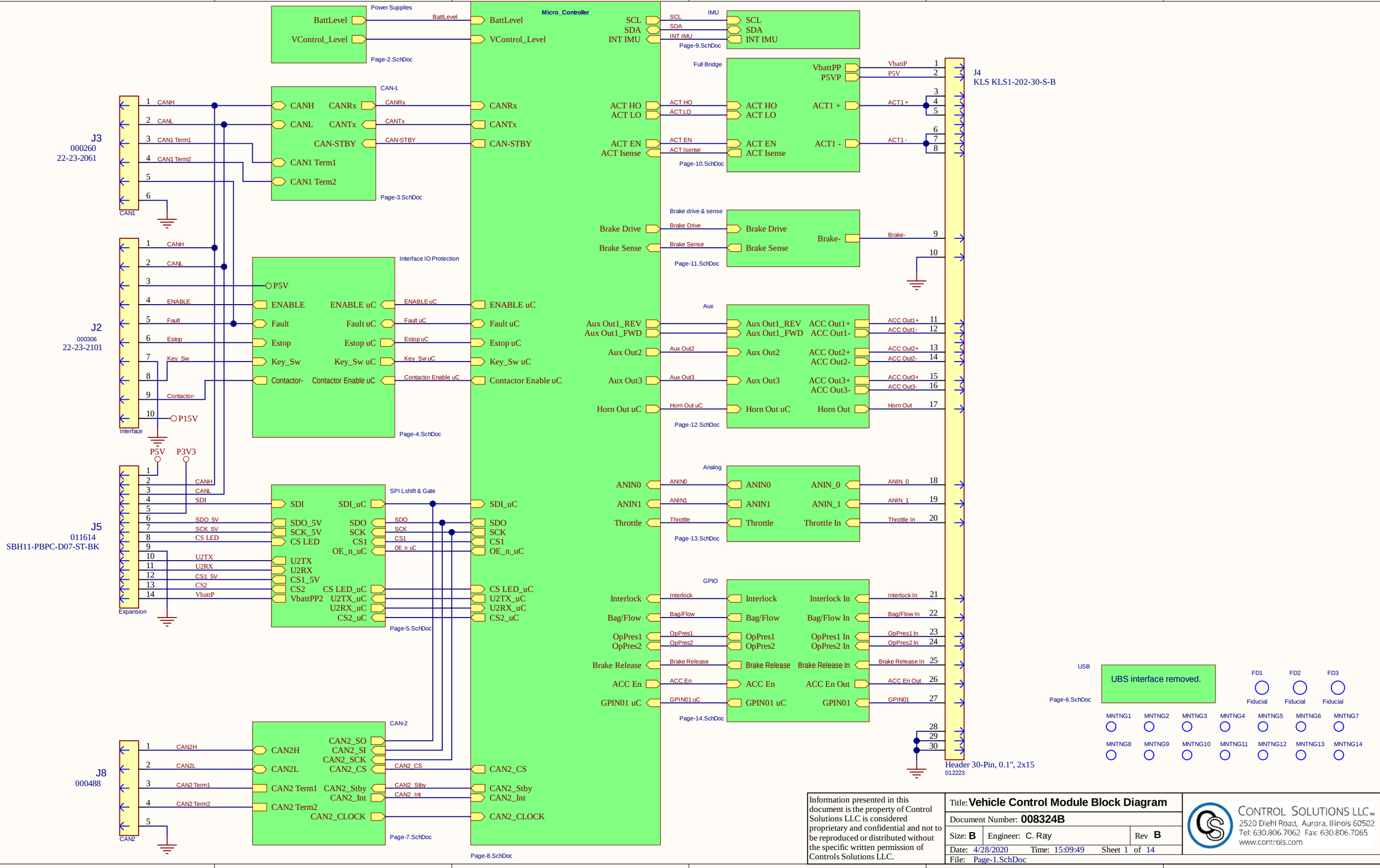

Title: **Vehicle Control Module Block Diagram**

Document Number: **008324B**

Size: **B** | Engineer: C. Ray | Rev **B**

Date: 4/28/2020 Time: 15:09:49 Sheet 1 of 14

File: Page-1.SchDoc

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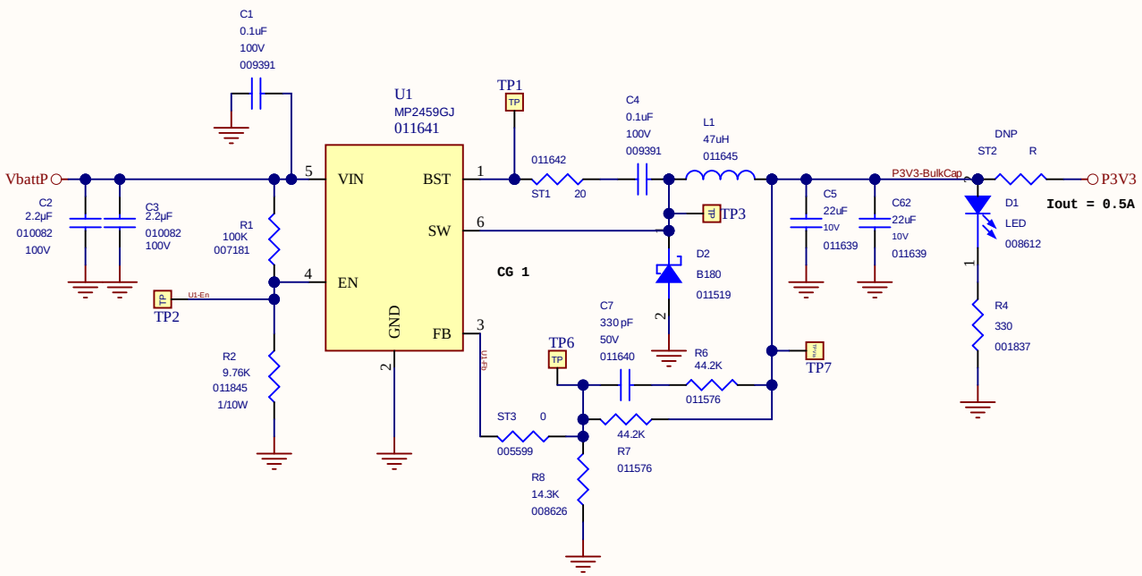

