J3
USB2

TYPE C

VBUS1 A4
VBUS2 B4
CC1 A5
DP1 A6   MCU_D+
DN1 A7   MCU_D-
SBU1 A8
SBU2 B8
DN2 B7   CELL_D-
DP2 B6   CELL_D+
CC2 B5
GND1 A1
GND2 B1

1

FU1
2A

R8
5k1   CC1

R2
5k1   CC2

C23
220uF

R4
5k1

R3
5k1

5V

J7

6 SCK
5 SDI
4 SDO
3 CS
2
1/0

PPS

Q7
3   2
1

C20
2.2uF

R1
100k

Q5
1   VOUT_EN
2

5V

J6

4 SCL
3 SDA
2
0/1

QWIIC

V2WI

Q2
3   2
1

C17
2.2uF

3V3

5V

VCELL_EN

U4
3 IN   SW   2
5 EN   BST 6
1 GND   FB   4

C16
220uF

C13
100nF

L2
4.7uH

C3
2.2uF

R15
37k4

C12
100nF

C11
220uF

R14
10k

Vo=0.8*(1+Rt/Rb)

VCELL

5V

C21
2.2uF

R5
100k

U3
1/2 VIN   VOUT 8
3   SHDN
4   GND

Q6

SELF_RST   1
2

3V3

C7
2.2uF

C8
220uF

FILE NAME: DCPU.pdsprj

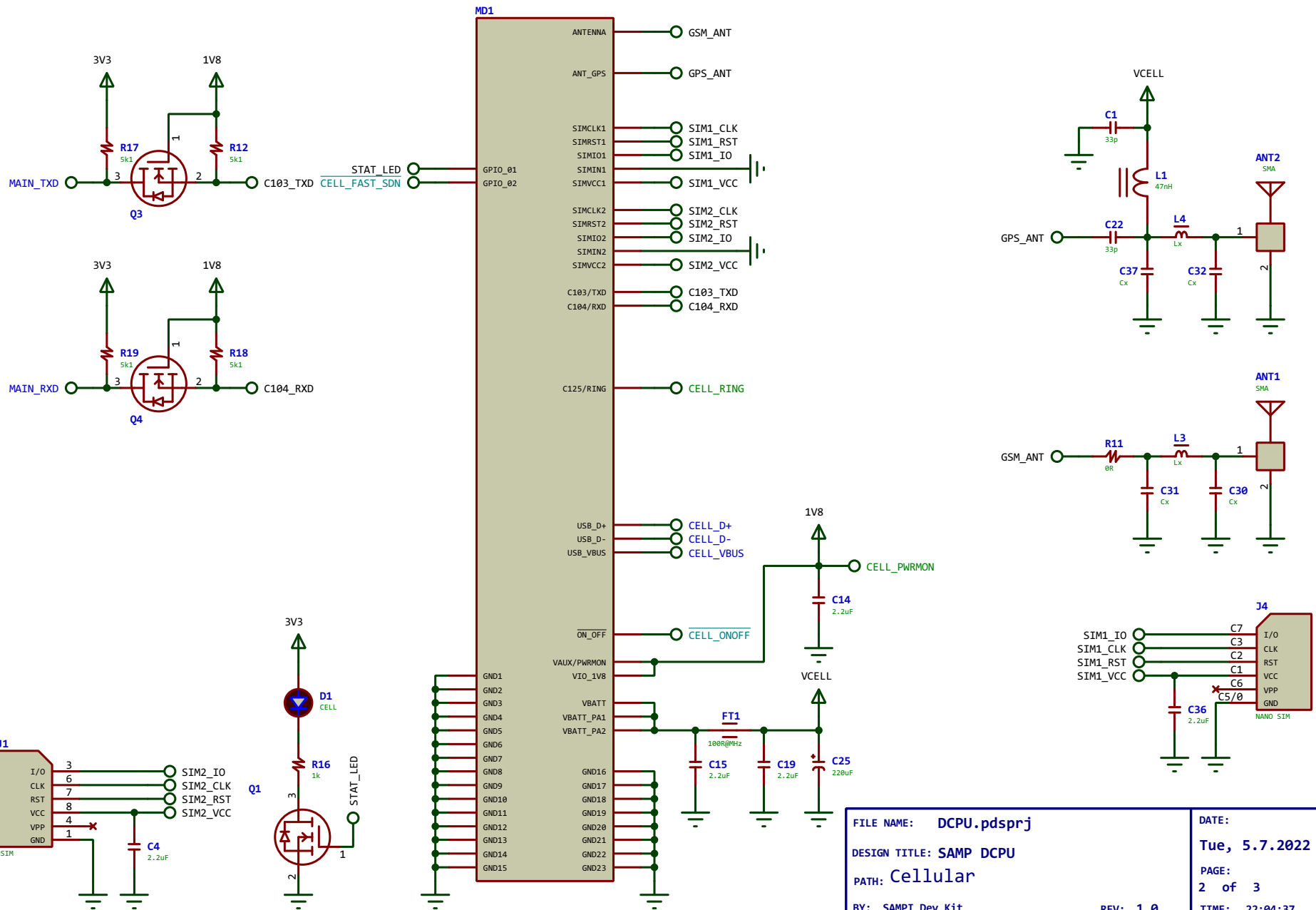DESIGN TITLE: SAMP DCPU

