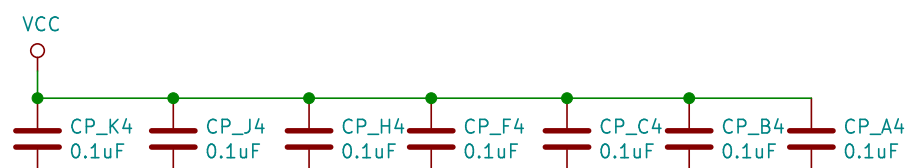
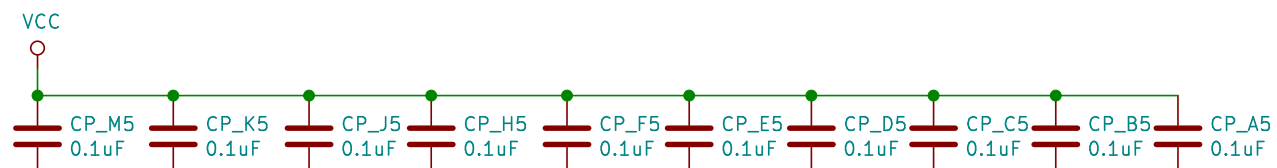
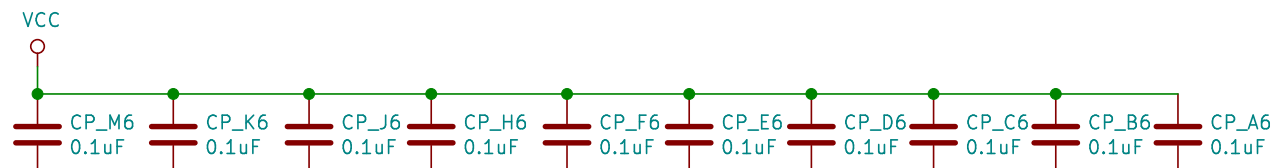
GND

VCC

Original PCB supplied by Antonio Nati
Reverse engineered by Matt Ownby with help from Warren Ondras
RuleCity LLC
Sheet: /
File: esh.sch
Title: Esh's Aurunmilla
Size: A3
Date: 2021-03-22
KiCad E.D.A. kicad (5.1.5)-3
Rev: 3
Id: 1/10



CP_H8 GND is unconnected on original PCB



Original PCB supplied by Antonio Nati
Reverse engineered by Matt Ownby with help from Warren Ondras

RuleCity LLC

Sheet: /power/

File: power.sch

Title: Esh's Aurunmilla

Size: A4

Date: 2021-03-22

Rev: 3

Size: A1	Date: 2021
KiCad E.D.A.	kicad (5.1.5)-3

Id: 2/10

