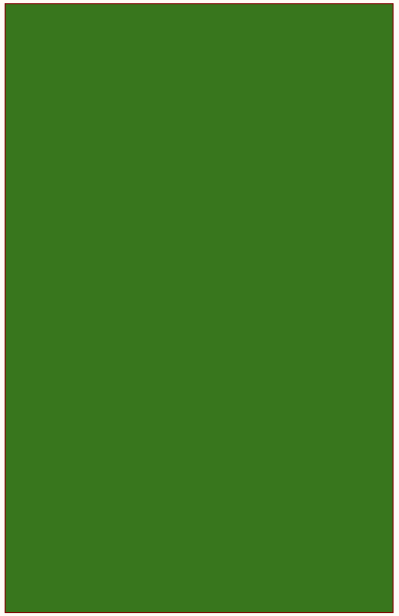
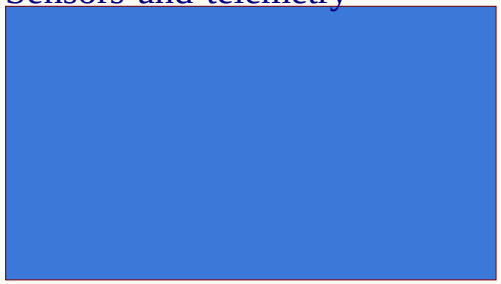
Power-and-Connection

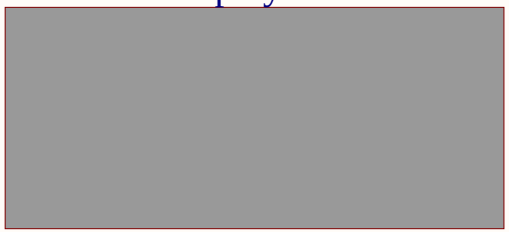
MCU



Sensors-and-telemetry



Parachute-Deployment



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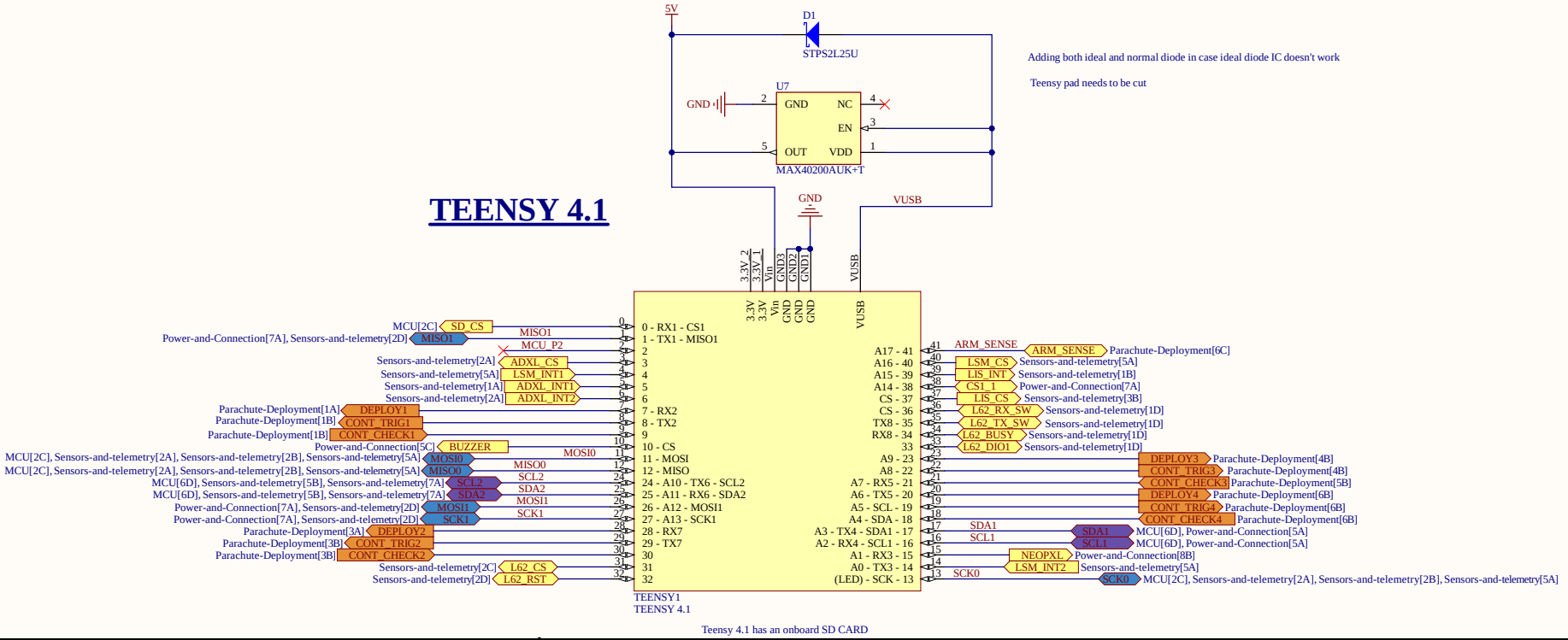
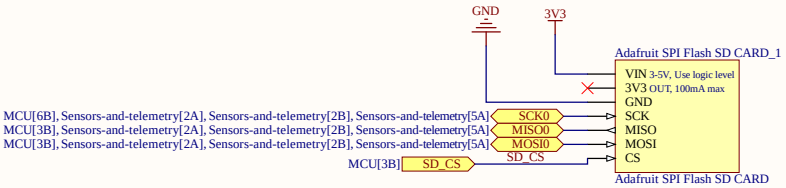
Date: 02/11/2022	Time: 16:59:22	Sheet 1 of 5	
File: C:\Users\tomto\Desktop\Engineering\Altium Designer\DART-PCB-recreation_2_1\Main.SchDoc			

