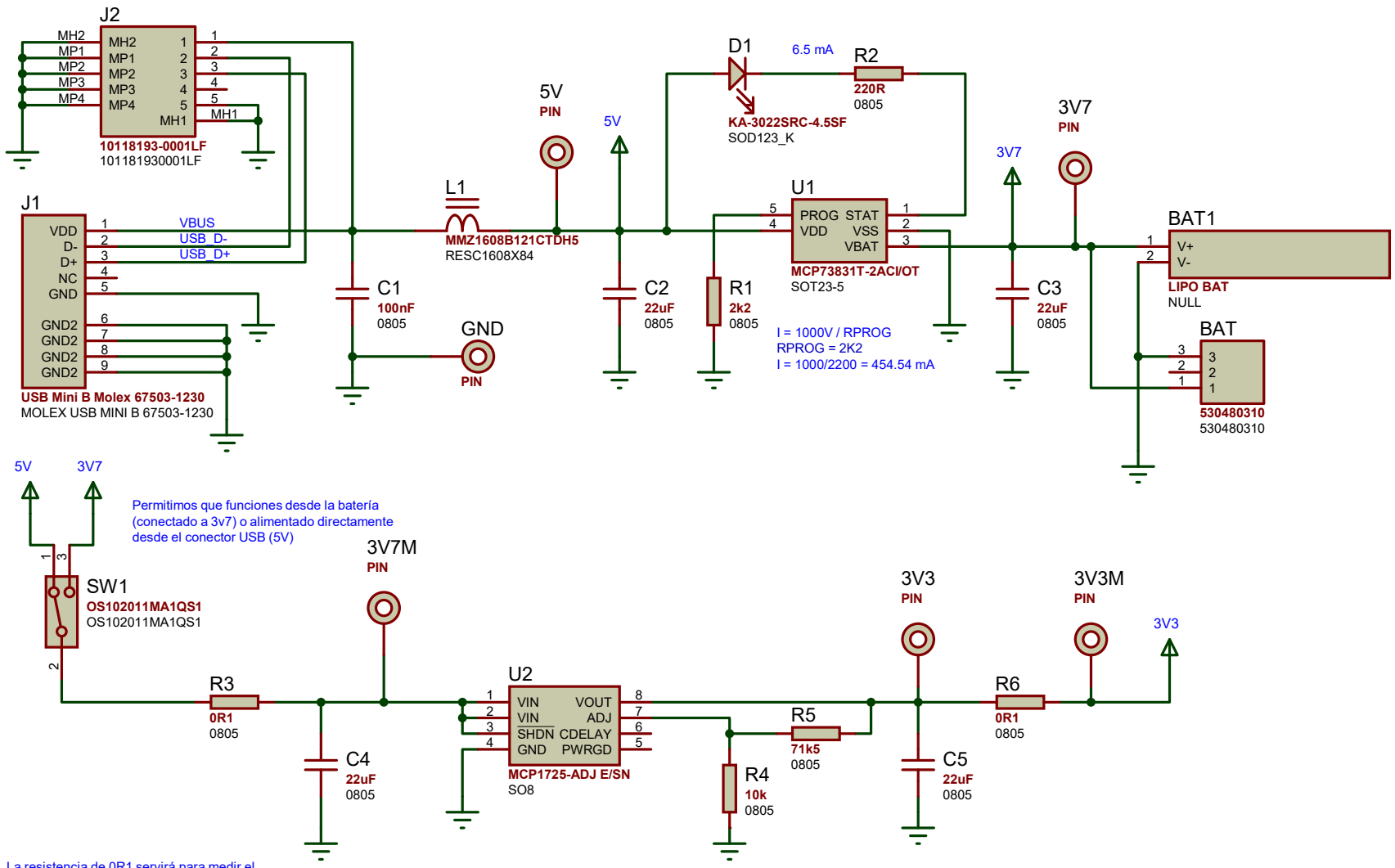
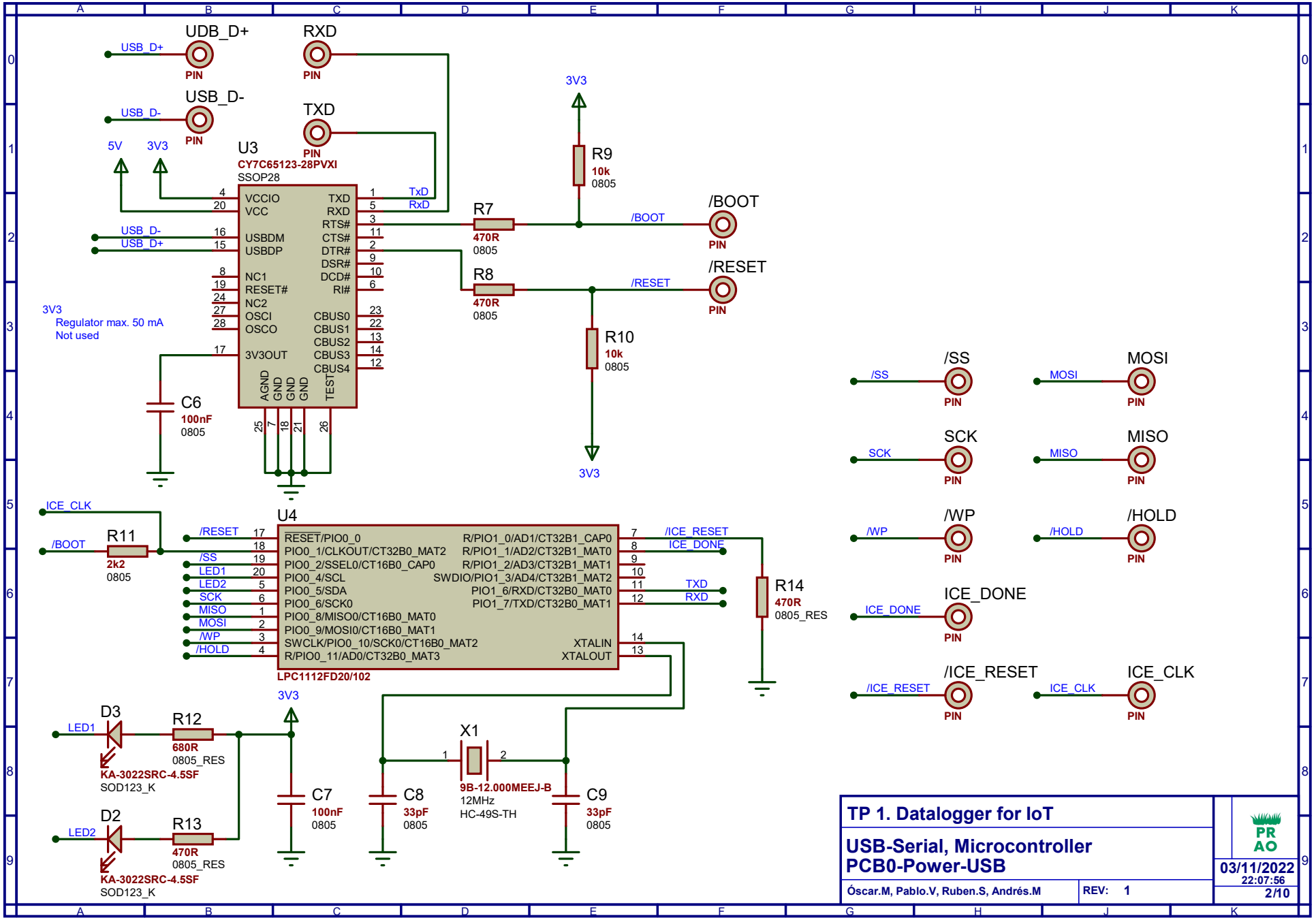
