VT

R1 50

P5
5V
1
2
3
3V3 VT

R4 20K   T10   AIN9
R5 20K   T9   AIN8
R6 20K   T8   AIN7
R7 20K   T7   AIN6
R8 20K   T6   AIN5
GND GND GND GND GND

R9 20K   T5   AIN4
R10 20K T4   AIN3
R11 20K T3   AIN2
R12 20K T2   AIN1
R13 20K T1   AIN0
GND GND GND GND GND

P4
5V   1
GND   2
AIN0   3
AIN1   4
AIN2   5
AIN3   6
AIN4   7
AIN5   8
AIN6   9
AIN7   10
AIN8   11
AIN9   12
Analog Out

U1A STM32F103C8T6
AIN0 10 PA0-WKUP   PB0 18 AIN8
AIN1 11 PA1   PB1 19 AIN9
AIN2 12 PA2   PB2 20
AIN3 13 PA3   PB3 39
AIN4 14 PA4   PB4 40
AIN5 15 PA5   PB5 41
AIN6 16 PA6   PB6 42 SCL1
AIN7 17 PA7   PB7 43 SDA1

TXD1 29 PA8   PB8 45 TIM4-3
RXD1 30 PA9   PB9 46 TIM4-4
     31 PA10   PB10 21
     32 PA11   PB11 22
SWDIO 33 PA12   PB12 25
SWCLK 34 PA13   PB13 26
     37 PA14   PB14 27
     38 PA15   PB15 28

2 PC13-TAMPER-RTC   PD0-OSC_IN 5
3 PC14-OSC32_IN   PD1 6
4 PC15-OSC32_OUT
                    BOOT0 44
                    NRST 7

R14 10K   R15 10K   3V3

C4 20p
Y1 8M
20p
GND GND

5V U7 LM1117
C1 47uF/10M C2 104 IN OUT 3V3
GND C3 104

U1B STM32F103C8T6
1 VBAT
24 VDD_1   VSS_1 23
36 VDD_2   VSS_2 35
48 VDD_3   VSS_3 47
3V3
9 VDDA   VSSA 8
GND

3V3
C6 104 C7 104 C8 104 C9 104
GND

P3 ST-Link
3V3   1
SWCLK 2
GND   3
SWDIO 4

P2 COM
TXD1 1
RXD1 2
GND   3
5V   4
SCL1 5
SDA1 6

3V3
R2 50 1 LED1 TIM4-3
R3 50 1 LED2 TIM4-4
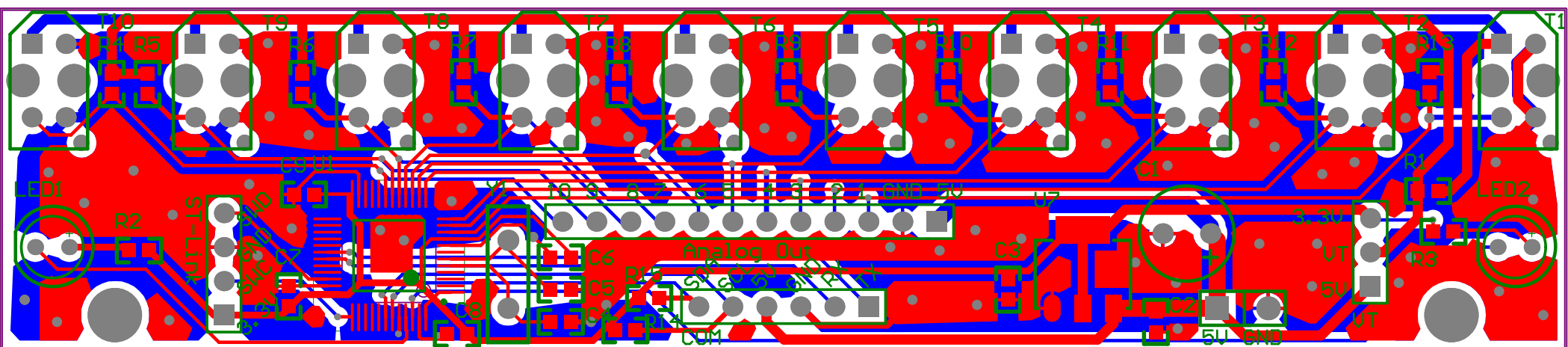
P1
5V   1
GND 2
5V GND

Title
Size A4
Number
Revision
Date: 2018/10/26
File: C:\Users\..\TCRT5000COM.SchDoc
Sheet of
Drawn By:

Comment	Description	Designator	Footprint	LibRef	Quantity
47uF/10V		C1	RB2	CAP POL	1
Cap	Capacitor	C2, C3, C6, C7, C8, C9	0603	Cap	6
20p	Capacitor	C4, C5	0603	Cap	2
LED-white	Typical INFRARED GaAs LED	LED1, LED2	LED-white	LED-white	2
5V GND	Header, 2-Pin	P1	SIP2-150	Header 2	1
COM	Header, 6-Pin	P2	HDR1X6	Header 6	1
ST-Link	Header, 4-Pin	P3	HDR1X4	Header 4	1
Analog Out	Header, 12-Pin	P4	HDR1X12	Header 12	1
VT	Header, 3-Pin	P5	HDR1X3	Header 3	1
Res3	Resistor	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15	0603	Res3	15
Optoisolator1	4-Pin Phototransistor Optocoupler	T1, T2, T3, T4, T5, T6, T7, T8, T9, T10	TCRT5000	Optoisolator1	10
STM32F103C8T6	STM32 ARM-based 32-bit MCU Performance Line with 64 kB Flash, 20 kB Internal RAM, -40 to +85癈 Temperature, 48-Pin LQFP, Tray	U1	QUAD48	STM32F103C8T6	1
LM1117		U7	SPP3	LM1117	1
8M	Crystal Oscillator	Y1	XTAL1	XTAL	1