REV	DATE	BY	CHANGE
A	07/16/12	GLS	Release to Proto Fab
B	08/1/12	GLS	Fixed drill on mount of Mindstorms Jack and BOM for 6P pheonix
C	08/12/12	GLS	Add JP to disconnect VM for SW debug, add screw term for Power Add 10pin battery connector as pass through header for stacking Narrow Bd by 2-3 mm on each wing to fit along side bone on LCD7 cape Swap pin 3,4 on external connectors Change GPIO used to support other capes, GPIO1_30 swapped with GPIO_27 GPIO1_30 now Motor6_Dir, GPIO0_27 now the mode 2 option for MOTOR6_PWM (pin 3 on jumper J1) Pin 3, J2 from GPIO0_3(P9_21) to GPIO1_3 (P8_6) for compatibility with LCD7 A3 release Move P8_20 net to P9_27
A1	10/21/12	GLS	Changed 2 pos dip Switch part number and foot print change motor8 dir back to GPIO1_31 with 0 ohm for option to use GPIO3_19 A4 ULCD7 schematic uses GPIO3_19 for cap touch int. Fix name of GPIO0_27 from incorrect GPIO1_27 Changed Motor DC jack to through hole

Use stackable headers
Add power connector

Changes to board-am335x.c:
Disable 1-wire bus on gpio1_3
Disable spidev

Need to swap P8_20 (which is currently used by DVI_PDn on latest version of DVI cape). We could move it to P9_27 which is the only pin available while remaining compatible with latest version sof LCD7 and DVID capes.

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Title: BeagleBone_Motor_Cape_RevA1 COVER PAGE

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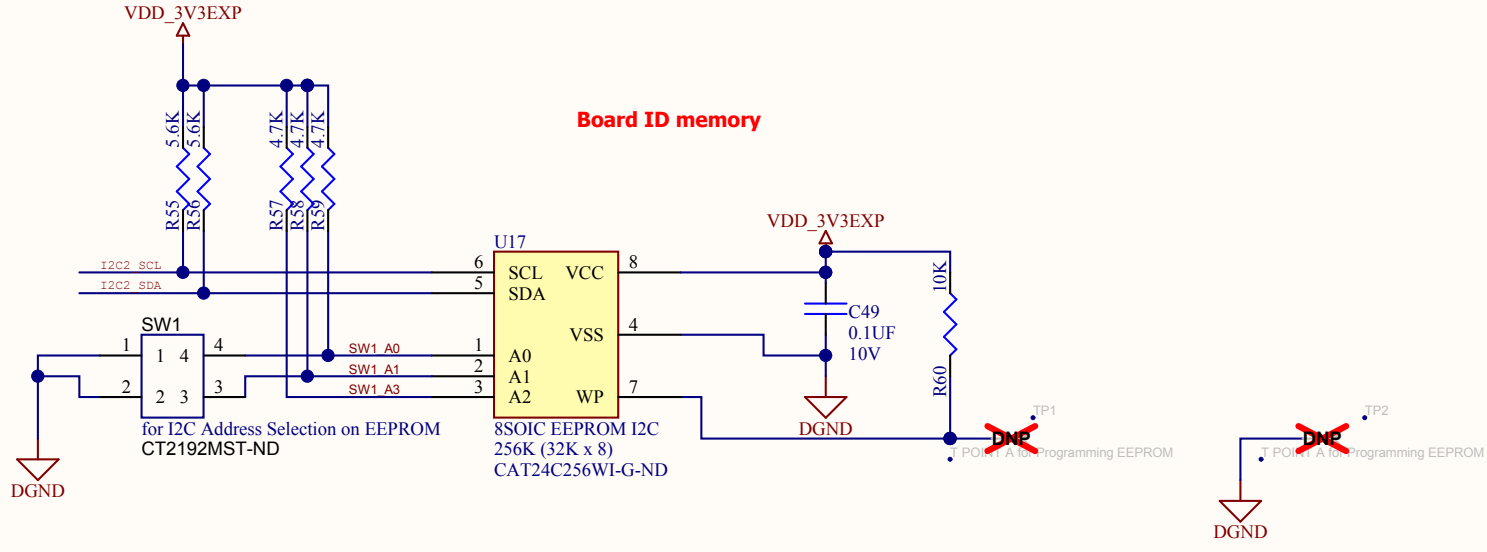
Date: | Sheet of



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Title: BeagleBone_Motor_Cape_RevA1_ID_EEPROM