TEENSY 4.1

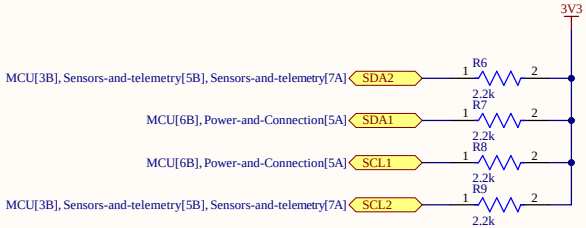


Teensy 4.1 has an onboard SD CARD

SPI SD CARD



I2C PULL UP RESISTORS



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Size: A4	Number:1	Revision:*	
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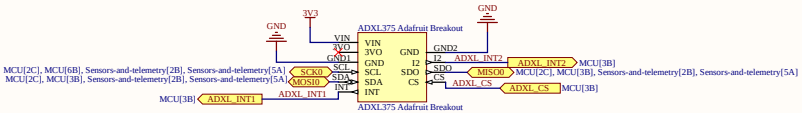
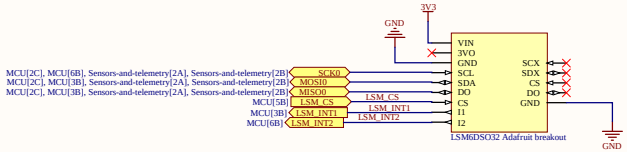
File: C:\Users\tomto\Desktop\Engineering\Altium Designer\DART-PCB-recreation_2_1\MCU.SchDoc			