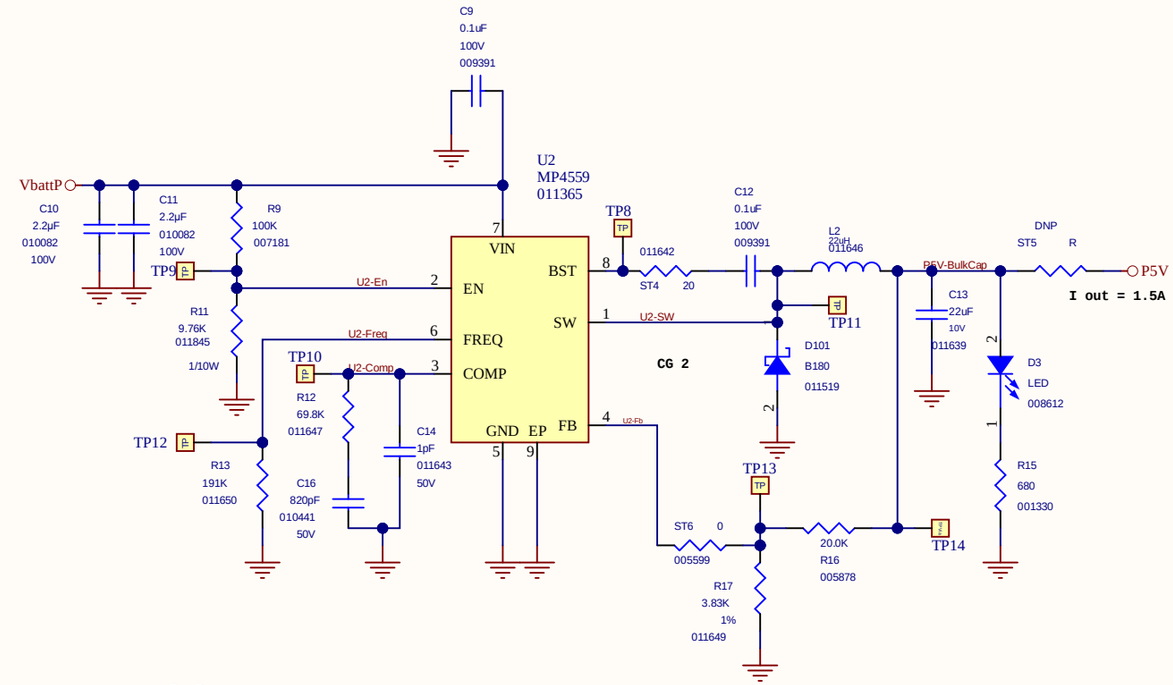

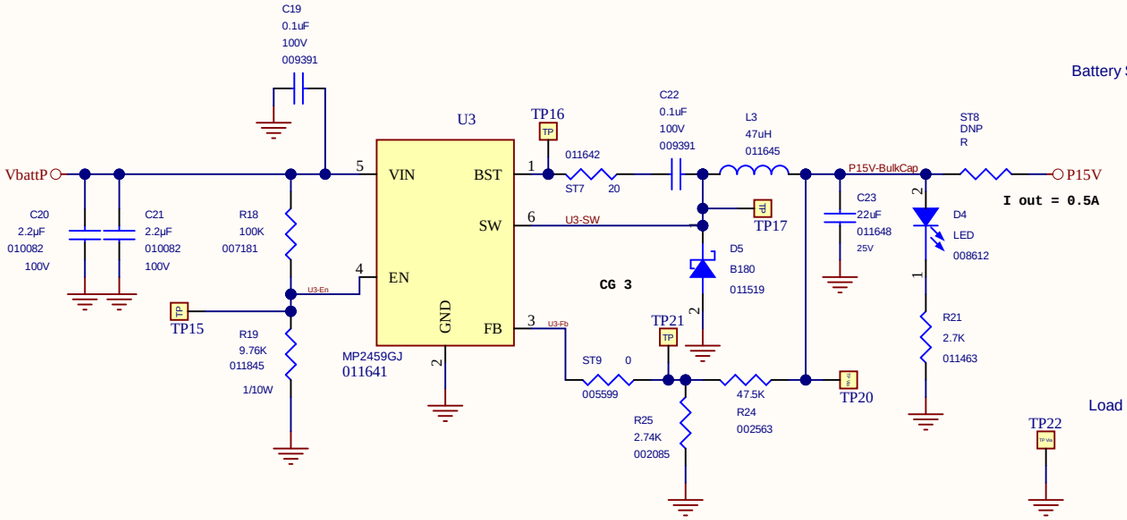

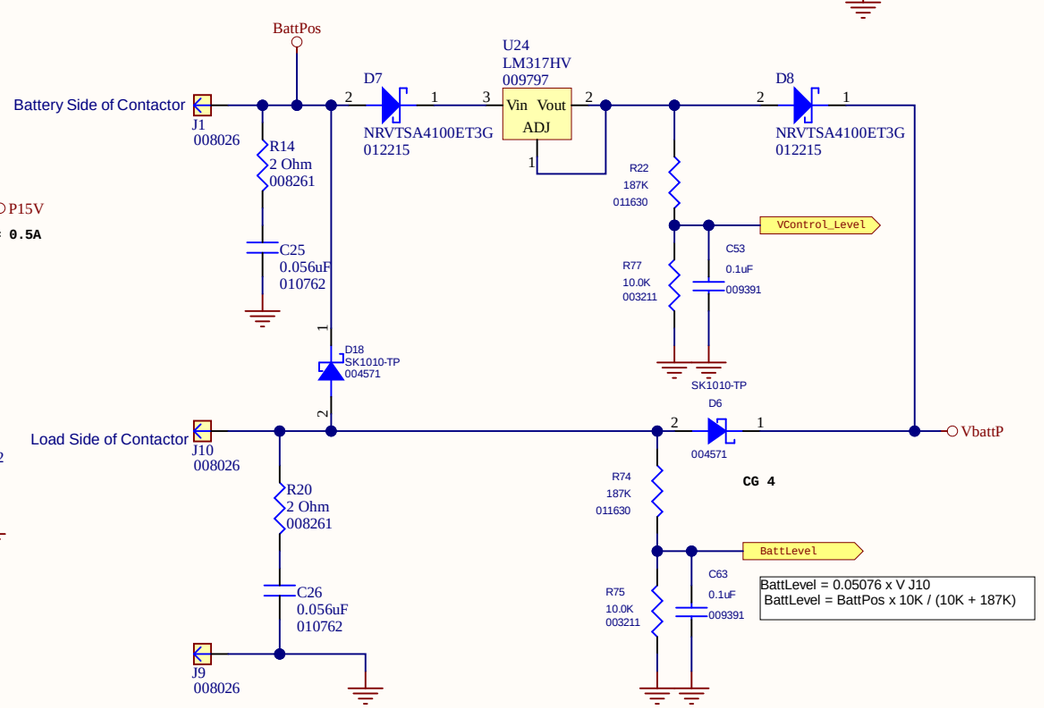

Title: **3.3V, 5V, and 15V Power Supplies**

Document Number: **008324B**

Size: **B** | Engineer: C. Ray | Rev **B**

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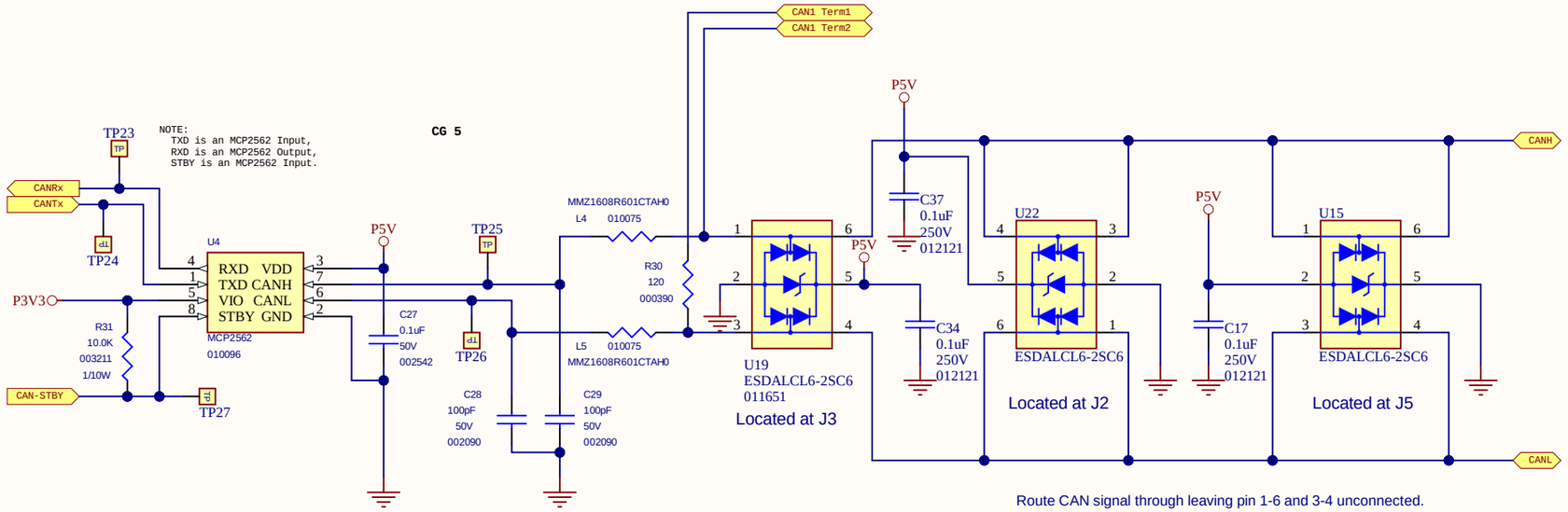

Route CAN signal through leaving pin 1-6 and 3-4 unconnected.

MCP2562 ESD protection on CANH & CANL meeting IEC61000-4-2 to 8KV.

$C_{i/o-GND}$	Capacitance between I/O and GND	V_R = 1.65 V		2.5	3.5	pF