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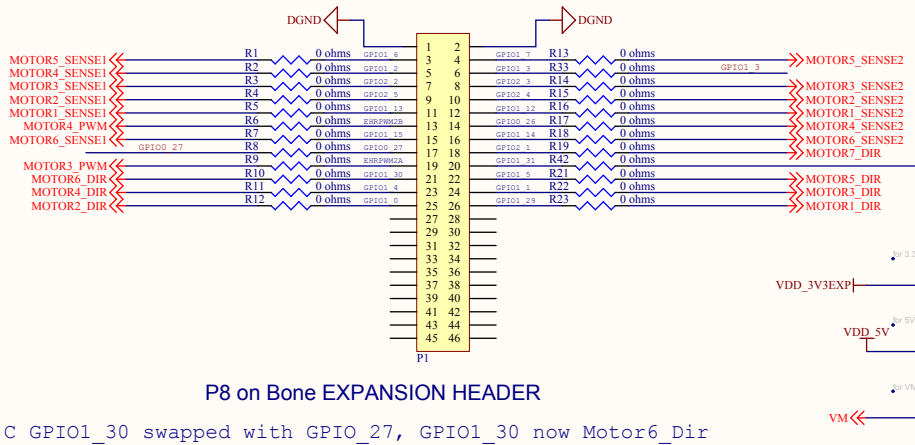
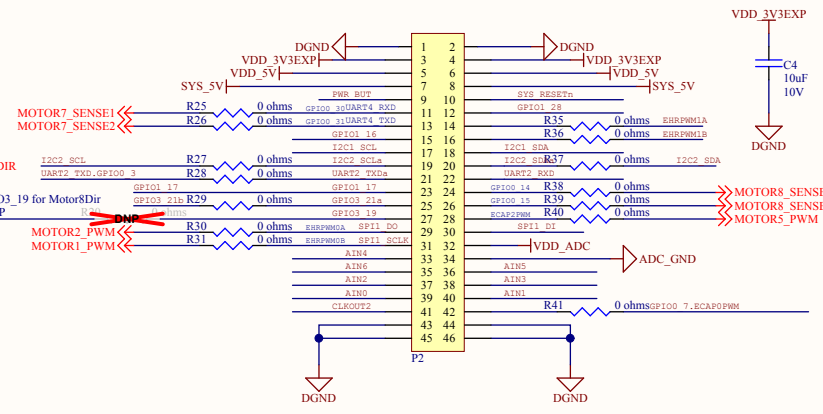


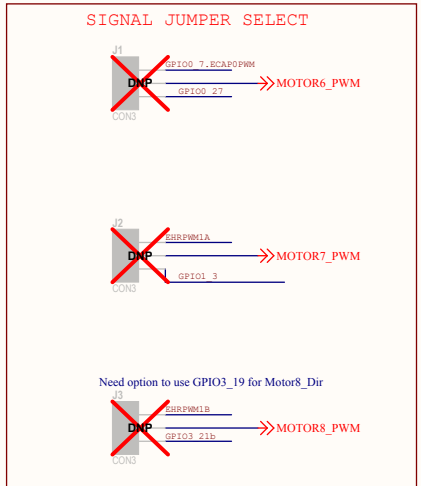
P8 on Bone EXPANSION HEADER

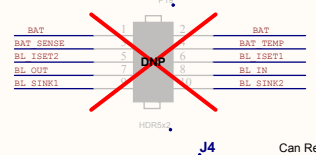


P9 on bone EXPANSION HEADER

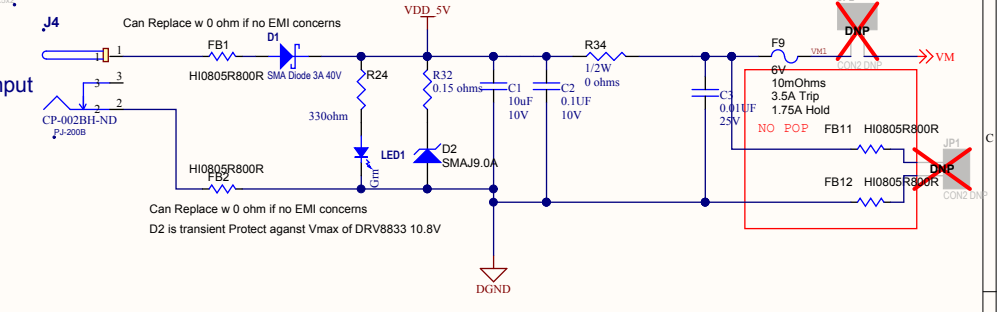
Rev C GPIO1_30 swapped with GPIO_27, GPIO1_30 now Motor6_Dir
Rev C GPIO0_27 now the mode 2 option for MOTOR6_PWM (pin 3 on jumper J1)
Rev C Pin 3, J2 from GPIO0_3(P9_21) to GPIO1_3 (P8_6) for compatibility with LCD7 A3 release
Rev D, Motor8_DIR back to GPIO3_31, fix name on GPIO0_27

