IC1
TMS320F28034PNT

Pin	Signal		Pin	Signal
69	GPIO0/EPWM1A	GPIO30/CANRXA ↑	33	CAN-RX
68	GPIO1/EPWM1B/COMP1OUT	GPIO31/CANTXA ↑	32	CAN-TX
67	GPIO2/EPWM2A	GPIO32/SDAA/EPWMSYNCI/ADCSOCAO ↑	2	SDA
66	GPIO3/EPWM2B/SPISOMIA/COMP2OUT	GPIO33/SCLA/EPWMSYNCO/ADCSOCBO ↑	3	SCL
63	GPIO4/EPWM3A	GPIO34/COMP2OUT/COMP3OUT ↑	74	GPIO34
62	GPIO5/EPWM6B/LINRXA/HRCAP2	GPIO35/TDI ↑	59	TDI
50	GPIO6/EPWM4A/EPWMSYNCI/EPWMSYNCO	GPIO36/TMS ↑	60	TMS
49	GPIO7/EPWM4B/SCIRXDA	GPIO37/TDO ↑	58	TDO
43	GPIO8/EPWM5A/ADCSOCAO	GPIO38/TCK/XCLKIN ↑	57	TCK
39	GPIO9/EPWM5B/LINTXA/HRCAP1	GPIO39 ↑	56	

GPIO6 — 50
SERIAL-RX — 49
GPIO8 — 43
LED1 — 39

Pin	Signal		Pin	Signal
65	GPIO10/EPWM6A/ADCSOCBO	GPIO40/EPWM7A ↑	64	
61	GPIO11/EPWM6B/LINRXA/HRCAP2	GPIO41/EPWM7B ↑	48	
47	↑ GPIO12/TZ1/SCITXDA/SPISOMIB	GPIO42/COMP1OUT ↑	5	GPIO42
76	↑ GPIO13/TZ2/SPISOMIB	GPIO43/COMP42OUT ↑	6	GPIO43
77	↑ GPIO14/TZ3/LINTXA/SPICLKB	GPIO44 ↑	45	
75	↑ GPIO15/TZ1/LINRXA/SPISTEB			
46	↑ GPIO16/SPISOMIA/TZ2	ADCINA0	18	ADCINA0
42	↑ GPIO17/SPISOMIA/TZ3	ADCINA1	17	ADCINA1
41	↑ GPIO18/SPICLKA/LINTXA/XCLKOUT	ADCINA2/COMP1A/AIO2	16	ADCINA2
55	↑ GPIO19/XCLKIN/SPISTEA/LINRXA/ECAP1	ADCINA3	15	ADCINA3
		ADCINA4/COMP2A/AIO4	14	ADCINA4
78	↑ GPIO20/EQEP1A/COMP1OUT	ADCINA5	13	ADCINA5
79	↑ GPIO21/EQEP1B/COMP2OUT	ADCINA6/COMP3A/AIO6	12	PWROUT_INT
1	↑ GPIO22/EQEP1S/LINTXA	ADCINA7	11	ADCINA7
4	↑ GPIO23/EQEP1I/LINRXA			
80	↑ GPIO24/ECAP1/SPISOMOB	ADCINB0	23	ADCINB0
44	↑ GPIO25/SPISOMIB	ADCINB1	24	ADCINB1
37	↑ GPIO26/HRCAP1/SPICLKB	ADCINB2/COMP1B/AIO10	25	ADCINB2
31	↑ GPIO27/HRCAP2/SPISTEB	ADCINB3	26	ADCINB3
40	↑ GPIO28/SCIRXDA/SDAA/TZ2	ADCINB4/COMP2B/AIO12	27	ADCINB4
34	↑ GPIO29/SCITXDA/SCLA/TZ3	ADCINB5	28	ADCINB5
		ADCINB6/COMP3B/AIO14	29	ADCINB6
		ADCINB7	30	ADCINB7

SERIAL-TX — 47
SPISOMI — 76
SPICLK — 77
SPICS — 75
GPIO18 — 41

12V_SW_CTRL — 78
GP_BUTTON — 79
GPIO22 — 1
GPIO23 — 4
SPISIMO — 80
GPIO25 — 44
GPIO26 — 37
GPIO27 — 31
CAN_RESET — 40
LED0 — 34