$\Delta C_{i/o-GND}$				0.015		
$C_{i/o-i/o}$	Capacitance between I/O	V_R = 1.65 V		1.2	1.7	pF
$\Delta C_{i/o-i/o}$				0.04		
$C_{i/o-GND}$	Capacitance between I/O and GND	V_R = 1.65 V		2.5	3.5	pF
$\Delta C_{i/o-GND}$				0.015		
$C_{i/o-i/o}$	Capacitance between I/O	V_R = 1.65 V		1.2	1.7	pF
$\Delta C_{i/o-i/o}$				0.04		

Title: **CAN-1 Transceiver**

Document Number: **008324B**

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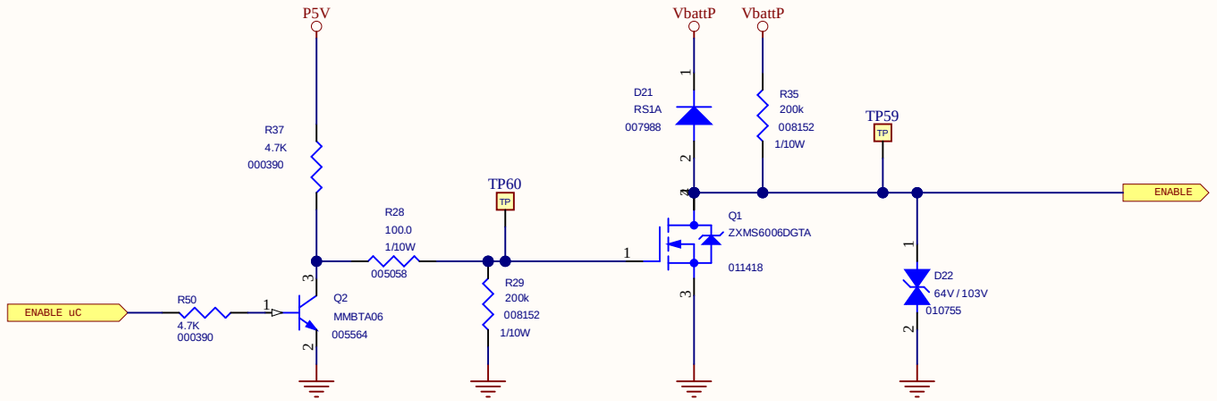

