

1

2

3

4

A

A

B

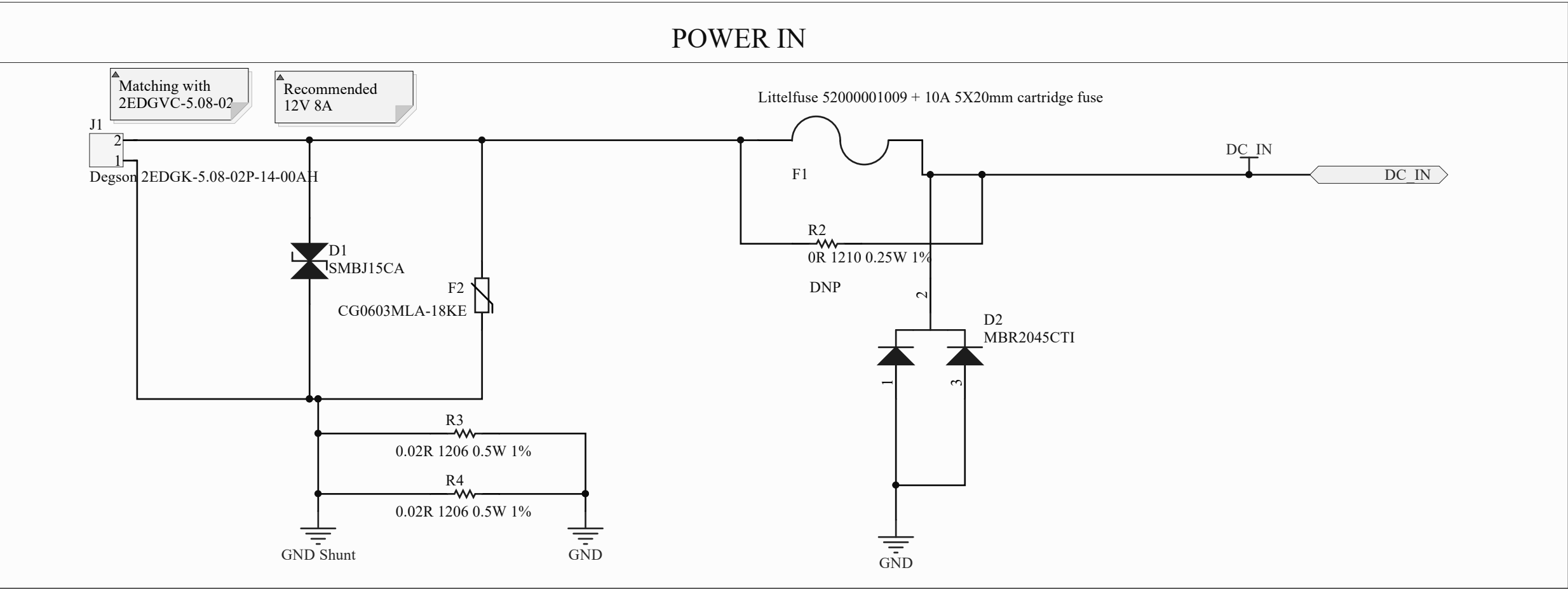
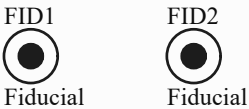
B

C

C

D

D



Title Power input		
Size: A3	Author: Pablo Sánchez Bergasa	Revision:2.A.1
Date: 25/10/2019	Time: 15:46:08	Sheet 2 of 10
File: Power_Input.SchDoc		