Pin	Signal
8	VSS
35	VSS
53	VSS
71	VSS
21	VSSA
20	VDDA
7	VDD
54	VDD
72	VDD
36	VDDIO
70	VDDIO

GND

GND   L3   choke here

+3V3
L4
BLM21PG221SN1D

C1 2.2 uF
C4 C3 C2
GND   GND

L2
L5
+3V3
BKP2125HS600-T
C6 C5
GND

Pin	Signal
19	VREFHI
22	VREFLO
9	XRS
10	TRST
52	X1
51	X2
73	VREGENZ
38	TEST2

XRS — 9
TRST — 10

GND

C28
GND
X5 10 MHz
C29
GND
GND

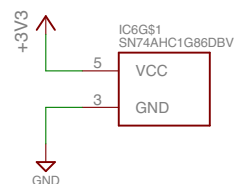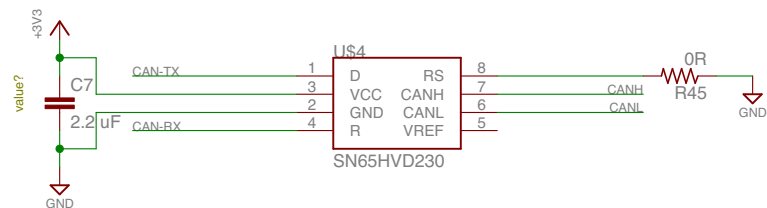↑ symbol indicates pin is pulled up at boot
