CPU,ETH

I/F Connectors

J1
TYPE-C-31-M-12
PWR_FLAG
FB1 BLM18BPG121SN1D
PWR_FLAG
VD5P00

VBUS A4
CC1 A5
CC2 B5
D- A7
D- B7
D+ A6
D+ B6
SHIELD
SBU1 A8
SBU2 B8
PWR_FLAG
S1

USB1_DN
USB1_DP

U3 TPD2E2U06DCKR-TP

R1 5.1k 1005
R2 5.1k 1005
C7 10uF 160B

GND

Power

VD5P00   VD3P30
U2 TLV62569DBVR
PWR_FLAG
VIN EN SW FB
L2 4.7uH 2016
PMIC_ON_REQ
R5 100k 1005
C2 10uF 6.3V X5R 160B
R10 22k 6.3V 1005
C4 10uF X5R 1005

R2 = Vref / (Vo − Vref) * R1
= 0.6 / (3.3 − 0.6) * 100.0k
= 22.22k −> 20k + 2.2k

Vo = (R1/R2 + 1) * Vref
= (100k/22k + 1) * 0.6
= 3.327V

Processor

VD3P30   VD3P30
IC1 MIMXRT1062DVJ6B

FB2 BLM18PG121SN1D
C26 C30 C33 C36 0.01uF 0.01uF 0.22uF 10uF 1005
GND

C14 C19 0.22uF 10uF 1005
GND

P12 VDD_HIGH_IN
N14 VDDA_ADC_3P3
F10 NVCC_GPIO_2
F5 NVCC_GPIO_3
E6 NVCC_EMC_2
E6 NVCC_EMC_1
J6 NVCC_SD0
K4 NVCC_SD1
L1 DCDC_IN_Q
L2 DCDC_IN_2

GPIO_AD_B0_03 G11 SPI1_INT0
GPIO_AD_B0_02 M11 SPI1_INT1
GPIO_EMC_04 F2
GPIO_EMC_05 E9 sw0/1
GPIO_EMC_08 H5 SPI1_INT2
GPIO_B0_10 H3 SPI1_INT3
GPIO_B1_03 D9 SPIO_INT0 GNSS_TXD0
GPIO_B1_00 B11
GPIO_B0_11 A11 SPIO_INT1
GPIO_B0_11 A10 SPIO_INT2

D0 - D9

D10 - D19
GPIO_B0_00 D7 SPIO_INT3
GPIO_B0_01 E8 SPIO_MOSI
GPIO_B0_02 E7 SPIO_MISO
GPIO_B0_03 D8 SPIO_SCK
GPIO_B1_04 M12 SPI1_CS0X
GPIO_B1_05 L11 SPI1_CS3X
GPIO_B1_06 K10 I2C1_SCL uart4 / i2c1
GPIO_B1_00 K11 I2C0_SDA
GPIO_B0_00 J11 I2C0_SCL

M1 DCDC_LP_1
M2 DCDC_LP_2
F6 VDD_SOC_IN_1
F7 VDD_SOC_IN_2
F8 VDD_SOC_IN_3
F9 VDD_SOC_IN_4
G6 VDD_SOC_IN_5
G9 VDD_SOC_IN_6
H7 VDD_SOC_IN_7
H9 VDD_SOC_IN_8
J9 VDD_SOC_IN_9
J5 DCDC_SENSE

D20 - D29
GPIO_AD_B1_10 L13 UART5_TXD
GPIO_AD_B1_11 H14 UART5_RXD uart5
GPIO_AD_B1_08 H13 SPIO_CS3X
GPIO_AD_B1_09 M13 SPIO_CS2X
GPIO_AD_B1_12 K14 PPSOUT
GPIO_AD_B1_13 L14 SPIO_CS1X
GPIO_AD_B1_14 G12 SPI1_MOSI
GPIO_AD_B1_15 J14 SPI1_SCK
GPIO_EMC_32 D5 UART7_RXD uart7
GPIO_EMC_31 C5 UART7_TXD