1

2

3

4

A

B

C

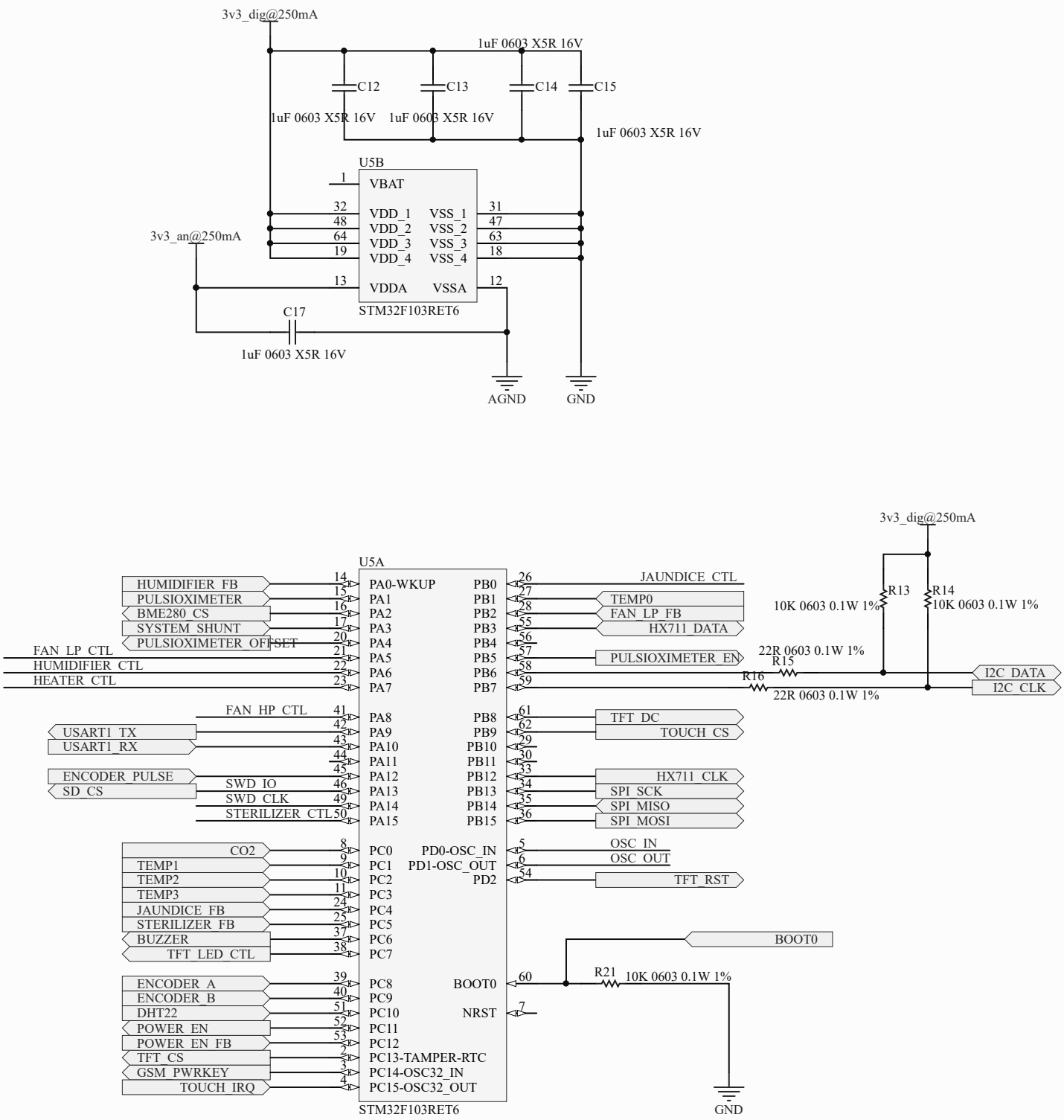
D

A

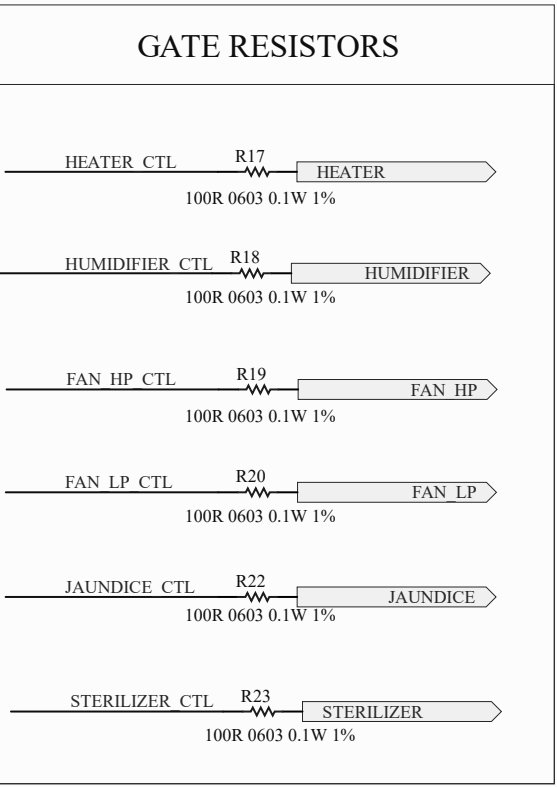
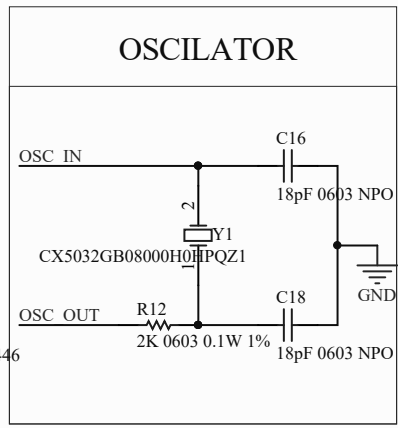
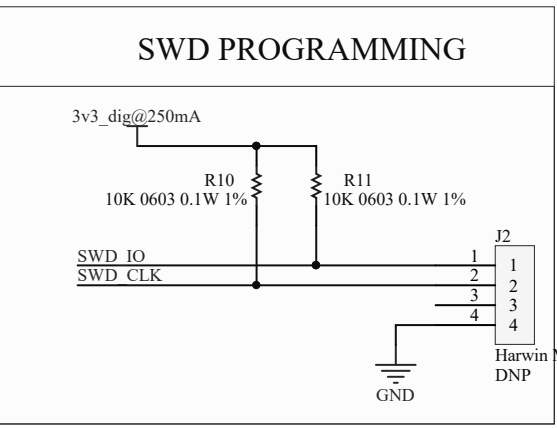
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C

