The Incrementor

Sheet: +12V Power Input

File: POS12_Power_Input.sch

Sheet: +3.3V Power Supply

File: POS3P3_Power_Supply.sch
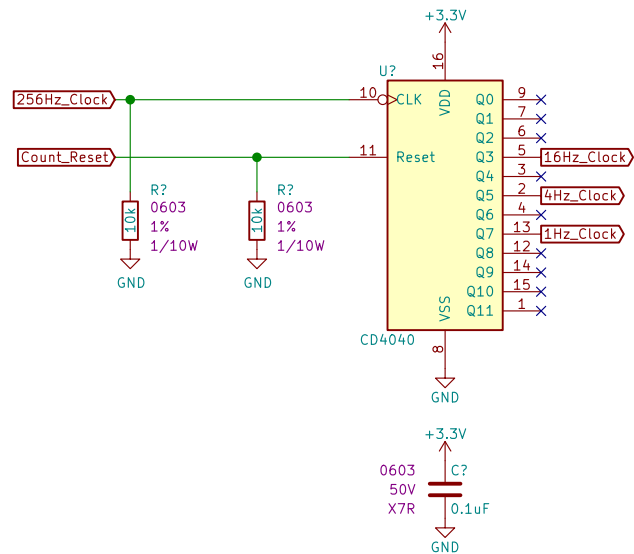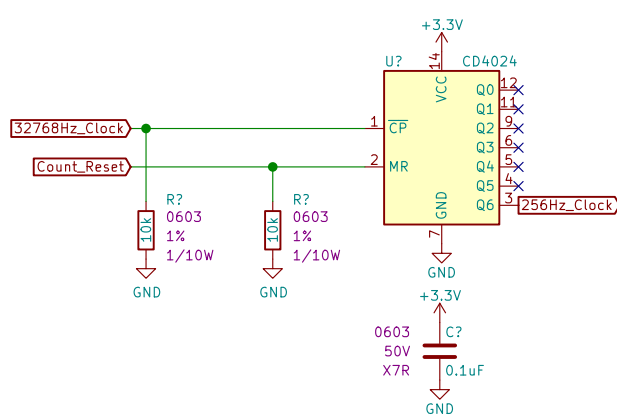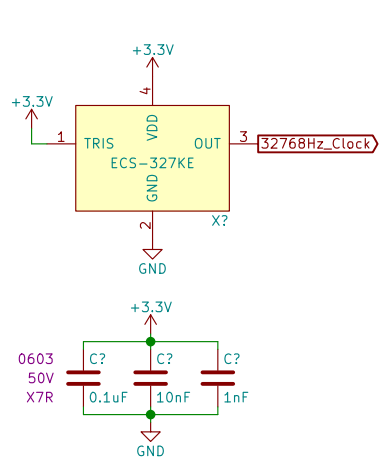
Sheet: Oscillator