5V DC POWER, 8 Motors at 500mA each = 4Amps
Resettable Fuse F9 Limits to 3.5Amps, replace with jumper for more
DC Jack only rated for 2.5A, Use JP1 for higher current
FB1,2, 11, 12 Ferrite Beads can be populated w 0 ohm untill EMI Testing





Motor Disconnect for SW debug



Populate FB11, FB12 to use JP1 for V_Motor (VM) max 10V
Remove R34 if more than 5V is desired on VM, 5V is still required for DRV8833 ICs
Add 10pin battery pass through header for stacking, like weather station cape
Look at merging sensor board

PCB Number: PRJ_Number
PCB Rev: PCB_Rev

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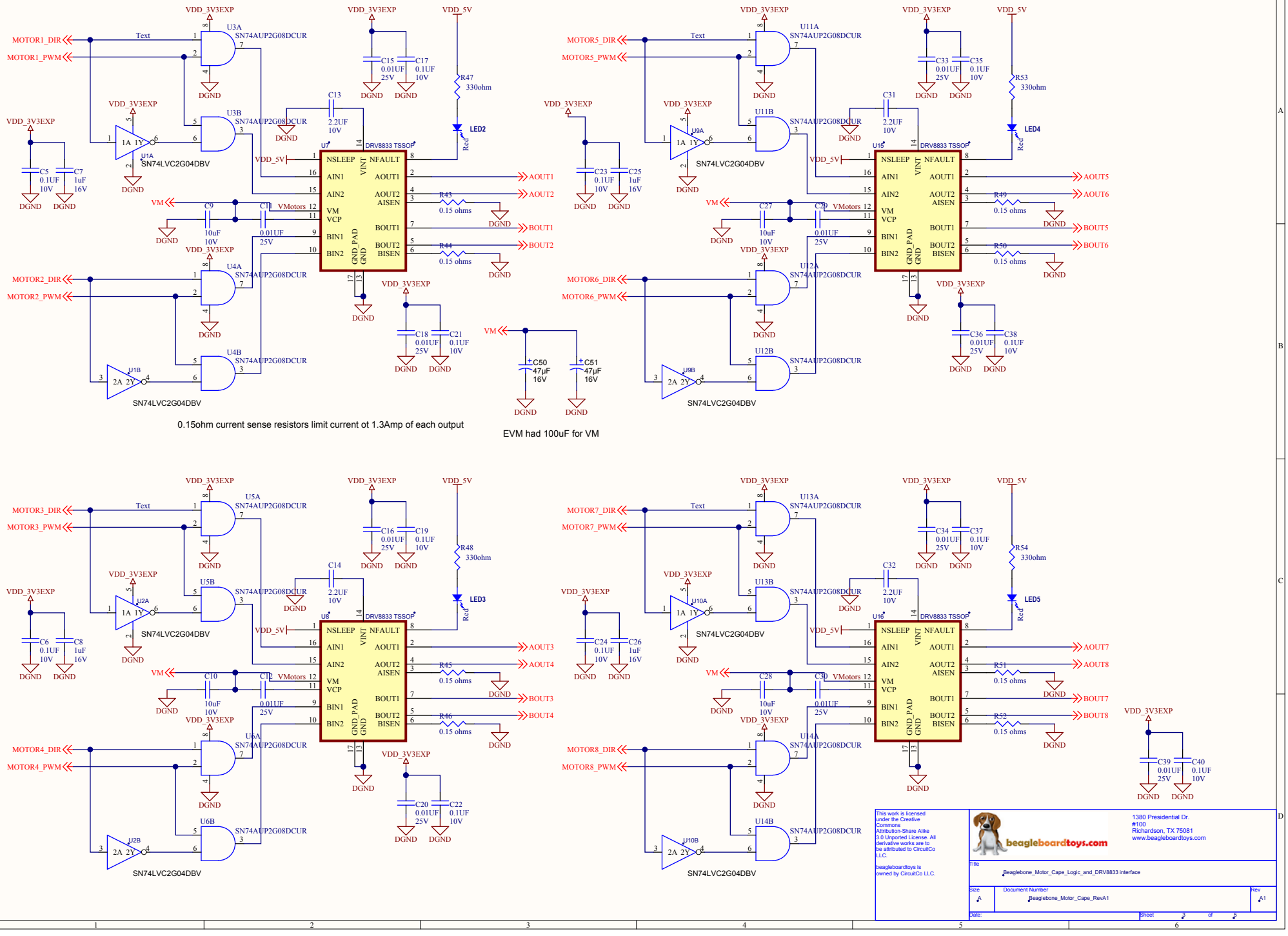
MOTOR1_DIR
MOTOR1_PWM
MOTOR2_DIR
MOTOR2_PWM
MOTOR3_DIR
MOTOR3_PWM
MOTOR4_DIR
MOTOR4_PWM
MOTOR5_DIR
MOTOR5_PWM
MOTOR6_DIR
MOTOR6_PWM
MOTOR7_DIR
MOTOR7_PWM
MOTOR8_DIR
MOTOR8_PWM
VDD_3V3EXP
VDD_5V
VM
DGND
U3A
U3B
U4A
U4B
U5A
U5B
U6A
U6B
U11A
U11B
U12A
U12B
U13A
U13B
U14A
U14B
SN74AUP2G08DCUR
U1A
U1B
U2A
U2B
U9A
U9B
U10A
U10B
SN74LVC2G04DBV
U7
U8
U15
U16
DRV8833 TSSOP
NSLEEP
AIN1
AIN2
VM
VCP
BIN1
BIN2
GND_PAD
GND
VINT
NFAULT
AOUT1
AOUT2
AISEN
BOUT1
BOUT2
BISEN
VMotors
AOUT1
AOUT2
AOUT3
AOUT4
AOUT5
AOUT6
AOUT7
AOUT8
BOUT1
BOUT2
BOUT3
BOUT4
BOUT5
BOUT6
BOUT7
BOUT8
LED2
LED3
LED4
LED5
Red
R47 330ohm
R48 330ohm
