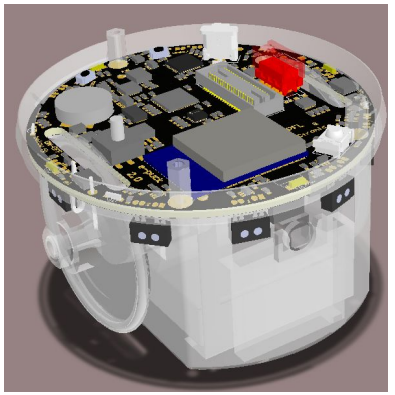


Programmer.SchDoc
CAN_PROG
OscEn
24MHz_PROG
PRT_PROG
VBUS_DET
I2C_PROG
USB_PROG
USB_CHARGE
USB_500
PWR_ON
/PWR_ON_BTN
BAT_SENS
SPI3_MOSI
SPI2_MOSI
CLK_MIC
SW_F407
Programmer
USYS_ON
/RESET_F407
IOprogr
EN_ESP32
GPIO0_ESP32
TXD_ESP32
RXD_ESP32
UD_TX
UD_RX
USYS_ON
/RESET_F407

Wi-Fi.SchDoc
WiFi
IOprogr
EN_ESP32
GPIO0_ESP32
TXD_ESP32
RXD_ESP32
UD_TX
UD_RX
genIO_1
REMOTE
/SD_DETECT
/SPI1_SS
SPI1
USYS_ON
/RESET_F407
/LED2
/LED4
/LED6
/LED8
Camera
USYS_ON
/RESET_F407

Powers.SchDoc
Powers
/PWR_ON_BTN
PWR_ON
USB_500
USB_CHARGE
USYS_ON
BAT_SENS
HIGH_CURRENT
USYS_ON
/RESET_F407

USB.SchDoc
USB
USB_PROG
I2C_PROG
VBUS_DET
PRT_PROG
24MHz_PROG
OscEn
HIGH_CURRENT
24MHz_F407
PRT_F407
USB_F407

microcontroller.SchDoc
uC
BAT_SENS
SW_F407
/RESET_F407
UD_TX
UD_RX
genIO_1
REMOTE
/SD_DETECT
/SPI1_SS
SPI1
Camera
24MHz_F407
PRT_F407
USB_F407
CAN_F407
AUDIO_PWR
DAC_OUT2
SPI3_MOSI
SPI2_MOSI
CLK_MIC
/SPI1_CS_ENC_R
/SPI1_CS_ENC_L
/INT_ENC_R
/INT_ENC_L
Motor1
Motor2
IR[1..8]
PULSE[0..3]
/DIST_INT
IMU_INT
I2C
/RED_LED[1..7]
BODY_LED
FRONT_LED

CAN_Audio.SchDoc
CAN and Audio
CAN_PROG
USYS_ON
CAN_F407
AUDIO_PWR
DAC_OUT2
SPI3_MOSI
SPI2_MOSI
CLK_MIC

Motors and Encoders
Motors_Encoders.SchDoc
SPI1
/SPI1_CS_ENC_R
/SPI1_CS_ENC_L
/INT_ENC_R
/INT_ENC_L
Motor1
Motor2

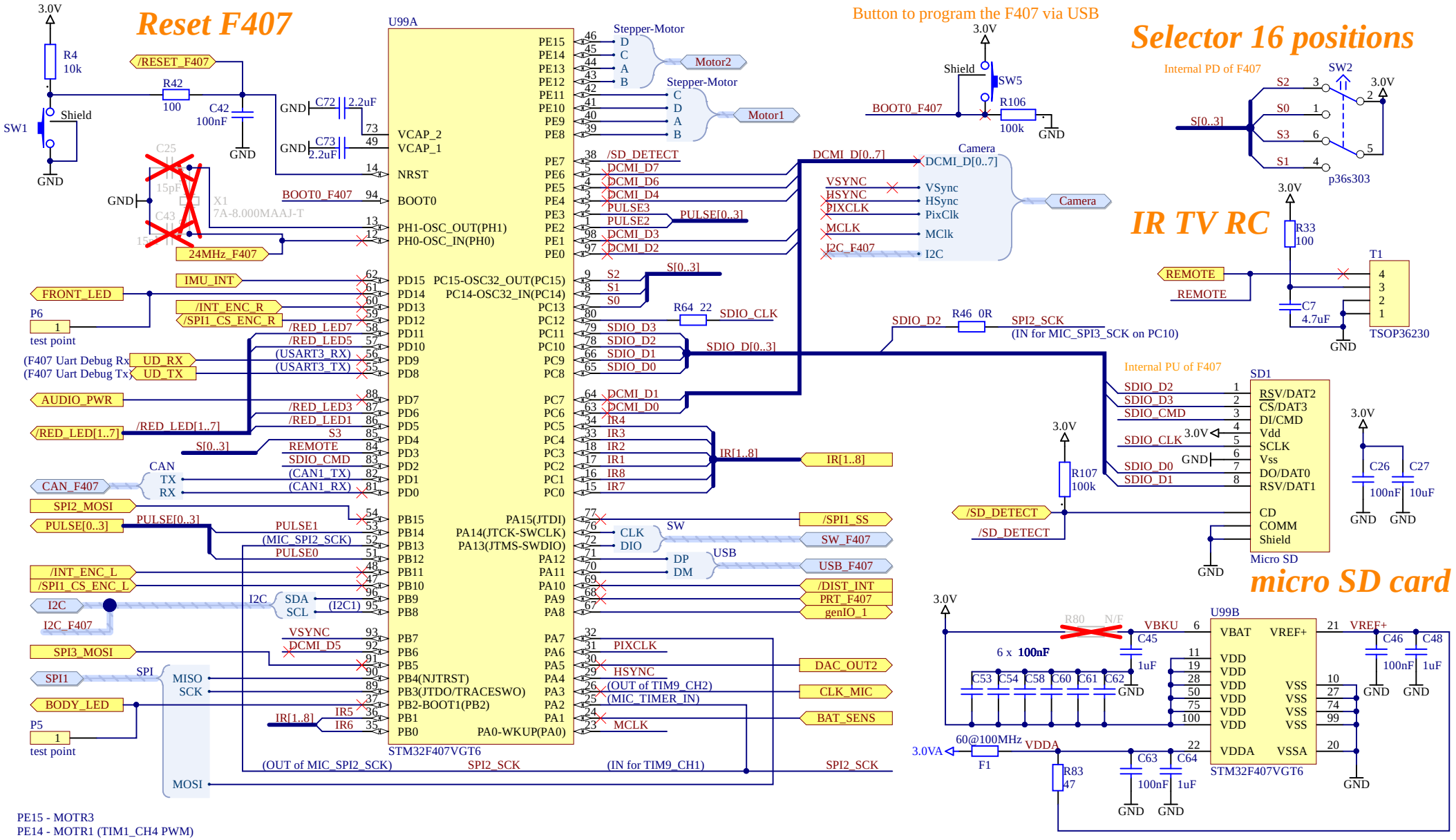
Camera
Cameras.SchDoc
Camera
USYS_ON
/RESET_F407
USYS_ON
/RESET_F407

Proximity.SchDoc
Proximity
USYS_ON
IR[1..8]
PULSE[0..3]

I2C_Sensors.SchDoc
I2C Sensors
USYS_ON
/RESET_F407
/DIST_INT
IMU_INT
I2C

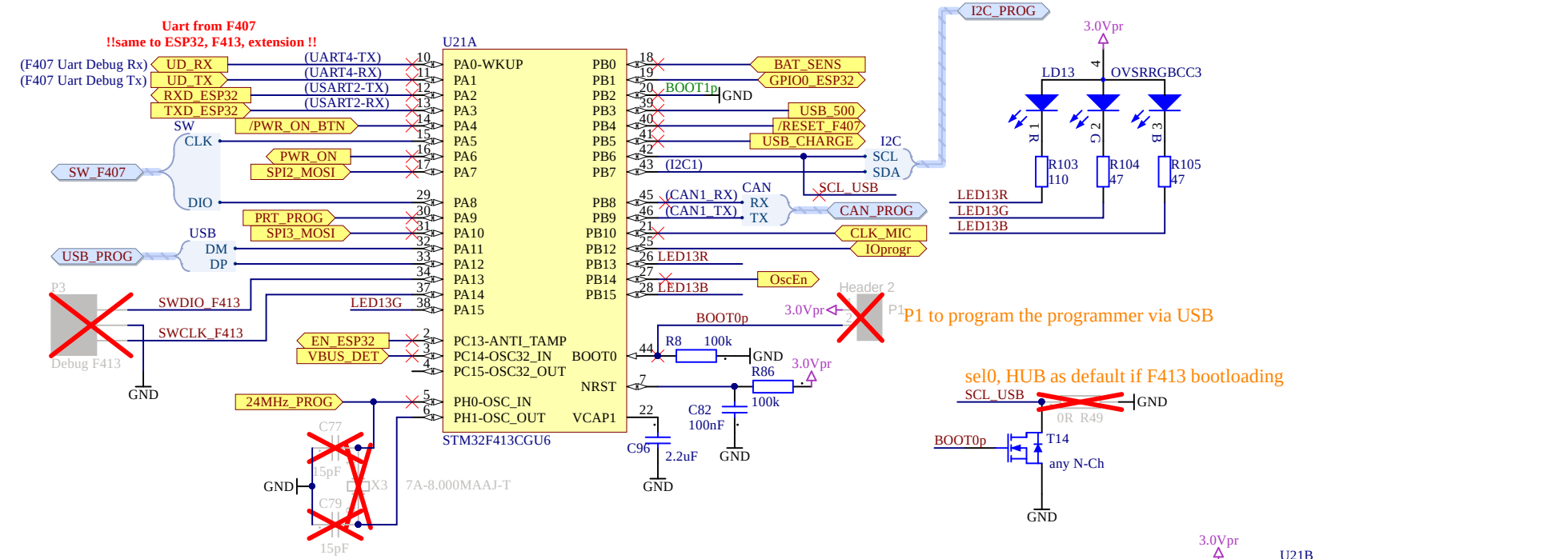
LEDs.SchDoc
LEDs
/RED_LED[1..7]
BODY_LED
FRONT_LED
/RGB_LED8
/RGB_LED6
/RGB_LED4
/RGB_LED2

Project *e-puck2*	Variant *e-puck2_EPFL*	Date: 2/14/2019 8:36:09 AM	*GCtronic & EPFL-Mobots*
Part *e-puck 2.0 main*		Revision: F4	*Common development*
File : *Main.SchDoc*		Page 1 / 12	ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE


Reset F407
Button to program the F407 via USB
Selector 16 positions
IR TV RC
micro SD card
Main microcontroller
STM32F407VGT6 1024KB flash
U99A
STM32F407VGT6
U99B
SD1
Micro SD
Stepper-Motor
Motor1
Motor2
Camera
TSOP36230
p36s303
/RESET_F407
BOOT0_F407
24MHz_F407
IMU_INT
FRONT_LED
/INT_ENC_R
/SPI1_CS_ENC_R
/RED_LED[1..7]
AUDIO_PWR
UD_RX
UD_TX
CAN_F407
SPI2_MOSI
PULSE[0..3]
/INT_ENC_L
/SPI1_CS_ENC_L
I2C_F407
SPI3_MOSI
BODY_LED
SDIO_CLK
SDIO_D[0..3]
DCMI_D[0..7]
IR[1..8]
/SPI1_SS
SW_F407
USB_F407
/DIST_INT
PRT_F407
genIO_1
DAC_OUT2
CLK_MIC
BAT_SENS
SPI2_SCK
/SD_DETECT
PE15 - MOTR3
PE14 - MOTR1 (TIM1_CH4 PWM)
PE13 - MOTR0 (TIM1_CH3 PWM)
PE12 - MOTR2
PE11 - MOTL1 (TIM1_CH2 PWM)
PE10 - MOTL3
PE9 - MOTL0 (TIM1_CH1 PWM)
PE8 - MOTL2
Project e-puck2
Variant e-puck2_EPFL
Part STM32F407 Main µController
File : Microcontroller.SchDoc
Date: 2/14/2019 8:36:10 AM
Revision: F4
Page 2 / 12
GCtronic & EPFL-Mobots
Common development
ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