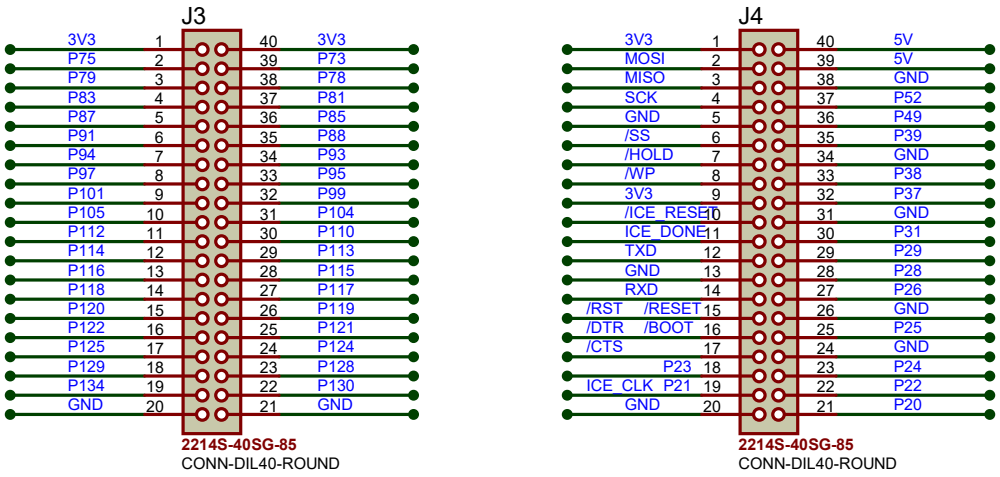