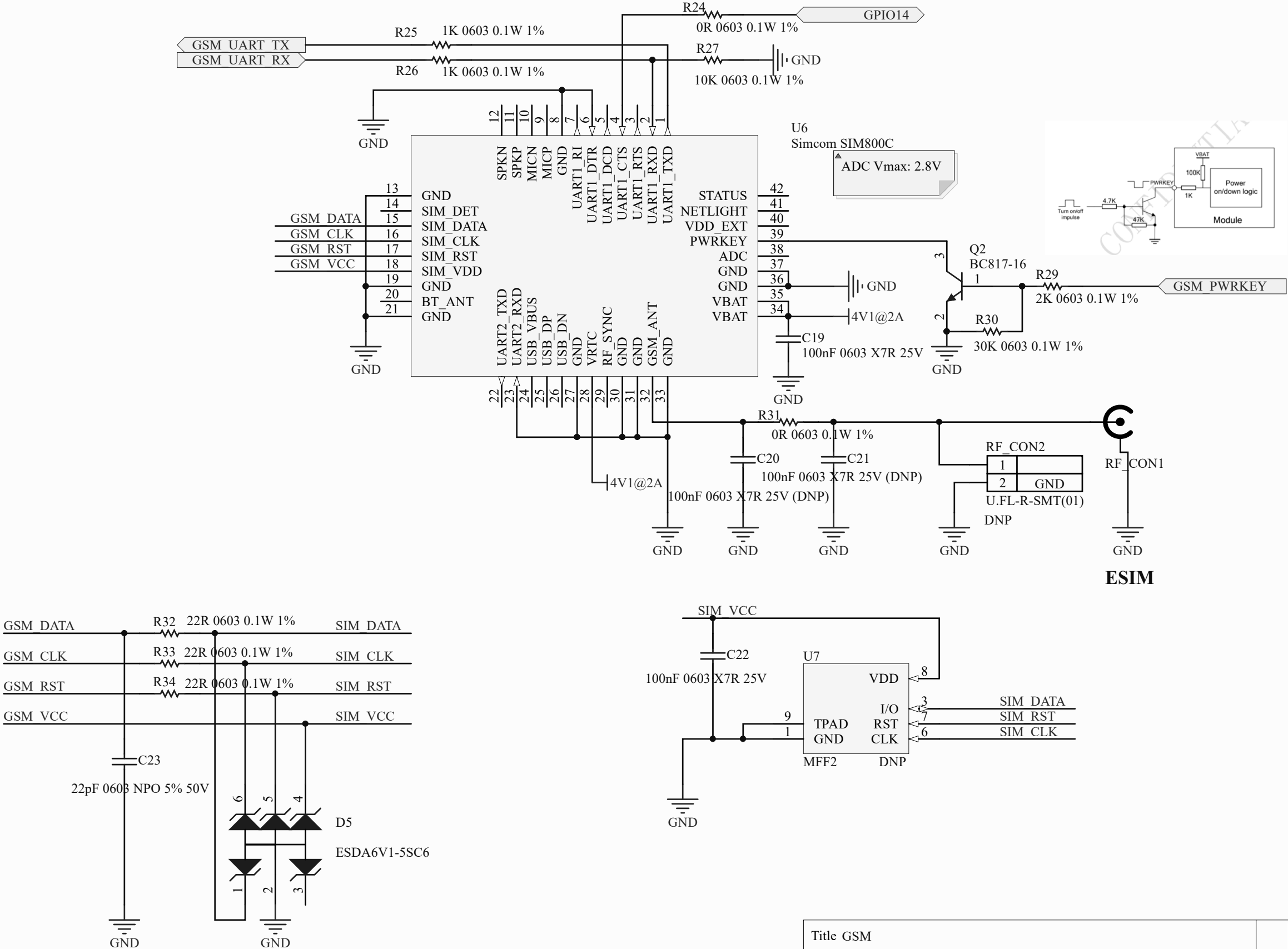
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