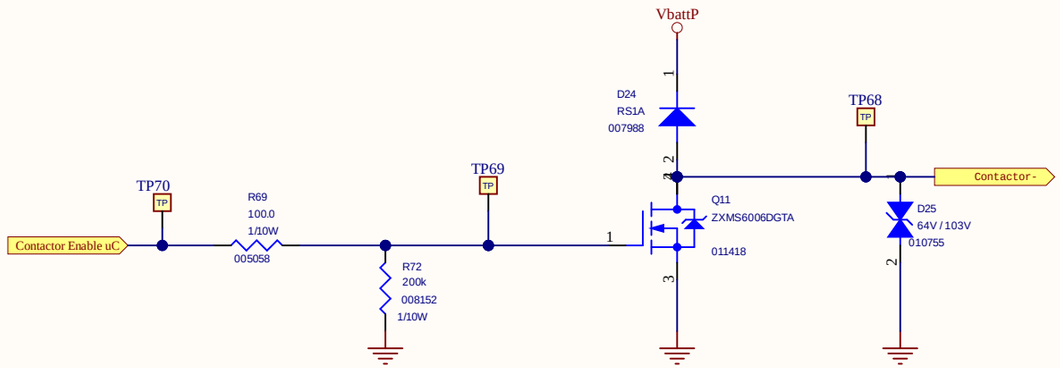

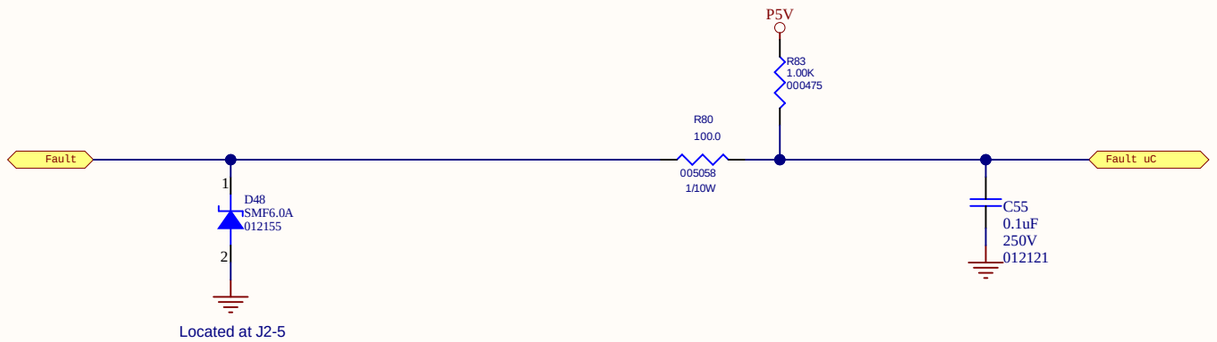

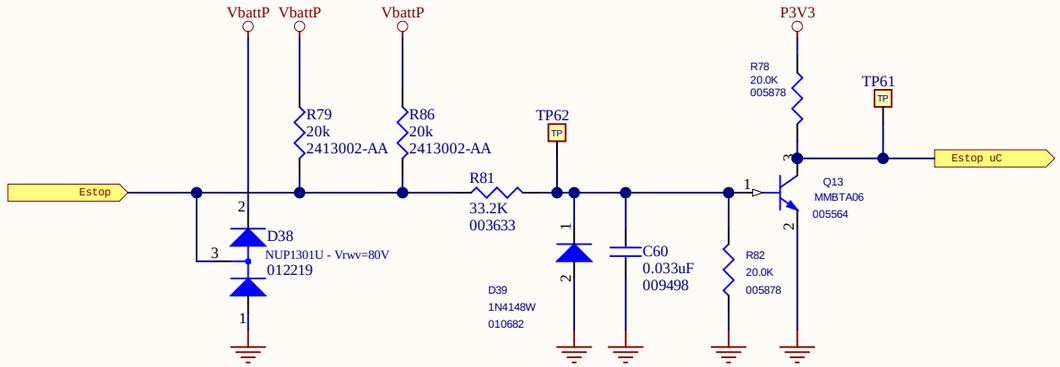

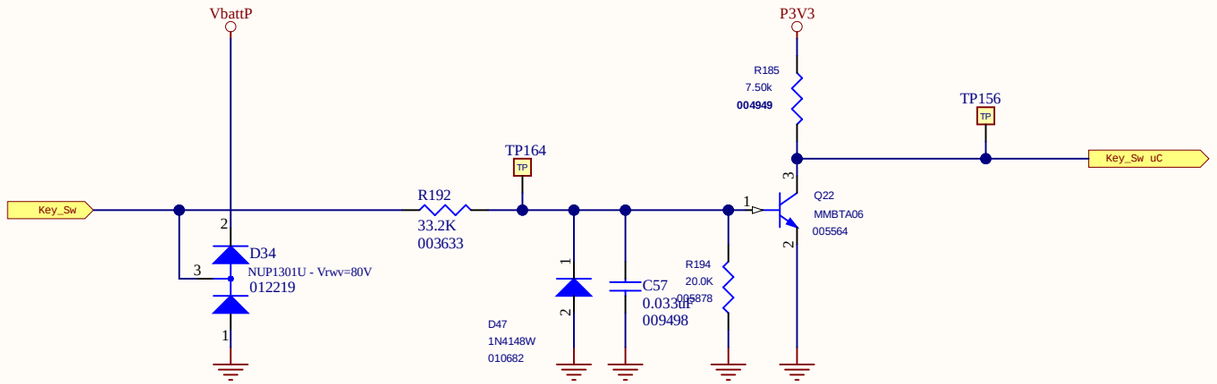

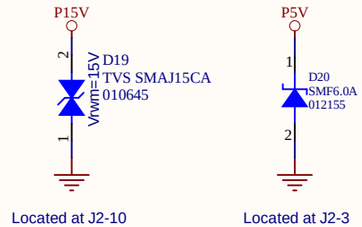

CG 6

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	Document Number: **008324B**	
	Size: **B** Engineer: C. Ray	Rev **B**
	Date: 4/28/2020 Time: 15:09:49 Sheet 4 of 14	
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Changes / Notes : Changed TX1030 to 74LV4T125

P5V

C24
0.1uF
002542
50V

OE_n_uC
SCK
SDO
CS2_uC
CS1
U2TX_uC
U2RX
SDI
CS_LED

U8A
SN74LV4T125
U8B
SN74LV4T125
U8C
SN74LV4T125
U8D
SN74LV4T125

TP5
TP4
TP66
TP67
TP71
TP72
TP73
TP74

R5 100.0 005058
R10 100.0 005058
R84 100.0 005058
R85 100.0 005058
R27 100.0 005058
R26 100.0 005058
R36 100.0 005058
R23 100.0 005058

SCK_5V
SDO_5V
CS2
CS1_5V
U2TX
U2RX_uC
SDI_uC
CS_LED_uC

5V Signal
3.3V Signal
3.3V Signal / 5V Tolerant Input
5V Tolerant Input
5V Tolerant Input

U25
DT2042-04TS
012225
U26
DT2042-04TS
012225
N/C

P3V3
D28
012177
SMF3.3
Located at J5-5

P5V
D27
SMF6.0A
012155
Located at J5-1

VbattP
2.5A F8
011478
VbattPP2
D26
010755
64V / 103V
Located at J5-14

Title: **Level Translation & Gating for SPI LED's**
Document Number: **008324B**
Size: **B** Engineer: C. Ray Rev **B**
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Page 6 is blank. The USB interface was removed.

Title: **USB**

Document Number: **008324B**

Size: **B** | Engineer: C. Ray | Rev **B**

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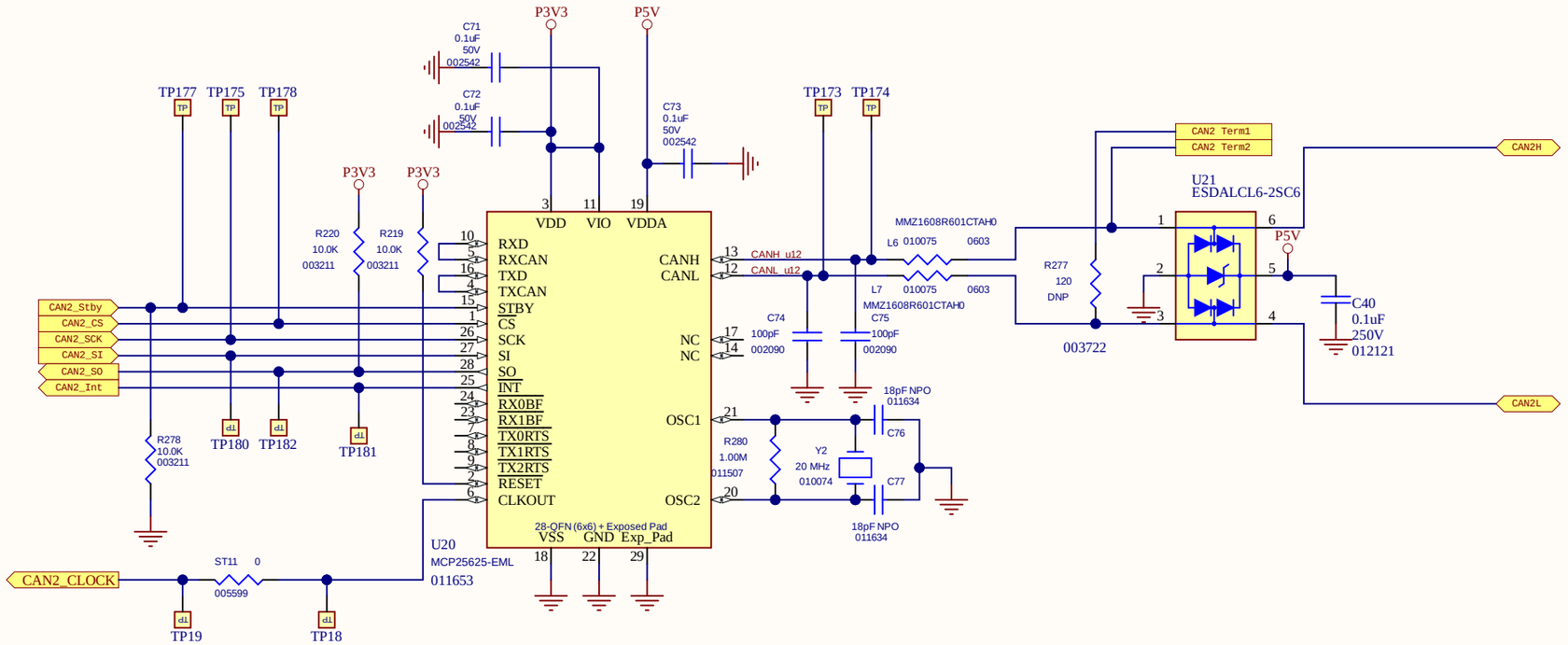
This CAN block follows the typical application shown in Figure 1-2 of the MCP25625 datasheet.
All optional connections have been left as no-connects.