PATH: Power

BY: SAMPI Dev Kit   REV: 1.0

DATE:
Tue, 5.7.2022

PAGE:
1 of 3

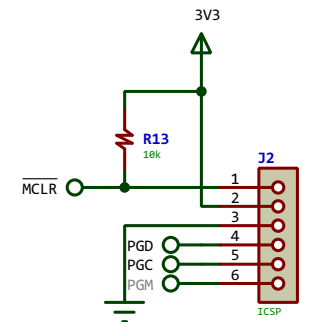TIME: 22:04:37

MD1

Pin	Signal
ANTENNA	GSM_ANT
ANT_GPS	GPS_ANT

3V3 · **1V8**

R17 5k1 · R12 5k1

MAIN_TXD — 3 Q3 2 — C103_TXD

3V3 · **1V8**

R19 5k1 · R18 5k1

MAIN_RXD — 3 Q4 2 — C104_RXD

STAT_LED → GPIO_01
CELL_FAST_SDN → GPIO_02

Signal	Net
SIMCLK1	SIM1_CLK
SIMRST1	SIM1_RST
SIMIO1	SIM1_IO
SIMIN1	
SIMVCC1	SIM1_VCC
SIMCLK2	SIM2_CLK
SIMRST2	SIM2_RST
SIMIO2	SIM2_IO
SIMIN2	
SIMVCC2	SIM2_VCC
C103/TXD	C103_TXD
C104/RXD	C104_RXD
C125/RING	CELL_RING
USB_D+	CELL_D+
USB_D-	CELL_D-
USB_VBUS	CELL_VBUS
ON_OFF	CELL_ONOFF
VAUX/PWRMON	CELL_PWRMON
VIO_1V8	
VBATT	
VBATT_PA1	
VBATT_PA2	