K7 PMIC_ON_REQ
M6 ONOFF
M6 WAKEUP
M5 PMIC_STBY_REQ
R7 100k 1005
VD5P00

D30 - D39
GPIO_EMC_37 E4 CAN_RXD
GPIO_EMC_36 C3 CAN_TXD
GPIO_EMC_07 C10 PWR_EN T4-SENSECAP.2-cn
GPIO_B1_13 D15 RESETX
GPIO_B1_12 D13 uart8
GPIO_B1_02 C11 SPI1_CS0X
GPIO_B1_03 D11 SPI1_CS1X
GPIO_B1_12 H12 SPI1_CS2X
GPIO_B1_13 H11 SPI1_MISO

USB target
N6 USB_OTG1_VBUS
M8 USB_OTG1_DN USB1_DN
L8 USB_OTG1_DP USB1_DP
N12 USB_OTG1_CHD_B

USB host
P6 USB_OTG2_VBUS
N7 USB_OTG2_DN
A7 USB_OTG2_DP
A7 GPIO_EMC_40
R8 100k 1005

D40 - D49
GPIO_AD_B1_04 L12 LED_D
GPIO_AD_B1_05 K12 LED_L
DAT0 GPIO_SD_B0_02 K1
DAT1 GPIO_SD_B0_01 J2
CLK0 GPIO_SD_B0_01 J4
CMD GPIO_SD_B0_00 J3
DAT4 GPIO_SD_B0_04 H2
DAT5 GPIO_SD_B0_05 J1
CSram GPIO_EMC_24 D1
D1 GPIO_EMC_27

SW, LED, etc

LED_D
LED_L
R36 5.1k
R13 5.1k
D6 D5
KT-0603R KT-0603R
GND

VD3P30 VD3P30 VD3P30
R3 5.1k 1005
R4 5.1k 1005
D1 KT-0603R

U5 MKL02Z32VFG4-T4
1 VDD/VREFH PTA4 F11 BOOT.MODE[0]
11 PTB3/IRQ_10 PTA5 E14
10 PTB2/IRQ_7 PTB0/IRQ_5 F13
PTA7/IRQ_4 PTB5/IRQ_12 F14
14 PTA0/IRQ_0 PTA6 G13
16 PTA2 PTA1/IRQ_1/LPTMR0_ALT1 F1
GPIO_EMC_01 D10 BOOT.CFG[1]
2 VSS/VREFL PTB1/IRQ_6 K3
17 EPAD PTA3 G10