CG 8

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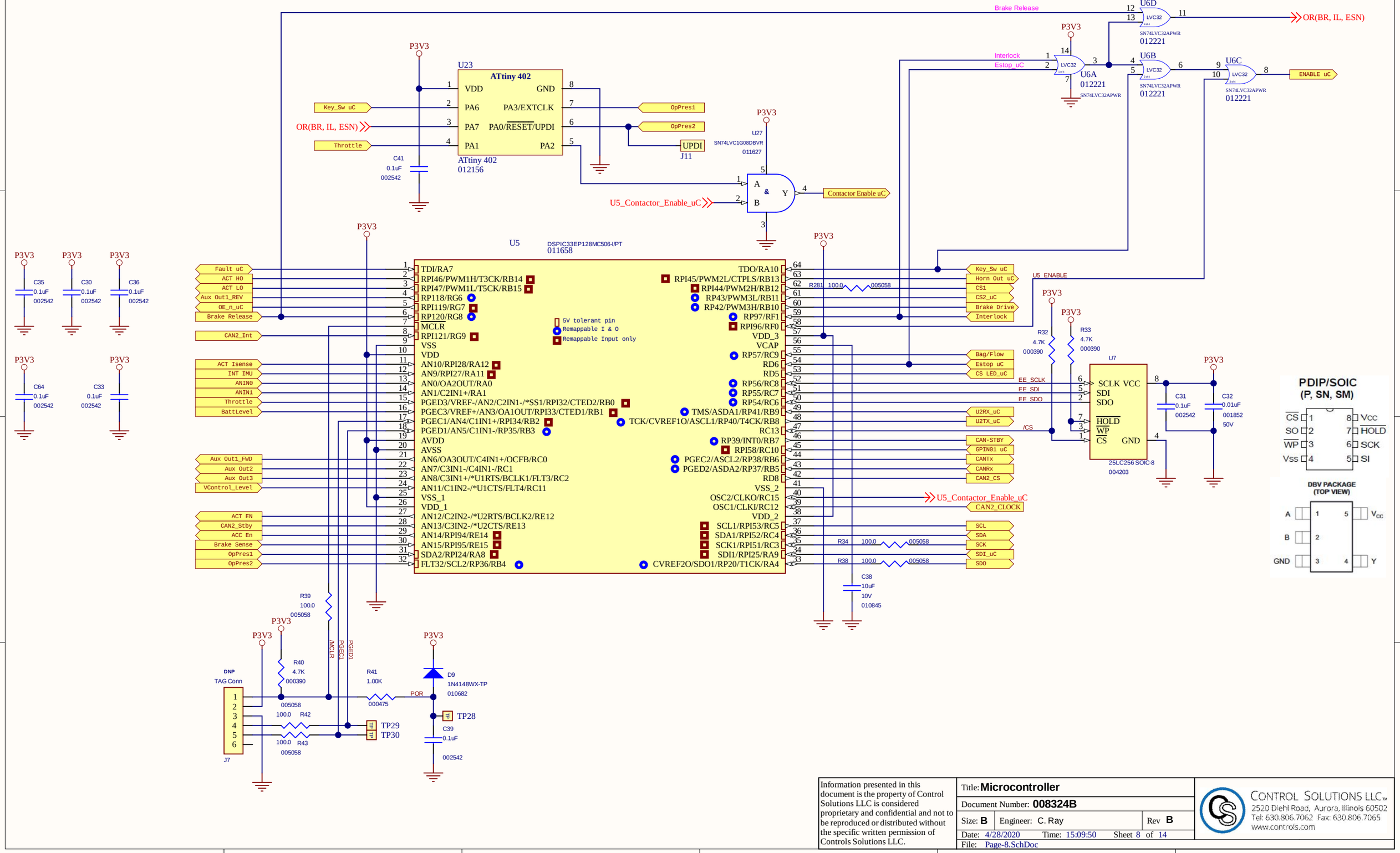

Title: **Microcontroller**

Document Number: **008324B**

Size: **B** | Engineer: C. Ray | Rev **B**

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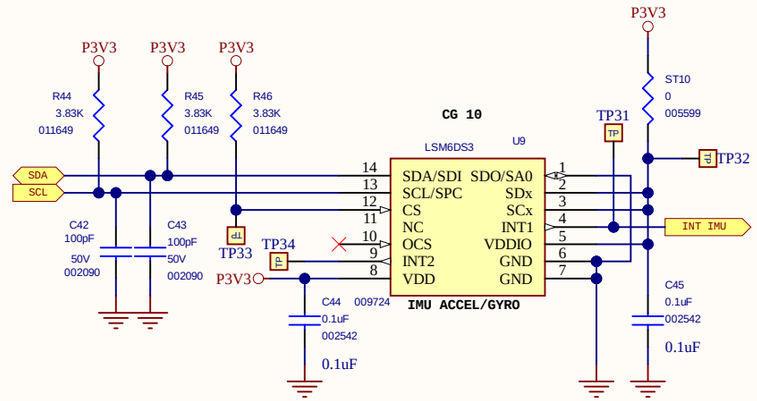