Programmer

STM32F413CGU6 48 pin QFN 1024 KB flash

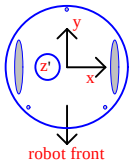


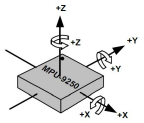
Project *e-puck2*	Variant *e-puck2_EPFL*	Date: 2/14/2019 8:36:10 AM	*GCtronic & EPFL-Mobots Common development*
Part *Programmer µController*		Revision: F4	
File : *Programmer.SchDoc*		Page 3 / 12	

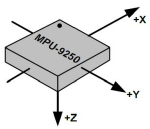
IMU 9 axis

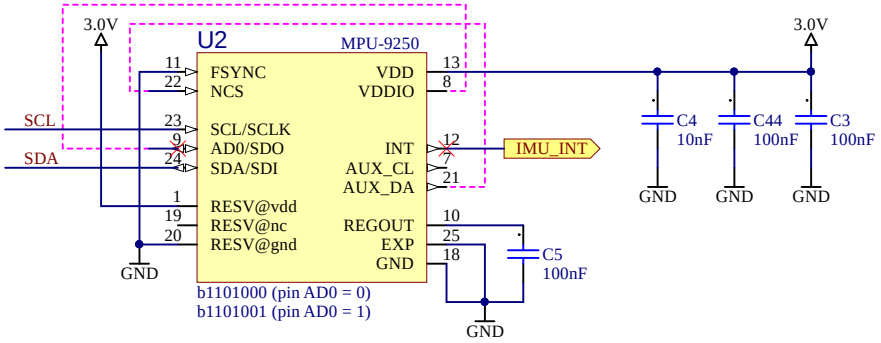
3 axes Gyro
3 axes Accelerometer

3 axes Magnetometer







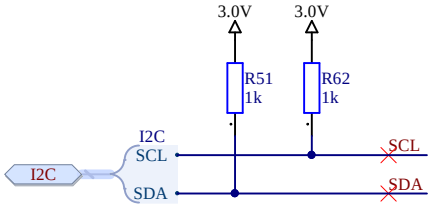


Exposed Pad not connected to GND (Soldermask not opened) but nevertheless place a GND plane below.
No other "clk" lines under chip

Due to schema grid problem not detected, there are 3 missing links, which have been corrected with two solder bridges with adjacent pins :

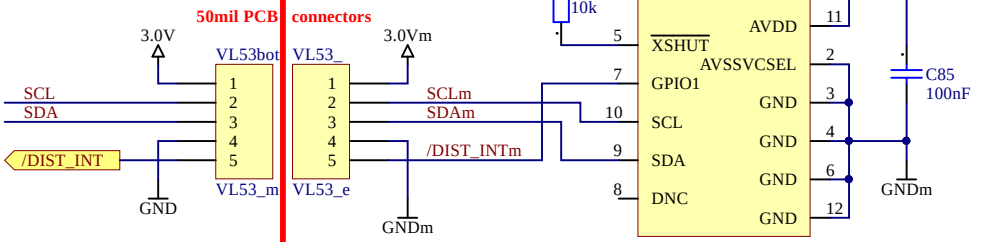
- NCS was not connected to 3.0V in order to never be in SPI mode => a solder bridge has been made with AUX_DA (internal PU).
- VDDIO was not connected to 3.0V but it is measured at 2,8V => nothing done.
- AD0/SDO was not connected to GND as desired => a solder bridge has been done with VDDIO, measured at 2,8V, in order to have a stable level.

Consequences:
- AUX I2C is not anymore usable, thus the compass too !!
- I2C address of IMU is b1101001

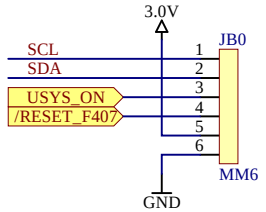


Distance sensor

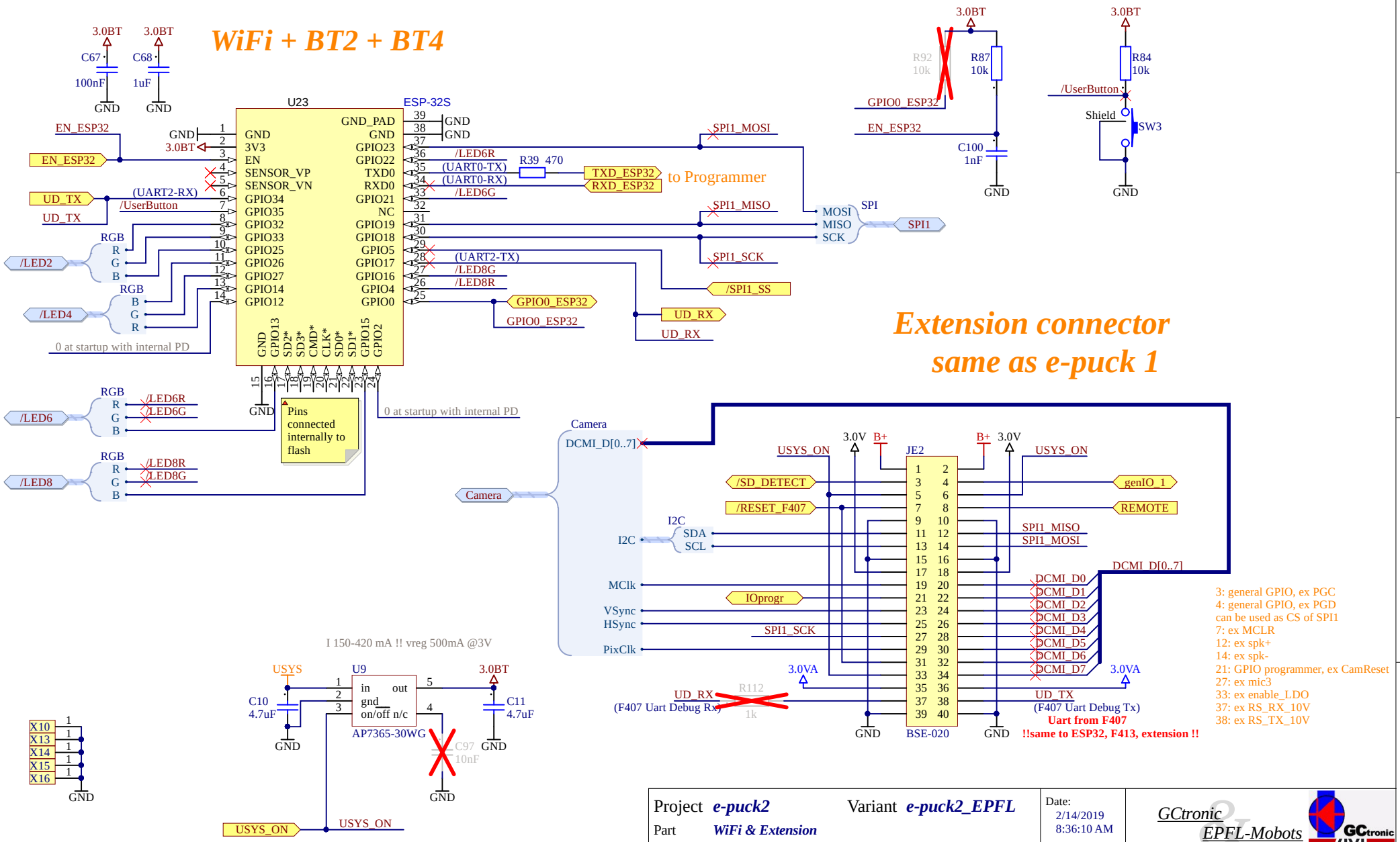
VL on different PCB.
Here a PCB sold connection



Bottom sensors connector

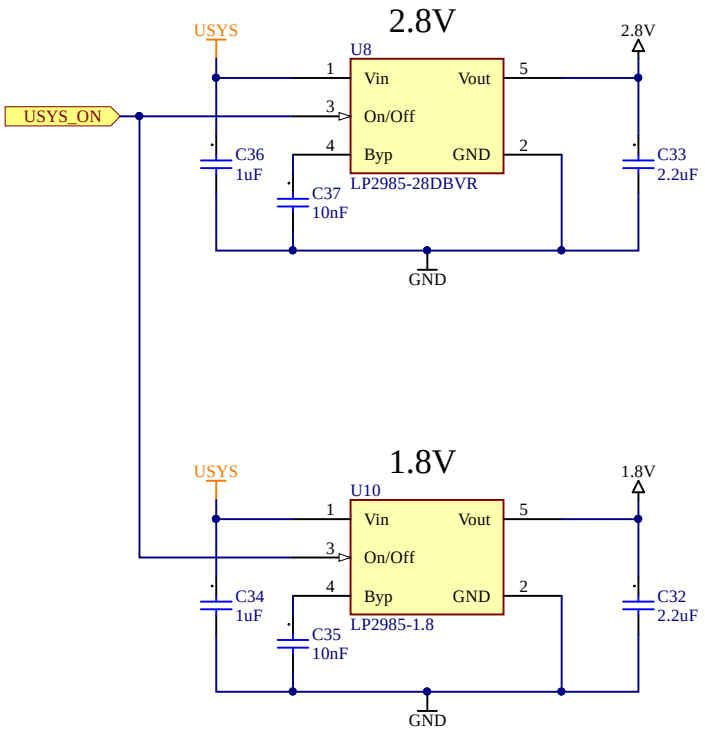


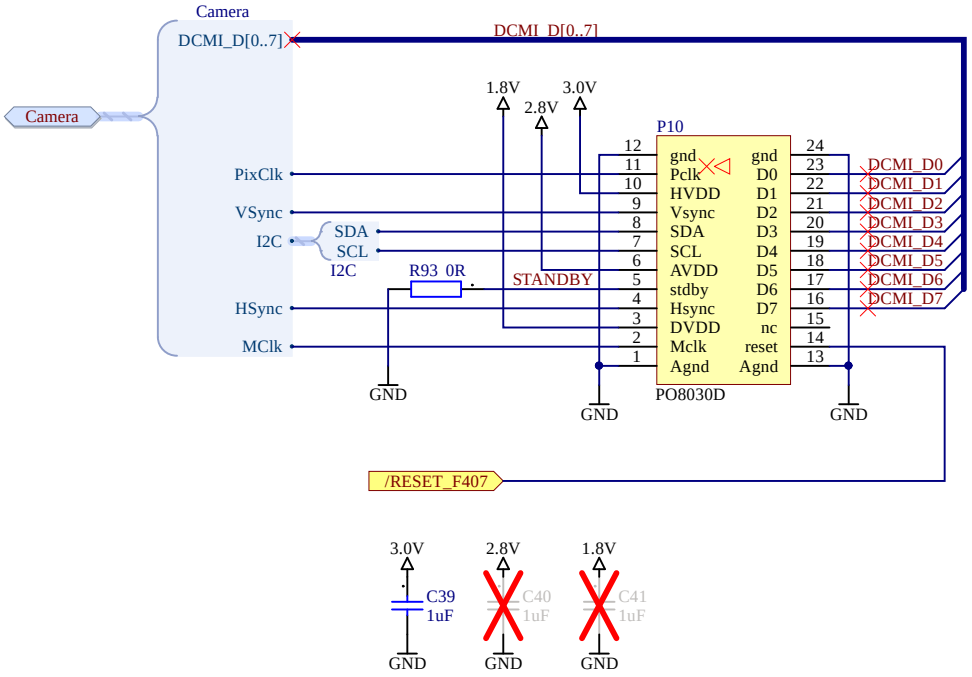
Project *e-puck2*	Variant *e-puck2_EPFL*	Date: 2/14/2019 8:36:10 AM	GCtronic & EPFL-Mobots Common development
Part *I2C sensors IMU, TOF & bottom sensors*		Revision: F4	
File : *I2C_Sensors.SchDoc*		Page 4 / 12	



