Recv — SiLabs_Thunderboard_Sense2

GND	VMCU
PA8	PK0-SPI_MOSI
PA9	PK2-SPI_MISO
PA6	PF7-SPI_SCLK
PA7	PA5-SPI_CS
PF5	PF3-UART_TX
PF6	PF4-UART_RX
PC11-I2C_SCL	PC10-I2C_SDA
BOARD_ID_SCL	5V
BOARD_ID_SDA	3V3

3V3 · GND · RadioRecv_RX · RadioRecv_TX

J1 J2 J3 J4
7V_1 7V_2 5V 3V3 GND

MotorCtrl Connector
MotorCtrl_TX 1
MotorCtrl_RX 2

R_boot 10K
UartX1_TX
C3 100nF C2 100nF C_quartz1 22pF X1 8MHz C_quartz2 22pF
JUMPER_2 *1
SYS_SWCLK SYS_SWDIO SWD

FrontLine_TX FrontLine_RX — FrontLine
RearLine_TX RearLine_RX — RearLine
UartX1_TX UartX1_RX — UartX1

R_led 1K LED Red

Microcontroller (main)
BOOT0 14
PA0WKUP 7
NRST 1
VBAT
VDD1 19 · VDD2 32 · VDD3 48 · VDD4 64
VDDA 13
VSS2 31 · VSS3 47
PH0 5 · PH1 6

PA4 20
PA5 21
PA6 22 GpioX2
PA7 23 GpioX3
PC4 24
PA9 42 RearServo_Ctrl
PA10 43 MotorCtrl_RX
PA11 44
PA12 45
PD2 54 RearLine_RX
PC8 39 ServoX2_Ctrl
PC9 40 ServoX1_Ctrl
PC10 51 RadioRecv_TX
PC11 52
PC12 53 RearLine_TX
PB6 58 MotorCtrl_TX
PB7 59 Gyro_SDA
PB10 29 Dist_SCL
VCAP_1 30
C1 100nF

PA1 15 UartX1_RX
PA2 16 Debug_TX
PC13 2
PC14 3
PC15 4
PA13 46 SYS_SWDIO
PA14 49 SYS_SWCLK
PA15 50
PB3 55 Dist_SDA
PC6 37 FrontLine_TX
PC7 38 FrontLine_RX
PC0 8
PC1 9
PC2 10
PC3 11
PC5 25 RadioRecv_RX
PB0 26 3V3_En_Gyro
PB1 27 3V3_En_Dist
PB2 28

VSS1 18 · VSS4 63 · VSSA 12
PB5 57 · PB4 56 · PB15 36 · PB14 35 · PB13 34 · PA8 41 · PA12 33 · PA3 17 · PB9 62 · PB8 61
GpioX1 GpioX0 GpioX7 GpioX6 GpioX5 FrontServo_Ctrl GpioX4 Debug_RX Gyro_SCL

Btn1 / Btn2 Connectors
R1 10K · R2 10K

RPi — RPI GPIO Connector Digi-Key 1568-1462-ND
+5V +5V GND UART0 TX UART0 RX GPIO18 GND GPIO23 GPIO24 GND GPIO25 GPIO8 (SPI0 CS0) GPIO7 (SPI0 CS1) RSVD GND GPIO12 GND GPIO16 (SPI1 CS0) GPIO20 (SPI1 MOSI) GPIO21 (SPI1 SCLK)
+3V3 GPIO2 (I2C SDA) GPIO3 (I2C SCL) GPIO4 GND GPIO17 GPIO27 GPIO22 +3V3 GPIO10 (SPI0 MOSI) GPIO9 (SPI0 MISO) GPIO11 (SPI0 SCLK) GND RSVD GPIO5 GPIO6 GPIO13 GPIO19 (SPI1 MISO) GPIO26 GND
Debug_RX Debug_TX GpioX4 GpioX2 GpioX7 GpioX5
GpioX0 GpioX1 GpioX6 GpioX3
RPi5V RPi3V3 3V3

Servos
FrontServo: Ctrl / Vcc / GND — FrontServo_Ctrl 7V_1
RearServo: Ctrl / Vcc / GND — RearServo_Ctrl 7V_2
ServoX1: Ctrl / Vcc / GND — ServoX1_Ctrl 5V
ServoX2: Ctrl / Vcc / GND — ServoX2_Ctrl 5V

MOSFET circuits
3V3_Gyro R3 10K · R4 120R · T1 pMOS · R5 10K · 3V3
3V3_Dist R6 10K · R7 120R · T2 pMOS · R8 10K · 3V3

Distance sensors
FrontDist: R9 1K, R10 1K, Dist_SCL, Dist_SDA
I2C_Dist: Dist_SCL, Dist_SDA
3V3_Dist

Gyro — MPU9250
VCC	
GND	
SCL	Gyro_SCL
SDA	Gyro_SDA
EDA	
ECL	
ADO	
INT	
NCS	
FSYNC	

I1: Gyro_SCL Gyro_SDA 3V3_Gyro
R11 1K · R12 1K · R13 1K
3V3_Gyro GND

Title	
Size: A	Number	Revision
Date: 2020-01-11	Sheet of
File: C:\Users\..\main.SchDoc	Drawn By:

Comment	Description	Designator	Footprint	LibRef	Quantity
JUMPER_2		*1	JUMPER_2	JUMPER_2	1
64-pin STM32F4 chip with symbol for Foxcar Control Board v1.		1	LQFP64	STM32F4R_64PIN_FOXCAR	1
Connector	2pin connector	Btn1, Btn2, MotorCtrl	FP_CONN2_TUSKE_254MM	Connector_2pin	3
100nF	Capacitor	C1, C2, C3	FP_0805_CAP_085	CAP 100nF	3
22pF	Capacitor	C_quartz1, C_quartz2	FP_0805_CAP_085	CAP 22pF	2
4-Pin Header		FrontDist, FrontLine, I1, I2C_Dist, J1, J2, J3, J4, RearLine, SWD, UartX1	4-Pin Header	4-Pin Header	11
ServoMotor	Servo motor	FrontServo, RearServo, ServoX1, ServoX2	Servo_motor	ServoMotor	4
MPU9250		Gyro	MPU9250	MPU9250	1
LED Red	Red LED	LED	FP_0805_LED_RED	LED Red	1
10K	Resistor	R1, R2, R3, R5, R6, R8, R_boot	FP_0805_RES	RES 10K	7
120R	Resistor	R4, R7	FP_0805_RES	RES 120R	2
1K	Resistor	R9, R10, R11, R12, R_led	FP_0805_RES	RES 1K	5
SiLabs_Thunderboard_Sense2	Radio transmitter/receiver	Recv	SiLabs_Thunderbird_Sense2	SiLabs_Thunderboard_Sense2	1
RPI GPIO Connector	GPIO Header for Raspberry Pi A+/B+/Pi 2/Pi 3 - 2x20	RPi	rpi	rpi connector	1
		RPi3V3, RPi5V	JUMPER_2	JUMPER_2	2
pMOS	pMOS FET	T1, T2	FP_SOT23-3	pMOS	2
8MHz	Quarz Crystal	X1	FP_CRYSTAL_HC49_SMD	Crystal	1