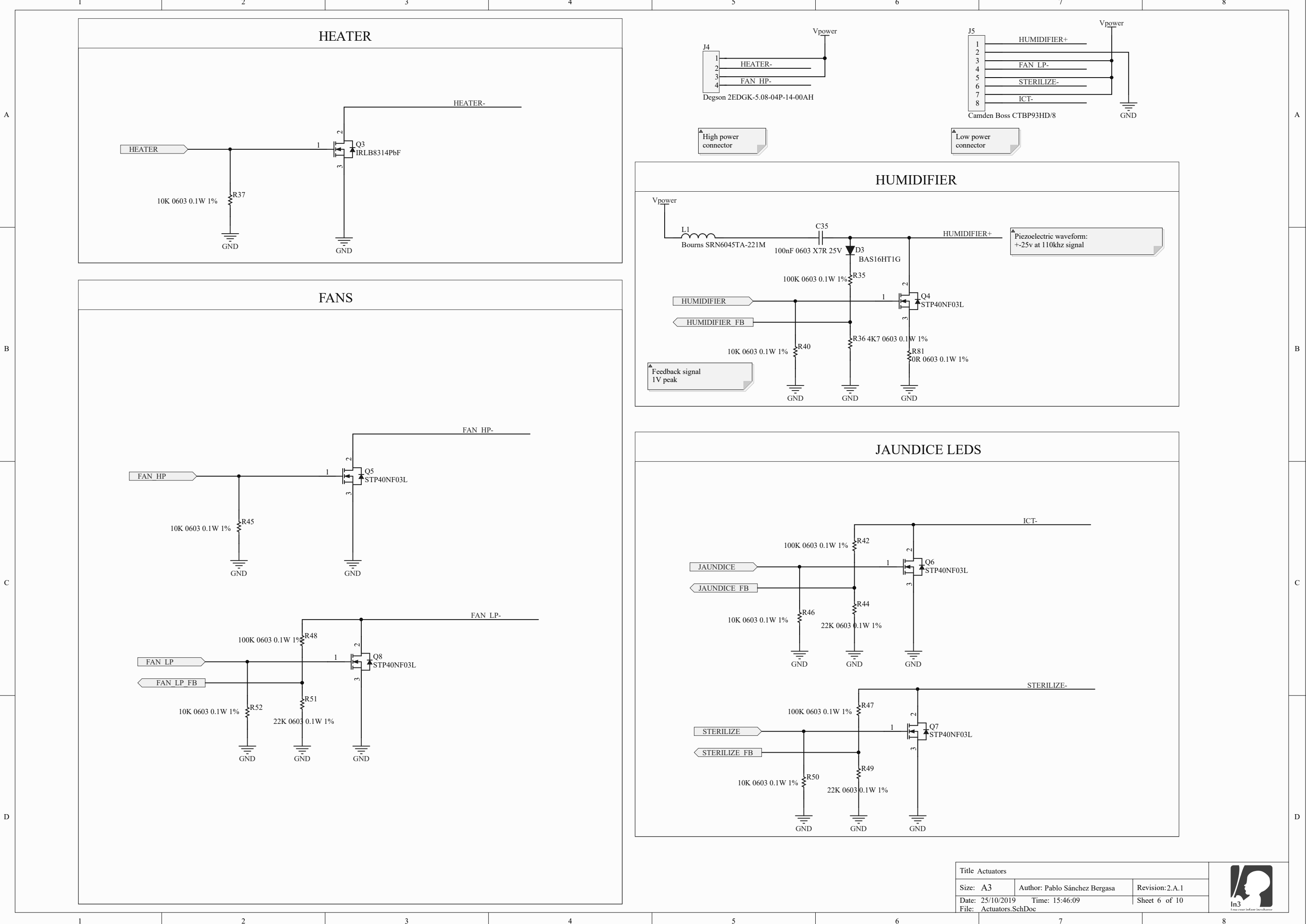


