RC Transponder 2.4GHz

REVISION 1.20

Revision	History	Responsible
1.00	1 st revision (Now obsolete)	Kenneth Lagoni Olsen
1.10	DIO1 connection added to CPU. R8 must be changed to ensure Vin-pin doesn't exceed 3.3V when input is 11V. Pull-down on serial input (to avoid junk trigger if floating).	Kenneth Lagoni Olsen
1.20	Updated: Input regulator U2 changed to be able to handle input voltage up to 24V (before 11V was max). Input power selectors changed from Diode to Fet type, to ensure minimal voltage drop when on. Regulator U3 changed to LDLN025M33R. Input connector changed from 1x10 DF13 to 2x3 DF13 and 1 SIL3 for more rubust connectors to RX. Vbat resistors R9 / R10 changed and upgraded to 0.1% for better accuracy. 5V measuring resistor R30 changed to 100K. And also changed to Vusb. GPS changed from PA6H to Quectel LR80. Also now with Reset option from MCU. Li-ion charger U1 changed to MCP73831T-2ACI for better Charge state output. Removed: Pressure sensor U9 removed. RC / SBUS input removed. Added: Power On from MCU is now via flip-flop U11 in order to allow software to reboot without losing power. Charge state input to MCU for better battery monitoring. J6 connector for easy bootloader programming.	Kenneth Lagoni Olsen

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SERCOM0
SERCOM1 -- Used for SPI (Radio)
SERCOM2 -- Used for GPS NMEA
SERCOM3 -- Used for frsky Smart Port
SERCOM4 -- Not Used.
SERCOM5 -- Used for aux Serial

U4A
PIOA
ATSAMD21G18A-48
XIN32
XOUT32
C2 20pF
C5 20pF
Y1 32.768kHz
Vin_USB_10p
DIO1
Vin_10p
POWER_GPS
LED
R13 1k3
D4 Red
LSQ976-Z
GPS_RX
GPS_TX
FrSky_INVERT
SAFTY_SW_FILTERED
GPS_RESET
POWER_ON_CLK
GPS_VBACKUP
MOSI
SCK
MISO
Frsky_Smart_Port_TX
Frsky_Smart_Port_RX
POWER_LEVEL
NSS
USB_N
USB_P
SAFTY_LED_N
LED Active Low
SWCLK
SWDIO
+3.3V
J6
RESET
5x1_DF52_0.8mm connector
PIN A3 on mkr Zero
PIN A4 on mkr Zero
PIN A5 on mkr Zero
PIN A6 on mkr Zero
SERCOM2 PAD 0(TX)
SERCOM2 PAD 1(RX)
PIN D2 on mkr Zero
PIN D3 on mkr Zero
SERCOM1 / SPI on mkrZero
SERCOM3 PAD2 (TX)
SERCOM3 PAD3 (RX)
PIN D0 on mkr Zero
PIN D1 on mkr Zero
POWER_ON_CLK 3
POWER_LEVEL 3

U4B
PIOB
ATSAMD21G18A-48
RX_EN
TX_EN
CHARGE_STATE
NRESET
BUSY
aux_TX_CPU
aux_RX_CPU
PIN A1 on mkr Zero
PIN D4 on mkr Zero (No interrupt on this pin)
PIN D5 on mkr Zero
SERCOM5 PAD2(TX) / Serial1 on mkrZero
SERCOM5 PAD3(RX) / Serial1 on mkrZero
CHARGE_STATE 3
R33 1k aux_TX
R34 1k aux_RX
D8 BAT54S
D9 BAT54S

U4C
ATSAMD21G18A-48
VDDIO1
VDDIO2
GND1
GND2
VDDCORE1
VDDANA
GND3
GNDANA
VDDIN
EP
NRST
C9 100nF
C10 100nF
C11 100nF
C12 100nF
C13 4.7uF
C17 100nF
C18 100nF
FB1 470R@100MHz
R16 10k
RESET

Vbat
Vbat_47p
VIN
VUSB
R9 499k 0.1%
R10 100k 0.1%
R8 100k
R11 10k
R30 100k
R31 10k
Vin_10p
Vin_USB_10p

FrSky Smart Port

U7 SN74LVC2G86DCTR
FrSky_INVERT
Frsky_Smart_Port_TX
Frsky_Smart_Port_RX
Vgps
R18 1k
R19 1k
FrSky_Smart_Port

Input Connectors

J5
aux_TX
aux_RX
3x1_1.25mm DF13 connector

J2
FrSky_Smart_Port
Vin (5V-24V)
VIN
3x2.54mm

J4
SAFTY_3V3
SAFTY_LED_N
SAFTY_SW
R28 68R
R27 10k
R29 10k
C20 100nF
SAFTY_SW_FILTERED
3x1_1.25mm DF13 connector