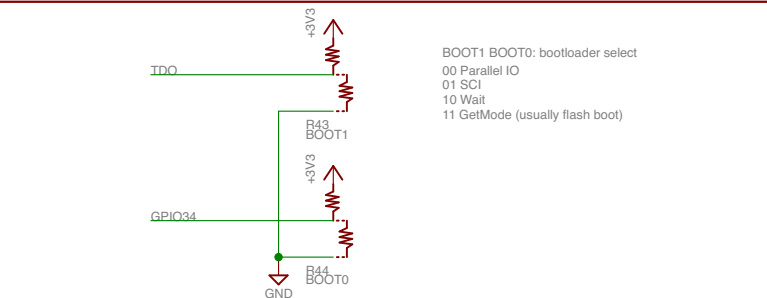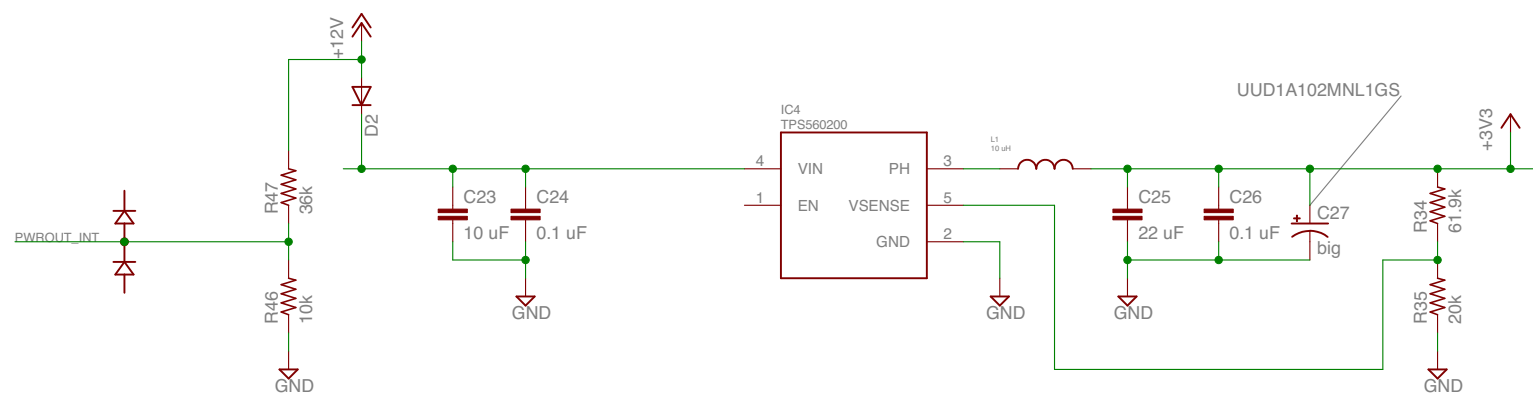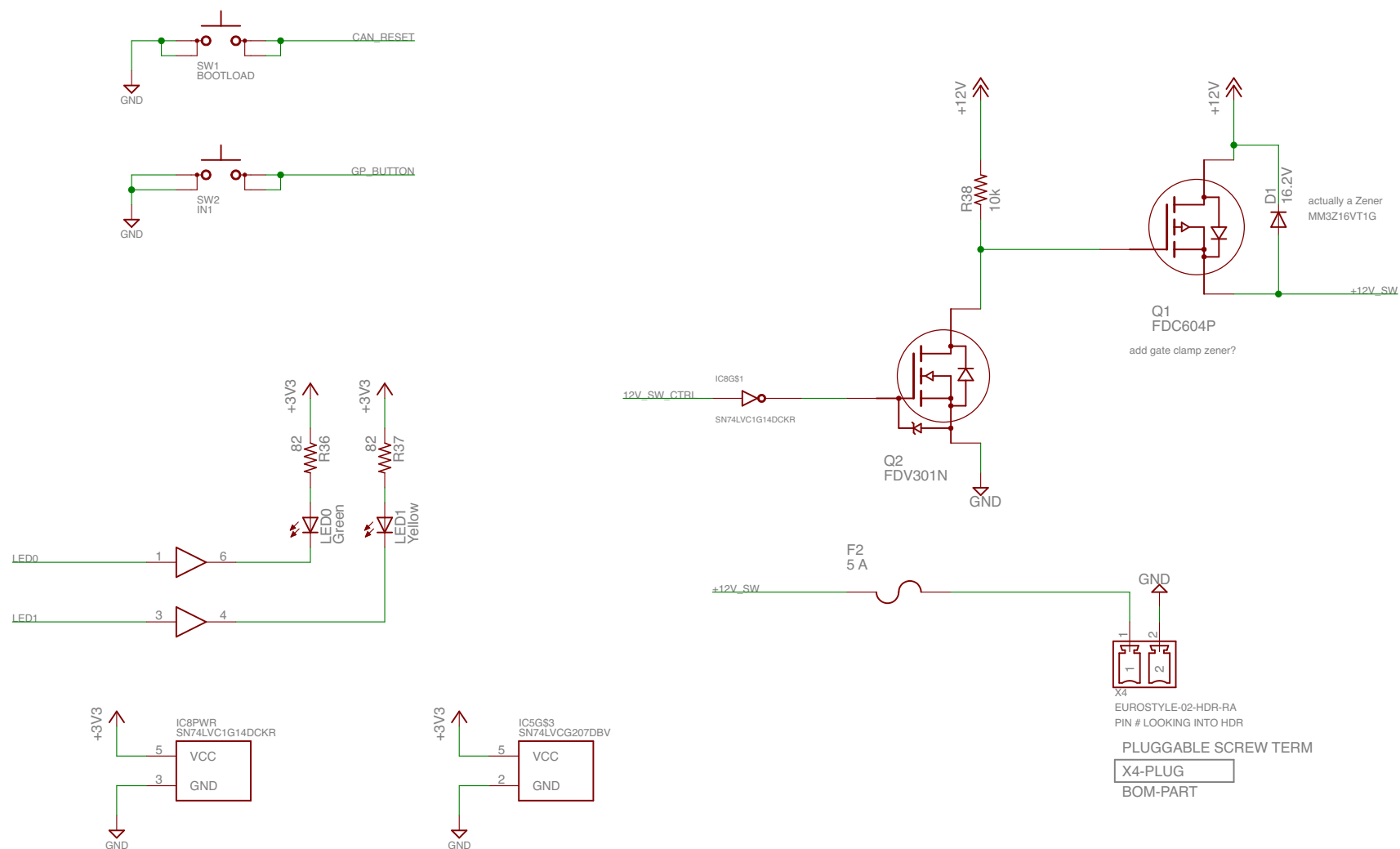
Board: Magic CAN Node r02
Drawn by Aaron Bonnell-Kangas
Revision date: r02 - 2014-02-10
Last modified date: 2/10/14 4:27 PM

TDO

+3V3

BOOT1 BOOT0: bootloader select
00 Parallel IO
01 SCI
10 Wait
11 GetMode (usually flash boot)

R43
BOOT1

+3V3

GPIO34

R44
BOOT0

GND

JTAG_HEADER

TMS	1	2	TRST ?
TDI	3	4	GND TDIS
+3V3	5	key 6
TDO	7	8	GND
? TCK	9	10
	11	12
? EMU0	13	14	EMU1 ?

