Communication Controller

VCC_MCU

C28 10n, C27 10n, C26 10n, C30 10n, C29 10n
GND

RST_PIN — 7 NRST
BOOT0 — 43 VBAT VDD VDD VDD VDDA
BOOT1 — 44 BOOT0
TCXO_MCU — 5 PF0
6 PF1
SWD_Int — TP8 SWD
2 PC13
3 PC14
4 PC15

U1 STM32F303CBTx

TP12 DA — DAC_OUT
TP11 AD — ADC_IN
TP10 MO — MO

SYS_LED — 18 PB0
RX_LED — 19 PB1
TX_LED — 39 PB2 / 40 PB3
PB4 TP9 RF_CLK — RF_CLKOUT
PB5 TP6 DClk — TxRx_Clk
PA5 TP7 Data — TxRx_Data
41 PB5
42 PB6
43 PB7
45 PB8 TP4 S_EN — SPI_EN
46 PB9 TP5 RF_EN — RF_EN
USART_TX
USART_RX
I2C_SCK
I2C_SDA
R28 4,7k
R29 4,7k
21 PB10
22 PB11
25 PB12
26 PB13 TP1 SCK — SPI_CLK
27 PB14 TP2 MISO — SPI_MISO
28 PB15 TP3 MOSI — SPI_MOSI
VCC_MCU

PA0 10, PA1 11, PA2 12, PA3 13, PA4 14, PA5 15, PA6 16, PA7 17, PA8 29, PA9 30, PA10 31, PA11 32, PA12 33, PA13 34, PA14 37, PA15 38

USB_DM, USB_DP, SWDIO, SWCLK, PWR_LED

VSS VSS VSS VSSA 23 35 47 8
GND

RF Transceiver

MoDem_VCC
GND
ADF7021 IC1

CE, TEST_A, GND4_3, FILT_Q, FILT_Q, FILT_I, FILT_I, MIX_Q, MIX_Q, MIX_I, MIX_I 24 23 22 21 20 19 18 17 16 15 14 13

RF_EN — R16 1k
SPI_EN — R1 1k — 25 SLE
SPI_MOSI — R2 1k — 26 SDATA
SPI_MISO — R4 1k — 27 SREAD
SPI_CLK — R5 1k — 28 SCLK
29 GND2
C1 10n, C2 100n — 30 ADCIN
31 CREG2
MoDem_VCC — 32 VDD2
SWD_Int — R3 1k — 33 SWD
TxRx_Data — R6 1k — 34 TXRXDATA
TxRx_Clk — R7 1k — 35 TXRXCLK
RF_CLKOUT — R18 1k — 36 CLKOUT
FMDemod TP13 FMDM — C39 10n
MO — R27 1k

GND4_1 12, CREG4 11, RSET 10, VDD4 9, RLNA 8, RFIN 7, RFIN 6, RFGND 5, RFOUT 4, VDD1 3, CREG1 2, VCOIN 1

C11 100n, R9 3,6k, R10 1,1k, C12 10n
RSET 51n
R8 3,9k, C13 10n, C8 10n, C40 10n, MoDem_VCC

MUXOUT 37, OSC2 38, OSC1 39, VDD3 40, CREG3 41, CPOUT 42, VDD 43, L2 44, L1 45, GND 46, GND1 47, CVCO 48, EP

C4 22p, C5 100n, C9 10n, L1 18n
C10 22n
TCXO_RF — C7 10n
MoDem_VCC
TP14 FMM — FMMod, VCO_IN, CPOUT

RF Matching and Filtering

GND
C22 6,8p
L2 27n
C23 4,7p
L4 20n, C25 6,8p, L5 22n — J2 RF_PORT 1
C24 10p
L3 13n
GND
C20 220p
C21 10n — MoDem_VCC
GND

BootSet

VCC_MCU
JP1 Boot0, JP2 Boot1
BOOT0, BOOT1
GND

SWDebug

5 4 3 2 1
J3 Conn_01x05
RST_PIN, SWDIO, SWCLK, VCC_MCU, GND

USB

J1 USB_A
VBUS
+3.3V
R15 1,3k
R13 22, R14 22
D+ D−
R14 22
Shield GND
USB_DM, USB_DP
GND

Power converter

VBUS U2 AP1117-33 +3.3V
3 VI VO 2
GND 1
C6 100n, C17 10n, C16 4,7u, C18 10n, C19 10n, R30 1k
GND

RF_TCXO

TCXO_RF
VCC_MoDem_Clk — 4 Vdd OUT 3 — X1 ASVxxxMHz
EN GND 1
C3 10n
GND

PLL Filter

CPOUT
R11 560
VCO_IN — R12 270
C14 470p, C15 15n, C16 1n
GND

ADC Filtering

ADC_IN — R19 1k — R21 1k — R23 1k — FMDemod
C33 4,7n, C35 4,7n, C37 4,7n
GND

LED Diodes

TX_LED, RX_LED, SYS_LED, PWR_LED
RN1 R_Pack04
TX D1, RX D2, SYS D3, PWR D4

Power interconnect

+3.3V
C41 10n, C42 1n, C43 100n
MoDem_VCC, VCC_MoDem_Clk, VCC_MCU
GND

MCU_TCXO

TCXO_MCU
VCC_MCU — 4 Vdd OUT 3 — X2 ASVxxxMHz
EN GND 1
C31 10n
GND

Unused Ports

5 4 3 2 1
J4 Conn_01x05
I2C_SDA, I2C_SCK, USART_RX, USART_TX
GND

DAC Filtering
and voltage dividing

DAC_OUT — R25 — R20 1k — R22 1k — R24 1k — FMMod
R26 ?
C34 4,7n, C36 4,7n, C38 4,7n
GND

Reset

RST_PIN — R17 10k — VCC_MCU
C32 100n
GND