Project *e-puck2*	Variant *e-puck2_EPFL*	Date: 2/14/2019 8:36:10 AM	GCtronic & EPFL-Mobots Common development
Part *WiFi & Extension*		Revision: F4	
File : *Wi-Fi.SchDoc*		Page 5 / 12	

VGA color camera

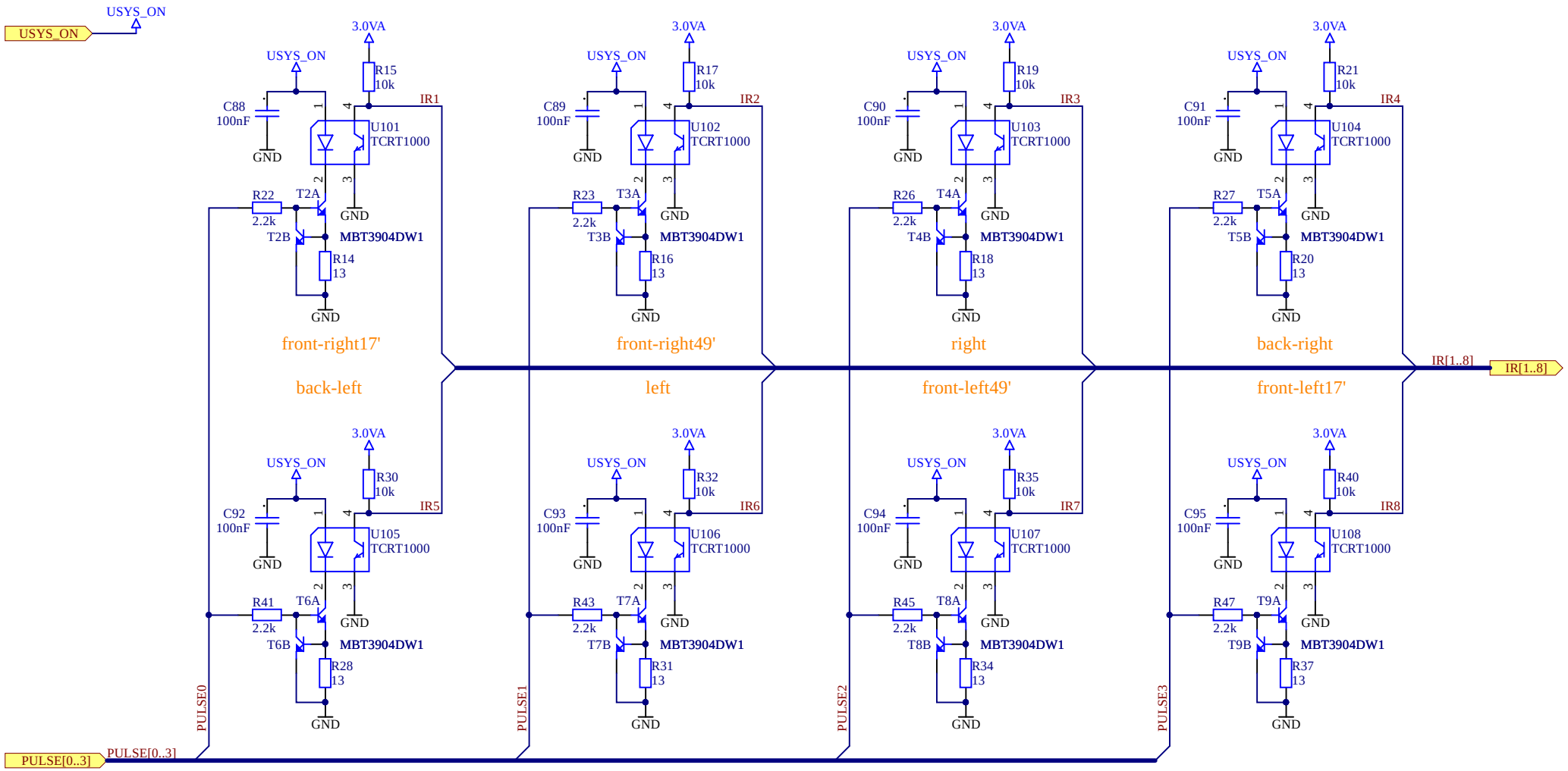




Project *e-puck2*	Variant *e-puck2_EPFL*	Date: 2/14/2019 8:36:10 AM	*GCtronic & EPFL-Mobots*
Part *Camera*		Revision: F4	*Common development*
File : *Cameras.SchDoc*		Page 6 / 12	

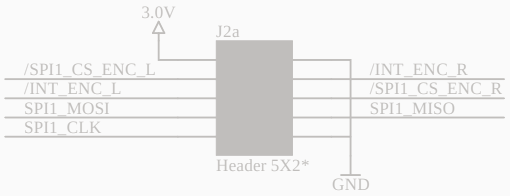
ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

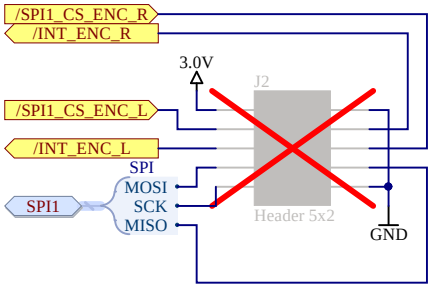
8 proximity sensors



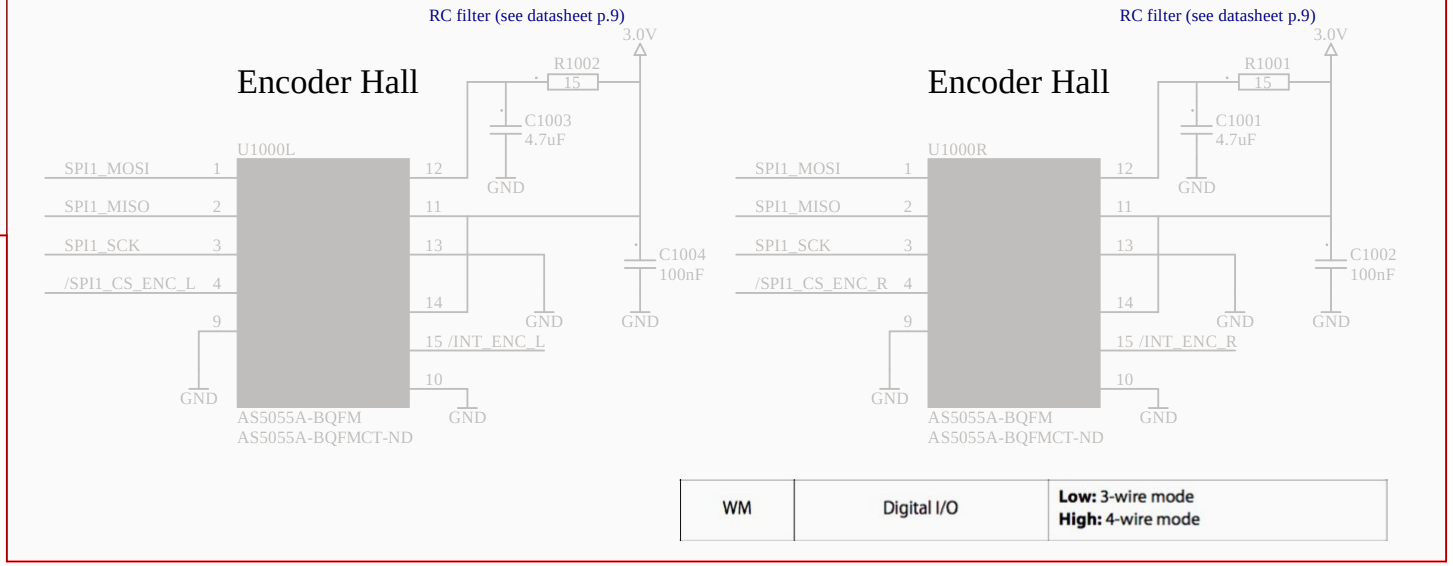
Project *e-puck2*	Variant *e-puck2_EPFL*	Date: 2/14/2019 8:36:10 AM	*GCtronic & EPFL-Mobots*
Part *Proximity sensors*		Revision: F4	*Common development*
File : *Proximity.SchDoc*		Page 7 / 12	ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

These parts are graphical

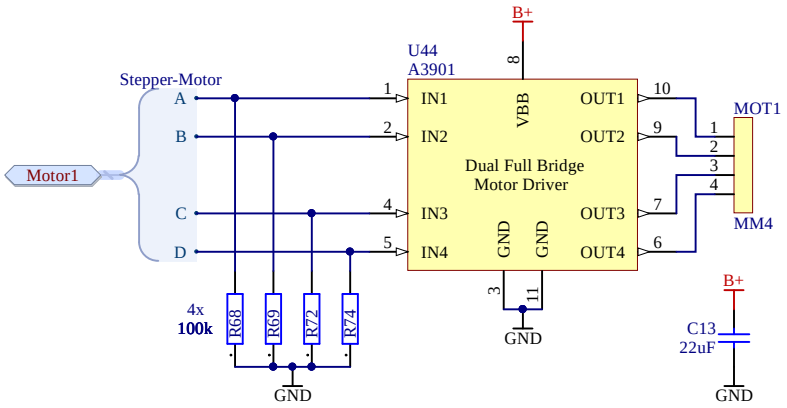




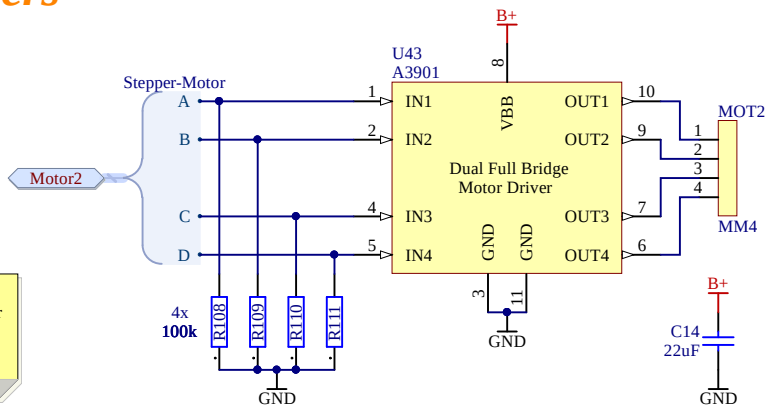
2 encoders on 1 separate PCB. Here just 1 SPI connector J2 bottom center