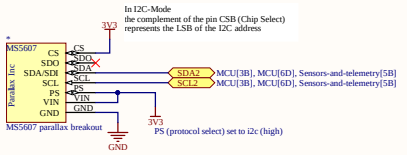
ADXL375 Accelerometer



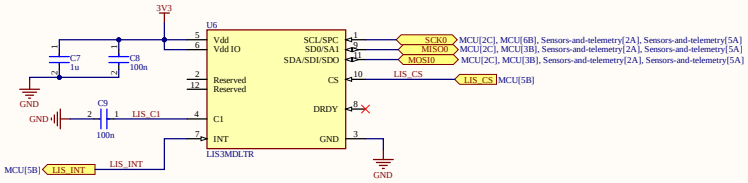
LSM6DSO32 6DOF



MS5607 Altimeter

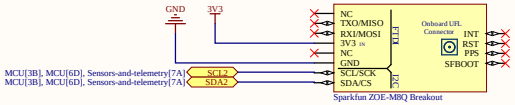


LIS3MDL Magnetometer

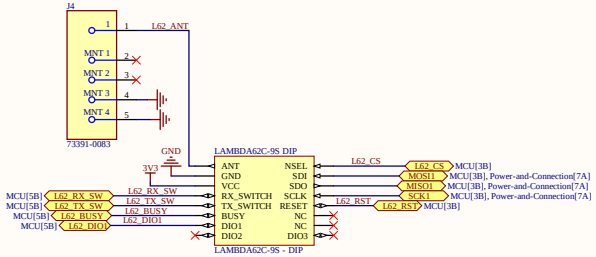


Magnetometer must be kept away from high currents (>10mA)

ZOE M8Q GPS



LAMBDA62C-9S Tranceiver



Title	MRAS - Sensors and telemetry		Sunride University of Sheffield
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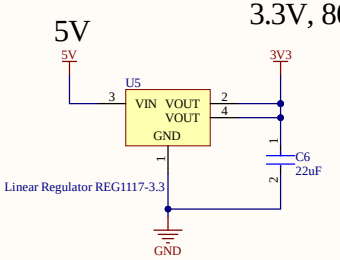
File: C:\Users\tomto\Desktop\Engineering\Altium Designer\DART-PCB-recreation_2_1\Sensors-and-telemetry.SchDoc			

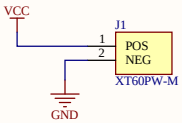
3.3V Regulator

3.3V, 800mA out

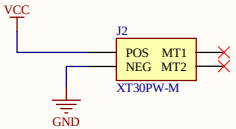


Battery connections

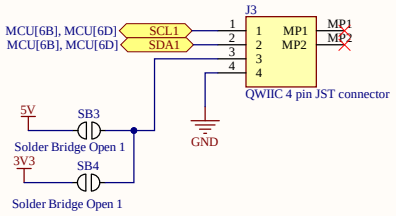
XT60

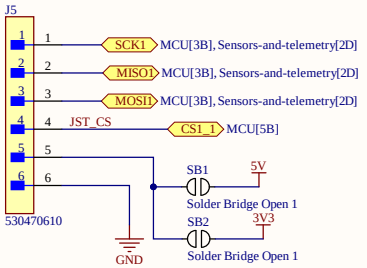


XT30

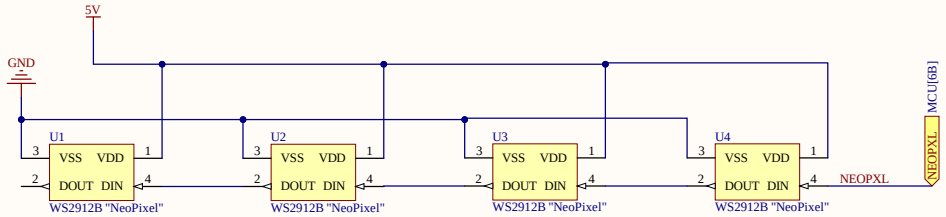


I2C and SPI connectors

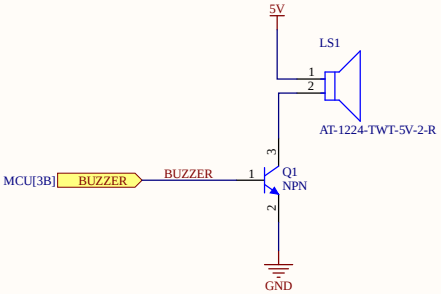




NEOPIXEL Array



Buzzer



Power Requirements:

5V:

Teensy 4.1: Assume 200mA MAX
NEOPIXELS: 4x60ma = 240mA
Buzzer: Assume 100mA
3.3v regulator (@ 66% efficiency) : 477mA

3.3V

SPI SD card: 30mA max. (operating read)
ZOE-M8Q GPS: 67mA max. (~25 mA normal)
Lambda62-9S: 118mA (max. @ 22dBm)
LIS3MDL: 0.27mA (max @ odr 20Hz)
ADXL375: 0.145mA (max. @ odr > 100Hz)
LSM6DSO32: 0.55mA (max.)
QWIIC: assume some generic module ~100mA

3.3V max overall current

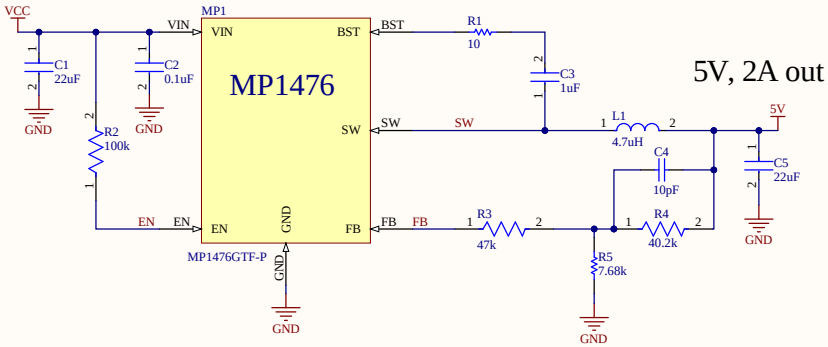
30 + 67 + 118 + 0.27 + 0.145 + 0.55 +100 = 318mA

TOTAL max overall current:

200 + 240 + 100 + 477 = 1017mA

5V Buck Converter

Max 4S - 16.8V IN



5V, 2A out

Title	MRAS - Power and Connection		Sunride University of Sheffield
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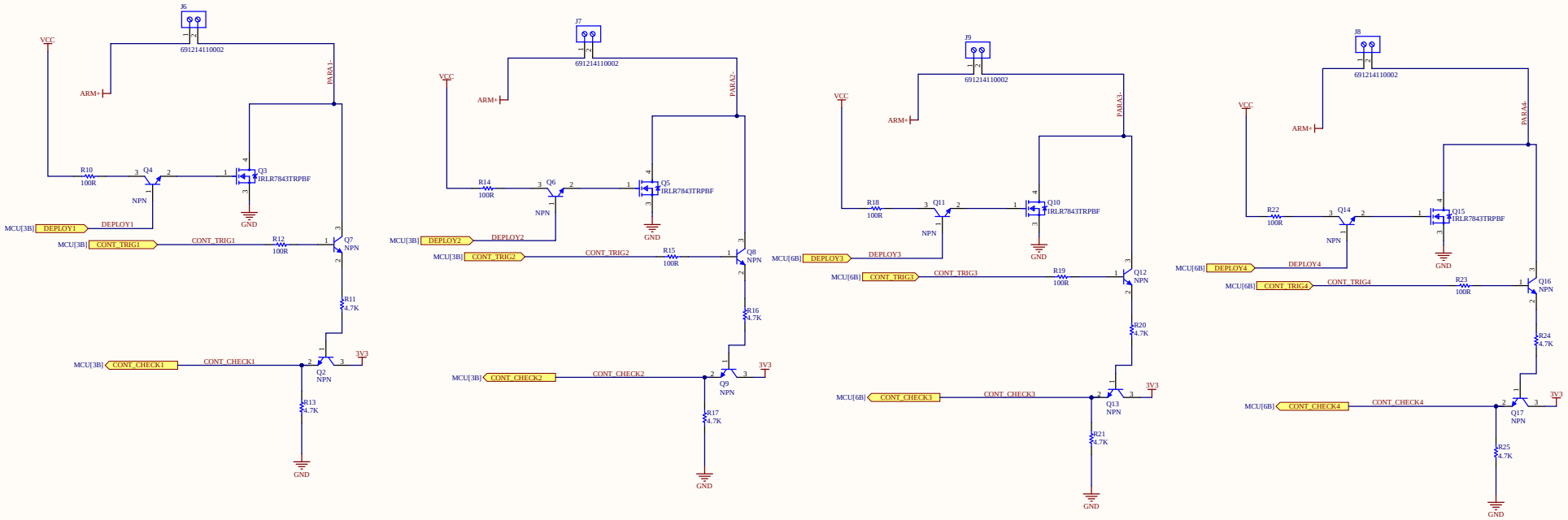
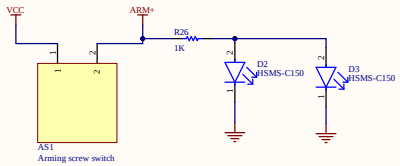
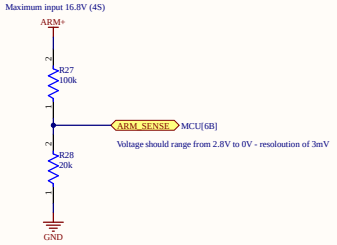
File: C:\Users\tomto\Desktop\Engineering\Altium Designer\DART-PCB-recreation_2_1\Power-and-Connection.SchDoc			

