Change List

Motor Driver Board_Pitch Or Roll

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RF-MCU+BMS

G-UART C-UART CAN POWER

IMU+COMPASS —SPI+2CS— GIMBAL CONTROL

CAN POWER

AS5048A SPI

MOS NTC —ADC—
Motor NTC —ADC— YAW FOC
Motor —ABC—

CAN POWER

AS5048A SPI

MOS NTC —ADC—
Motor NTC —ADC— ROLL FOC
Motor —ABC—

CAN POWER

AS5048A SPI

MOS NTC —ADC—
Motor NTC —ADC— PITCH FOC
Motor —ABC—

CAN POWER

02_SYSTEM_BLOCK

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24V — VBAT

LDO/MC78L12ACDG

MOS Driver — 3H-Bridge MOS — BLDC Motor

DC-DC/MPM3510AGQV-P — VCC_3V3 — VREF/REF3025AIDBZR — VCC_2V5

Gimbal_STM32 — CAN BUS — CAN TRAN/TCAN332 — CAN Protocol/CAN1

Downloader — SWD

Debugger — UART6

Motor_STM32

ADC123_IN11/PC1 — IBAT
ADC123_IN12/PC2 — VBAT
SPI1 — AS5048A
ADC123_IN0/IN1/IN2 — V(A+B+C)
ADC12_IN15/IN8/IN9 — Ia+Ib+Ic
TIM1_CH1/CH2/CH3 — FD6288+MOS
ADC123_IN3/PA3 — Temp_MOS
ADC123_IN10/PC0 — Temp_Motor
GPIO/PC4 — Red LED
POWER — Green LED

BLDC

600mA(5A@20s)
Pitch Or Roll Motor

IN 12V

BAT+ VBAT

BAT- GND

U2
16 IN
17 EN
2   VCC
10 NC1
15 NC2
18 AAM

BST 11
SW1 4
SW2 5
SW3 6
OUT1 7
OUT2 8
OUT3 9
FB 1

AGND 3
PGND1 12
PGND2 13
PGND3 14

C2 10uF X5R 25V 0603
C1 100nF 0402 25V X5R
R3 100K ohm 0402 ¡À5%
R4 56K ohm 0402 ¡À1%

R7 5.6 ohm 0402 ¡À1%
C6 330pF X7R 16V 0402
SW

R5 82K ohm 0402 ¡À1%
R6 26.1K ohm 0402 ¡À1%
C7 22uF X5R 10V 0603
C8 22uF X5R 10V 0603

VCC_3V3_YAW

VCC_3V3_YAW U4 REF3025AIDBZR VCC_2V5_YAW
1 VIN VOUT 2
GND 3
C12 470nF 0402 6.3V 10% X7R
C28 100nF 0402 10V 220% X5R

GND

MOTOR_C_YAW 1
MOTOR_B_YAW 2
MOTOR_A_YAW 3
J2
78171-0003

CANH 1
CANL 2
GND 3
GND 4
VBAT 5
VBAT 6
J1
SM06B-SURS-TF

VCC_3V3_YAW 1
2
UART6_TX_YAW 3
UART6_RX_YAW 4
SW_CLK_YAW 5
SW_DIO_YAW 6
J5
SM06B-SURS-TF

07_YAW_FOC_POWER

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VCC_3V3_YAW

U1
STM32F405RGT6

19 VDD1
32 VDD2
48 VDD3
64 VDD4

18 VSS1
63 VSS2

31 VCAP_1
47 VCAP_2

7 NRST

5 PH0/OSC_IN
6 PH1/OSC_OUT

60 BOOT0
28 PB2/BOOT1

13 VDDA
12 VSSA
1 VBAT

PA0_WKUP 14 ADC VA YAW
PA1 15 ADC VB YAW
PA2 16 ADC VC YAW
PA3 17
PA4 20 SPI1 CS YAW
PA5 21 SPI1 SCLK YAW
PA6 22 SPI1 MISO YAW
PA7 23 SPI1 MOSI YAW
PA8 41 PWM CH YAW
PA9 42 PWM BH YAW
PA10 43 PWM AH YAW
PA11 44
PA12 45
PA13 46 SW DIO YAW
PA14 49 SW CLK YAW
PA15 50

PB0 26 ADC IB YAW
PB1 27 ADC IC YAW
PB3 55
PB4 56
PB5 57
PB6 58
PB7 59
PB8 61 CAN RX YAW
PB9 62 CAN TX YAW
PB10 29
PB11 30
PB12 33
PB13 34 PWM CL YAW
PB14 35 PWM BL YAW
PB15 36 PWM AL YAW

PC0 8
PC1 9
PC2 10
PC3 11
PC4 24
PC5 25 ADC IA YAW
PC6 37 UART6 TX YAW
PC7 38 UART6 RX YAW
PC8 39
PC9 40
PC10 51
PC11 52
PC12 53
PC13 2
PC14 3
PC15 4

