MCU

U1 STM32F103T8U6

PA0/WKUP/USART2_CTS/ADC12_IN0/TIM2_CH1_ETR
PA1/USART2_RTS/ADC12_IN1/TIM2_CH2
PA2/USART2_TX/ADC12_IN2/TIM2_CH3
PA3/USART2_RX/ADC12_IN3/TIM2_CH4
PA4/SPI1_NSS/USART2_CK/ADC12_IN4
PA5/SPI1_SCK/ADC12_IN5
PA6/SPI1_MISO/ADC12_IN6/TIM3_CH1/TIM1_BKIN
PA7/SPI1_MOSI/ADC12_IN7/TIM3_CH2/TIM1_CH1N

PA8/USART1_CK/TIM1_CH1/MCO
PA9/USART1_TX/TIM1_CH2
PA10/USART1_RX/TIM1_CH3
PA11/USART1_CTS/CANRX/USBDM/TIM1_CH4
PA12/USART1_RTS/CANTX/USBDP/TIM1_ETR
PA13/JTMS/SWDIO
PA14/JTCK/SWCLK
PA15/JTDI/TIM2_CH1_ETR/SPI1_NSS

PB0/ADC12_IN8/TIM3_CH3/TIM1_CH2N   15 PB0/LED_RED
PB1/ADC12_IN9/TIM3_CH4/TIM1_CH3N   16 PB1/LED_BLUE
PB2/BOOT1   17
PB3/JTDO/TIM2_CH2/TRACESWO/SPI1_SCK 30
PB4/JNTRST/TIM3_CH1/SPI1_MISO   31
PB5/I2C_SMBAI/TIM3_CH2/SPI1_MOSI   32
PB6/I2C1_SCL/TIM4_CH1/USART1_TX   33 PB6/TIM4_CH1
PB7/I2C1_SDA/TIM4_CH2/USART1_RX   34 PB7/TIM4_CH2

BOOT0   35
NRST   4
PD0/OSC_IN
PD1/OSC_OUT

VSS_1   18
VSS_2   26
VSS_3   36
EPAD   37
VSSA   5   AGND

VDD_1   19
VDD_2   27
VDD_3   1
VDDA   6

PA1/ADC_A   8
PA10/SWITCH1 10
PA11/SWITCH2 11
PA6/PWM1   13
PA7/PWM2   14
PA11/CANRX 23
PA12/CANTX 24
PA13/SWDIO 25
PA14/SWCLK 28

3.3V R1 10k
C6 18pF   Y1   C9 18pF
C8 100nF S1 KEY

C11 100nF C12 100nF C13 100nF C14 4.7uF C15 100nF L1 FB L2 FB C16 1uF C17 10nF

SWD

SWD1 USB-B(Micro)
VCC D- D+ NC GND
PA13/SWDIO PA14/SWCLK
R10 10k R11 10k

CAN通信

U5 SN65HVD1050
TXD S   8 R34 0 GND
GND CANH 7 CANH
VCC CANL 6 CANL
RXD Vref 5
PA12/CANTX PA11/CANRX
C18 100nF
GND 5V

P1 CAN CANL CANH
P2 CAN CANL CANH

S2 SW_DIP1 CANL R20 120 CANH

调试LED

LED2 Double_LED
PB0/LED_RED R18 1K
PB1/LED_BLUE R19 500
3.3V

电源

P3 Power
24V D2 SMBJ12A
C22 100uF C23 100uF C24 100uF C25 100uF C26 100uF C27 100uF
PGND NT3 Net-Tie GND

U7 MP2451
24V VIN SW 6 C30 100n L3 4.7uH D3 SS34
EN BST
GND FB
R27 100k C33 4.7uF
C31 10uF C32 100n C34 33pF
R28 100k R29 68k 1%
R30 33k R31 10k 1%
TP6 5V
GND