Parachute deployment system





Switch for arming pyro channels



Voltage divider to sense arming

Title	MRAS - Parachute deployment		Sunride University of Sheffield
Size: A4	Number:*	Revision:*	
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File: C:\Users\tomto\Desktop\Engineering\Altium Designer\DART-PCB-recreation_2_1\Parachute-Deployment.SchDoc			

Battery

35.56x185.42mm

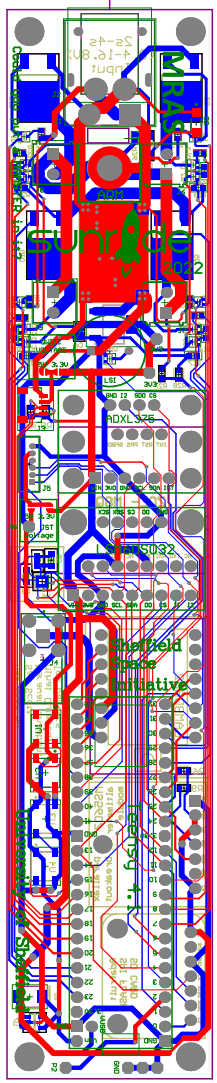
7300x1400mil - These are FINAL

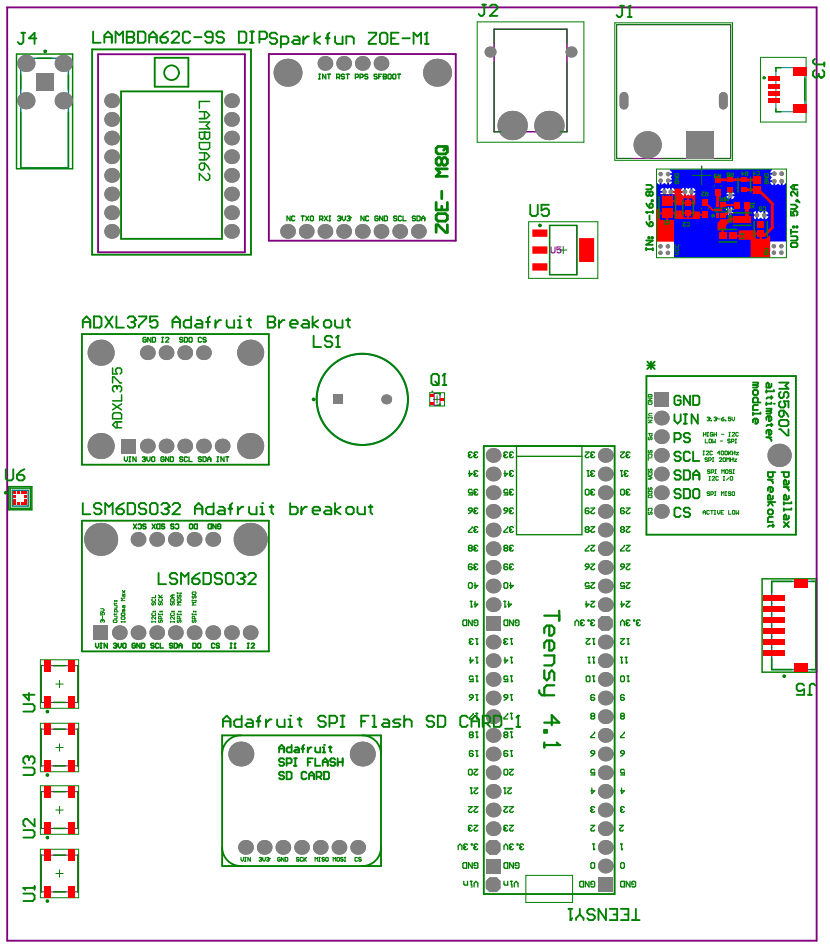
PARA channels are 80 mil

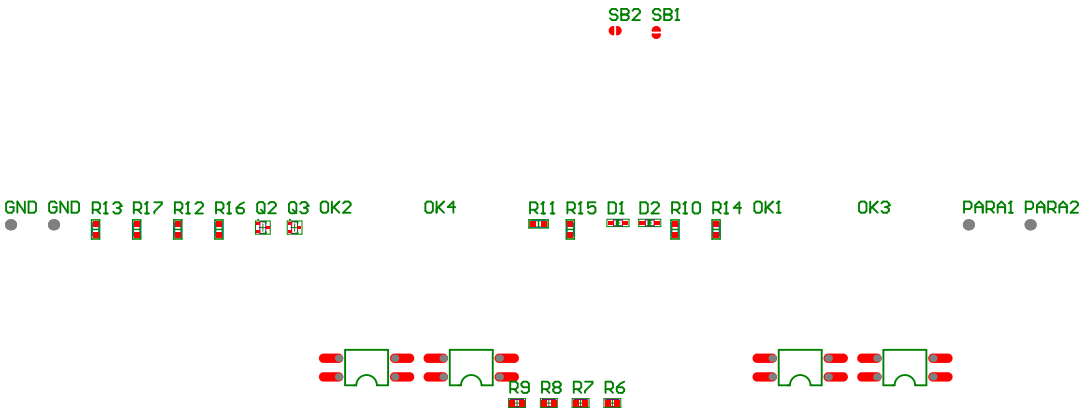
Parachute Deployment

Power

Sensors and Processor




J4
LAMBDA62C-9S DIP
LAMBDA62
Sparkfun ZOE-M1
INT RST PPS SFBOOT
NC TXD RXI 3V3 NC GND SCL SDA
ZOE- M8Q
J2
J1
J3
U5
IN: 6-16.8V
OUT: 5V,2A
ADXL375 Adafruit Breakout
ADXL375
GND I2 SDO CS
VIN 3VO GND SCL SDA INT
LS1
Q1
U6
LSM6DS032 Adafruit breakout
LSM6DS032
VIN 3VO GND SCL SDA DO CS II I2
MS5607 altimeter module
GND
VIN
PS
SCL
SDA
SDO
CS
parallax breakout
U4
U3
U2
U1
Adafruit SPI Flash SD CARD 1
Adafruit SPI FLASH SD CARD
Teensy 4.1
TEENSY1
J5


SB2 SB1
GND GND R13 R17 R12 R16 Q2 Q3 OK2
OK4
R11 R15 D1 D2 R10 R14 OK1
OK3
PARA1 PARA2
R9 R8 R7 R6