File: Oscillator.sch

Sheet: Status LEDs

File: Status_LEDs.sch
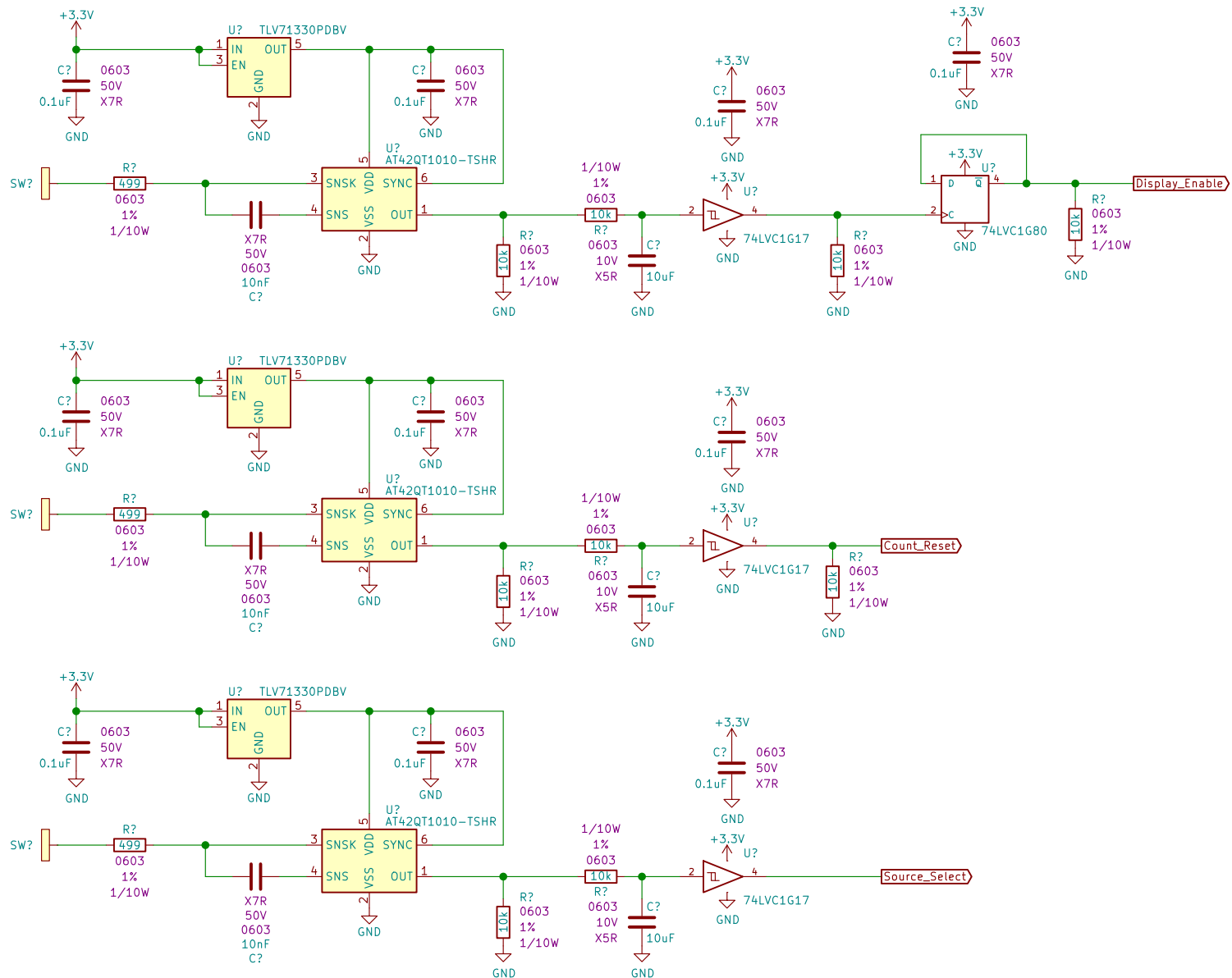
Sheet: Pushbuttons

File: Pushbuttons.sch

Sheet: External Clock

File: External_Clock.sch
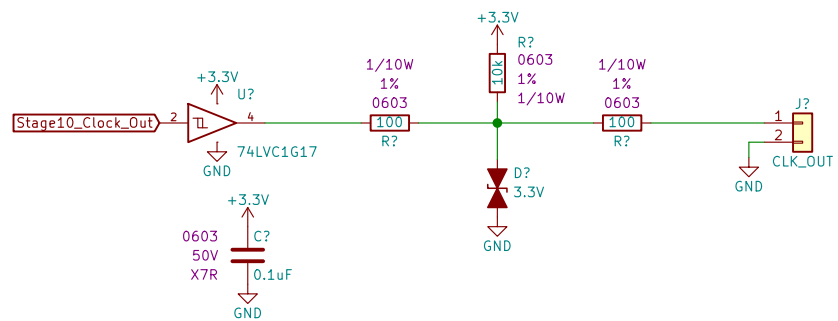
Sheet: Clock Output