5V U6 SPX5205M5-3.3V
VIN VOUT 5 TP4 3.3V
EN
GND BYP 4
C21 1uF C20 2.2uF C28 10nF
R22 560 LED3 GREEN
TP5
GND

RM_langya_logo
RM_logo

DRV8701

U2 DRV8701
24V
AVDD 4.8V/30mA   7 AVDD   GH1 17 RH
DVDD 3.3V/30mA   8 DVDD   SH1 18 RS
1 VM   GL1 19 RL
2 VCP   GH2 24 LH
3 CPH   SH2 23 LS
CPL   GL2 22 LL
C1 1u C2 1u C3 10u C4 100n C5 1u
C7 100n
AVDD TP1 TP PA6/PWM1 R2 0 15 PWM1   SP 21 S_P
TP2 TP PA7/PWM2 R3 0 14 PWM2   SN 20 S_N
R6 10k 3.3V R5 10k 13 SLEEP_N SO 11 PA1/ADC_A
12 IDRIVE VREF 6
R9 10k DVDD R8 10k FAULT FAULT_N 9
R12 10k SNSOUT 10
GND 16 GND PAD 25
AGND
R4 68k TP3 TP C10 100p R7 68k GND
DVDD R13 560 LED1 RED FAULT 错误指示

U3 / U4

U3 CSD88599Q5DC   U4 CSD88599Q5DC
LH R14 10 1 GH   VIN 27 24V 27 VIN GH 1 R15 10 RH
LS   2 SH   VSW   VSW SH 2 RS
LL R16 10 22 GL VSW   VSW GL 22 R17 10 RL
MOTOR1
XT30 D1 TVS
PGND NC PGND NC
CSD88599Q5DC

S_P NT1 Net-Tie C19 1n R21
S_N NT2 Net-Tie
PGND

行程开关接口

PA11/SWITCH2 R24 10k J1 CON3
5V
R32 560 LED4 GREEN GND

PA10/SWITCH1 R25 10k J2 CON3
5V
R33 560 LED5 GREEN GND

电机编码器

PB6/TIM4_CH1 R23 510 P4 Encoder
PB7/TIM4_CH2 R26 510
GND C29 100nF
5V

Title
Size A3 Number Revision
Date: 2017/12/15 Sheet of
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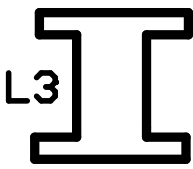
RM35_DRIVER
HUST_RM
2017/12/11