GND1 … GND15
GND16 … GND23

Power / RF section

VCELL

C1 33p
L1 47nH

ANT2 SMA

GPS_ANT — C22 33p — L4 Lx — 1 ANT2 2
C37 Cx · C32 Cx

ANT1 SMA

GSM_ANT — R11 0R — L3 Lx — 1 ANT1 2
C31 Cx · C30 Cx

1V8 — CELL_PWRMON
C14 2.2uF

VCELL
FT1 100R@MHz
C15 2.2uF · C19 2.2uF · C25 220uF

J4 — NANO SIM

Pin	Signal	J4
SIM1_IO	C7	I/O
SIM1_CLK	C3	CLK
SIM1_RST	C2	RST
SIM1_VCC	C1	VCC
	C6	VPP
	C5/0	GND

C36 2.2uF

J1 — eSIM

Pin	Signal
I/O 3	SIM2_IO
CLK 6	SIM2_CLK
RST 7	SIM2_RST
VCC 8	SIM2_VCC
VPP 4	
GND 1	

C4 2.2uF

3V3
D1 CELL
R16 1k
Q1 3 / 2 / 1 — STAT_LED

U2

Left side pins:
- 36 PGEC2/VREF+/CVREF+/AN0/RP1/OCM1E/INT3/RA0 — CELL_VBUS
- 37 PGED2/VREF-/AN1/RP2/OCM1F/RA1 — CC2
- 7 OSC1/CLKI/AN5/RP3/OCM1C/RA2 — VCELL_EN
- 8 OSC2/CLKO/AN6/C3IND/RP4/OCM1D/RA3 — SELF_RST
- 10 SOSCO/SCLKI/RP5/PWRLCLK/OCM3D/RA4 — VOUT_EN
- 11 RP24/OCM3A/RA9 — CS
- 3 AN12/C2IND/T2CK/T2G/RC0 — CELL_RING
- 4 AN13/T3CK/T3G/RC1 — CELL_ONOFF
- 5 RP19/OCM2A/RC2 — UBT
- 14 RC3 — MCU_VBUS
- 21 AN14/LVDIN/C2INC/RC8 — SYS_LED
- 22 PGEC3/TDO/RP18/ASCL1/USBOEN/SDO3/RC9 — SCK
- 35 MCLR — MCLR
- 29 VUSB3V3
- 34 AVDD/ADD
- 33 AVSS/VSS

Right side pins:
- 38 PGED1/AN2/C1IND/C2INB/C3INC/RP6/OCM2C/RB0 — PGD
- 39 PGEC1/AN3/C1INC/C2INA/RP7/OCM2D/RB1 — PGC
- 1 AN4/C1INB/RP8/SDA2/OCM2E/RB2 — CELL_FAST_SDN
- 2 TDI/AN11/C1INA/RP9/SCL2/OCM2F/RB3 — CELL_PWRMON
- 9 SOSCI/AN7/RP10/OCM3C/RB4 — APP_LED
- 15 PGED3/RP11/ASDA1/USBID/SS3/FSYNC3/OCM3E/RB5 — SDO
- 16 VBUS/RB6 — VBUS
- 17 RP12/SDA3/SDI3/OCM3F/RB7 — SDI
- 18 TCK/RP13/SCL1/U1CTS/SCK1/OCM1A/RB8 — SCL
- 20 TMS/RP14/SDA1/T1CK/T1G/U1RTS/SDO1/OCM1B/INT2/RB9 — SDA
- 27 D-/RB10 — MCU_D-
- 28 D+/RB11 — MCU_D+
- 30 AN8/RP15/SCL3/SCK3/RB13 — CC1
- 31 AN9/C3INB/RP16/U1TX/VBUSON/SDI1/OCM3B/INT1/RB14 — MAIN_TXD
- 32 AN10/C3INA/RP17/U1RX/SS1/FSYNC1/OCM2B/INT0/RB15 — MAIN_RXD
- 13/26 VDD
- 24 VCAP
- 6/12/41 VSS