File: Clock_Output.sch
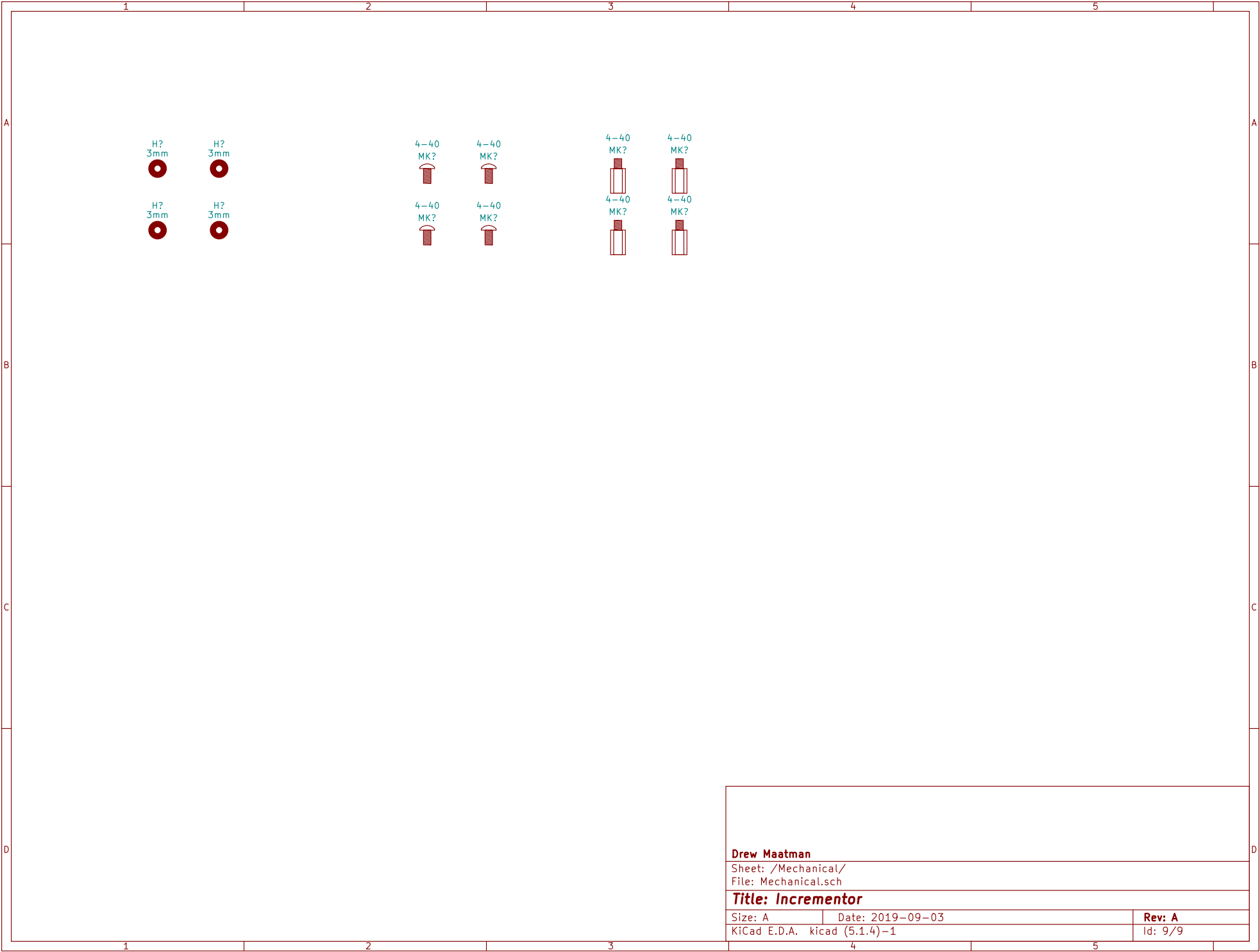
Sheet: Mechanical