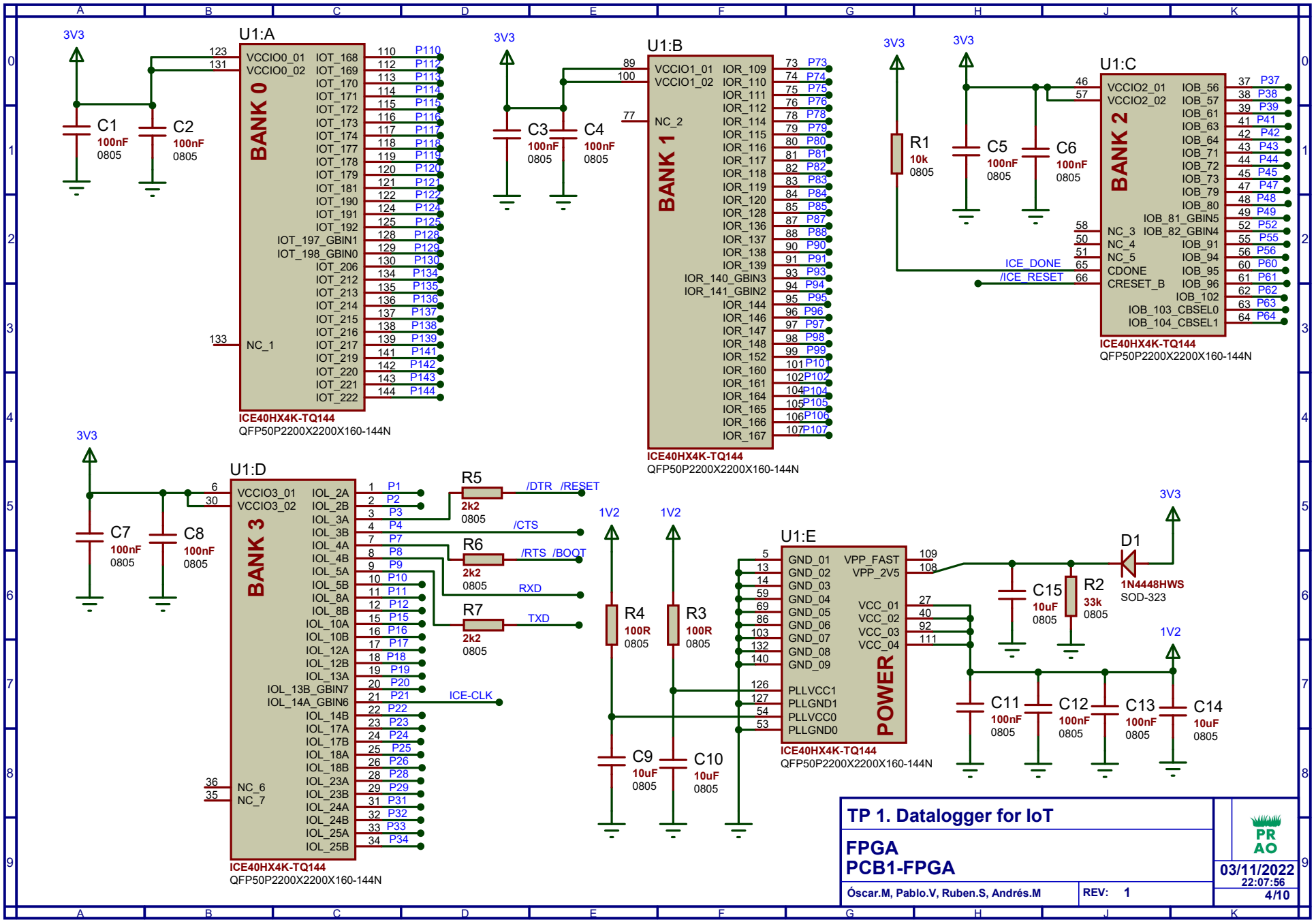
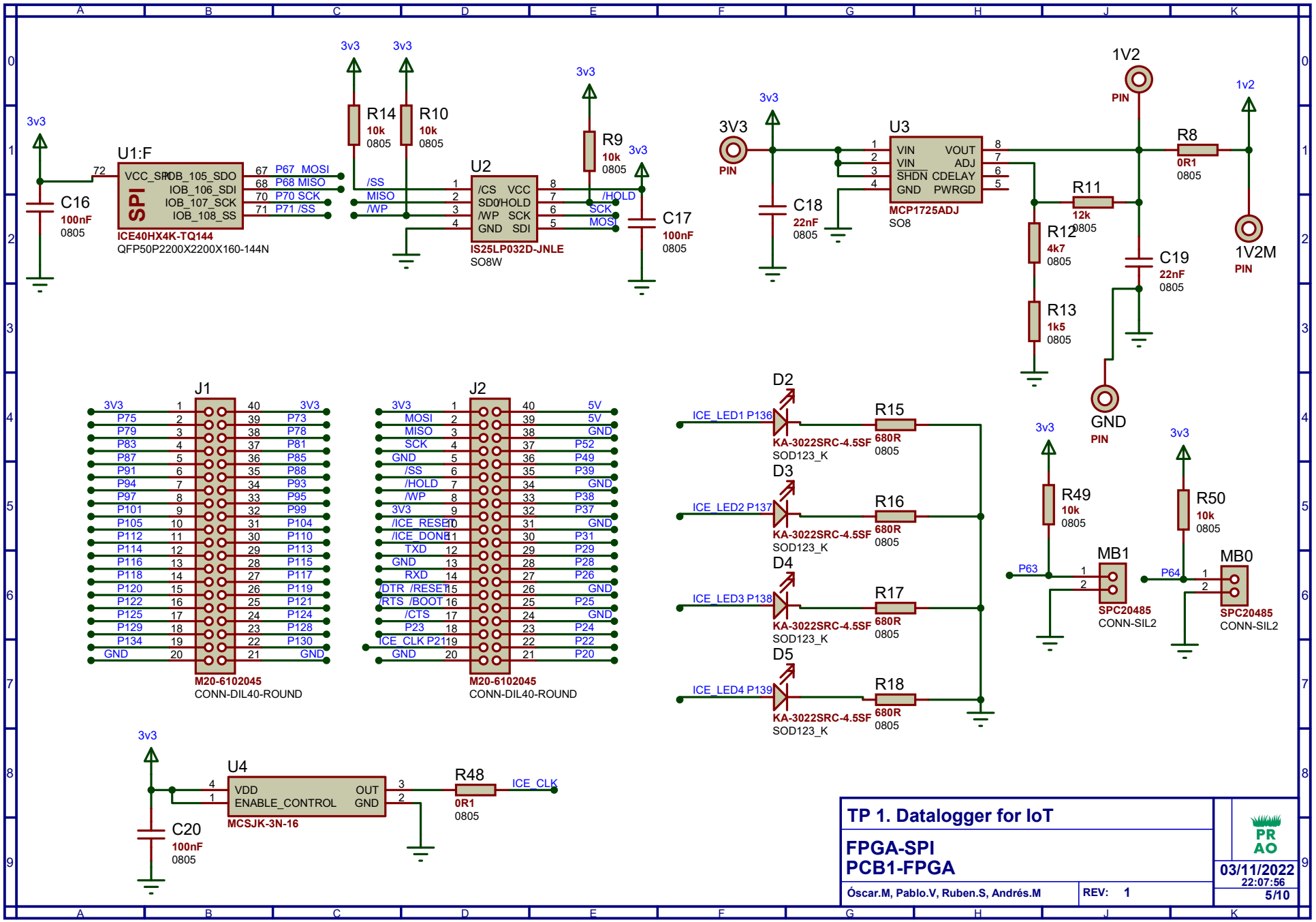