VTREF

+3V3

GND

X6

+3V3

C7

value?

2.2 uF

GND

CAN-TX

CAN-RX

U$4
1 D   RS 8
3 VCC CANH 7
2 GND CANL 6
4 R   VREF 5

SN65HVD230

0R
R45

CANH

CANL

GND

+12V

TERM-1

SHIELD

CANl

1
3
4   5
6   8

X1
CAN

GND

X1-CONN
BOM-PART

X1-TERM
BOM-PART

+12V

TERM-2

SHIELD

CANl

1
3
4   5
6   8

X2
CAN

GND

X2-CONN
BOM-PART

X2-TERM
BOM-PART

CANH

CANH

+3V3

IC6G$1
SN74AHC1G86DBV
5 VCC

3 GND

GND

TERM-1
TERM-2

36k
R39

36k
R33

10k
R29

10k
R32

GND   GND

1 A
2 B   Y 4

CANL

120
R31

6

4

1

+3V3

IC3
ADG719
2 +V

5

GND 3

CANH

GND

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+12V

D2

PWROUT_INT

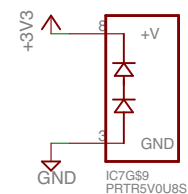R47
36k

R46
10k

GND

GND

C23
10 uF

C24
0.1 uF

GND

IC4
TPS560200

4 VIN   PH 3
1 EN   VSENSE 5
        GND   2

GND

L1
10 uH

UUD1A102MNL1GS

C25
22 uF

C26
0.1 uF

± C27
big

GND

+3V3

R34
61.9k

R35
20k

GND

RELEASE
3V3 power

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CAN_RESET

SW1
BOOTLOAD

GND

GP_BUTTON

SW2
IN1

GND

+12V

R38
10k

+12V

D1
16.2V

actually a Zener
MM3Z16VT1G

+12V_SW

Q1
FDC604P

add gate clamp zener?