File: Mechanical.sch

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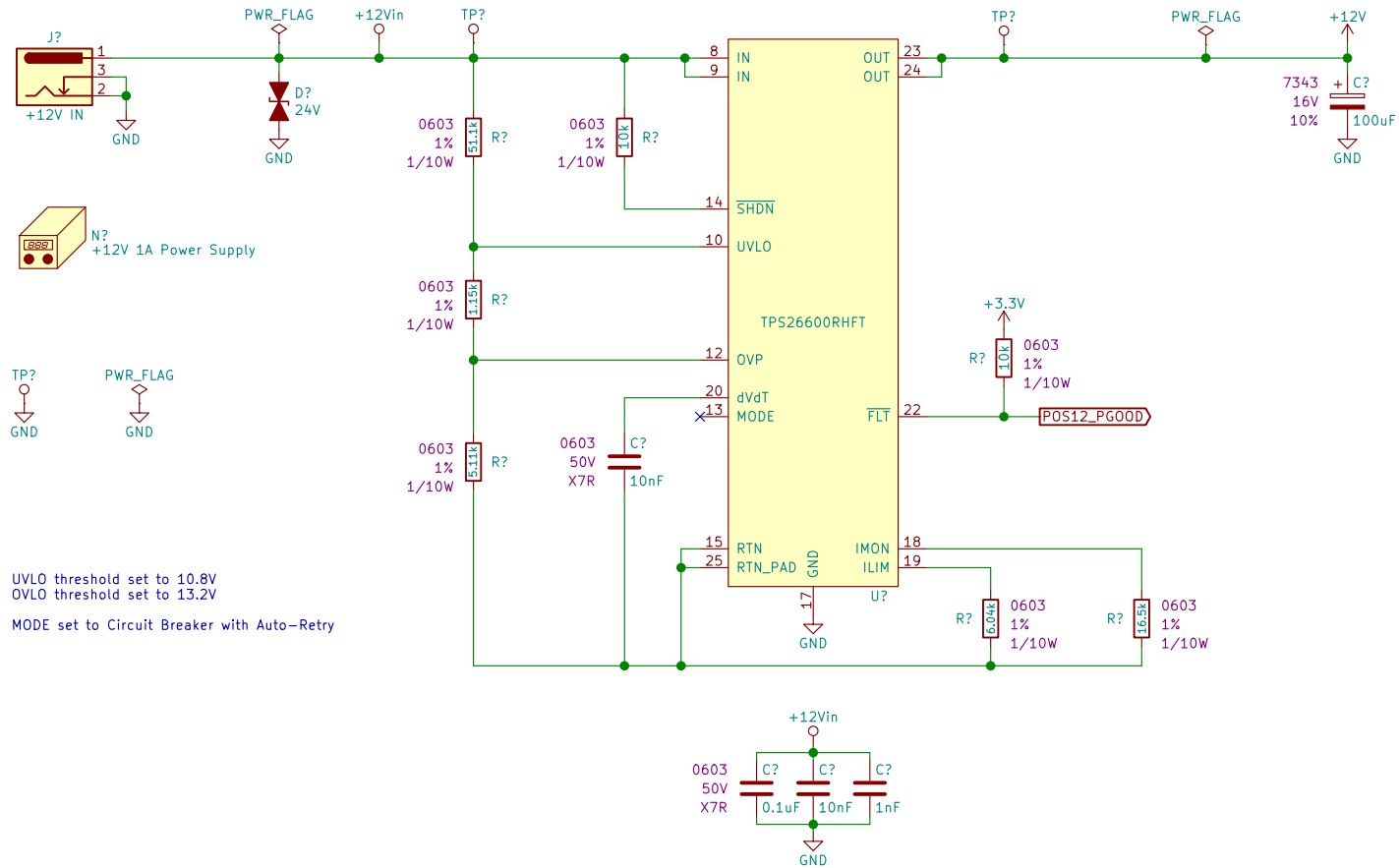Sheet: /
File: Ultimate_Counter.sch

Title: Incrementor

Size: A	Date: 2019-09-03	Rev: A
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PWR_FLAG +12Vin TP?

J?
+12V IN

GND

N?
+12V 1A Power Supply

TP?   PWR_FLAG
GND   GND

UVLO threshold set to 10.8V
OVLO threshold set to 13.2V

MODE set to Circuit Breaker with Auto-Retry

D?
24V

GND

0603
1%
1/10W
51.1k R?

0603
1%
1/10W
1.15k R?

0603
1%
1/10W
5.11k R?

0603
1%
1/10W
10k R?

0603
50V
X7R
10nF C?