J2
MH2
MP1
MP2
MP3
MP4
MH1
10118193-0001LF
101181930001LF
J1
VDD
D-
D+
NC
GND
GND2
GND2
GND2
GND2
VBUS
USB_D-
USB_D+
USB Mini B Molex 67503-1230
MOLEX USB MINI B 67503-1230
L1
MMZ1608B121CTDH5
RESC1608X84
5V
PIN
C1
100nF
0805
GND
PIN
C2
22uF
0805
D1
6.5 mA
KA-3022SRC-4.5SF
SOD123_K
R2
220R
0805
U1
PROG
VDD
STAT
VSS
VBAT
MCP73831T-2ACI/OT
SOT23-5
R1
2k2
0805
I = 1000V / RPROG
RPROG = 2K2
I = 1000/2200 = 454.54 mA
3V7
PIN
C3
22uF
0805
BAT1
V+
V-
LIPO BAT
NULL
BAT
530480310
530480310
5V
3V7
Permitimos que funciones desde la batería
(conectado a 3v7) o alimentado directamente
desde el conector USB (5V)
SW1
OS102011MA1QS1
OS102011MA1QS1
3V7M
PIN
R3
0R1
0805
C4
22uF
0805
U2
VIN
VIN
SHDN
GND
VOUT
ADJ
CDELAY
PWRGD
MCP1725-ADJ E/SN
SO8
R5
71k5
0805
R4
10k
0805
3V3
PIN
C5
22uF
0805
R6
0R1
0805
3V3M
PIN
3V3
La resistencia de 0R1 servirá para medir el
consumo midiendo el voltaje entre 3v7 y 3v7m
y multiplicándolo por 0. Como mucho caerán unos 40mV en ella.
Para una salida de 3V3
R1 = R2 * 7.04878
R2 debe estar entre 10k y 200k
Si R2 = 10k, R1 = 70.4878k --> 71.5k (E48)
Con lo que VOUT = 3.3415 V
TP 1. Datalogger for IoT
USB-Power
PCB0-Power-USB
Óscar.M, Pablo.V, Ruben.S, Andrés.M
REV: 1
PR
AO
03/11/2022
22:07:56
1/10

