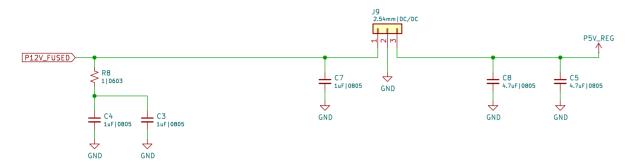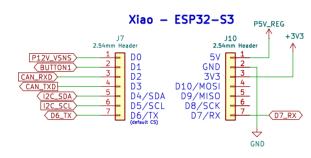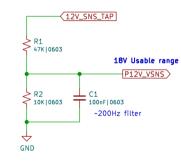All capacitors derated a minimum of 50% for each voltage rail.
X5R, X6S, X7R or better
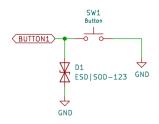
All resistors are 1% or better

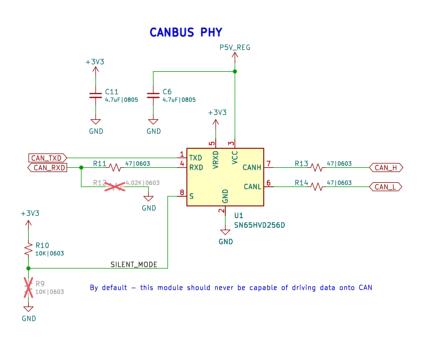## 12V to 5V DC/DC | 0.5A

J9
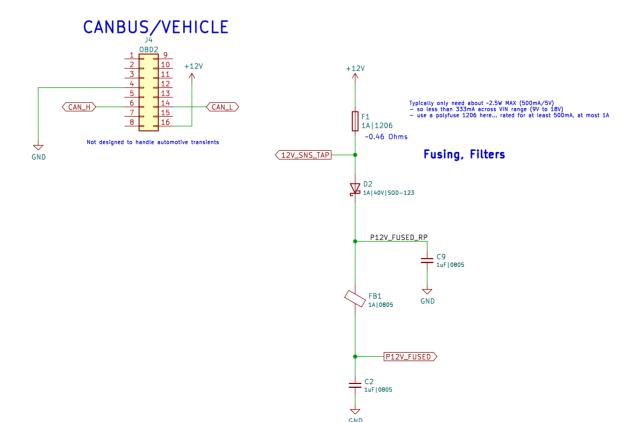2.54mm|DC/DC

P12V_FUSED

P5V_REG

R8
1|0603

C7
1uF|0805

GND

C8
4.7uF|0805

GND

C5
4.7uF|0805

GND

C4
1uF|0805

GND

C3
1uF|0805

GND

Xiao - ESP32-S3

J7
2.54mm Header

P12V_VSNS	1	D0
BUTTON1	2	D1
	3	D2
CAN_RXD	4	D3
I2C_SDA	5	D4/SDA
I2C_SCL	6	D5/SCL
D6_TX	7	D6/TX (default CS)

J10
2.54mm Header

P5V_REG   +3V3

5V	1	
GND	2	
3V3	3	+3V3
D10/MOSI	4	
D9/MISO	5	
D8/SCK	6	
D7/RX	7	D7_RX

GND

12V_SNS_TAP

R1
47K|0603

18V Usable range

P12V_VSNS

R2
10K|0603

C1
100nF|0603

~200Hz filter

GND

CANBUS PHY

+3V3

C11
4.7uF|0805

GND

P5V_REG

C6
4.7uF|0805

GND

+3V3

CAN_TXD

CAN_RXD

R11   47|0603

R12   1.02K|0603

GND

1	TXD	VRXD 5
4	RXD	VCC 3
	CANH	7
	CANL	6
8	S	GND 2

R13   47|0603   CAN_H

R14   47|0603   CAN_L

U1
SN65HVD256D

GND

+3V3

R10
10K|0603

SILENT_MODE

R9
10K|0603

GND

By default - this module should never be capable of driving data onto CAN

CANBUS/VEHICLE

J4
OBD2

1	9
2	10
3	11
4	12
5	13
6	14
7	15
8	16

+12V

CAN_H

CAN_L

GND

Not designed to handle automotive transients

SW1
Button

BUTTON1

D1
ESD|SOD-123

GND

GND

+12V

F1
1A|1206
~0.46 Ohms

Typically only need about ~2.5W MAX (500mA/5V)
- so less than 333mA across VIN range (9V to 18V)
- use a polyfuse 1206 here... rated for at least 500mA, at most 1A

12V_SNS_TAP

Fusing, Filters

D2
1A|40V|SOD-123

P12V_FUSED_RP

C9
1uF|0805

GND

FB1
1A|0805

P12V_FUSED

C2
1uF|0805

GND

oshw