12V_SW_CTRL

IC8G$1

SN74LVC1G14DCKR

Q2
FDV301N

GND

+3V3

+3V3

82 R36

82 R37

LED0
Green

LED1
Yellow

LED0   1   6

LED1   3   4

F2
5 A

+12V_SW

GND

1   2

1   2

X4
EUROSTYLE-02-HDR-RA
PIN # LOOKING INTO HDR

PLUGGABLE SCREW TERM

X4-PLUG

BOM-PART

+3V3

IC8PWR
SN74LVC1G14DCKR

5   VCC

3   GND

GND

+3V3

IC5G$3
SN74LVCG207DBV

5   VCC

2   GND

GND

RELEASE
12V switching, LEDs, buttons

Board: Magic CAN Node r02
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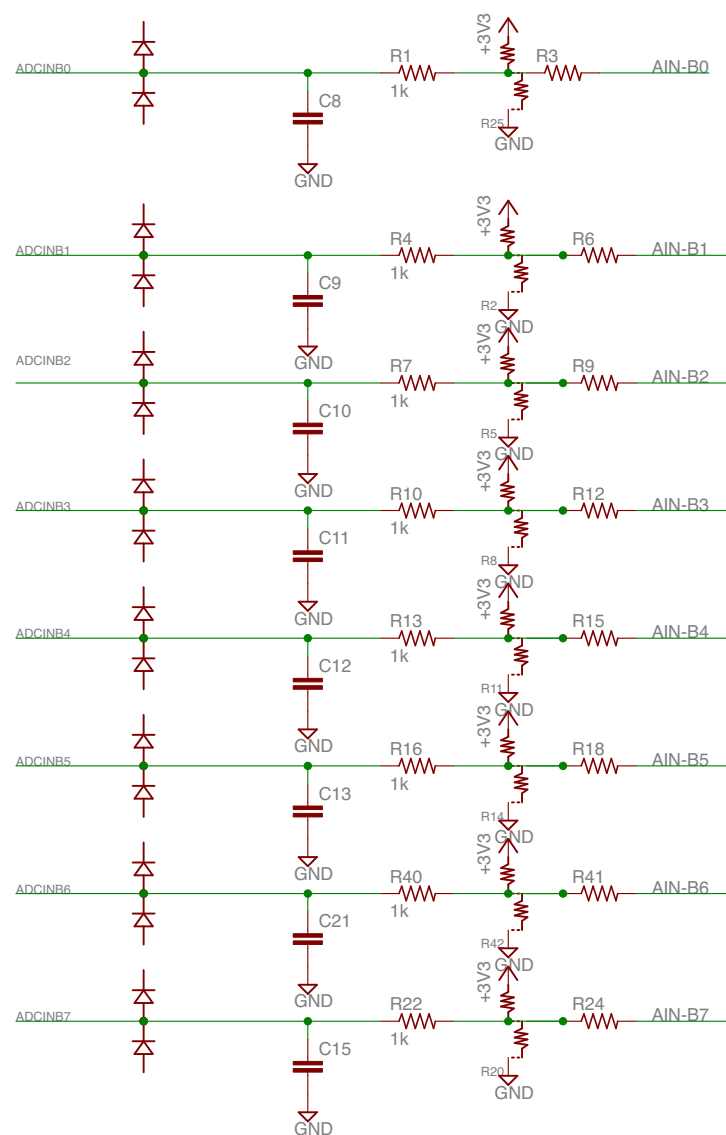
for thermistor measurement:
   populate top half of R2, R5, etc
   and populate R3, R6, etc with 0R

for 0-3.3V measurement:
   populate R3, R6, etc with 0R
   DNP R2, R5, etc

for 0-5V measurement:
   populate R3, R6, etc with 5.6k
   populate bottom half of R2, R5, etc with 10k

for 0-12V measurement:
   populate R3, R6, etc with 27k
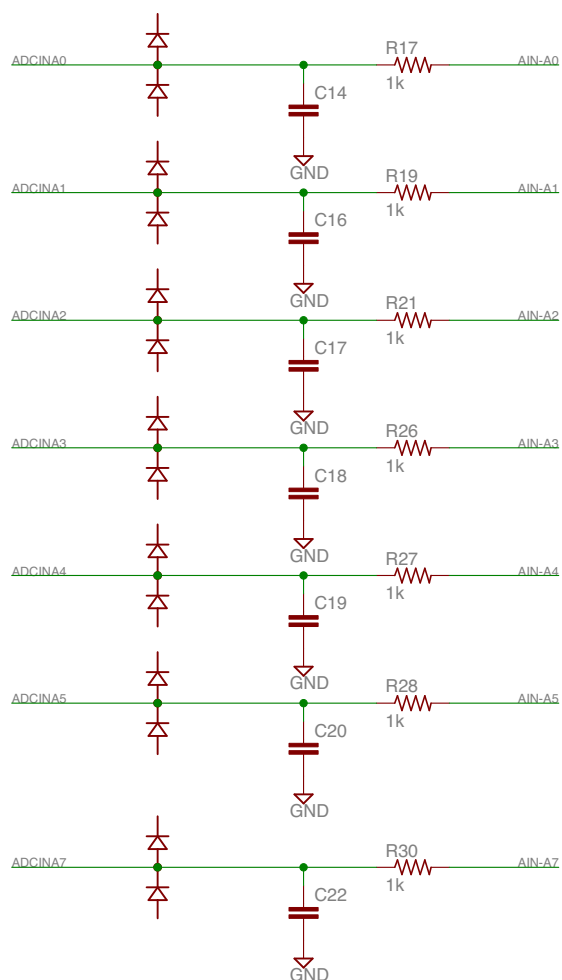   populate bottom half of R2, R5, etc with 10k

for 0-15V measurement:
   populate R3, R6, etc with 36k
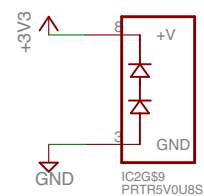   populate bottom half of R2, R5, etc with 10k