Title: **Inertial Measurement Unit**

Document Number: **008324B**

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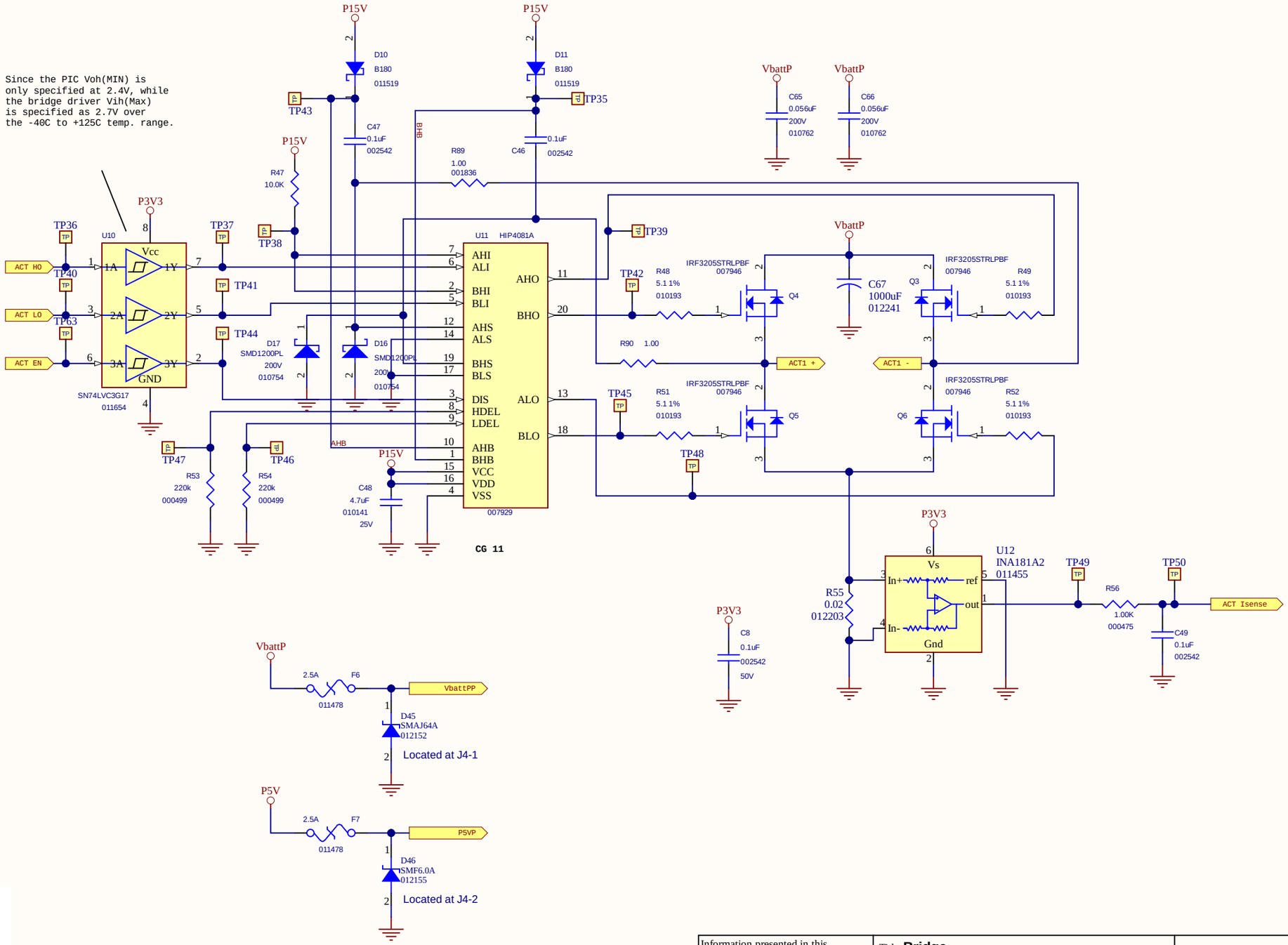
Since the PIC Voh(MIN) is
only specified at 2.4V, while
the bridge driver Vih(Max)
is specified as 2.7V over
the -40C to +125C temp. range.



Changes / Notes :

R55 changed to 0.02 ohms making the current sensing range approximately 0A-3.3A.

U12 Vout: Vout = 1V / 1A
Vout = I x R x G
Vout = 1A x 0.02 x 50V/V

Title: **Bridge**

Document Number: **008324B**

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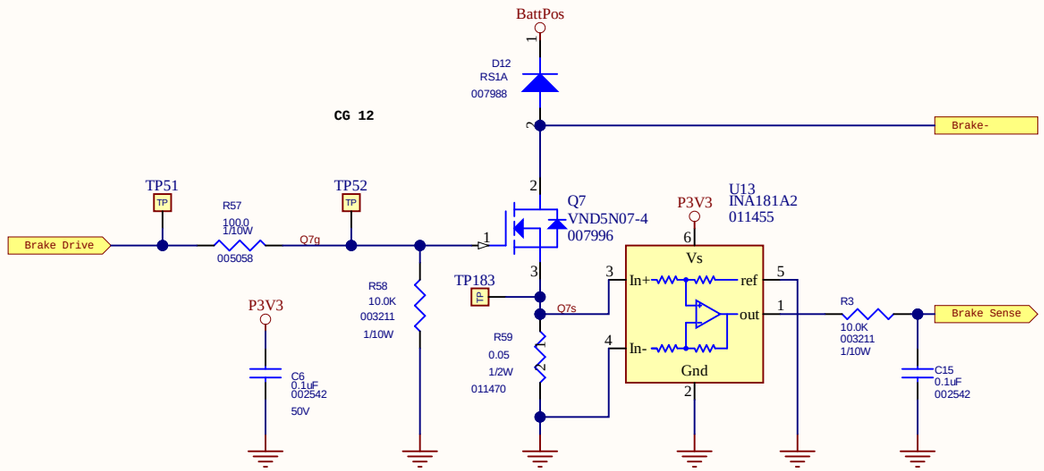
Ref. Brake I Sense.asc simulation.
Manufacturer Pspice model indicates 20mV out when
the current through the sense resistor is 0.
Ref. also ina181a2 Symbol Test1.asc
Better than single-supply R2R in/out ISL28130 in
diff-amp config.



Title: **Brake Drive & Brake Current Sense**

Document Number: **008324B**

Size: **B** | Engineer: C. Ray | Rev **B**

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File: Page-11.SchDoc

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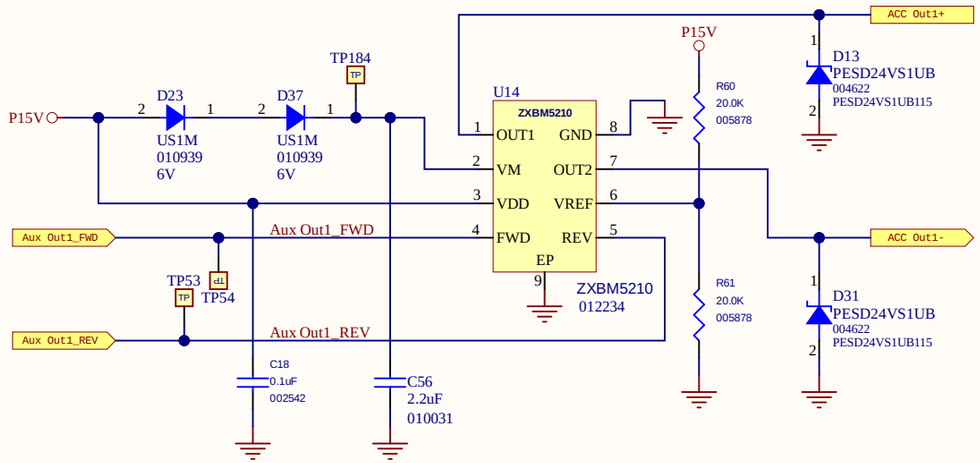