JTAG, etc
F3 TMS
E11 TCK D50 - D59
E13 MOD
E12 TDI
F4 TDO

SW1 SKRPABE010

C16 0.22uF 16V 1005
R9 100k 1005
GND

Ext Flash
FLASH_CS L4 CS
FLASH_CLK L7 CLK
FLASH_D0 P3 DO
FLASH_D1 N4 D1
FLASH_D2 P4 D2
FLASH_D3 P5 D3

GPIO_SD_B1_06
GPIO_SD_B1_07
GPIO_SD_B1_08
GPIO_SD_B1_09
GPIO_SD_B1_10
GPIO_SD_B1_11

D3 BAT54C
N10 GPANAIO
K6 TEST_MODE

K8 VDD_USB_CAP
M9 VDD_SNVS_IN
M10 VDD_SNVS_CAP
P10 NVCC_PLL
P8 VDD_HIGH_CAP

N13 CCM_CLK1_P
P13 CCM_CLK1_N
N11 XTALI
N11 XTALO

VD3P30
C15 0.22uF 16V 1005
C22 0.22uF 16V 1005
C24 10uF X5R 1005

Y1 Q24FA20H00339
RTC_XTALI N9
RTC_XTALO P9

ETH
RXD0 GPIO_B1_04 E12 ETH_RXD0
RXD1 GPIO_B1_05 D12 ETH_RXD1
DV GPIO_B1_06 A12 ETH_DV
TXD0 GPIO_B1_07 B12 ETH_TXD0
TXD1 GPIO_B1_08 A12 ETH_TXD1
TXEN GPIO_B1_09 B13 ETH_TXEN
RXER GPIO_B1_10 A13 ETH_RXER
MDC GPIO_B1_14 E14 ETH_MDC
MDIO GPIO_B1_15 B14 ETH_MDIO
RST GPIO_B0_14 E10 ETH_RST
INT GPIO_B0_15 E11 ETH_INT

Ether Pny + CN

VD3P30
U7 DP83825IRMQ
C41 C42 C43 1uF 0.22uF 1uF 160B 1005 1005

ETH_TXEN 1 TXEN RXM ETH_RD_N
ETH_TXD0 2 TXD0 RXP ETH_RD_P
ETH_TXD1 24 TXD1
ETH_RXD0 18 RXD0 TXM ETH_TD_N
ETH_RXD1 17 RXD1 TXP ETH_TD_P
ETH_RXER 21 RXER CRS_DV/PHYAD[1:0]
ETH_MDIO 15 MDIO
ETH_MDC 16 MDC LED0/ANEN_SPEED ETH_LED_ACT
ETH_INT 9 INTR/PWRDN REF_CLK/LED2
ETH_RST 5 RST
ETH_XI 12 XO
XI/CLKIN BIAS
GNDGNDGND

R17 13k 160B
R18 13k 160B
Actual 6.49k[Ohm]

ETH_LED_ACT
R16 1k 1005

J4 RJ45_Hanrun_HR911105A_Horizontal
ETH_TD_P
ETH_TD_N
ETH_RD_P
ETH_RD_N

C40 0.22uF 1005
GND

Debug

TP4 TestPoint
PPSOUT
J2 SM02B-SRSS-TB
GND GND

GNSS_PPS TP5 TestPoint
GNSS_TXD TP6 TestPoint
TP7 TestPoint
GND

GPT1IC2(ALT4) GNSS_PPS

FLASH_CS 1 CS
FLASH_CLK 6 CLK
FLASH_D0 5 DI/IO0
FLASH_D1 2 DO/IO1
FLASH_D2 3 WP/IO2
FLASH_D3 7 HOLD/RESET/IO3
U6 W25Q64JVSSIM
GND

C39 0.22uF 16V 1005
VD3P30
GND

XTAL: 18pF 18pF
C133 C128
VCXO: xx 33pF

H1 MountingHole
H2 MountingHole
H3 MountingHole
H4 MountingHole

GPIO_BO [B06,B05,B04]
ID ID2,1,0 Board
0: 0 0 0 T4-IMU
1: 0 0 1 T4-PTPGM
2: 0 1 0 T4-SENSECAP
3: 0 1 1 Reserved
4: 1 0 0 Reserved
5: 1 0 1 Reserved
6: 1 1 0 Reserved
7: 1 1 1 Reserved

0 close
1 open

T4-SENSECAP.2-cn
ファイル: T4-SENSECAP.1-cn.kicad_sch

VOLTAGE CONV,CN

3.3V to 1.8V/3.3V level shift

```
--- 1.8V
R2 = R1 * (Vout - Vref) / Vref
R2 = 10k * (1.8V - 1.25) / 1.25
R2 = 4.4k = 4.7k

Vout = 1.25 * (1*R2/R1)
     = 1.25 * (1* 4.7k/10k)
     =1.838V

--- 3.3V
R2 = R1 * (Vout - Vref) / Vref
R2 = 10k * (3.3V - 1.25) / 1.25
R2 = 16.4k = (4.7k + 12k)

Vout = 1.25 * (1*R2/R1)
     = 1.25 * (1* 16.7k/10k)
     = 3.338V
```