PD2 54 LED GREEN YAW

Y1
16MHz

C39 15pF/0402/16V/5%/NPO
C41 15pF/0402/16V/5%/NPO

R2 NP/0402/5%
100nF/0402/16V/10%/X7R

R43 10k/0402/5%
R1 10k/0402/5%

VCC_3V3_YAW

CAN TX YAW
U5
TXD NC2 8
GND CANH 7
VCC CANL 6
RXD NC1 5
C13 100nF/0402/16V/X5R
VCC_3V3_YAW
CAN RX YAW
TCAN332DCNR
CANH
CANL

U6
AS5048A-HTSP
SPI1 CS YAW /CS VDD3V 12
SPI1 MISO YAW MISO VDD5V 11
SPI1 MOSI YAW MOSI
SPI1 SCLK YAW SCLK
PWM
TEST1
TEST2
TEST3
TEST4
TEST5
TEST6 GND 13
VCC_3V3_YAW
C14 C15

U3
VBAT
VM 19
VM 9
CPH 6 C9
CPL 5 C10
VCP 7
V3P3 25 V3P3-2 R8 V3-2
FAULT 28
PWM AH YAW IN1 OUT1 10 MOTOR_A_YAW
PWM AL YAW EN1 OUT2 13 MOTOR_B_YAW
PWM BH YAW IN2 OUT3 15 MOTOR_C_YAW
PWM BL YAW EN2
PWM CH YAW IN3 GND 3
PWM CL YAW EN3 GND 17
GND 18
V3-2 26 RESET GND 20
V3-2 27 SLEEP GND 23
GND 24
29 COMPO GND 30
21 COMPP GND 31
22 COMPN GND 32
4 NC PGND1 11 IS IA YAW
8 NC PGND2 12 IS IB YAW
14 NC PGND3 16 IS IC YAW
PAD 37
MOT2

0.01uF X7R 25V 0402
0.1uF X5R 25V 0402
1k ohm 0402 ¡À5%
0.47uF X7R 6.3V 0402

VCC_3V3_YAW

LED1
R10 1k/0402/5% LED GREEN YAW
LED2
R11 1k/0402/5%

08_YAW_FOC_STM32

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IS_IA_YAW_I
SH2
SH1
IS_IA_YAW_GND
C16
R12
100m1 /0603/1%
1nF/0201/50V/10%/X7R
GND

C17
R13
100m1 /0603/1%
1nF/0201/50V/10%/X7R
SH4
IS_IB_YAW_I
SH3
IS_IB_YAW_GND

C18
R14
100m1 /0603/1%
1nF/0201/50V/10%/X7R
SH6
IS_IC_YAW_I
SH5
IS_IC_YAW_GND
GND

GND

VCC_3V3_YAW
VCC_OP1_YAW
VCC_OP1_YAW
R16
33R/0201/1%
R18
11K/0201/1%
VCC_2V5_YAW
R19
51K/0201/1%
C19
100nF/0201/10V/20%/X5R
C20
NP/0201/10V/20%/X5R
R20
1K/0201/1%
IS_IA_YAW_I
ADC_IA_YAW
R15
0R/0201/1%
5
1
3
U7
+
4
R21
1K/0201/1%
IS_IA_YAW_GND
OPA365
2
C21
NP/0201/10V/20%/X5R
-200~200mV*8.15+1.65V=0.02~3.28V
-2~2A*100m¦¸=-200~200mV
R17
7.15K/0201/1%

VCC_3V3_YAW
VCC_OP2_YAW
VCC_OP2_YAW
33R/0201/1%
R23
R29
11K/0201/1%
VCC_2V5_YAW
R30
51K/0201/1%
C22
100nF/0201/10V/20%/X5R
C24
NP/0201/10V/20%/X5R
R31
1K/0201/1%
IS_IB_YAW_I
ADC_IB_YAW
R25
0R/0201/1%
5
1
3
U8
+
4
R32
1K/0201/1%
IS_IB_YAW_GND
OPA365
2
C25
NP/0201/10V/20%/X5R
-200~200mV*8.15+1.65V=0.02~3.28V
-2~2A*100m¦¸=-200~200mV
R27
7.15K/0201/1%

VCC_3V3_YAW
VCC_OP3_YAW
VCC_OP3_YAW
33R/0201/1%
R24
R33
11K/0201/1%
VCC_2V5_YAW
R34
51K/0201/1%
C23
100nF/0201/10V/20%/X5R
C26
NP/0201/10V/20%/X5R
R35
1K/0201/1%
IS_IC_YAW_I
ADC_IC_YAW
R26
0R/0201/1%
5
1
3
U9
+
4
R36
1K/0201/1%
IS_IC_YAW_GND
OPA365
2
C27
NP/0201/10V/20%/X5R
-200~200mV*8.15+1.65V=0.02~3.28V
-2~2A*100m¦¸=-200~200mV
R28
7.15K/0201/1%

09_YAW_FOC_MOS

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