TPS26600RHFT

8 IN   OUT 23
9 IN   OUT 24

14 SHDN

10 UVLO

12 OVP

20 dVdT
13 MODE

15 RTN   IMON 18
25 RTN_PAD ILIM 19
17 GND

U?

TP?   PWR_FLAG +12V

7343
16V
10%
100uF C?

GND

+3.3V

10k R? 0603
1%
1/10W

FLT 22   POS12_PGOOD

0603
1%
1/10W
6.04k R?

0603
1%
1/10W
16.5k R?

GND

+12Vin

0603
50V
X7R

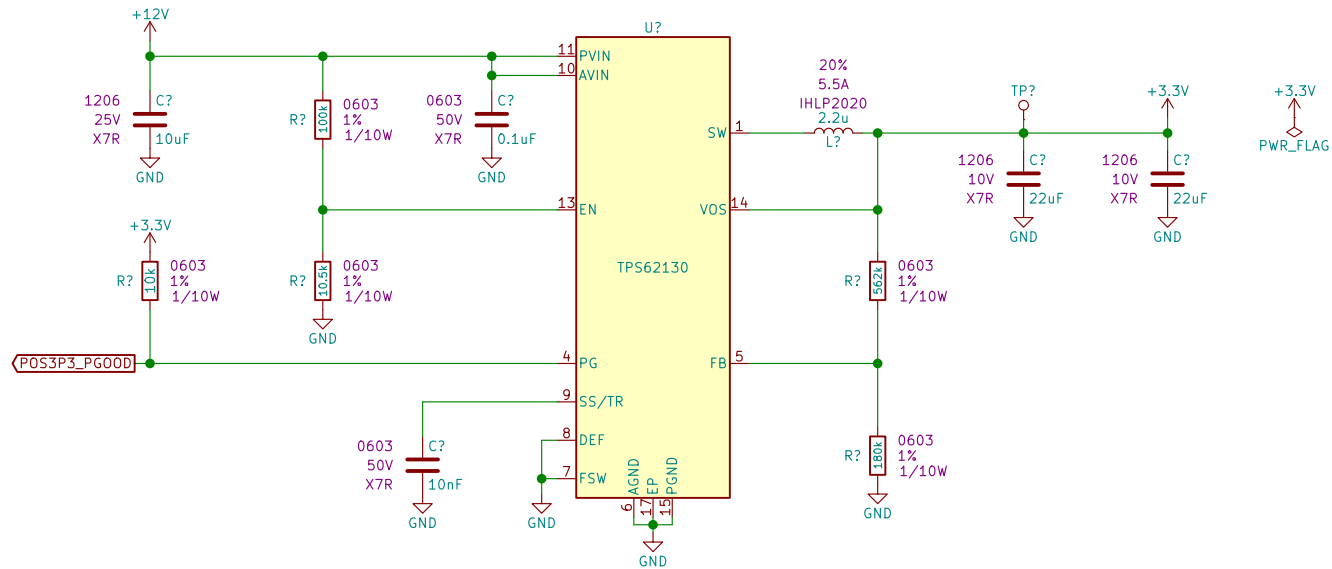0.1uF C?   10nF C?   1nF C?

GND

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Sheet: /+12V Power Input/
File: POS12_Power_Input.sch
Title: Incrementor
Size: A   Date: 2019-09-03   Rev: A
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+12V

1206
25V
X7R C?
10uF

GND

R? 100k 0603
1%
1/10W

0603
50V
X7R C?
0.1uF

GND

11 PVIN
10 AVIN

U?

SW 1

20%
5.5A
IHLP2020
2.2u
L?

TP?