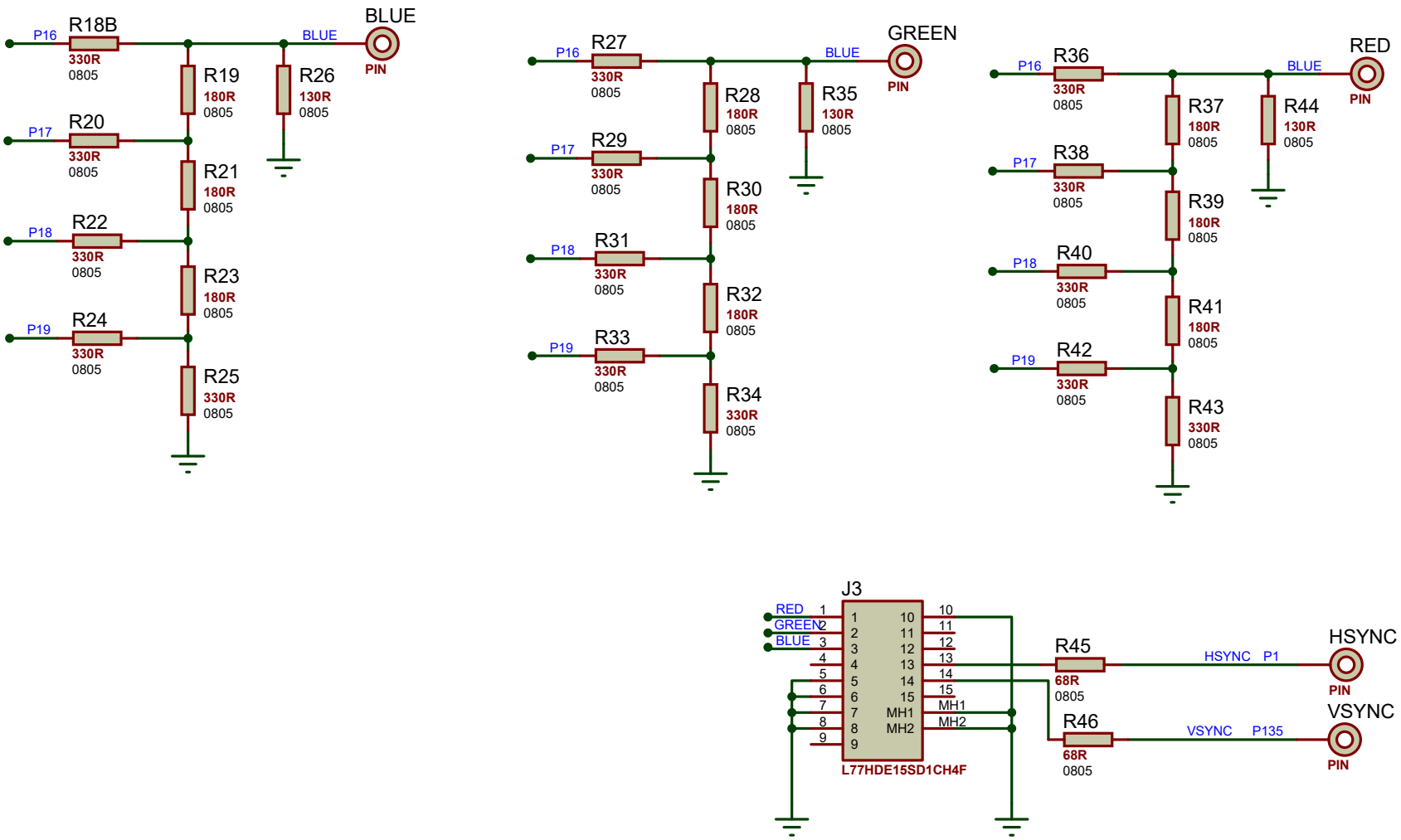

UDB_D+
USB_D+
PIN
USB_D-
USB_D-
PIN
RXD
PIN
TXD
PIN
5V
3V3
U3
CY7C65123-28PVXI
SSOP28
VCCIO
VCC
USBDM
USBDP
NC1
RESET#
NC2
OSCI
OSCO
3V3OUT
TXD
RXD
RTS#
CTS#
DTR#
DSR#
DCD#
RI#
CBUS0
CBUS1
CBUS2
CBUS3
CBUS4
AGND
GND
GND
GND
TEST
TxD
RxD
3V3
Regulator max. 50 mA
Not used
C6
100nF
0805
R7
470R
0805
R8
470R
0805
R9
10k
0805
R10
10k
0805
3V3
/BOOT
/BOOT
PIN
/RESET
/RESET
PIN
/SS
/SS
PIN
MOSI
MOSI
PIN
SCK
SCK
PIN
MISO
MISO
PIN
/WP
/WP
PIN
/HOLD
/HOLD
PIN
ICE_DONE
ICE_DONE
PIN
/ICE_RESET
/ICE_RESET
PIN
ICE_CLK
ICE_CLK
PIN
ICE_CLK
/BOOT
R11
2k2
0805
U4
LPC1112FD20/102
/RESET
/SS
LED1
LED2
SCK
MISO
MOSI
/WP
/HOLD
RESET/PIO0_0
PIO0_1/CLKOUT/CT32B0_MAT2
PIO0_2/SSEL0/CT16B0_CAP0
PIO0_4/SCL
PIO0_5/SDA
PIO0_6/SCK0
PIO0_8/MISO0/CT16B0_MAT0
PIO0_9/MOSI0/CT16B0_MAT1
SWCLK/PIO0_10/SCK0/CT16B0_MAT2
R/PIO0_11/AD0/CT32B0_MAT3
R/PIO1_0/AD1/CT32B1_CAP0
R/PIO1_1/AD2/CT32B1_MAT0
R/PIO1_2/AD3/CT32B1_MAT1
SWDIO/PIO1_3/AD4/CT32B1_MAT2
PIO1_6/RXD/CT32B0_MAT0
PIO1_7/TXD/CT32B0_MAT1
XTALIN
XTALOUT
/ICE_RESET
ICE_DONE
TXD
RXD
R14
470R
0805_RES
D3
LED1
R12
680R
0805_RES
KA-3022SRC-4.5SF
SOD123_K
D2
LED2
R13
470R
0805_RES
KA-3022SRC-4.5SF
SOD123_K
3V3
C7
100nF
0805
X1
9B-12.000MEEJ-B
12MHz
HC-49S-TH
C8
33pF
0805
C9
33pF
0805
TP 1. Datalogger for IoT
USB-Serial, Microcontroller
PCB0-Power-USB
Óscar.M, Pablo.V, Ruben.S, Andrés.M
REV: 1
PR
AO
03/11/2022
22:07:56
2/10



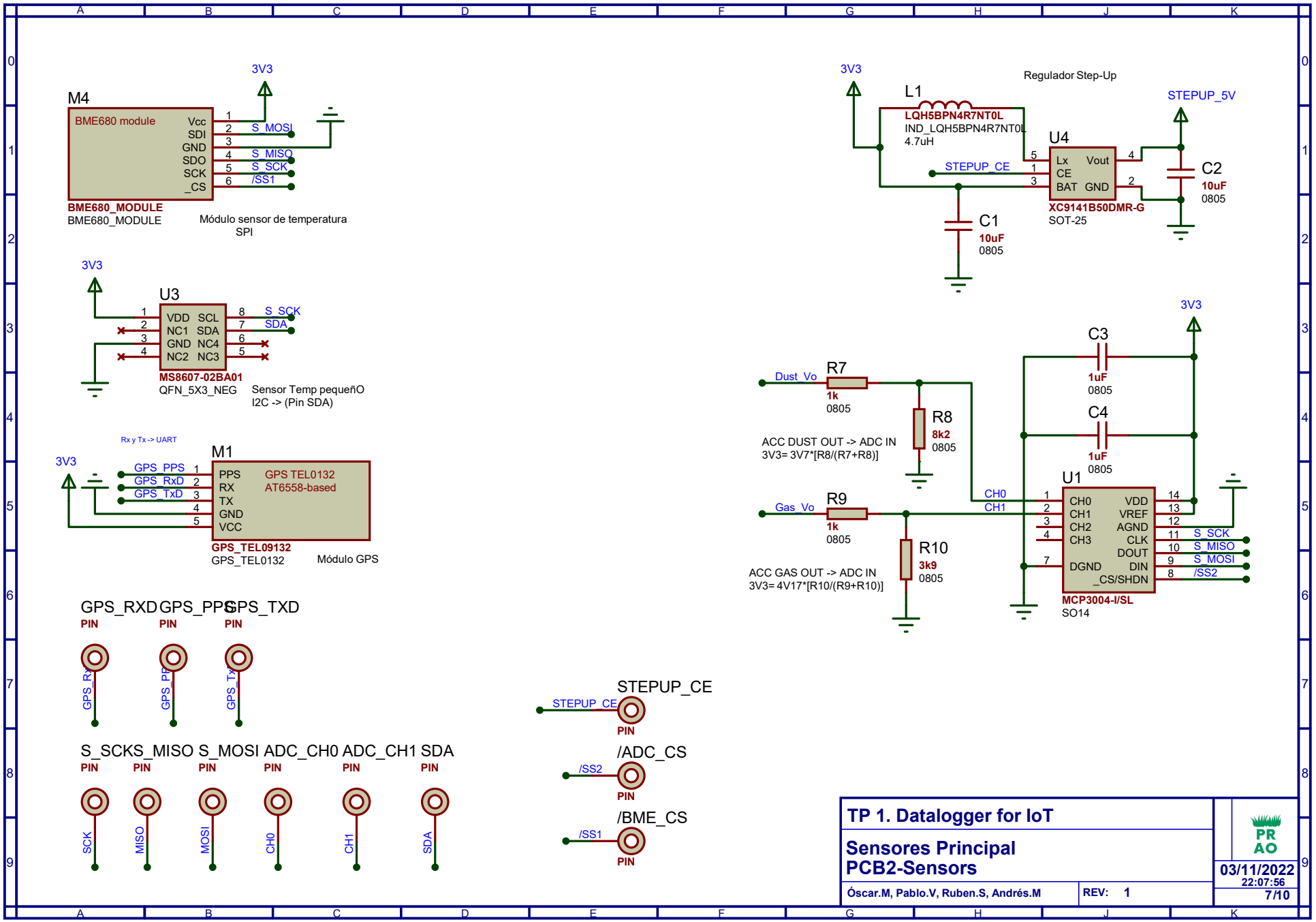
TP 1. Datalogger for IoT		PR AO
Conectores PCB0-Power-USB		03/11/2022 22:07:56
Óscar.M, Pablo.V, Ruben.S, Andrés.M	REV: 1	3/10