Motor drivers



Motor's drivers are directly on B+ to recover energy from an active breaking. When in sleep uses 50nA

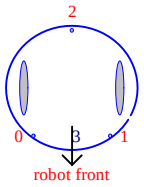


Project *e-puck2*	Variant *e-puck2_EPFL*	Date: 2/14/2019 8:36:11 AM	GCtronic & EPFL-Mobots Common development
Part *Motors & Encoders*		Revision: F4	
File : *Motors_Encoders.SchDoc*		Page 8 / 12	

Audio

Can Transceivers

3 microphones on top (0,1,2)
1 microphone (3) on bottom



Right
Left
Back
Bottom front

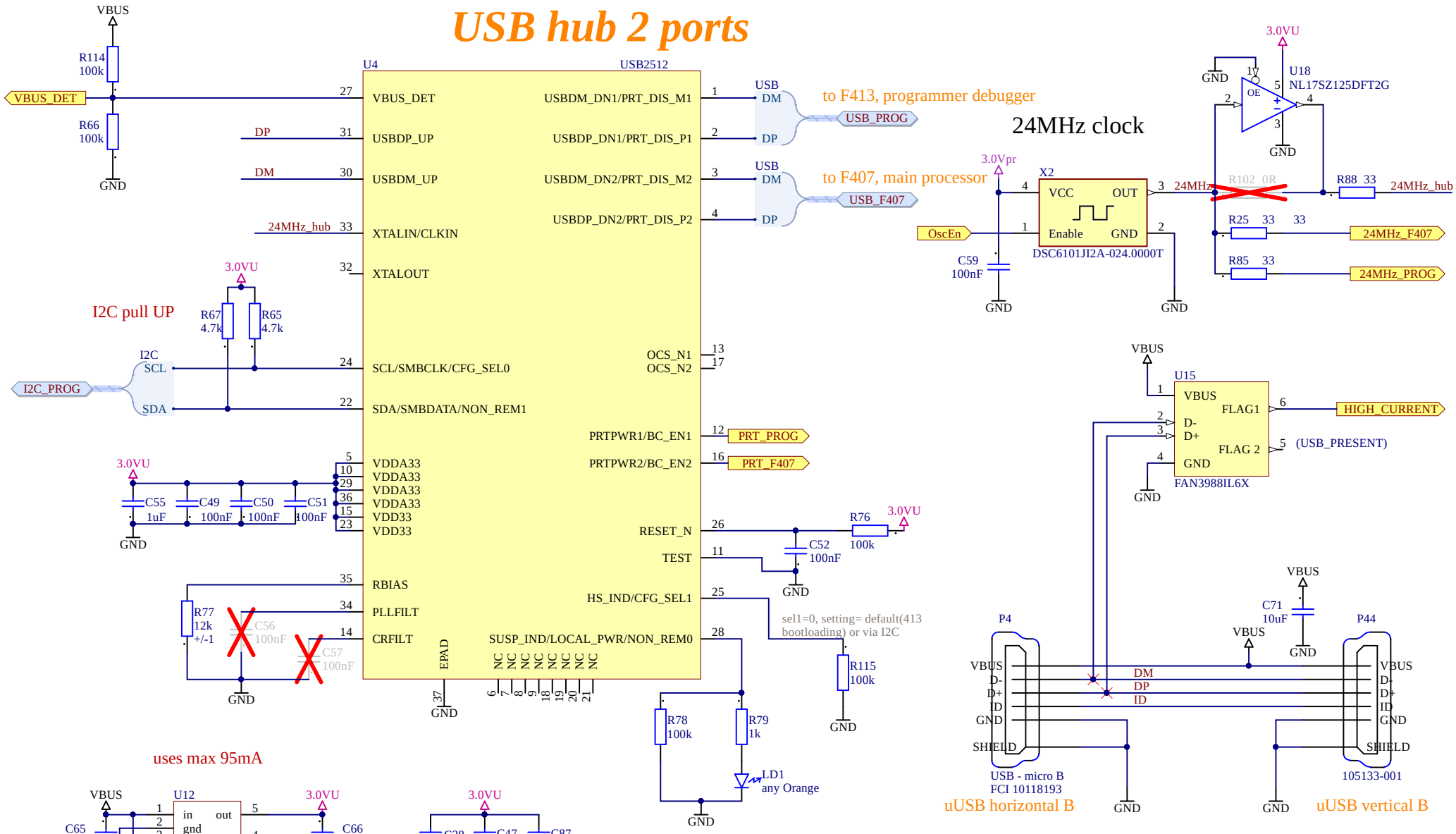
MIC1 MP45DT02-M
MIC2 MP45DT02-M
MIC3 MP45DT02-M
MIC4 MP45DT02-M
GND
L/R
VDD
DOUT
CLK
3.0VA
C8 100nF
C9 10uF
C18 100nF
C19 10uF
C20 100nF
C21 10uF
C22 100nF
C23 10uF
SPI2_MOSI
SPI3_MOSI
CLK_MIC

U5 MAX3051EKA-T
U17 MAX3051EKA-T
3.0V
3.0Vpr
CAN_F407
CAN_PROG
CAN
TX
RX
CANH
CANL
R2 0R
R36 0R
USYS_ON
P27
MM6
C84 100nF
J1
CC_SolderJP2_Medium
R3 120

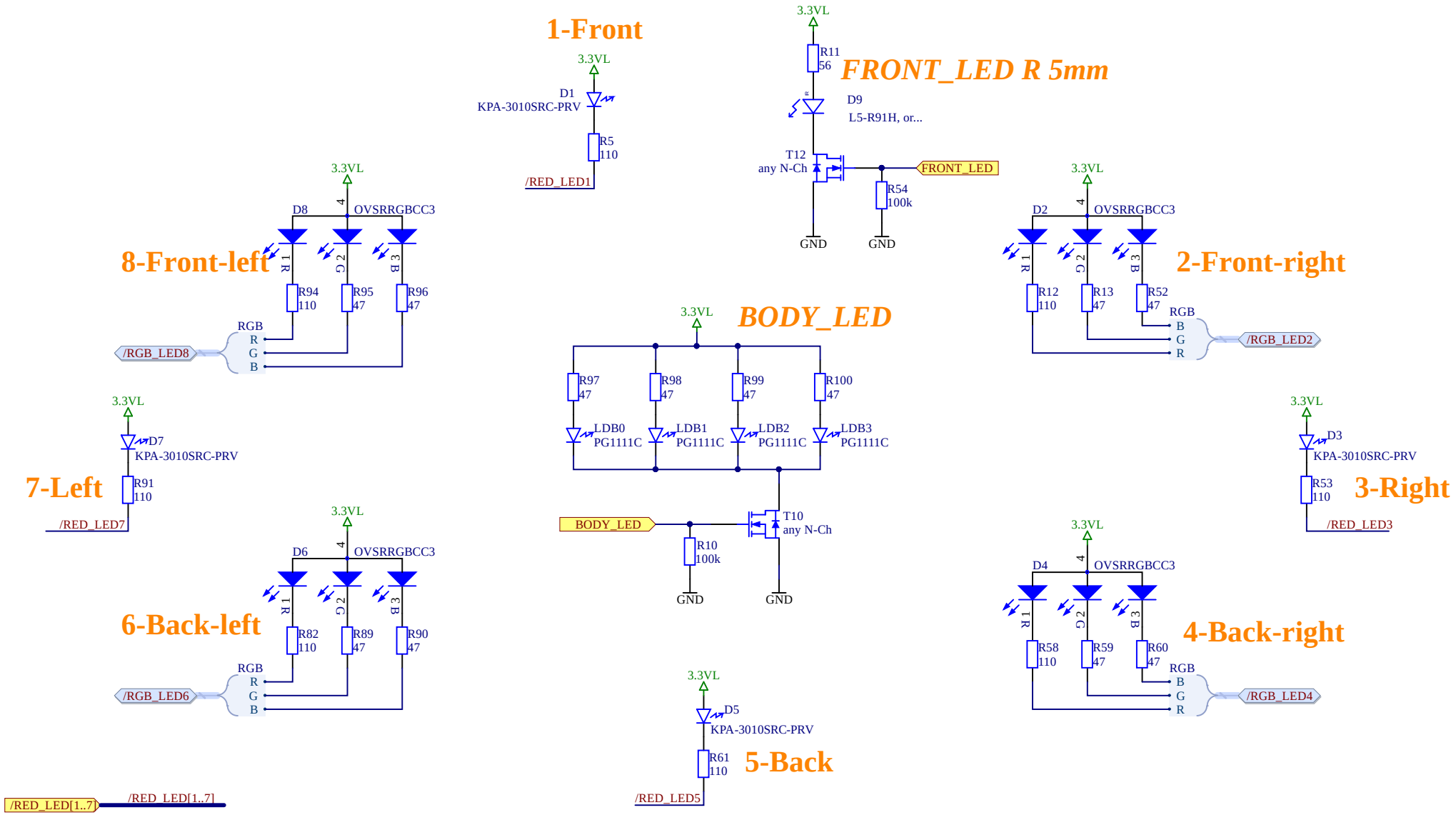
U7 TPA301D
AUDIO_PWR
DAC_OUT2
R50 10k
C6 470nF
C15 10pF
R55 51k
C16 2.2uF
C17 4.7uF
LS1
Speaker

Project *e-puck2*	Variant *e-puck2_EPFL*	Date: 2/14/2019 8:36:11 AM	GCtronic & EPFL-Mobots Common development
Part *CAN & Audio*		Revision: F4	
File : *CAN_Audio.SchDoc*		Page 9 / 12	

USB hub 2 ports

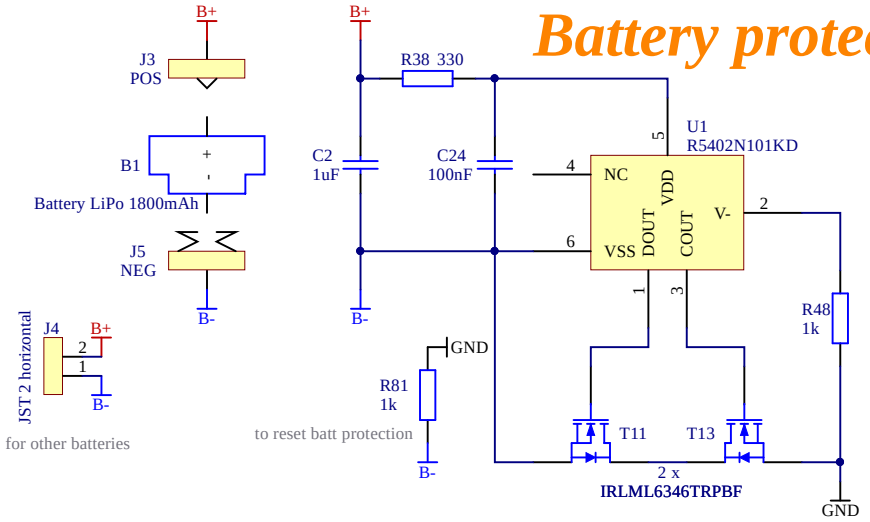


Project *e-puck2*	Variant *e-puck2_EPFL*	Date: 2/14/2019 8:36:11 AM	GCtronic & EPFL-Mobots Common development
Part *USB*		Revision: F4	
File : *USB.SchDoc*		Page 10 / 12	