+3.3V

+3.3V

PWR_FLAG

1206
10V
X7R C?
22uF

1206
10V
X7R C?
22uF

GND

GND

+3.3V

R? 10k 0603
1%
1/10W

R? 10.5k 0603
1%
1/10W

GND

13 EN

VOS 14

TPS62130

R? 562k 0603
1%
1/10W

POS3P3_PGOOD

4 PG

FB 5

9 SS/TR

R? 180k 0603
1%
1/10W

GND

0603
50V
X7R C?
10nF

GND

8 DEF

7 FSW

6 AGND
17 EP
15 PGND

GND

GND

+3.3V

+3.3V

4
TRIS   VDD
ECS-327KE
OUT   3   32768Hz_Clock
1
GND
2
X?
GND

+3.3V

0603
50V
X7R
C?   C?   C?
0.1uF   10nF   1nF
GND

U?   CD4024
14
+3.3V
VCC
Q0   12
Q1   11
Q2   9
Q3   6
Q4   5
Q5   4
Q6   3
32768Hz_Clock   1   CP
Count_Reset   2   MR
256Hz_Clock
GND
7
GND

R?
10k   0603
1%
1/10W
GND

R?
10k   0603
1%
1/10W
GND

0603
50V
X7R
C?
0.1uF
+3.3V
GND

+3.3V
16
U?
256Hz_Clock   10   CLK   VDD   Q0   9
Q1   7
Q2   6
Q3   5   16Hz_Clock
Q4   3
Q5   2   4Hz_Clock
Count_Reset   11   Reset   Q6   4
Q7   13   1Hz_Clock
Q8   12
Q9   14
Q10   15
VSS   Q11   1
CD4040
8
GND

R?
10k   0603
1%
1/10W
GND

R?
10k   0603
1%
1/10W
GND

0603
50V
X7R
C?
0.1uF
+3.3V
GND

Row A:

+3.3V
0603 C?
50V
X7R
0.1uF
GND
+3.3V
Suspend
R? 0603 1% 10k 1/10W
GND
+3.3V U? 2 4 74LVC1G06
GND
+3.3V
D? Red
R? 0603 1% 1k 1/10W

+3.3V
0603 C?
50V
X7R
0.1uF
GND
+3.3V
External_Clock_Select
R? 0603 1% 10k 1/10W
GND
+3.3V U? 2 4 74LVC1G06
GND
+3.3V
D? Green
R? 0603 1% 1k 1/10W

+3.3V
0603 C?
50V
X7R
0.1uF
GND
+3.3V
1Hz_Clock_Select
R? 0603 1% 10k 1/10W
GND
+3.3V U? 2 4 74LVC1G06
GND
+3.3V
D? Green
R? 0603 1% 1k 1/10W

Row B:

+3.3V
0603 C?
50V
X7R
0.1uF
GND
16Hz_Clock_Select
R? 0603 1% 10k 1/10W
GND
+3.3V U? 2 4 74LVC1G06
GND
+3.3V
D? Green
R? 0603 1% 1k 1/10W

+3.3V
0603 C?
50V
X7R
0.1uF
GND
256Hz_Clock_Select
R? 0603 1% 10k 1/10W
GND
+3.3V U? 2 4 74LVC1G06
GND
+3.3V
D? Green
R? 0603 1% 1k 1/10W

+3.3V
0603 C?
50V
X7R
0.1uF
GND
32768Hz_Clock_Select
R? 0603 1% 10k 1/10W
GND
+3.3V U? 2 4 74LVC1G06
GND
+3.3V
D? Green
R? 0603 1% 1k 1/10W

Row C:

+3.3V
0603 C?
50V
X7R
0.1uF
GND
POS12_PGOOD
+3.3V U? 2 4 74LVC1G06
GND
+3.3V
D? Green
R? 0603 1% 1k 1/10W

+3.3V
0603 C?
50V
X7R
0.1uF
GND
4Hz_Clock_Select
R? 0603 1% 10k 1/10W
GND
+3.3V U? 2 4 74LVC1G06
GND
+3.3V
D? Green
R? 0603 1% 1k 1/10W

+3.3V
0603 C?
50V
X7R
0.1uF
GND
POS3P3_PGOOD
+3.3V U? 2 4 74LVC1G06
GND
+3.3V
D? Green
R? 0603 1% 1k 1/10W

Row A (Display_Enable):
- +3.3V
- C? 0603 50V X7R 0.1uF — GND
- U? TLV71330PDBV — IN OUT EN GND
- C? 0603 50V X7R 0.1uF — GND
- SW?
- R? 499 0603 1% 1/10W
- X7R 50V 0603 10nF C?
- U? AT42QT1010-TSHR — SNSK VDD SNS VSS SYNC OUT — GND
- R? 10k 0603 1% 1/10W — GND
- 1/10W 1% 0603 10k
- R? 0603 10V X5R — C? 10uF — GND
- +3.3V — C? 0603 50V X7R 0.1uF — GND
- U? 74LVC1G17 — GND
- R? 10k 0603 1% 1/10W — GND
- +3.3V — C? 0603 50V X7R 0.1uF — GND
- +3.3V — U? 74LVC1G80 — D Q C — GND
- R? 10k 0603 1% 1/10W — GND
- Display_Enable