HSE OSC clock:
 $R_s = 6 * ERC = 6 * 330 \text{ohm}$
 $CL = CL1 * CL2 / (CL1 + CL2) + C_{stray} = CL1 / 2 + 3$
 $CL1 = CL2 = 18 \text{pf}$



GSM/GPRS MODULE





Title Actuators

Size: A3

Author: Pablo Sánchez Bergasa

Revision:2.A.1

Date: 25/10/2019

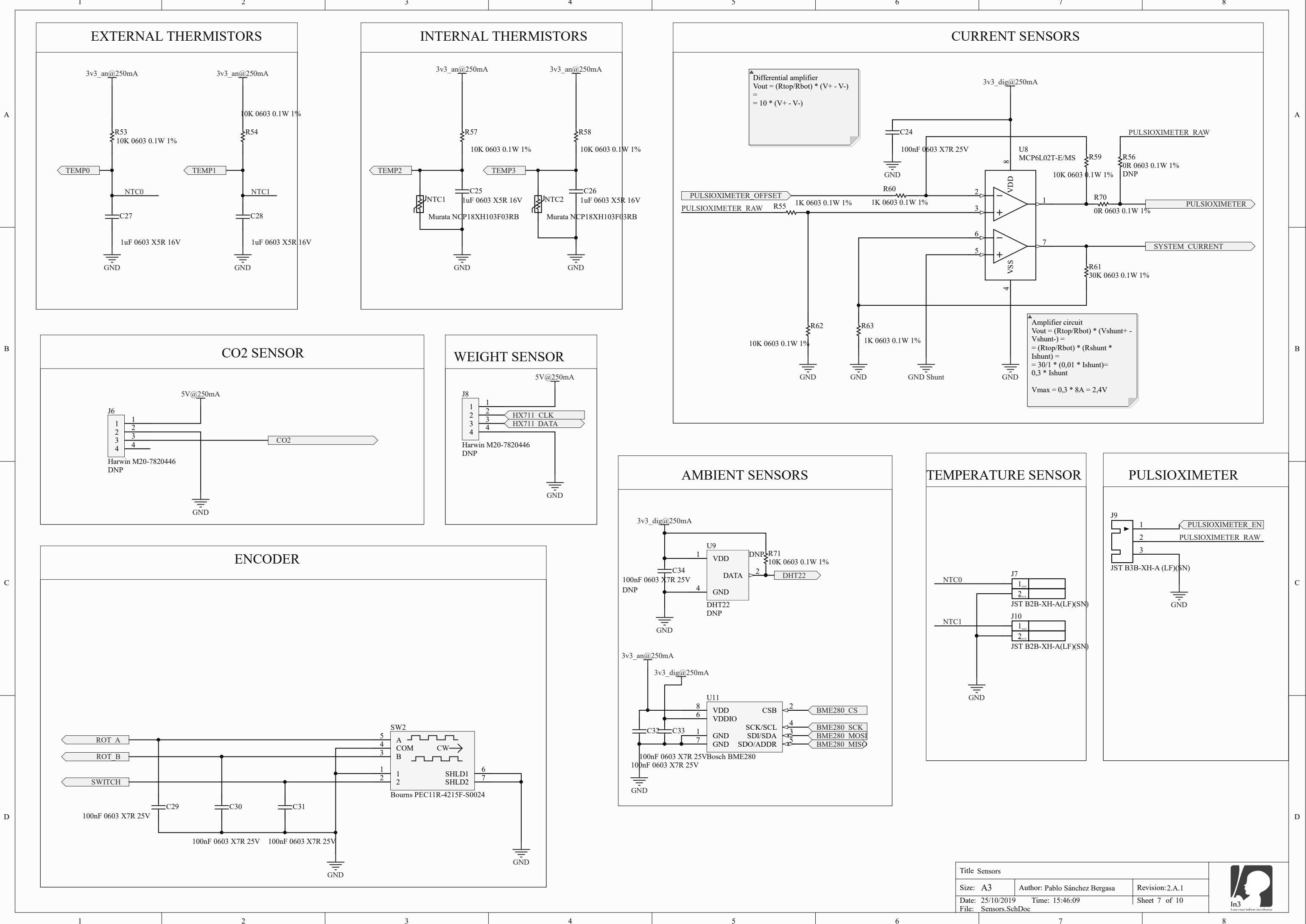
Time: 15:46:09

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File: Actuators.SchDoc

In3

Low cost infant incubator



CURRENT SENSORS

Differential amplifier

$$V_{out} = (R_{top}/R_{bot}) * (V_{+} - V_{-})$$
$$= 10 * (V_{+} - V_{-})$$

3v3_dig@250mA

C24

100nF 0603 X7R 25V

GND

R60

1K 0603 0.1W 1%

PULSIOXIMETER RAW

R55

1K 0603 0.1W 1%

PULSIOXIMETER OFFSET

U8

MCP6L02T-E/MS

VDD

VSS

R59

10K 0603 0.1W 1%

R70

0R 0603 0.1W 1%

PULSIOXIMETER

R61

30K 0603 0.1W 1%

SYSTEM CURRENT

R62

10K 0603 0.1W 1%

GND

R63

1K 0603 0.1W 1%

GND

GND Shunt

GND

Amplifier circuit

$$V_{out} = (R_{top}/R_{bot}) * (V_{shunt+} - V_{shunt-})$$