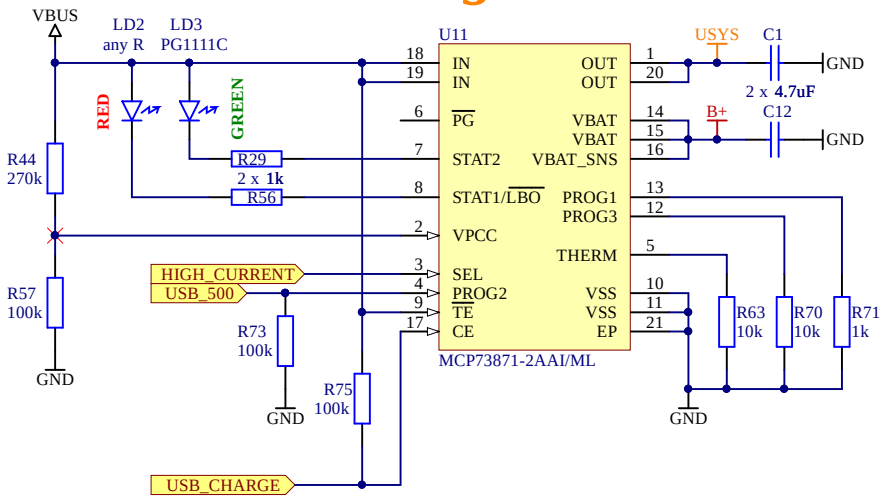


Project *e-puck2*	Variant *e-puck2_EPFL*	Date: 2/14/2019 8:36:11 AM	*GCtronic & EPFL-Mobots*
Part *LEDs*		Revision: F4	*Common development*
File : *LEDs.SchDoc*		Page 11/ 12	ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

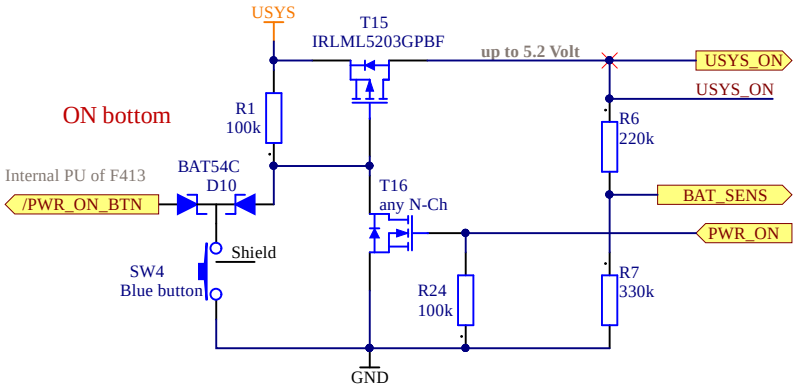
Battery protection



Charger

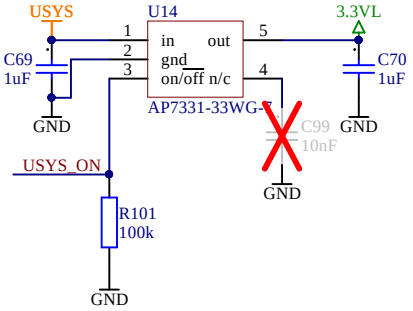


ON- OFF

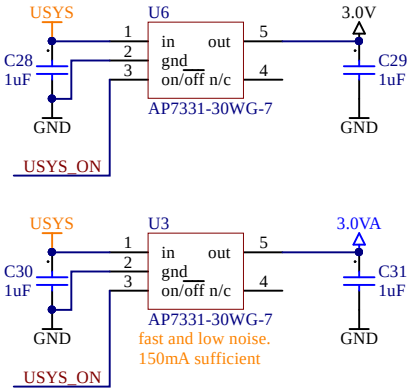


with SW4 system get power
with PWR_ON from uP power is kept ON (USYS_ON)

LDO 3.3V 300mA

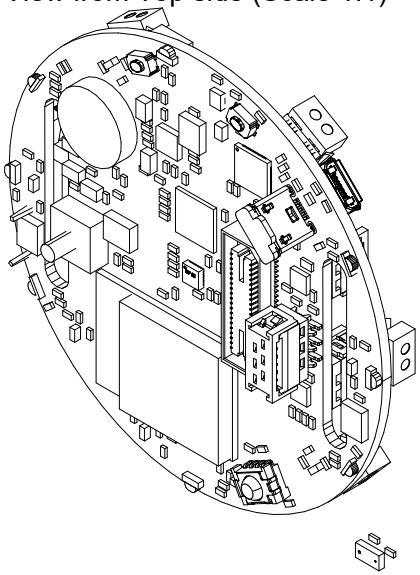


LDOs 3.0V 300mA

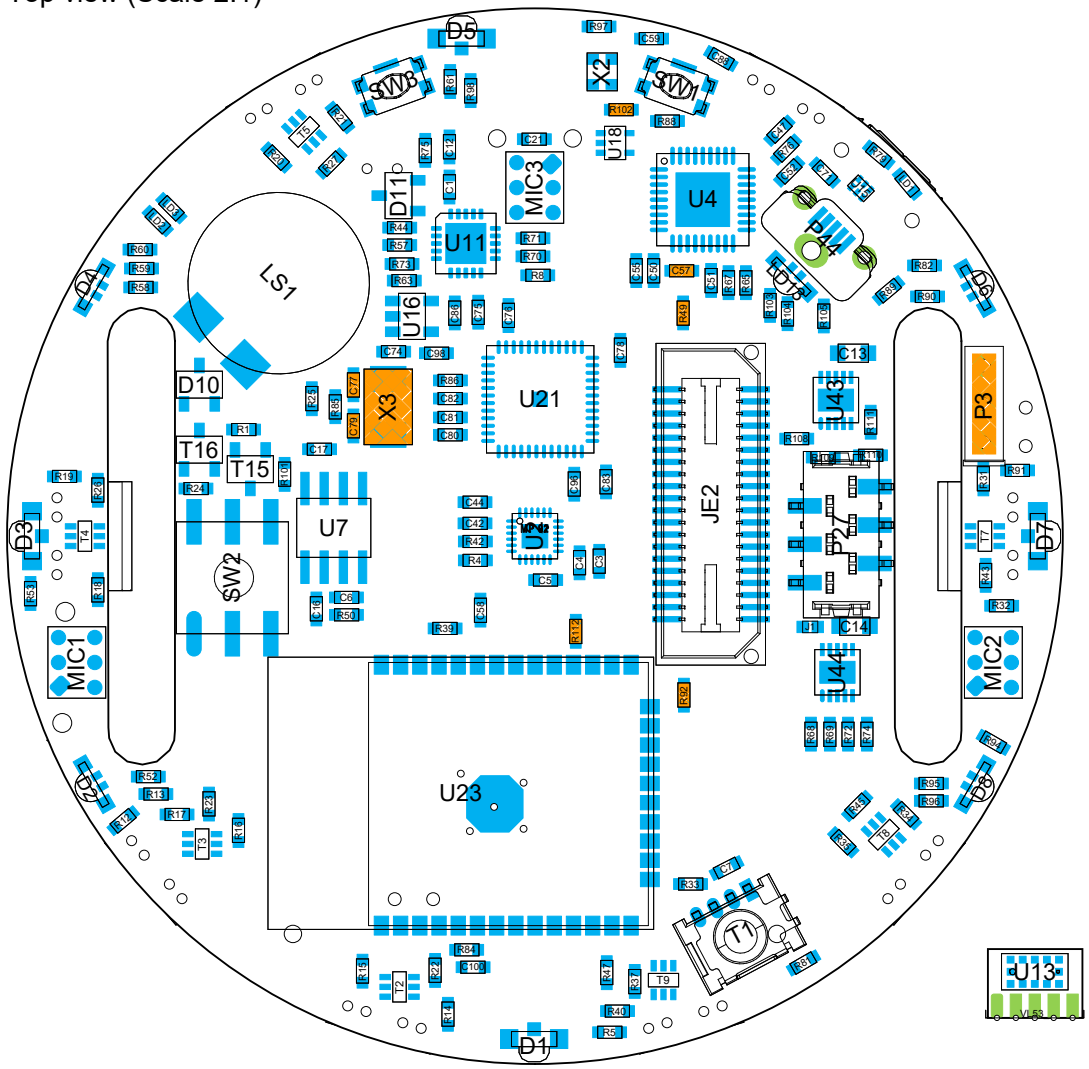


Project *e-puck2*	Variant *e-puck2_EPFL*	Date: 2/14/2019 8:36:12 AM	*GCtronic & EPFL-Mobots Common development*
Part *Power, Charger, ON-OFF*		Revision: F4	
File : *Powers.SchDoc*		Page 12/ 12	

View from Top side (Scale 1:1)



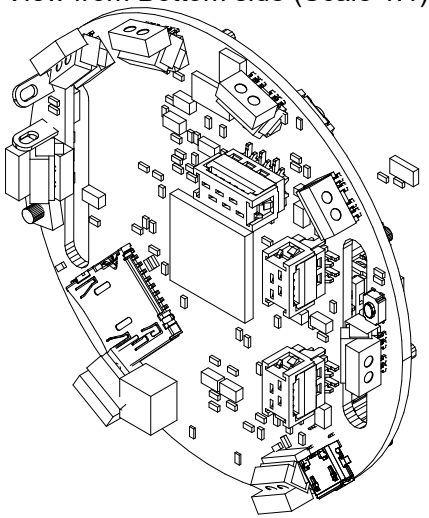
Top view (Scale 2:1)



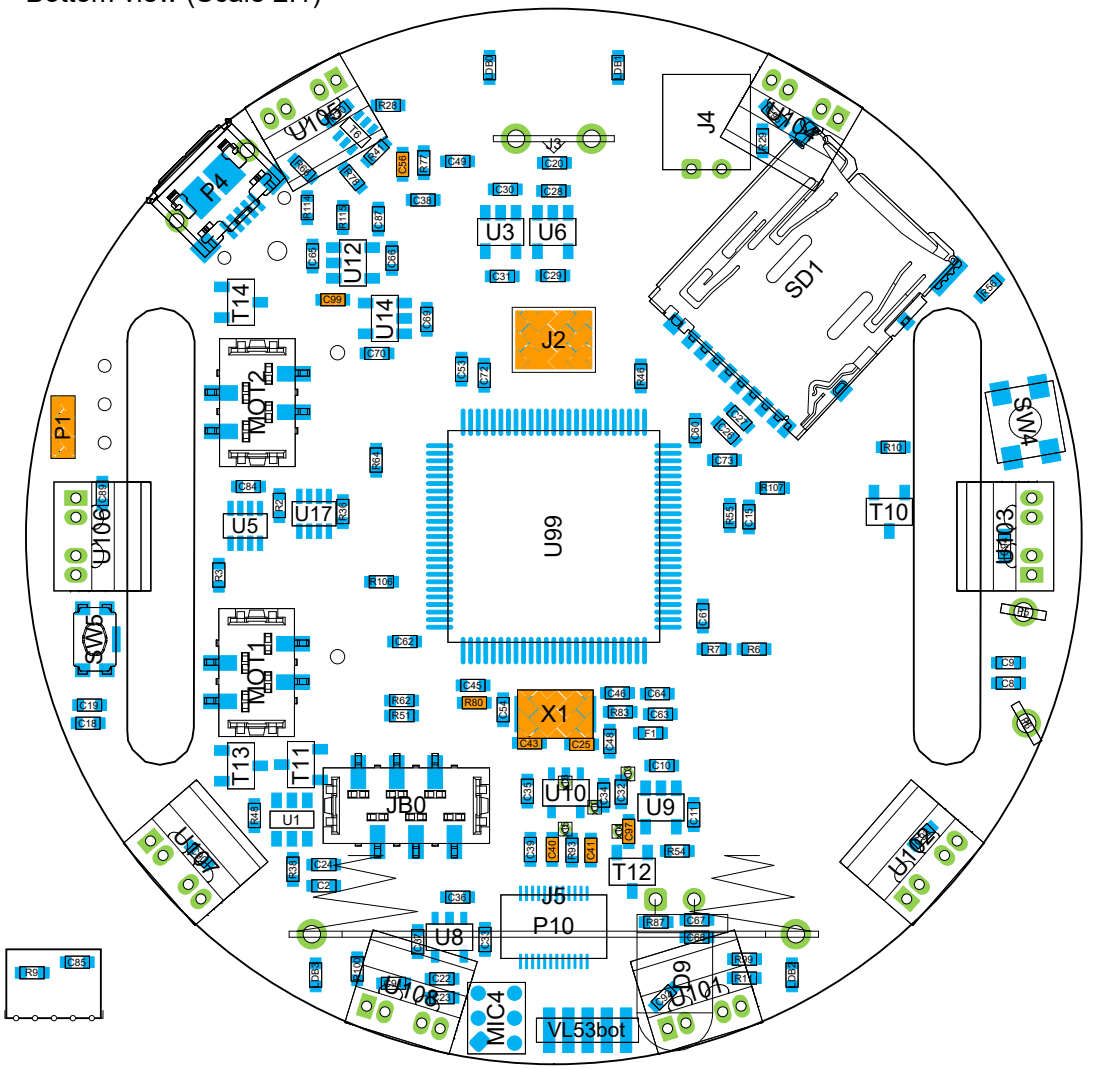
Legend: Components not fitted | SMD pads | TH pads