VBUS — MCU_VBUS

Components:
- C10 100nF
- C5 100nF
- 3V3
- C9 2.2uF
- C18 100nF
- C6 100nF
- 3V3

R13 10k
MCLR
J2 — 1 2 3 4 5 6 — ICSP
PGD PGC PGM
3V3

V2WI
R6 5k1
R7 5k1
U1 — 1 SCK, 3 SDA, 5 WP — 24AA16 VCC=V2WI
C2 100nF
SCL SDA

SYS_LED APP_LED
R25 1k
R10 1k
D4 SYS
D6 APP

3V3
R9 100k
UBT
BT2 UBT
1/0

Legend:
- Open-Draint Output
- Analog
- GPIOs connect to the other sheets
- GPIOs connect to components in this sheet
- 5V tolerant
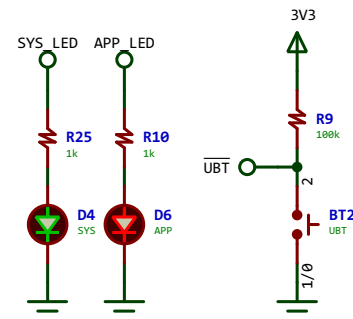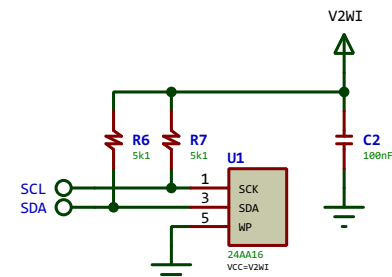
NUM	PIN	NAME	TYPE	OPEN DRAIN	INIT	PERIPHERAL
34	AVDD	VDD	POWER	-	-	-
33	AVSS	GND	GND	-	-	-
35	MCLR	MCLR_N	SYSTEM RESET	-	-	-
19	N/C	NC	-	-	-	-
23	N/C	NC	-	-	-	-
25	N/C	NC	-	-	-	-
40	N/C	NC	-	-	-	-
36	RA0	CELL_VBUS	DIGITAL OUTPUT	NOT CONFIGURE	LOW	-
37	RA1	CC2	ANALOG INPUT	NOT CONFIGURE	LOW	AN1
7	RA2	VCELL_EN	DIGITAL OUTPUT	NOT CONFIGURE	LOW	-
8	RA3	SELF_RESET	DIGITAL OUTPUT	NOT CONFIGURE	LOW	-
10	RA4	VOUT_EN	DIGITAL OUTPUT	NOT CONFIGURE	LOW	-
11	RA9	CS_N	DIGITAL OUTPUT	NOT CONFIGURE	HIGH	SPI2
38	RB0	PGD	DIGITAL INPUT	NOT CONFIGURE	LOW	-
39	RB1	PGC	DIGITAL INPUT	NOT CONFIGURE	LOW	-
27	RB10	MCU_DM	DIGITAL INPUT	NOT CONFIGURE	LOW	-
28	RB11	MCU_DP	DIGITAL INPUT	NOT CONFIGURE	LOW	-
30	RB13	CC1	ANALOG INPUT	NOT CONFIGURE	LOW	AN8
31	RB14	MAIN_TXD	DIGITAL OUTPUT	NOT CONFIGURE	HIGH	UART1
32	RB15	MAIN_RXD	DIGITAL INPUT	NOT CONFIGURE	LOW	UART1
1	RB2	CELL_FAST_SDN_N	DIGITAL OUTPUT	YES	HIGH	-
2	RB3	CELL_PWRMON	ANALOG INPUT	NOT CONFIGURE	LOW	AN11
9	RB4	APP_LED	DIGITAL OUTPUT	NOT CONFIGURE	HIGH	-
15	RB5	SDO	DIGITAL OUTPUT	NOT CONFIGURE	LOW	SPI2
16	RB6	VBUS	DIGITAL INPUT	NOT CONFIGURE	LOW	USB
17	RB7	SDI	DIGITAL INPUT	NOT CONFIGURE	LOW	SPI2
18	RB8	SCL	DIGITAL INPUT	NOT CONFIGURE	LOW	I2C1
20	RB9	SDA	DIGITAL INPUT	NOT CONFIGURE	LOW	I2C1
3	RC0	CELL_RING	ANALOG INPUT	NOT CONFIGURE	LOW	AN12
4	RC1	CELL_ONOFF_N	DIGITAL OUTPUT	YES	HIGH	-
5	RC2	UBT_N	DIGITAL INPUT	NOT CONFIGURE	LOW	-
14	RC3	MCU_VBUS	DIGITAL OUTPUT	NOT CONFIGURE	LOW	-
21	RC8	SYS_LED	DIGITAL OUTPUT	NOT CONFIGURE	HIGH	-
22	RC9	SCK	DIGITAL OUTPUT	NOT CONFIGURE	LOW	SPI2
24	VCAP	VCAP	-	-	-	-
13	VDD	VDD	POWER	-	-	-
26	VDD	VDD	POWER	-	-	-
6	VSS	GND	GND	-	-	-
12	VSS	GND	GND	-	-	-
29	VUSB3V3	VDD	POWER	-	-	-