$$= (R_{top}/R_{bot}) * (R_{shunt} * I_{shunt})$$
$$= 30/1 * (0,01 * I_{shunt}) = 0,3 * I_{shunt}$$
$$V_{max} = 0,3 * 8A = 2,4V$$

CO2 SENSOR

J6

1

2

3

4

5V@250mA

CO2

Harwin M20-7820446

DNP

GND

WEIGHT SENSOR

J8

1

2

3

4

5V@250mA

HX711 CLK

HX711 DATA

Harwin M20-7820446

DNP

GND

ENCODER

ROT A

ROT B

SWITCH

C29

100nF 0603 X7R 25V

C30

100nF 0603 X7R 25V

C31

100nF 0603 X7R 25V

GND

SW2

A

COM

B

SHLD1

SHLD2

Bourms PEC11R-4215F-S0024

AMBIENT SENSORS

3v3_dig@250mA

C34

100nF 0603 X7R 25V

DNP

U9

VDD

DATA

GND

DHT22

DNP

R71

10K 0603 0.1W 1%

DHT22

3v3_an@250mA

3v3_dig@250mA

C32

100nF 0603 X7R 25V

C33

100nF 0603 X7R 25V

GND

U11

VDD

VDDIO

GND

GND

CSB

SCK/SCL

SDI/SDA

SDO/ADDR

BME280 CS

BME280 SCK

BME280 MOSI

BME280 MISO

Bosch BME280

TEMPERATURE SENSOR

NTC0

NTC1

J7

1

2

JST B2B-XH-A(LF)(SN)

J10

1

2

JST B2B-XH-A(LF)(SN)

GND

PULSIOXIMETER

J9

1

2

3

PULSIOXIMETER EN

PULSIOXIMETER RAW

JST B3B-XH-A (LF)(SN)