Radio Tranceiver

U8
E28-2G4M20S
100uF/4V
C23
MISO
MOSI
SCK
NSS
RX_EN
TX_EN
NRESET
BUSY
DIO1
VCC
GND1
MISO_TX
MOSI_RX
SCK_RTSN
NSS_CTS
GND2
RX_EN
TX_EN
GND3
NRESET
BUSY
DIO1
DIO2
DIO3
GND4
E28 2G4M20S
Manufacturer: EBYTE
SN: 18013000001

USB

VUSB
FB2
C15 1nF
470R@100MHz
C16 1nF
J3
ZX62-AB-5PA(31)
USB_N
USB_P
VBUS
D-
D+
ID
GND
Shield
USB
D5
PRTR5V0U2X
R17 1M
C19 4.7nF / 100V

GPS Module

Q3
RZR040P01
Vgps
POWER_GPS
R15 10k
GPS_VBACKUP
C24 10uF/6V3
C14 100nF
C25 100nF
GPS_RESET
GPS_TX
GPS_RX
R35 10k
U10
VCC
RESET
GND1
VBACKUP
NC1
TIMER
TXD1
RXD1
AADET_N
1PPS
GND3
EX_ANT
L80-M39
Quectel-L80-R

P1
Heat Shrink 6cm
PCB1
TransponderRC2_4-12

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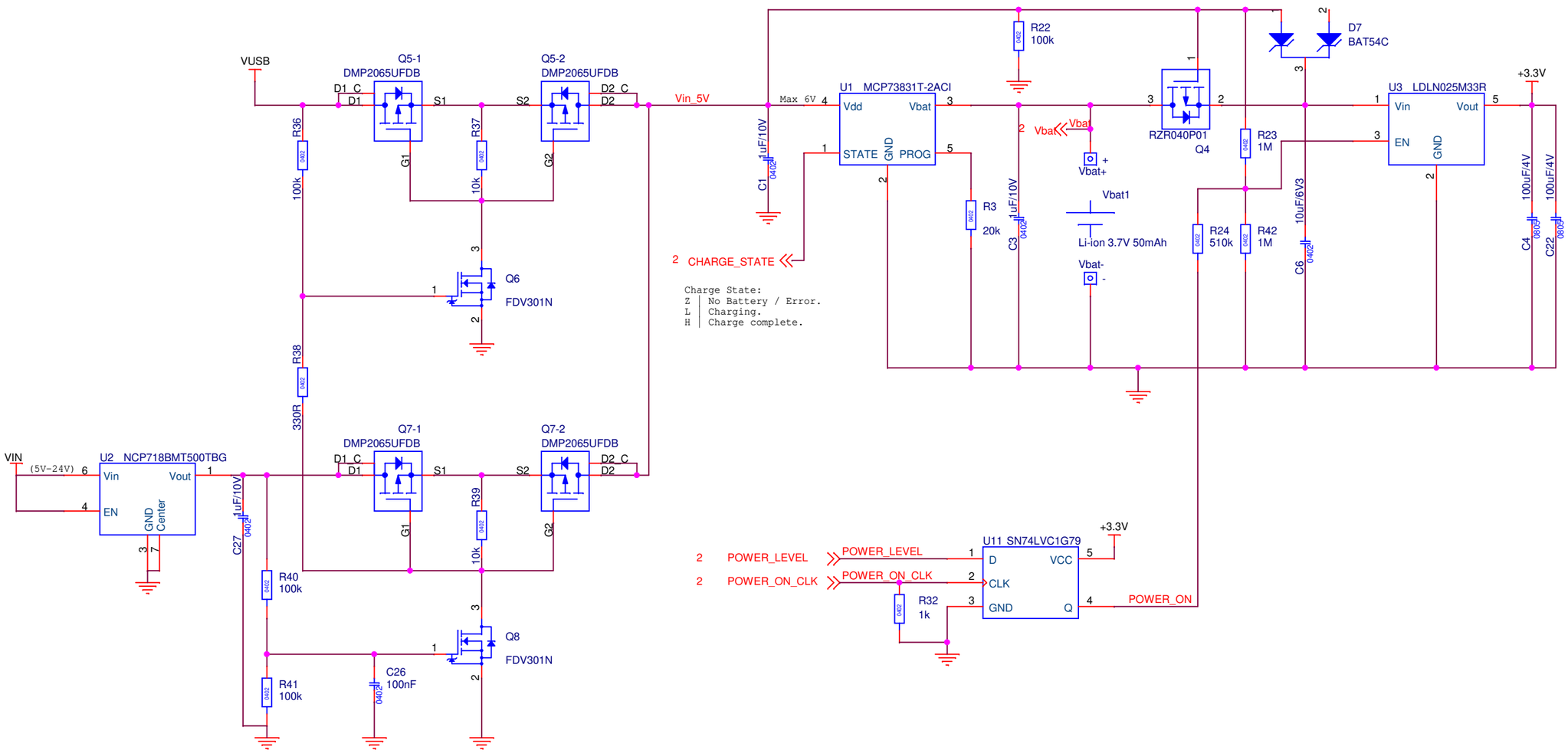

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