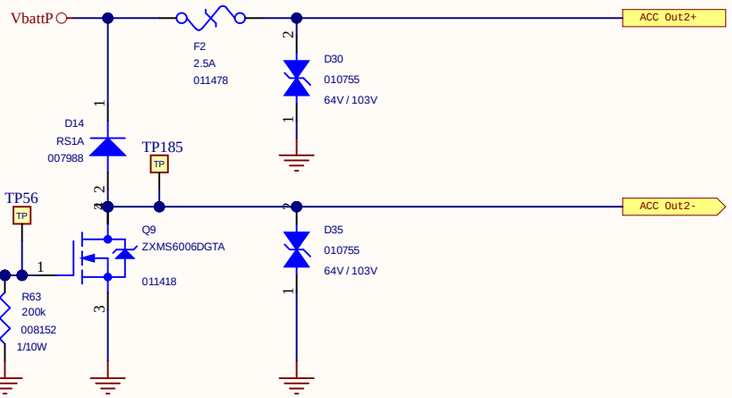

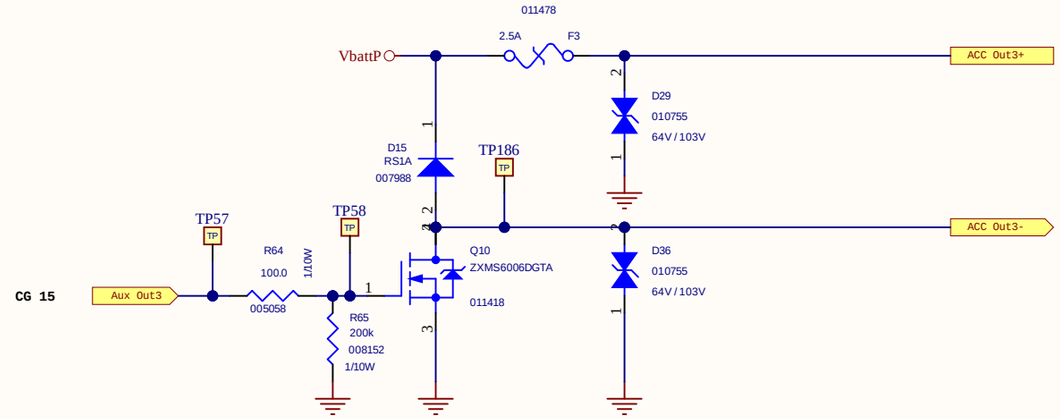

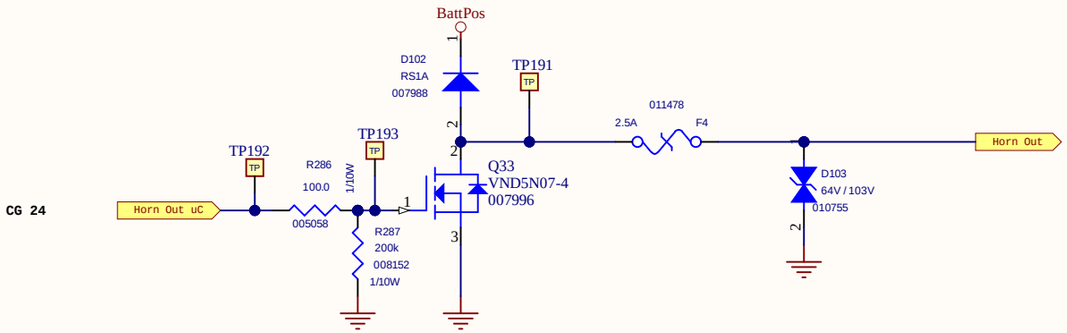

Title: **Auxilary / Accessory Output**

Document Number: **008324B**

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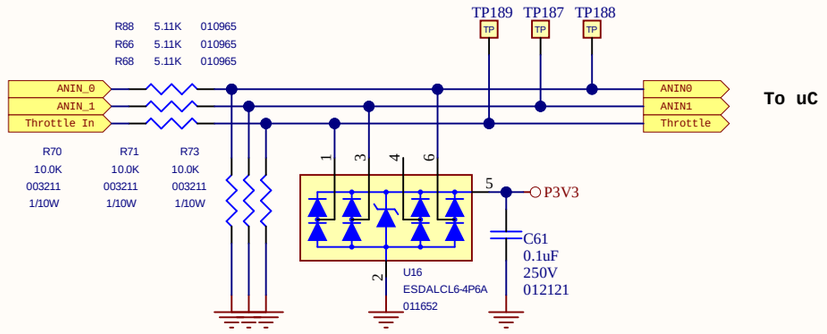

To uC

5V * (10K/(10K + 5.1K)) = 3.31V

Title: **Analog Input 5V to 3.3V Level Shift, ESD**

Document Number: **008324B**

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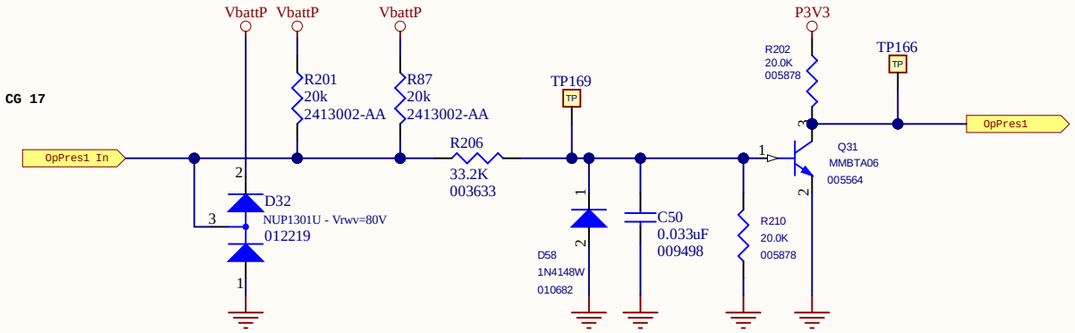