GND

Title Sensors

Size: A3

Author: Pablo Sánchez Bergasa

Revision:2.A.1

Date: 25/10/2019

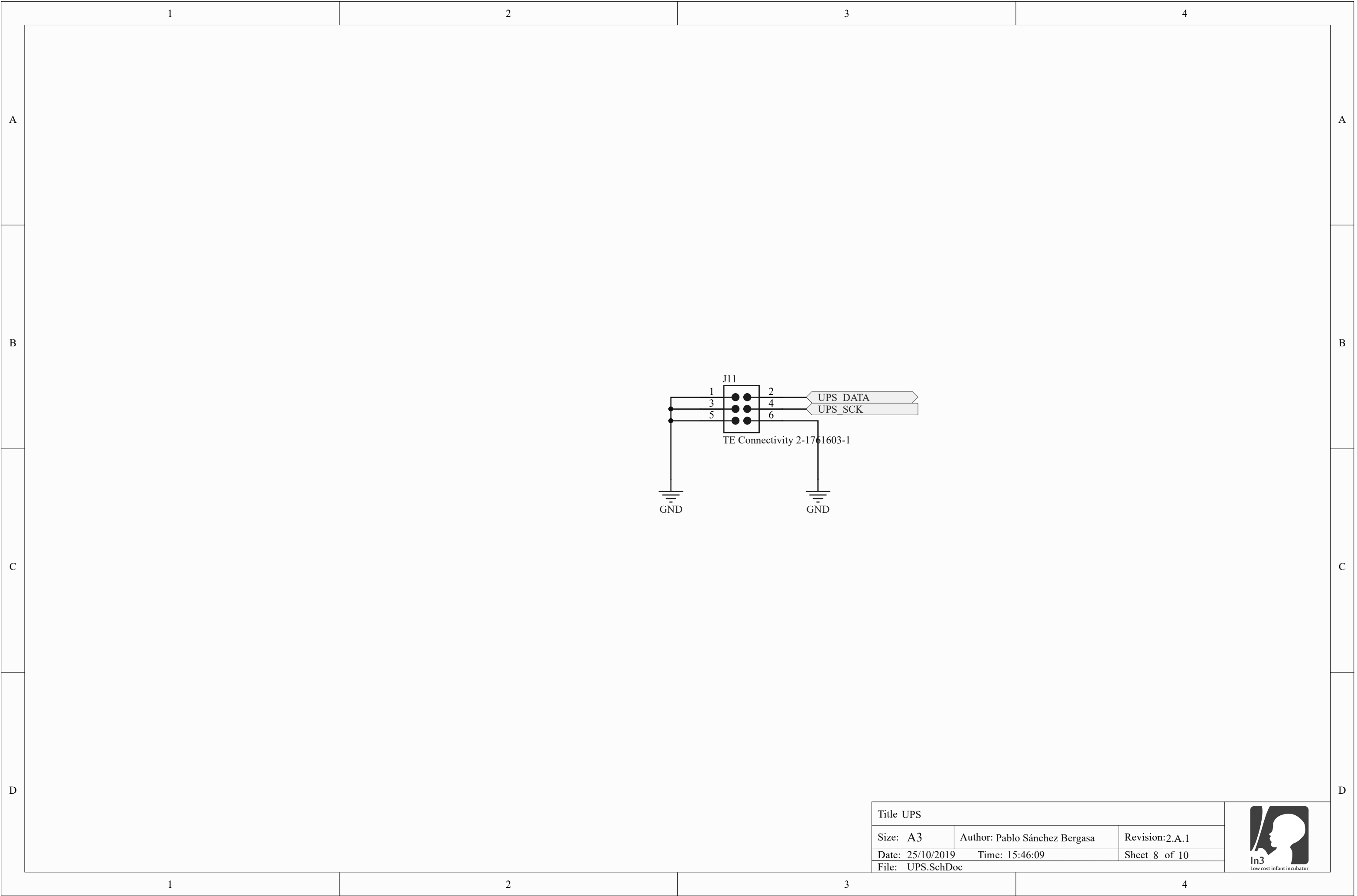
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File: Sensors.SchDoc