R53 330ohm
R54 330ohm
R43 0.15 ohms
R44 0.15 ohms
R45 0.15 ohms
R46 0.15 ohms
R49 0.15 ohms
R50 0.15 ohms
R51 0.15 ohms
R52 0.15 ohms
C5 0.1UF 10V
C6 0.1UF 10V
C7 1uF 16V
C8 1uF 16V
C9 10uF 10V
C10 10uF 10V
C11 0.01UF 25V
C12 0.01UF 25V
C13 2.2UF 10V
C14 2.2UF 10V
C15 0.01UF 25V
C16 0.01UF 25V
C17 0.1UF 10V
C18 0.01UF 25V
C19 0.1UF 10V
C20 0.01UF 25V
C21 0.1UF 10V
C22 0.1UF 10V
C23 0.1UF 10V
C24 0.1UF 10V
C25 1uF 16V
C26 1uF 16V
C27 10uF 10V
C28 10uF 10V
C29 0.01UF 25V
C30 0.01UF 25V
C31 2.2UF 10V
C32 2.2UF 10V
C33 0.01UF 25V
C34 0.01UF 25V
C35 0.1UF 10V
C36 0.01UF 25V
C37 0.1UF 10V
C38 0.1UF 10V
C39 0.01UF 25V
C40 0.1UF 10V
C50 47µF 16V
C51 47µF 16V
Text
0.15ohm current sense resistors limit current ot 1.3Amp of each output
EVM had 100uF for VM
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Beaglebone_Motor_Cape_Logic_and_DRV8833 interface
Size
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Document Number
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Rev
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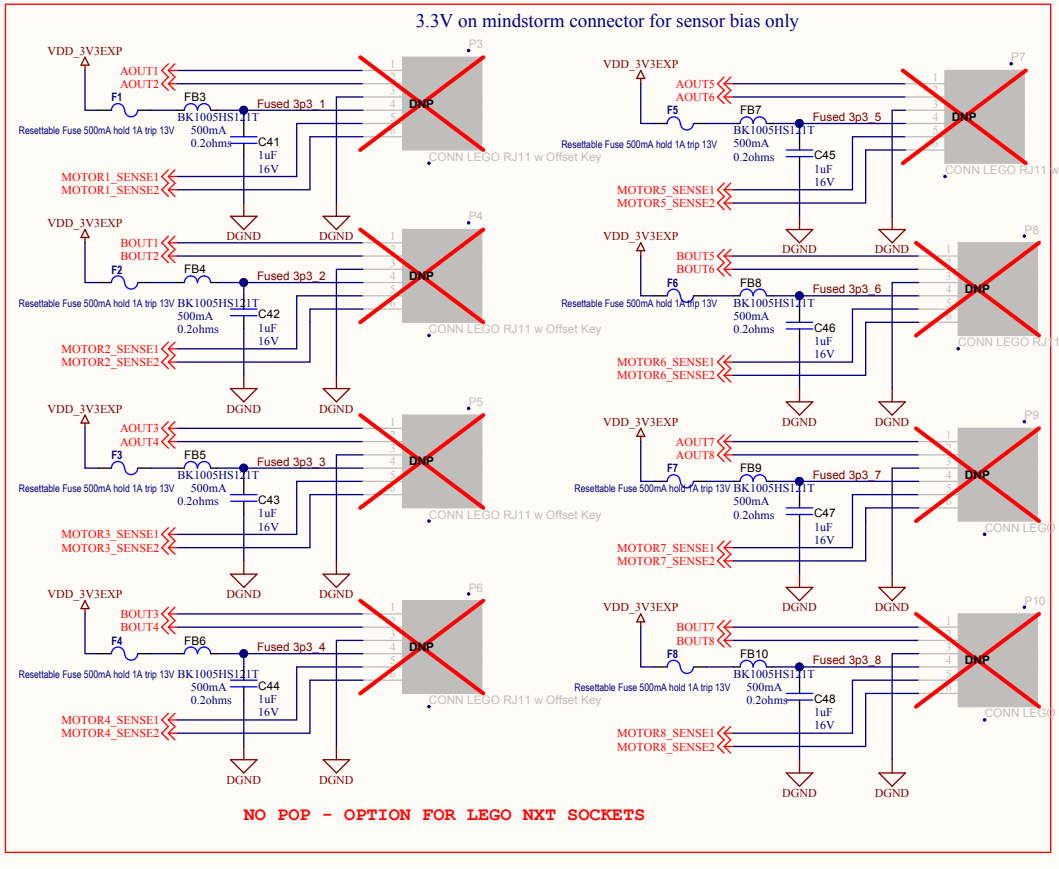
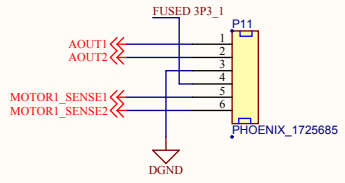
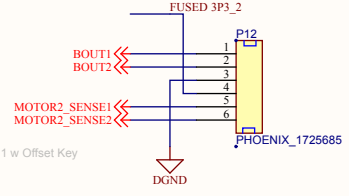
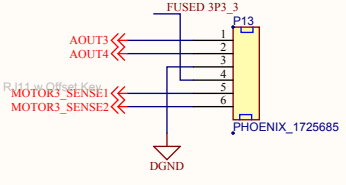
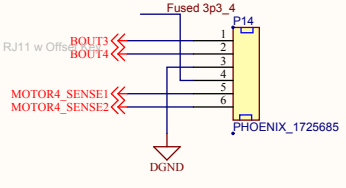
Sheet 3 of 5