ADCINB0
C8
GND
R1
1k
+3V3
R3
R25
GND
AIN-B0

ADCINB1
C9
GND
R4
1k
+3V3
R6
R2
GND
AIN-B1

ADCINB2
C10
GND
R7
1k
+3V3
R9
R5
GND
AIN-B2

ADCINB3
C11
GND
R10
1k
+3V3
R12
R8
GND
AIN-B3

ADCINB4
C12
GND
R13
1k
+3V3
R15
R11
GND
AIN-B4

ADCINB5
C13
GND
R16
1k
+3V3
R18
R14
GND
AIN-B5

ADCINB6
C21
GND
R40
1k
+3V3
R41
R42
GND
AIN-B6

ADCINB7
C15
GND
R22
1k
+3V3
R24
R20
GND
AIN-B7

+3V3
+V
GND
GND
IC7G$9
PRTR5V0U8S

RELEASE
Sensor input filters

C

Board: Magic CAN Node r02
Drawn by Aaron Bonnell-Kangas
Revision date: r02 - 2014-02-10
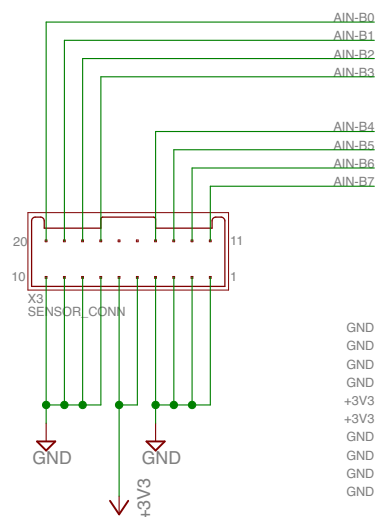Last modified date: 2/10/14 4:27 PM

ADCINA0   R17   AIN-A0
           1k
C14
GND

ADCINA1   R19   AIN-A1
           1k
C16
GND

ADCINA2   R21   AIN-A2
           1k
C17
GND

ADCINA3   R26   AIN-A3
           1k
C18
GND

ADCINA4   R27   AIN-A4
           1k
C19
GND

ADCINA5   R28   AIN-A5
           1k
C20
GND

ADCINA7   R30   AIN-A7
           1k
C22
GND

+3V3
+V
GND
GND
IC2G$9
PRTR5V0U8S

populate C14-C22 with 0.1 uF by default
(for f_3dB = 1.6 kHz)

RELEASE
Auxiliary analog input filters
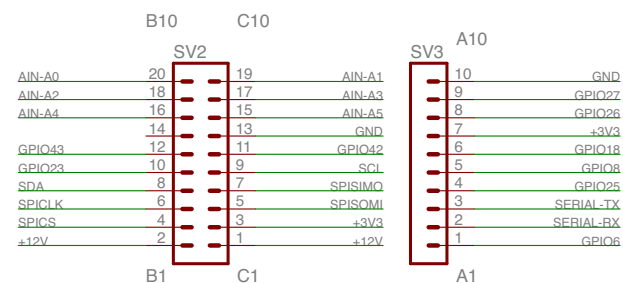
Board: Magic CAN Node r02
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AIN-B0
AIN-B1
AIN-B2
AIN-B3

AIN-B4
AIN-B5
AIN-B6
AIN-B7

20   11
10   1

X3
SENSOR_CONN

GND
GND
GND
GND
+3V3
+3V3
GND
GND
GND
GND

GND   GND

+3V3

X3-CONN
BOM-PART

X3-TERM
BOM-PART

B10   C10

SV2

AIN-A0	20	19	AIN-A1
AIN-A2	18	17	AIN-A3
AIN-A4	16	15	AIN-A5
	14	13	GND
GPIO43	12	11	GPIO42
GPIO23	10	9	SCL
SDA	8	7	SPISIMO
SPICLK	6	5	SPISOMI
SPICS	4	3	+3V3
+12V	2	1	+12V

B1   C1

SV3   A10

10	GND
9	GPIO27
8	GPIO26
7	+3V3
6	GPIO18
5	GPIO8
4	GPIO25
3	SERIAL-TX
2	SERIAL-RX
1	GPIO6

A1

NOTE: these symbols are wrong presently
   SV3(1-10) is A1-A10
   SV2(2,4,6,8,...) is B1-10
   SV2(1,3,5,9,...) is C1-10

RELEASE
Sensor connector and backpack headers

Board: Magic CAN Node r02
Drawn by Aaron Bonnell-Kangas
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