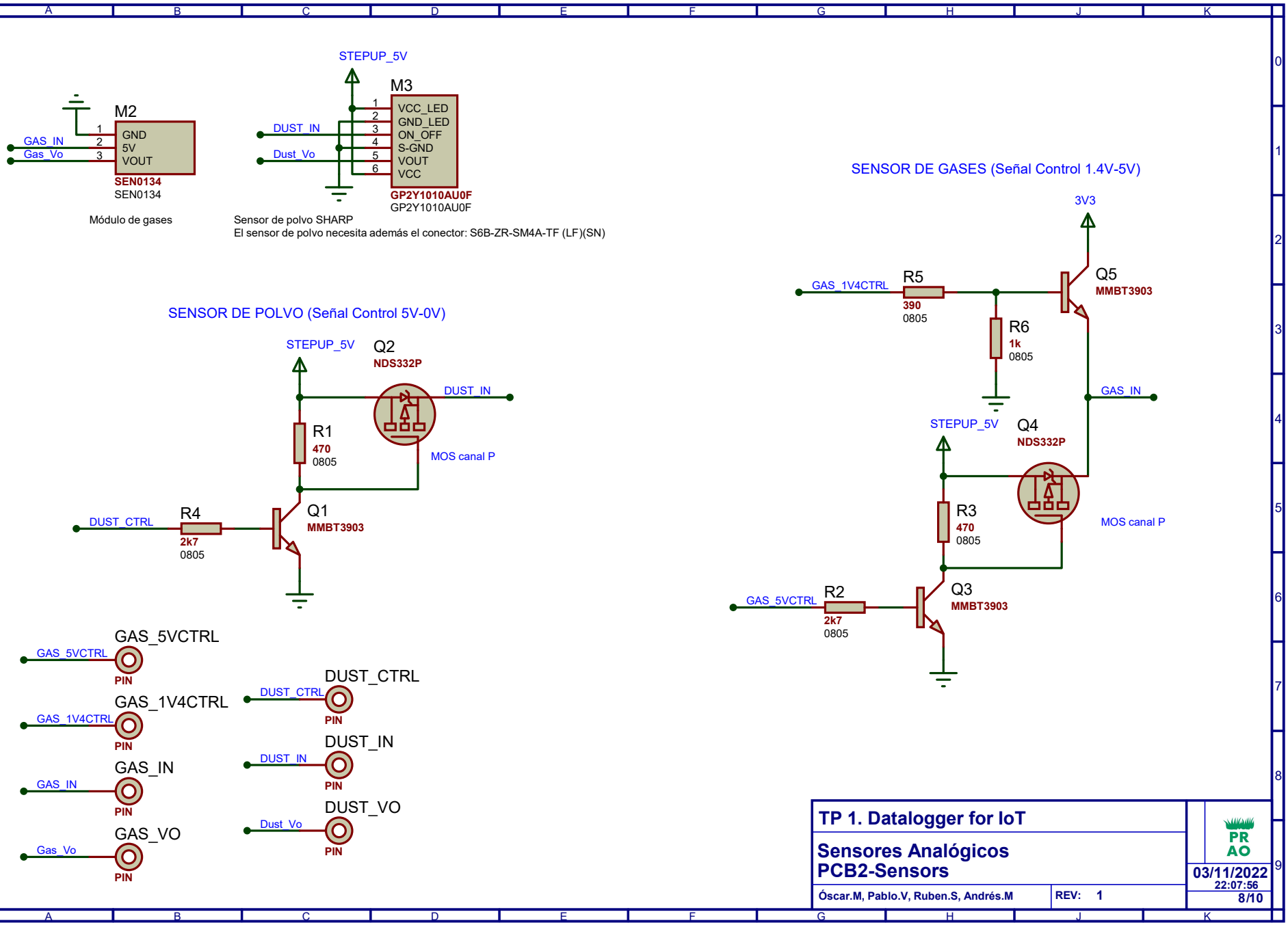

U1:A
BANK 0
ICE40HX4K-TQ144
QFP50P2200X2200X160-144N
U1:B
BANK 1
ICE40HX4K-TQ144
QFP50P2200X2200X160-144N
U1:C
BANK 2
ICE40HX4K-TQ144
QFP50P2200X2200X160-144N
U1:D
BANK 3
ICE40HX4K-TQ144
QFP50P2200X2200X160-144N
U1:E
POWER
ICE40HX4K-TQ144
QFP50P2200X2200X160-144N
3V3
1V2
C1 100nF 0805
C2 100nF 0805
C3 100nF 0805
C4 100nF 0805
C5 100nF 0805
C6 100nF 0805
C7 100nF 0805
C8 100nF 0805
C9 10uF 0805
C10 10uF 0805
C11 100nF 0805
C12 100nF 0805
C13 100nF 0805
C14 10uF 0805
C15 10uF 0805
R1 10k 0805
R2 33k 0805
R3 100R 0805
R4 100R 0805
R5 2k2 0805
R6 2k2 0805
R7 2k2 0805
D1 1N4448HWS SOD-323
/DTR /RESET
/CTS
/RTS /BOOT
RXD
TXD
ICE-CLK
ICE_DONE
/ICE_RESET
TP 1. Datalogger for IoT
FPGA
PCB1-FPGA
Óscar.M, Pablo.V, Ruben.S, Andrés.M
REV: 1
PR AO
03/11/2022
22:07:56
4/10