R28
R29
C34
R30
R31

C30
L3
U7
D3
C32
R27
C33
C31

C7 C5
R7
R4
C3
C4

C22 C27 C26

HUST ROBOMASTER

MOTOR1

NT3

P3

XT30

+

PWR
EOR

LED3
LED1
R22

24V

C21

C28

U6

C20

C18

U5

CAN_H

P2

P1

R20

S2

SWD1

USB

S1

R8
R12

R13
R6
R9
R5
R3
R2

R19
R18

5V
LED2
3V3

TP6 TP4

C1
C2
U2

TP2 TP1
PWM1/2

U1

C8
R1

R16
R14

C19

R17

R15
TP5

TP3
ADC
Y1

U3

U4

GND
5V

R26
R23

C9

R24
R32
R25
R33

C6

C29

GND

B
A

XT30

+

SW1
LED5

J2

SW2
LED4

J1

D2

R21

C25 C24 C23

NT2

D1

L2

C10

C12 C11

L1

C16

C17

C15

C13

C14
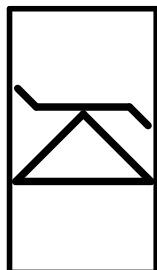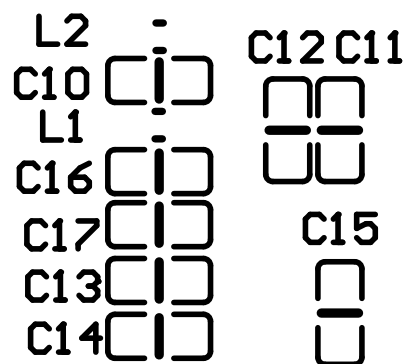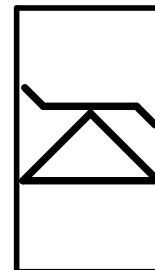
R10 R11
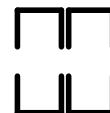
Comment	Description	Designator	Footprint	LibRef	Quantity
RM_logo			RM_logo 300mil*350	RM_logo	1
1uF/0603/50V	Capacitor	C1, C2, C4, C5, C7, C10, C19, C20, C21, C28, C30, C32, C34	0603C	Cap	13
1uF/0603/50V	Capacitor	C3, C31	0805C	Cap	2
18pF	Capacitor	C6, C9	0603C	Cap	2
100nF	Capacitor	C8, C11, C12, C13, C15, C18	0603C	Cap	6
4.7uF	Capacitor	C14	0603C	Cap	1
1uF	Capacitor	C16	0603C	Cap	1
10nF	Capacitor	C17	0603C	Cap	1
1uF/0603/50V	Capacitor	C22, C23, C24, C25, C26, C27, C33	1206C	Cap	7
Cap	Capacitor	C29	0603c	Cap	1
TVS		D1	SMB/DO-214AA	TVS	1
SMBJ12A	Zener Diode	D2	SMB/DO-214AA	D Zener	1
SS34	Schottky Diode	D3	SOD-323	D Schottky	1
CON3	Connector	J1, J2	A1254-03AWB	CON3	2
FB	Inductor	L1, L2	0603L	Inductor	2
10mH/0402	Inductor	L3	4020L	Inductor	1
RED	Typical RED, GREEN, YELLOW, AMBER GaAs LED	LED1	0603LED_R	LED	1
Double_LED		LED2	0805LEDX2	Double_Color LED	1
GREEN	Typical RED, GREEN, YELLOW, AMBER GaAs LED	LED3, LED4, LED5	0603LED_G	LED	3
XT30		MOTOR1	XT30PW-Female	XT30	1
CAN		P1, P2	MX3.0MM 2X1AW	MX3.0_2X1	2
Power		P3	XT30PW-Male	MX5.5_2X1	1
Encoder	Header, 4-Pin	P4	MX3.0mm 2X2AW	Header 4	1
10k	Resistor	R1, R10, R11	0603R	Res1	3
1K/5%	Resistor	R2, R3, R4, R5, R6, R7, R8, R9, R12, R14, R15, R17, R20, R24, R25	0603R	Res1	15
Res1	Resistor	R13, R22, R23, R26, R27, R29, R31	0603R	Res1	7
1K/5%	Resistor	R16	0603R_1	Res1	1
1K	Resistor	R18	0603R	Res1	1
500	Resistor	R19	0603R	Res1	1
0.05R/2512/1%	Resistor	R21	2512	Res2	1
1%	Resistor	R28, R30	0603R	Res1	2
Res1	Resistor	R32, R33, R34	0603R_1	Res1	3
KEY	Button	S1	SW-3x6x2.5mm	PushButton_2p	1
SW_DIP1		S2	SW_DIP_1X2	SW_DIP 1	1
USB-B(Micro)		SWD1	USB-micro_A	USB-micro	1
TP	Test Point	TP1, TP2, TP3, TP4, TP6	TP_SMT	TP	5
TP	Test Point	TP5	TP_VIA	TP	1
STM32F103T8U6		U1	VFQFPN-36-M	STM32F103T8U6	1
DRV8701	全桥驱动	U2	RGE0024F	DRV8701	1
CSD88599Q5DC	60 V Half-Bridge NexFET Power Block, DMM0022A (LSON-CLIP-27)	U3, U4	DMM0022A	CSD88599Q5DC	2
SN65HVD1050		U5	SOIC-8	TJA1050	1
SPX5205M5-3.3V		U6	SOT-23-5 L	SPX5205M5-3.3V	1
MP2451	开关电源0.6A	U7	SOT23-6	MP2451	1
XTAL	Crystal Oscillator	Y1	NX5032GA	XTAL	1