Project *e-puck2* Variant *e-puck2_EPFL* Part *Top implantation*	Date: 2/14/2019 8:36 AM Revision: F4	*GCtronic & EPFL-Mobots Common development* ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE
File : *e-puck2_F4.PCBDwf*	Page 1 / 5	

View from Bottom side (Scale 1:1)



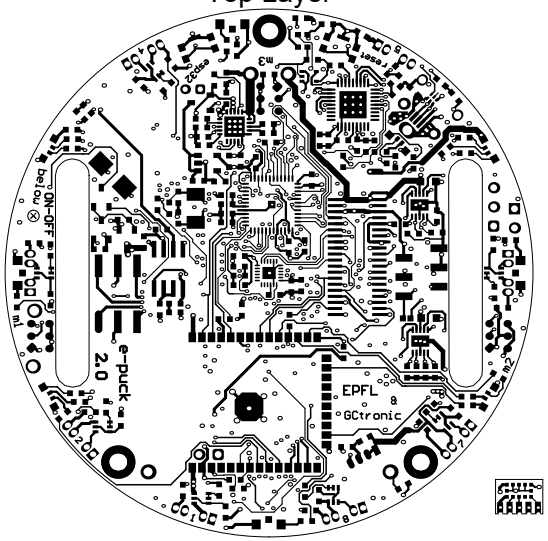
Bottom view (Scale 2:1)



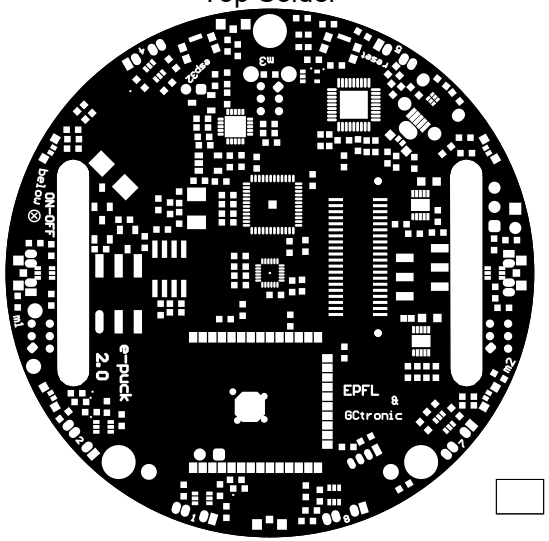
Legend: Components not fitted | SMD pads | TH pads

Project *e-puck2* Variant *e-puck2_EPFL* Part *Bottom implantation*	Date: 2/14/2019 8:36 AM Revision: F4	*GCtronic & EPFL-Mobots* *Common development*
File : *e-puck2_F4.PCBDwf*	Page 2 / 5	ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

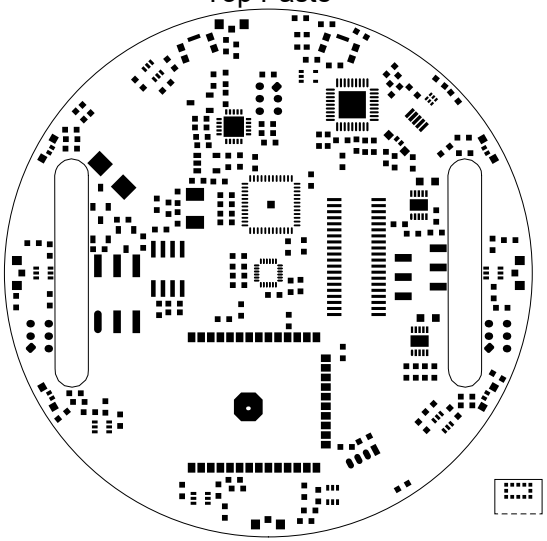
Top Layer



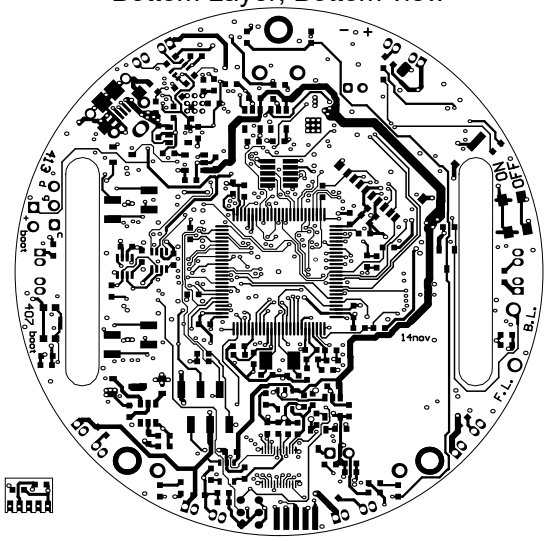
Top Solder



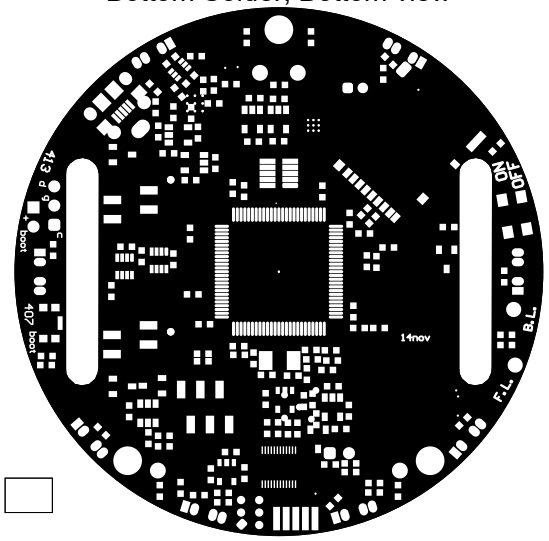
Top Paste



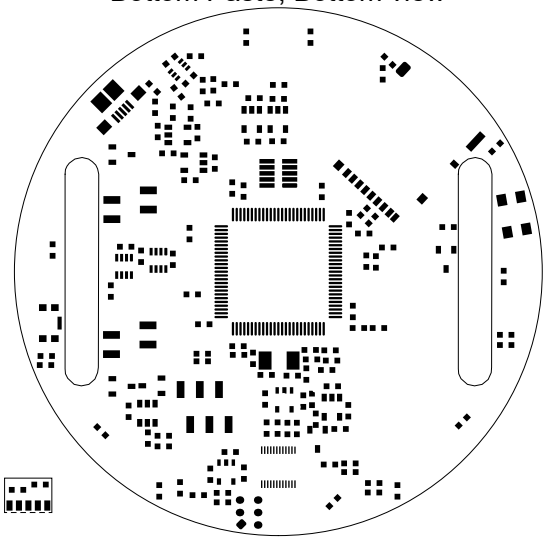
Bottom Layer, Bottom view



Bottom Solder, Bottom view



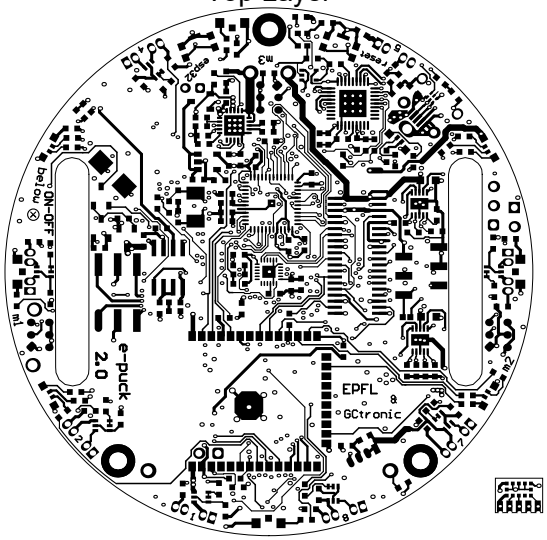
Bottom Paste, Bottom view



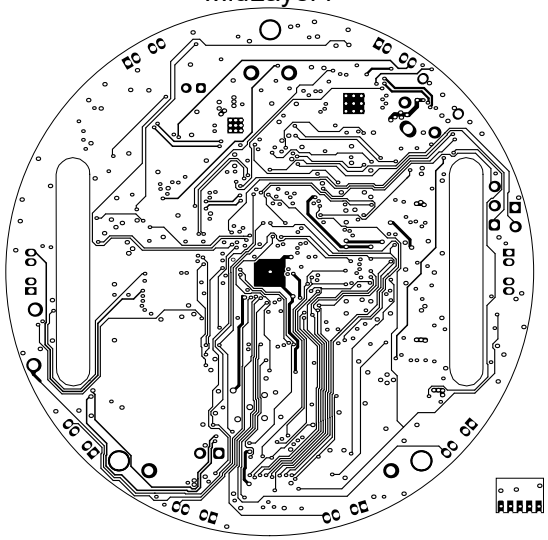
Scale 1:1

Project *e-puck2* Variant *e-puck2_EPFL* Part *Top & Bottom layers*	Date: 2/14/2019 8:36 AM Revision: F4	*GCtronic & EPFL-Mobots Common development* ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE
File : *e-puck2_F4.PCBDwf*	Page 3 / 5	