U1:F
SPI
ICE40HX4K-TQ144
QFP50P2200X2200X160-144N
C16
100nF
0805
R14
10k
0805
R10
10k
0805
U2
IS25LP032D-JNLE
SO8W
R9
10k
0805
C17
100nF
0805
U3
MCP1725ADJ
SO8
R11
12k
0805
R12
4k7
0805
R13
1k5
0805
R8
0R1
0805
C18
22nF
0805
C19
22nF
0805
1V2
1V2M
PIN
GND
J1
J2
M20-6102045
CONN-DIL40-ROUND
D2
D3
D4
D5
KA-3022SRC-4.5SF
SOD123_K
R15
R16
R17
R18
680R
0805
R49
R50
10k
0805
MB1
MB0
SPC20485
CONN-SIL2
U4
MCSJK-3N-16
C20
100nF
0805
R48
0R1
0805
TP 1. Datalogger for IoT
FPGA-SPI
PCB1-FPGA
Óscar.M, Pablo.V, Ruben.S, Andrés.M
REV: 1
PR
AO
03/11/2022
22:07:56
5/10

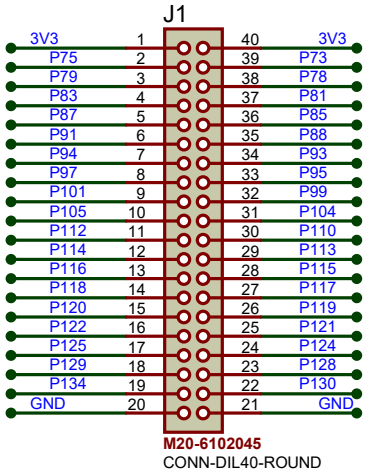


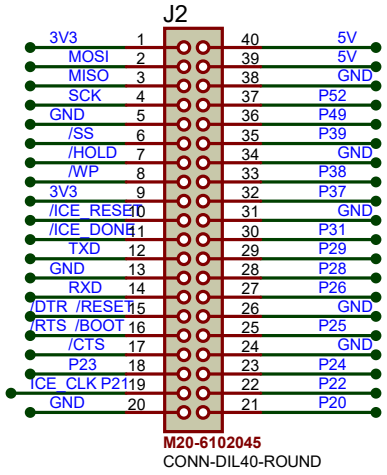
TP 1. Datalogger for IoT			PR AO
FPGA VGA output PCB1-FPGA			03/11/2022 22:07:56
Óscar.M, Pablo.V, Ruben.S, Andrés.M	REV: 1		6/10


M4
BME680 module
Vcc
SDI
GND
SDO
SCK
_CS
S_MOSI
S_MISO
S_SCK
/SS1
BME680_MODULE
BME680_MODULE
Módulo sensor de temperatura SPI
3V3
U3
VDD SCL
NC1 SDA
GND NC4
NC2 NC3
S_SCK
SDA
MS8607-02BA01
QFN_5X3_NEG
Sensor Temp pequeñO I2C -> (Pin SDA)
Rx y Tx -> UART
M1
PPS
RX
TX
GND
VCC
GPS_PPS
GPS_RxD
GPS_TxD
GPS TEL0132
AT6558-based
GPS_TEL09132
GPS_TEL0132
Módulo GPS
GPS_RXD
GPS_PPS
GPS_TXD
PIN
S_SCK
S_MISO
S_MOSI
ADC_CH0
ADC_CH1
SDA
SCK
MISO
MOSI
CH0
CH1
SDA
STEPUP_CE
/ADC_CS
/SS2
/BME_CS
/SS1
Regulador Step-Up
L1
LQH5BPN4R7NT0L
IND_LQH5BPN4R7NT0L
4.7uH
STEPUP_5V
U4
Lx Vout
CE
BAT GND
XC9141B50DMR-G
SOT-25
C1
10uF
0805
C2
10uF
0805
C3
1uF
0805
C4
1uF
0805
Dust_Vo
R7
1k
0805
R8
8k2
0805
ACC DUST OUT -> ADC IN
3V3= 3V7*[R8/(R7+R8)]
Gas_Vo
R9
1k
0805
R10
3k9
0805
ACC GAS OUT -> ADC IN
3V3= 4V17*[R10/(R9+R10)]
U1
CH0 VDD
CH1 VREF
CH2 AGND
CH3 CLK
DOUT
DGND DIN
_CS/SHDN
MCP3004-I/SL
SO14
TP 1. Datalogger for IoT
Sensores Principal
PCB2-Sensors
Óscar.M, Pablo.V, Ruben.S, Andrés.M
REV: 1
PR
AO
03/11/2022
22:07:56
7/10