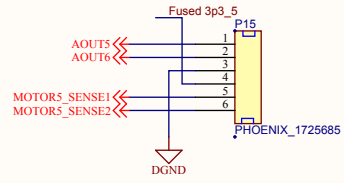


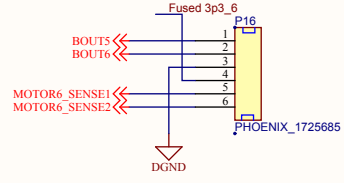


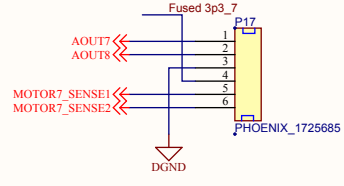


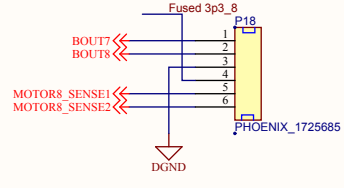












Pin1 Motor Pwr 1, White Wire in cable, (edge closest to offset latch)
If this line is set as NEGATIVE and the black wire is set as POSITIVE, the motor will rotate in one direction.
Set as POSITIVE and the black wire set as NEGATIVE, the motor will reverse.
This port is controlled by PWM to set the power level or speed.
Low voltage and low current on both signals the motor to brake

Pin2 Motor Pwr 2, Black Wire in Cable, used with Motor Pwr 1 above

Pin 3 GND, Red Wire in Cable

Pin 4 3.3V for motor sensors, Green Wire in Cable

Pin 5 Encoder 1, Yellow Wire in Cable

Pin 6 Encoder 3, Blue Wire in Cable

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