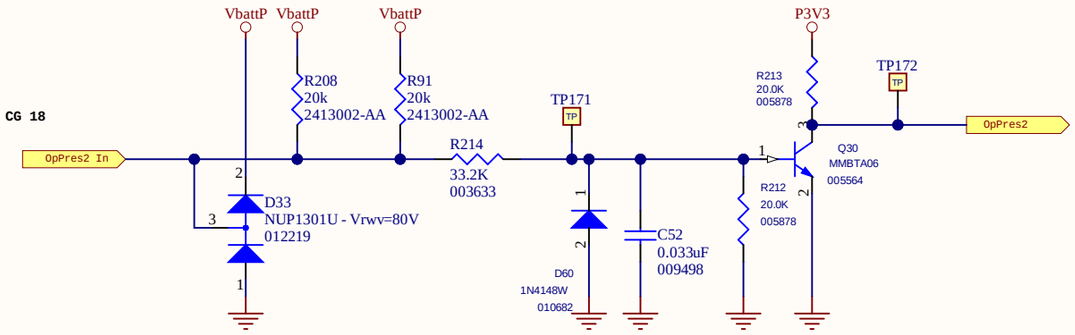

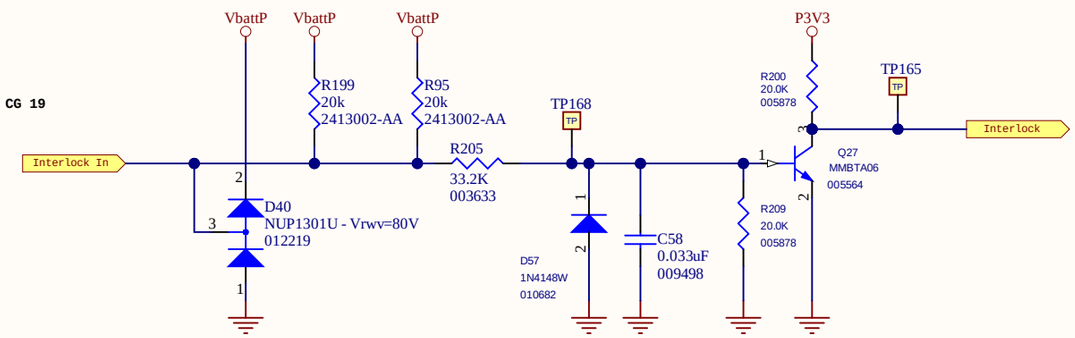

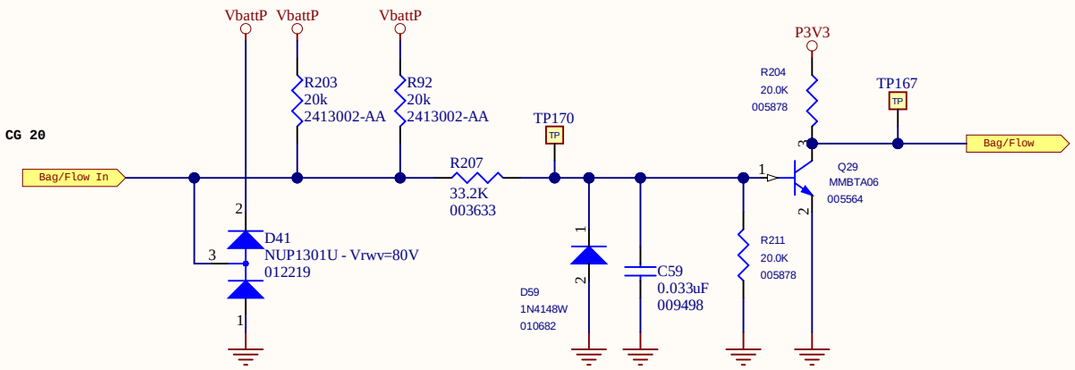

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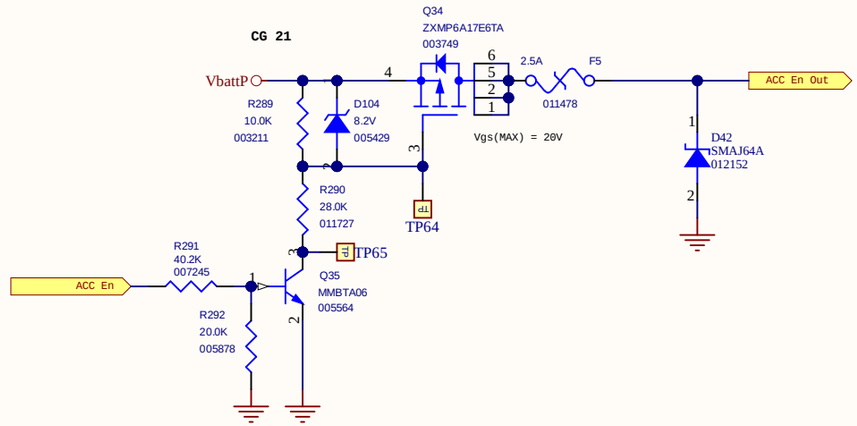

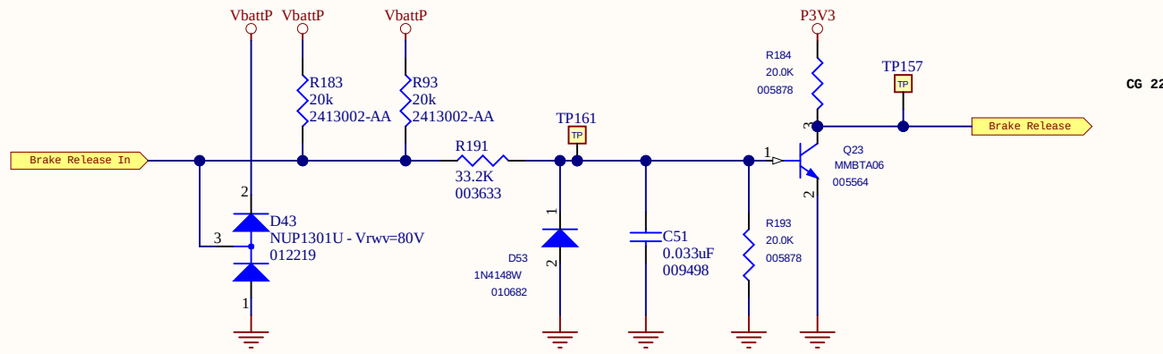

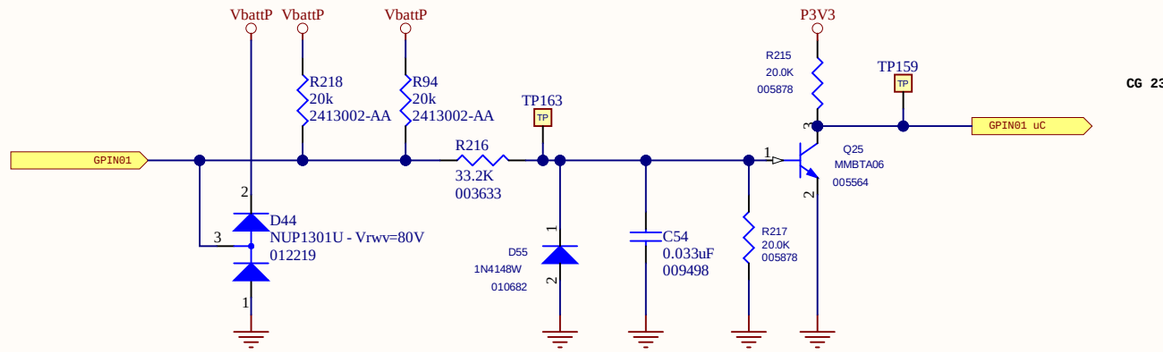

Title: **GPIO**

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