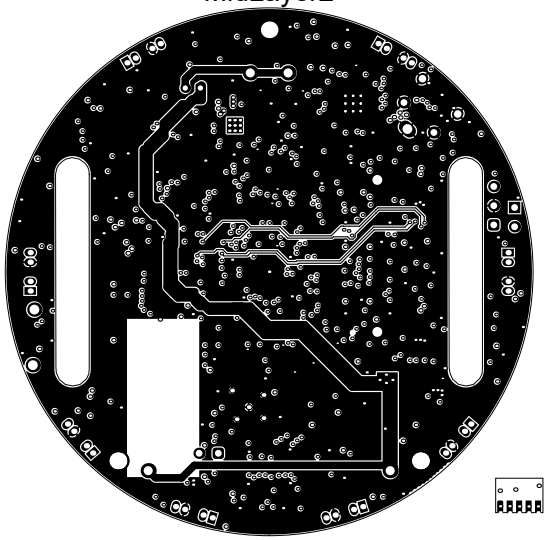
Top Layer



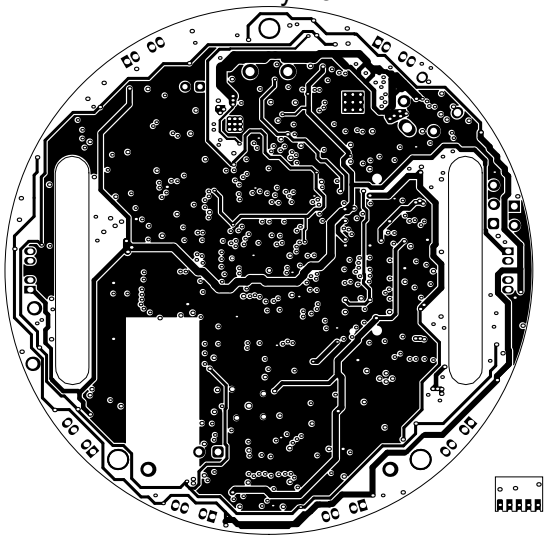
MidLayer1



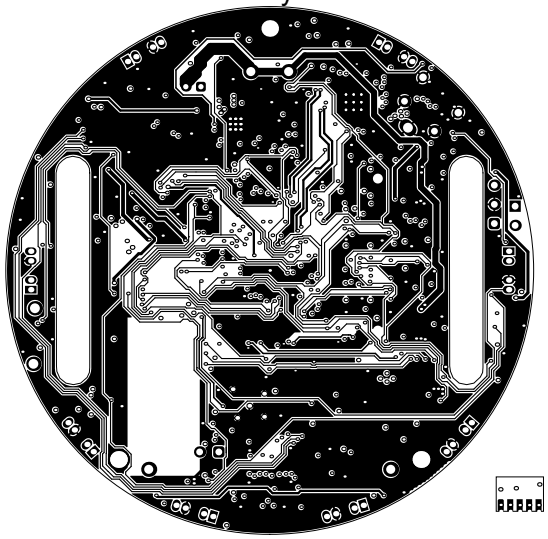
MidLayer2



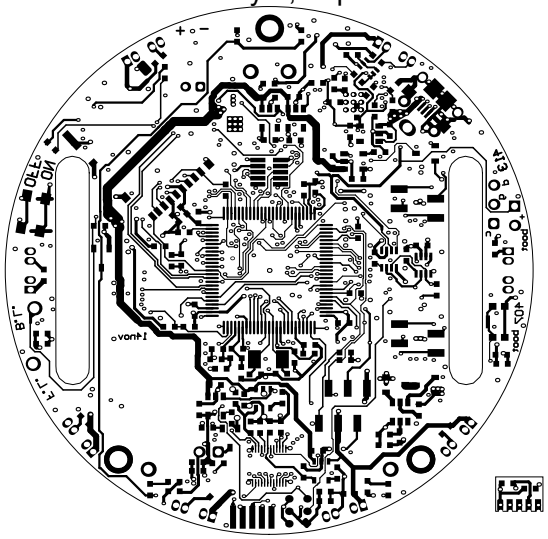
MidLayer3



MidLayer4



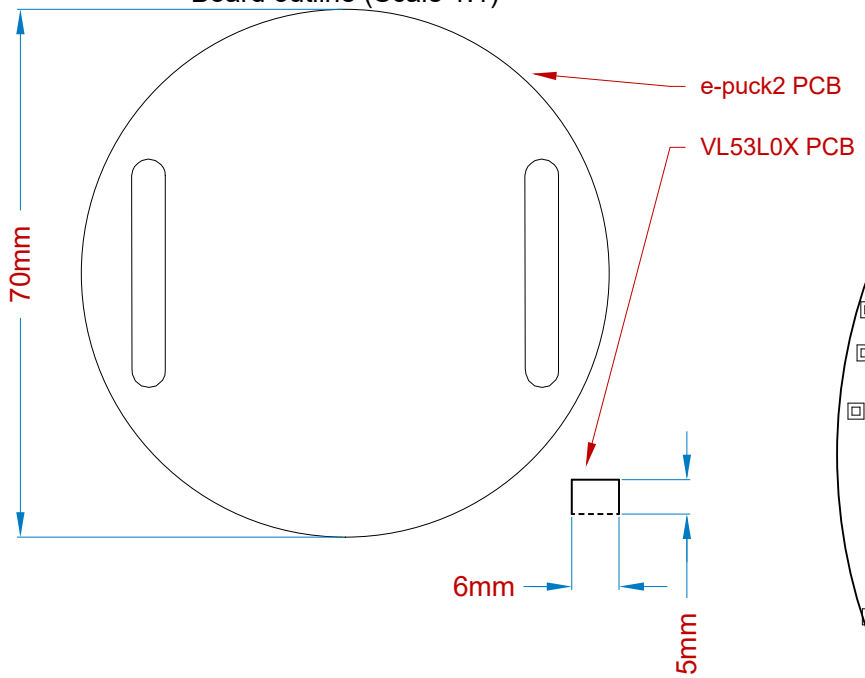
Bottom Layer, Top view



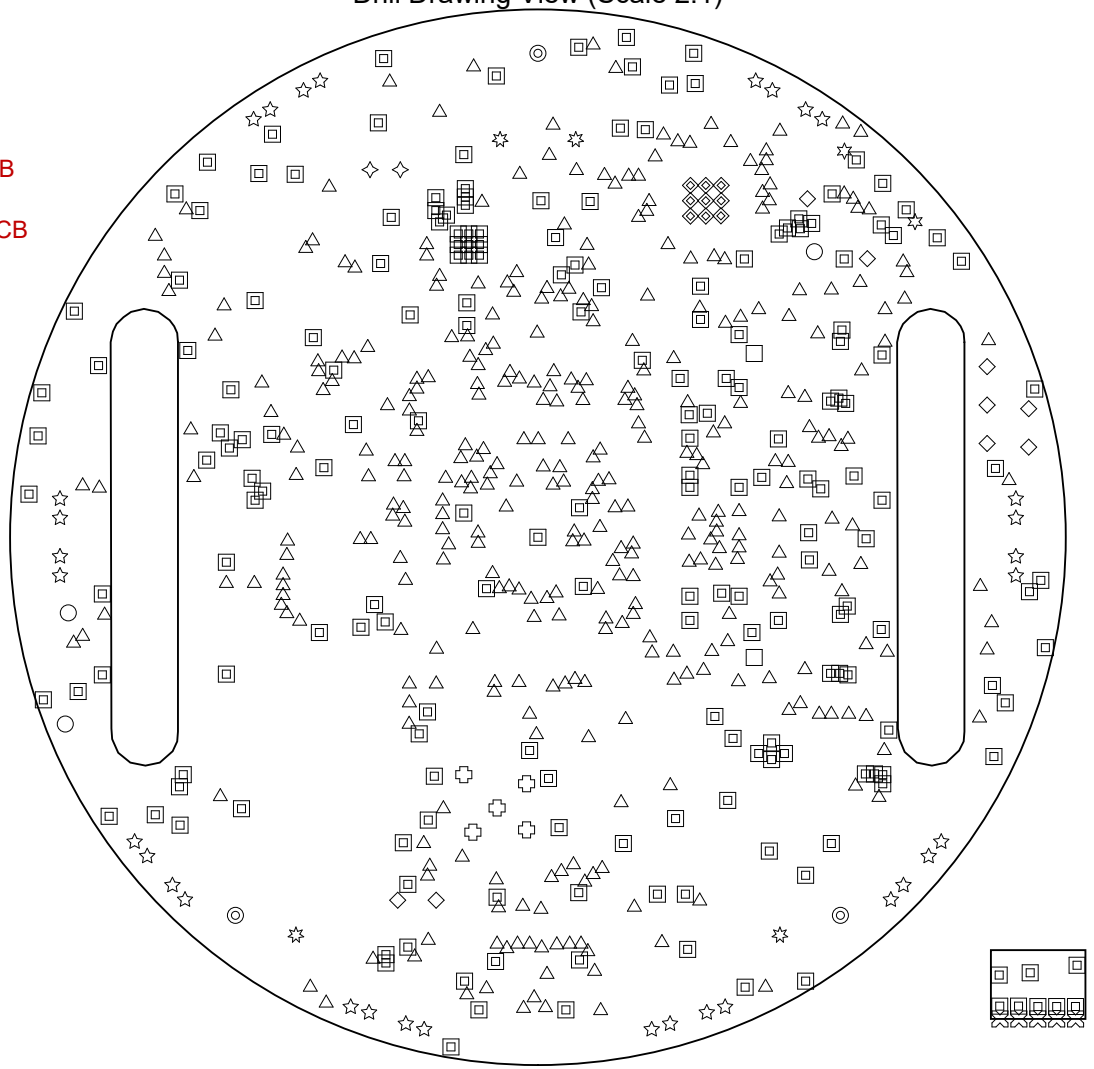
Scale 1:1

Project *e-puck2* Variant *e-puck2_EPFL* Part *Signal layers*	Date: 2/14/2019 8:36 AM Revision: F4	*GCtronic & EPFL-Mobots Common development* ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE
File : *e-puck2_F4.PCBDwf*	Page 4 / 5	

Board outline (Scale 1:1)



Drill Drawing View (Scale 2:1)



Drill Table

Symbol	Count	Hole Size	Plated	Hole Tolerance
△	360	0mm	Plated	None
▣	202	0mm	Plated	None
◈	9	0mm	Plated	None
⊠	5	0mm	Plated	None
⌬	5	0mm	Plated	None
✧	2	1mm	Plated	None
☆	32	1mm	Plated	None
◇	9	1mm	Plated	None
□	2	1mm	Non-Plated	None
✡	2	1mm	Plated	None
✡	4	1mm	Plated	None
○	3	1mm	Plated	None
◎	3	2mm	Plated	None
	638 Total			

Project *e-puck2* Variant *e-puck2_EPFL* Part *Drill information*	Date: 2/14/2019 8:36 AM Revision: F4	*GCtronic & EPFL-Mobots Common development* ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE
File : *e-puck2_F4.PCBDwf*	Page 5 / 5	