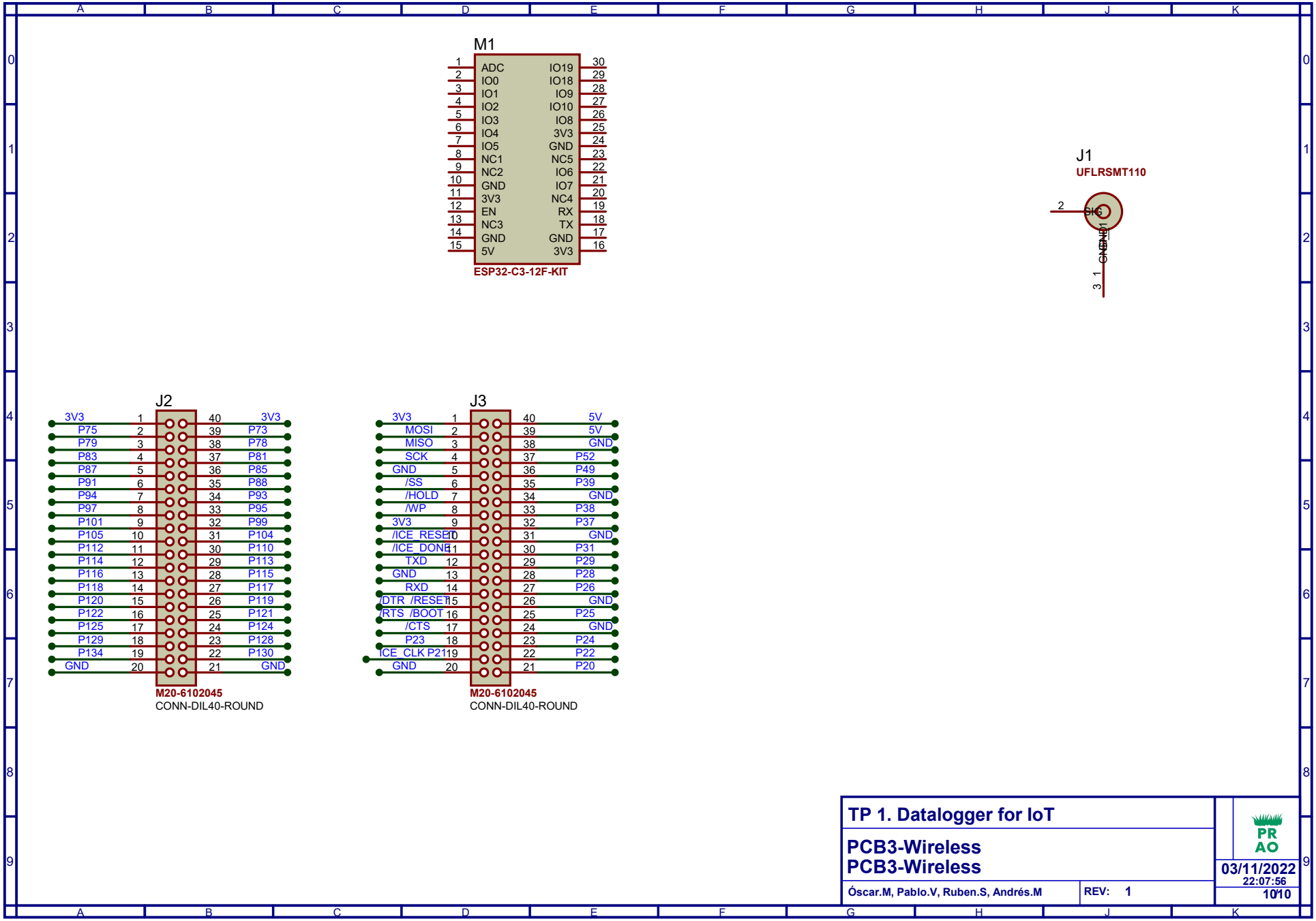

M2
GND
5V
VOUT
GAS_IN
Gas_Vo
SEN0134
SEN0134
Módulo de gases
STEPUP_5V
M3
VCC_LED
GND_LED
ON_OFF
S-GND
VOUT
VCC
DUST_IN
Dust_Vo
GP2Y1010AU0F
GP2Y1010AU0F
Sensor de polvo SHARP
El sensor de polvo necesita además el conector: S6B-ZR-SM4A-TF (LF)(SN)
SENSOR DE POLVO (Señal Control 5V-0V)
STEPUP_5V
Q2
NDS332P
DUST_IN
R1
470
0805
MOS canal P
DUST_CTRL
R4
2k7
0805
Q1
MMBT3903
SENSOR DE GASES (Señal Control 1.4V-5V)
3V3
GAS_1V4CTRL
R5
390
0805
Q5
MMBT3903
R6
1k
0805
GAS_IN
STEPUP_5V
Q4
NDS332P
MOS canal P
R3
470
0805
GAS_5VCTRL
R2
2k7
0805
Q3
MMBT3903
GAS_5VCTRL
PIN
GAS_1V4CTRL
PIN
GAS_IN
PIN
GAS_VO
Gas_Vo
PIN
DUST_CTRL
DUST_CTRL
PIN
DUST_IN
DUST_IN
PIN
DUST_VO
Dust_Vo
PIN
TP 1. Datalogger for IoT
Sensores Analógicos
PCB2-Sensors
Óscar.M, Pablo.V, Ruben.S, Andrés.M
REV: 1
PR
AO
03/11/2022
22:07:56
8/10

CONEXIONADO PINES FPGA - PINES CONTROL SENSORES





TP 1. Datalogger for IoT		PR AO
Conectores PCB2-Sensors		03/11/2022 22:07:56
Óscar.M, Pablo.V, Ruben.S, Andrés.M	REV: 1	9/10


M1
1 ADC
2 IO0
3 IO1
4 IO2
5 IO3
6 IO4
7 IO5
8 NC1
9 NC2
10 GND
11 3V3
12 EN
13 NC3
14 GND
15 5V
30 IO19
29 IO18
28 IO9
27 IO10
26 IO8
25 3V3
24 GND
23 NC5
22 IO6
21 IO7
20 NC4
19 RX
18 TX
17 GND
16 3V3
ESP32-C3-12F-KIT
J1
UFLRSMT110
2 SIG
1 GND
3 GND
J2
3V3 1 40 3V3
P75 2 39 P73
P79 3 38 P78
P83 4 37 P81
P87 5 36 P85
P91 6 35 P88
P94 7 34 P93
P97 8 33 P95
P101 9 32 P99
P105 10 31 P104
P112 11 30 P110
P114 12 29 P113
P116 13 28 P115
P118 14 27 P117
P120 15 26 P119
P122 16 25 P121
P125 17 24 P124
P129 18 23 P128
P134 19 22 P130
GND 20 21 GND
M20-6102045
CONN-DIL40-ROUND
J3
3V3 1 40 5V
MOSI 2 39 5V
MISO 3 38 GND
SCK 4 37 P52
GND 5 36 P49
/SS 6 35 P39
/HOLD 7 34 GND
/WP 8 33 P38
3V3 9 32 P37
/ICE_RESET 10 31 GND
/ICE_DONE 11 30 P31
TXD 12 29 P29
GND 13 28 P28
RXD 14 27 P26
/DTR /RESET 15 26 GND
/RTS /BOOT 16 25 P25
/CTS 17 24 GND
P23 18 23 P24
ICE_CLK P21 19 22 P22
GND 20 21 P20
M20-6102045
CONN-DIL40-ROUND
TP 1. Datalogger for IoT
PCB3-Wireless
PCB3-Wireless
Óscar.M, Pablo.V, Ruben.S, Andrés.M
REV: 1
PR
AO
03/11/2022
22:07:56
10/10