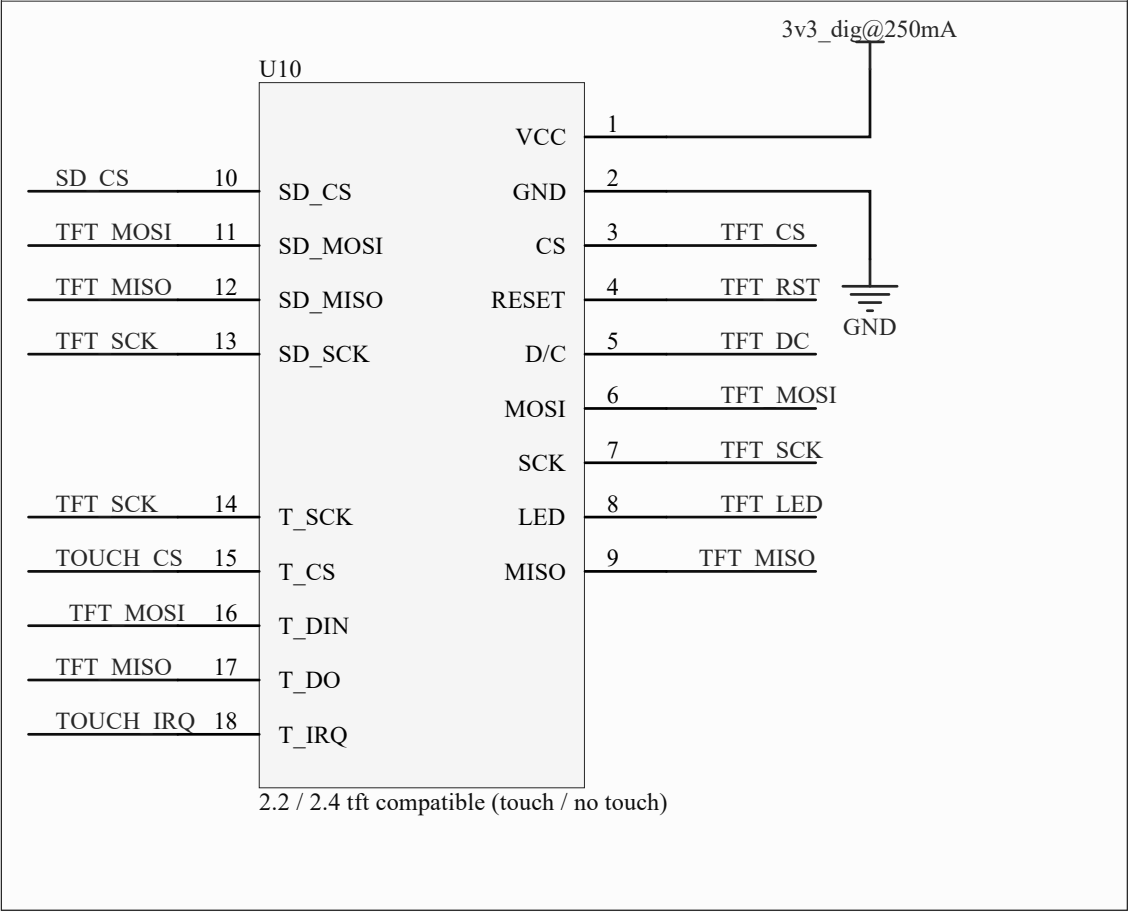
In3

Low cost infant incubator



1	2	3	4										
A	<div><div>BUZZER</div><div><p>5V@250mA</p><p>1K 0603 0.1W 1% R64</p><p>BUZ1 PS1420P02CT</p><p>BUZZER R65 100R 0603 0.1W 1%</p><p>Q9 BC817-16</p><p>GND</p></div></div>			A									
B				B									
C				C									
D	<div><div>Title Buzzer</div><div><table><tr><td>Size: A3</td><td>Author: Pablo Sánchez Bergasa</td><td>Revision:2.A.1</td></tr><tr><td>Date: 25/10/2019</td><td>Time: 15:46:09</td><td>Sheet 9 of 10</td></tr><tr><td colspan="3">File: Buzzer.SchDoc</td></tr></table></div><div><p>In3 Low cost infant incubator</p></div></div> <td data-kind="ghost"></td> <td data-kind="ghost"></td> <td>D</td>	Size: A3	Author: Pablo Sánchez Bergasa	Revision:2.A.1	Date: 25/10/2019	Time: 15:46:09	Sheet 9 of 10	File: Buzzer.SchDoc					D
Size: A3	Author: Pablo Sánchez Bergasa	Revision:2.A.1											
Date: 25/10/2019	Time: 15:46:09	Sheet 9 of 10											
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1	2	3	4										

2.2/2.4 SPI TFT



TFT LED