Bill of materials

Project: e-puck2

Source Data From: e-puck2_F4.PrjPcb

Variant: e-puck2_EPFL

Report Date: 14.02.2019 8:36:00

Print Date: 14.02.2019 8:39:06

GCtronic ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

Gctronic & EPFL-Mobots *Common development*

#	Comment	Value	Designator	Description	Layer	Footprint	Quantity
1	100k	100k	R1, R8, R24, R57, R68, R69, R72, R73, R74, R75, R76, R86, R101, R108, R109, R110, R111	Resistor	Top	ROB_0603	17
2	100nF	100nF	C3, C5, C42, C44, C47, C50, C51, C52, C58, C59, C75, C78, C82, C83,	Capacitor	Top	ROB_0603	15
3	10k	10k	R4, R15, R17, R19, R21, R32, R35, R40, R50, R63, R70, R84	Resistor	Top	ROB_0603	12
4	47	47	R13, R52, R59, R60, R89, R90, R95, R96, R97, R98, R104, R105	Resistor	Top	ROB_0603	12
5	110	110	R5, R12, R53, R58, R61, R82, R91, R94, R103	Resistor	Top	ROB_0603	9
6	13	13	R14, R16, R18, R20, R31, R34, R37	Resistor	Top	ROB_0603	7
7	2.2k	2.2k	R22, R23, R26, R27, R43, R45, R47	Resistor	Top	ROB_0603	7
8	MBT3904DW1		T2, T3, T4, T5, T7, T8, T9	Dual NPN 0.2A	Top	SC70-6	7
9	4.7uF	4.7uF	C1, C7, C12, C17, C76	Capacitor	Top	ROB_0603	5
10	OVSRRGBCC3	OVSRRGBCC3	D2, D4, D6, D8, LD13	side LED RGB SMD	Top	OVSRRGBCC3-Edge	5
11	1uF	1uF	C55, C74, C81, C86	Capacitor	Top	ROB_0603	4
12	side LED Red	KPA-3010SRC-PRV	D1, D3, D5, D7	LED	Top	KPA-3010SRC-PRV	4
13	10nF	10nF	C4, C80, C98	Capacitor	Top	ROB_0603	3
14	MP45DT02-M	MP45DT02-M	MIC1, MIC2, MIC3	MEMS Omnidirectional Digital Microphone	Top	HLGA-6L	3
15	33	33	R25, R85, R88	Resistor	Top	ROB_0603	3
16	1k	1k	R71, R79, R81	Resistor	Top	ROB_0603, RES400	3
17	22uF	22uF	C13, C14	Capacitor	Top	ROB_0805b	2
18	2.2uF	2.2uF	C16, C96	Capacitor	Top	ROB_0603	2
19	10uF	10uF	C21, C71	Capacitor	Top	ROB_0603	2
20	BAT54C	BAT54C	D10, D11	Small signal double diode	Top	SOT23-3 - NEW	2
21	100	100	R33, R42	Resistor	Top	ROB_0603	2
22	4.7k	4.7k	R65, R67	Resistor	Top	ROB_0603	2
23	button		SW1, SW3	KMR221GLFS	Top	C&K_KMR2	2
24	A3901		U43, U44	IC : Dual Full Bridge Low Voltage Motor Driver	Top	DFN-10	2
25	470nF	470nF	C6	Capacitor	Top	ROB_0603	1
26	1nF	1nF	C100	Capacitor	Top	ROB_0603	1
27	BSE-020		JE2	Samtec BSE-020	Top	BSE-020	1
28	led orange	any Orange	LD1	LED USB connection	Top	ROB_LED_0603	1
29	led red	any R	LD2	LED charging	Top	ROB_LED_0603	1
30	led green	PG1111C	LD3	LED charged	Top	ROB_LED_0603	1
31	Speaker	mouser PSR12N08AK	LS1	Loudspeaker 12mm	Top	DS-1389	1
32	MM6	farnell 1056234	P27	Micro-Match 6 pins Female on board Vertical Smd connector	Top	TYCO_7-188275-6	1
33	105133-001	105133-001	P44	uUSB B VERT.	Top	Receptacle microAB-105133-001	1
34	470	470	R39	Resistor	Top	ROB_0603	1
35	270k	270k	R44	Resistor	Top	ROB_0603	1
36	p36s303	p36s303 or 220AMC16R	SW2	hex selector	Top	p36s	1
37	TSOP36230		T1	IT TV receiver	Top	TSOP36230	1
38	IRLML5203GPBF	IRLML5203GPBF	T15	P-Channel MOSFET Rds 0.165ohm@2.6A	Top	SOT23-3 - NEW	1
39	any N-Ch	any N-Ch	T16	N-Channel MOSFET Rds 0.063ohm@3.4A	Top	SOT23-3 - NEW	1
40	MPU-9250		U2	SMD Gyroscope/Accelerometer/Magnetometer Sensor; 9-AXIS	Top	QFN40P300X300X105-25N	1
41	USB2512B-I/M2		U4	IC USB HUB CONTROLLER, USB 2.0, SQFN-36	Top	SQFN6x6-36	1
42	TPA301D		U7	TPA301D	Top	SO-8	1
43	MCP73871-2AAI/ML	MCP73871-2AAI/ML	U11	Stand-Alone System Load Sharing and Li-Ion / Li-Polymer Battery Charge Management Controller	Top	SQFN20 4x4mm	1
44	VL53L0X		U13	TOF sensor	Top	VL53L0X	1
45	FAN3988IL6X	FAN3988IL6X	U15	USB/Charger and Over - Voltage Detection Device	Top	MLP6	1
46	LDO 3V low noise	AP7331-30WG-7	U16	LDO 3V low noise	Top	Sot23-5	1
47	NL17SZ125DFT2G		U18	Non-Inverting 3-State Buffer, Low enable, TinyLogic	Top	SOT65P210X110-5AL	1
48	STM32F413CGU6		U21	ARM Cortex-M4 32-bit MCU+FPU, 105 DMIPS, 128 kB Flash, 64 kB Internal RAM, 36 I/Os, 48-pin UFQFPN, -40 to 85 degC, Tray	Top	STM-UFQFPN48_N	1
49	ESP-32S	ESP-32S	U23	Wi-Fi BT BLE MCU Module	Top	ESP-32S	1

50	DSC6101JI2A-024.0000T		X2	OSC MEMS 24.0000MHZ CMOS SMD	Top	Oscillator 2.5x2mm VLGA	1
51	100nF	100nF	C8, C18, C20, C22, C24, C26, C38, C46, C49, C53, C54, C60, C61, C62, C63, C67, C84, C87, C89, C90, C91, C92, C93, C94, C95	Capacitor	Bottom	ROB_0603	25
52	1uF	1uF	C2, C28, C29, C30, C31, C34, C36, C39, C45, C48, C64, C65, C66, C68, C69, C70	Capacitor	Bottom	ROB_0603	16
53	100k	100k	R10, R54, R66, R78, R106, R107, R114, R115	Resistor	Bottom	ROB_0603	8
54	TCRT1000		U101, U102, U103, U104, U105, U106, U107, U108	Reflective Optical Sensor. bottom but top pins must remain 1.4 mm, Reflective Optical Sensor with Transistor Output	Bottom	TCRT1000	8
55	1k	1k	R29, R48, R51, R56, R62	Resistor	Bottom	ROB_0603	5
56	STE-1		X10, X13, X14, X15, X16		Bottom	HEADER1x1	5
57	10uF	10uF	C9, C19, C23, C27	Capacitor	Bottom	ROB_0603	4
58	2.2uF	2.2uF	C32, C33, C72, C73	Capacitor	Bottom	ROB_0603	4
59	led green	PG1111C	LDB0, LDB1, LDB2, LDB3	LED body	Bottom	ROB_LED_0603	4
60	0R	0R	R2, R36, R46, R93	Resistor	Bottom	ROB_0603	4
61	10k	10k	R9, R30, R87	Resistor	Bottom	ROB_0603	3
62	47	47	R83, R99, R100	Resistor	Bottom	ROB_0603	3
63	any N-Ch	any N-Ch	T10, T12, T14	N-Channel MOSFET Rds 0.063ohm@3.4A	Bottom	SOT23-3 - NEW	3
64	LDO 3V low noise	AP7331-30WG-7	U3, U6, U12	LDO 3V low noise	Bottom	Sot23-5	3
65	4.7uF	4.7uF	C10, C11	Capacitor	Bottom	ROB_0603	2
66	10nF	10nF	C35, C37	Capacitor	Bottom	ROB_0603	2
67	MM4	civilux CA3204M1300	MOT1, MOT2	MicroMatch 4 SMD vertical	Bottom	MM4smd	2
68	test point	keystone 4952	P5, P6	Header, 1-Pin, bottom	Bottom	testpoint	2
69	IRLML6346TRPBF	IRLML6346TRPBF	T11, T13	N-Channel MOSFET Rds 0.063ohm@3.4A	Bottom	SOT23-3 - NEW	2
70	MAX3051EKA-T		U5, U17	+3.3V, 1Mbps, Low-Supply-Current CAN Transceiver	Bottom	SOT23-8	2
71	10pF	10pF	C15	Capacitor	Bottom	ROB_0603	1
72	100nF		C85	Capacitor	Bottom	ROB_0603	1
73	Led R 5mm	L5-R91H, or...	D9	strong red LED	Bottom	LED5_90	1
74	60@100MHz	ex farnell 1669742	F1	Bead Ferrite	Bottom	ROB_0603	1
75	POS		J3		Bottom	BATT_CON_EPUCK_P	1
76	JST 2 horizontal	farnell 9491902	J4	batt contact S2B-PH-K-S	Bottom	CON-JST-H	1
77	NEG		J5		Bottom	BATT_CON_EPUCK_M	1
78	MM6	farnell 1056234	JB0	Micro-Match 6 pins Female on board Vertical Smd connector	Bottom	TYCO_7-188275-6	1
79	MP45DT02-M	MP45DT02-M	MIC4	MEMS Omnidirectional Digital Microphone	Bottom	HLGA-6L	1
80	FCI 10118193	FCI 10118193	P4	USB MICRO TYPE B horizontal	Bottom	Receptacle microB_smd/th	1
81	24-5805-024-000-829	24-5805-024-000-829	P10	RCPT 24 pins camera 24-5805-024-000-829	Bottom	Connector 24-5805-024-000-829	1
82	120	120	R3	Resistor	Bottom	ROB_0603	1
83	220k	220k	R6	Resistor	Bottom	ROB_0603	1
84	330k	330k	R7	Resistor	Bottom	ROB_0603	1
85	56	56	R11	Resistor	Bottom	ROB_0603	1
86	13	13	R28	Resistor	Bottom	ROB_0603	1
87	330	330	R38	Resistor	Bottom	ROB_0603	1
88	2.2k	2.2k	R41	Resistor	Bottom	ROB_0603	1
89	51k	51k	R55	Resistor	Bottom	ROB_0603	1
90	22	22	R64	Resistor	Bottom	ROB_0603	1
91	12k	12k	R77	Resistor	Bottom	ROB_0603	1
92	Micro SD	mouser DM3AT-SF-PEJM5	SD1	uSD Connector HRS DM3AT-SF-PEJM5	Bottom	MicroSD_DM3AT-SF-PEJM5	1
93	Blue button	7914J	SW4	push button 7914J	Bottom	SW7914J	1
94	button		SW5	KMR221GLFS	Bottom	C&K_KMR2	1
95	MBT3904DW1		T6	Dual NPN 0.2A	Bottom	SC70-6	1
96	R5402N101KD	R5402N101KD	U1	Li-ion/polymer 1Cell Protector	Bottom	SOT23-6	1
97	LDO 2V8	LP2985-28DBVR	U8	IC REG LDO 2.8V 0.15A SOT23-5	Bottom	SOT95P285X100-5L	1
98	LDO 3V0 600mA	AP7365-30WG	U9	LDO 3V0 600mA	Bottom	Sot23-5	1
99	LDO 1V8	LP2985-1.8	U10	LDO 1.8V, 150mA, SOT23-5	Bottom	SOT95P285X100-5L	1
100	LDO 3V3	AP7331-33WG-7	U14	LDO 3V3	Bottom	Sot23-5	1
101	STM32F407VGT6		U99	ARM Cortex-M4 32-bit MCU+FPU, 210 DMIPS, 512 kB Flash, 192 kB Internal RAM, 82 I/Os, 100-pin LQFP, -40 to 85 degC, Tray	Bottom	STM-LQFP100_N	1
Approved				**Notes**			**296**