Row B (Count_Reset):
- +3.3V
- C? 0603 50V X7R 0.1uF — GND
- U? TLV71330PDBV — IN OUT EN GND
- C? 0603 50V X7R 0.1uF — GND
- SW?
- R? 499 0603 1% 1/10W
- X7R 50V 0603 10nF C?
- U? AT42QT1010-TSHR — SNSK VDD SNS VSS SYNC OUT — GND
- R? 10k 0603 1% 1/10W — GND
- 1/10W 1% 0603 10k
- R? 0603 10V X5R — C? 10uF — GND
- +3.3V — C? 0603 50V X7R 0.1uF — GND
- +3.3V — U? 74LVC1G17 — GND
- R? 10k 0603 1% 1/10W — GND
- Count_Reset

Row C (Source_Select):
- +3.3V
- C? 0603 50V X7R 0.1uF — GND
- U? TLV71330PDBV — IN OUT EN GND
- C? 0603 50V X7R 0.1uF — GND
- SW?
- R? 499 0603 1% 1/10W
- X7R 50V 0603 10nF C?
- U? AT42QT1010-TSHR — SNSK VDD SNS VSS SYNC OUT — GND
- R? 10k 0603 1% 1/10W — GND
- 1/10W 1% 0603 10k
- R? 0603 10V X5R — C? 10uF — GND
- +3.3V — C? 0603 50V X7R 0.1uF — GND
- +3.3V — U? 74LVC1G17 — GND
- Source_Select
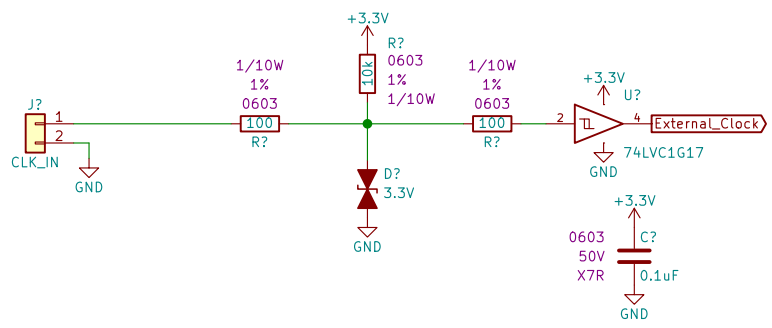
Drew Maatman
Sheet: /Pushbuttons/
File: Pushbuttons.sch
Title: Incrementor
Size: A   Date: 2019-09-03   Rev: A
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+3.3V

R?
0603
1%
1/10W
10k

1/10W
1%
0603
100
R?

1/10W
1%
0603
100
R?

+3.3V
U?

External_Clock

74LVC1G17

2

4

GND

J?
1
2
CLK_IN

GND

D?
3.3V

GND

+3.3V
C?

0603
50V
X7R
0.1uF

GND

Stage10_Clock_Out

+3.3V
U?
74LVC1G17

GND

2
4

+3.3V
C?
0603
50V
X7R
0.1uF

GND

1/10W
1%
0603
100
R?

+3.3V
R?
0603
10k
1%
1/10W

D?
3.3V

GND

1/10W
1%
0603
100
R?

J?
1
2
CLK_OUT

GND

H?
3mm

H?
3mm

4-40
MK?

4-40
MK?

4-40
MK?

4-40
MK?

H?
3mm

H?
3mm

4-40
MK?

4-40
MK?

4-40
MK?

4-40
MK?

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Title: Incrementor

Size: A	Date: 2019-09-03	Rev: A
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