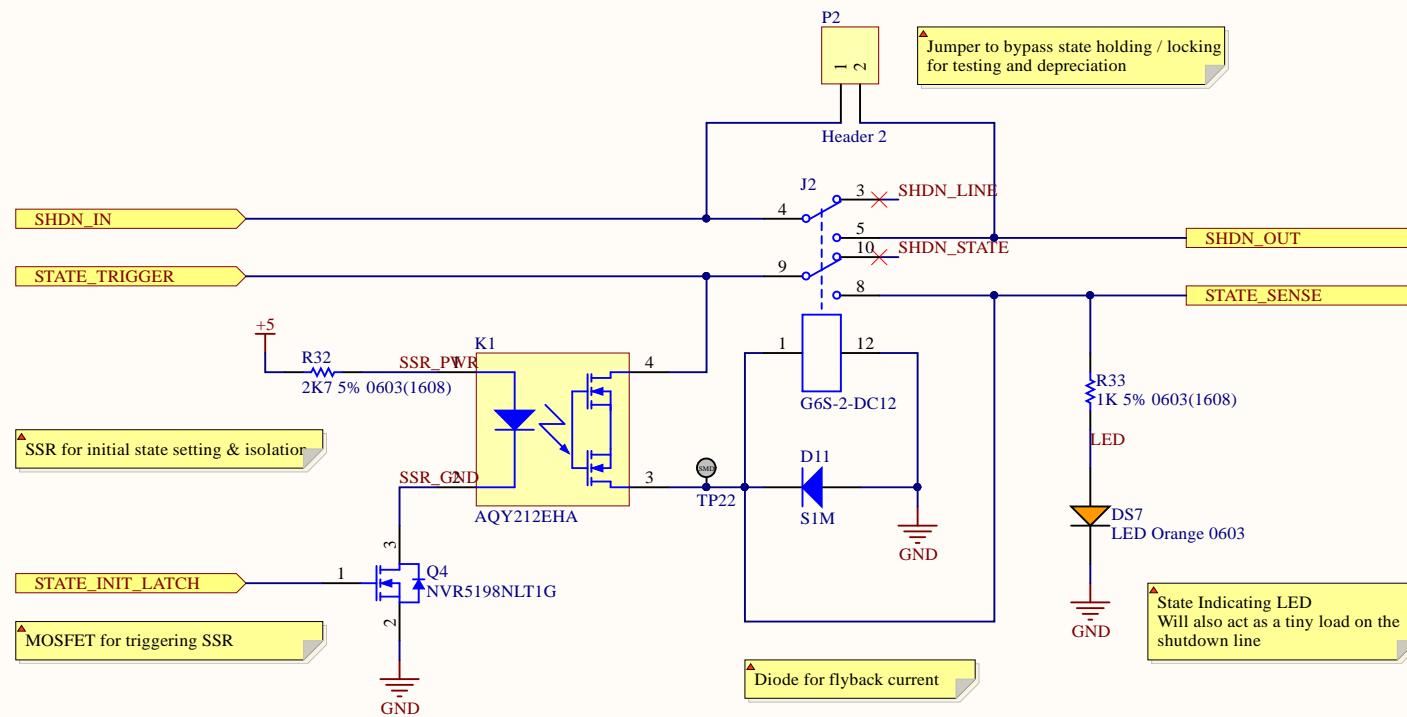


A



D

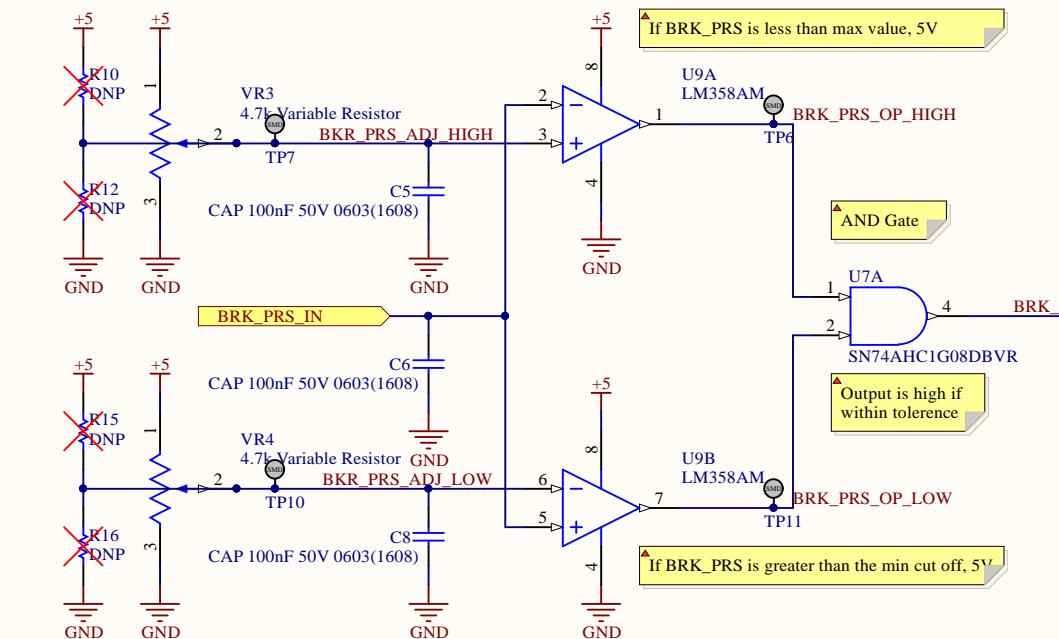
Relay https://lcsc.com/product-detail/Relays_OMRON_G6S-2-12V_G6S-2-12V_C28410.html

SSR <https://datasheet.octopart.com/AQY212EHA-Panasonic-datasheet-109895.pdf>
Any of these part numbers are suitable replacements to the one listed in the same product family
- AQY211EH AQY211EHA AQY211EHAX AQY211EHAZ
- AQY212EH AQY212EHA AQY212EHAX AQY212EHAZ

Relay Diode https://lcsc.com/product-detail/Diodes-General-Purpose_ON-Semicon_MURA120T3G_ON-Semicon-ON-MURA120T3G_C111832.html
Any diode that has 500mA and greater than 20V resistance will be fine. The package is a common SMA type

Title **QUTMS Shutdown V2.1 - Shutdown Segment**

Size: A4	Number: 3	Revision: 6	QUT Motorsport, O-120 O Block, QUT Gardens Point Brisbane, QLD, Australia
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RC Charging Circuit:
50% Charge Voltage Wise at 500ms (to compare at 2V5)
500ms = $0.7T = 0.7 * R * C$
 $C = 10\mu F = 0.01F$
 $\gg R = 71k5$

AND Gate

U7A SN74AHC1G08DBVR

BRK_PRS_OP

BPSD_DELAY_RESISTOR

SN74AHC1G08DBVR

CAP 10uF 50V 1206(3216)

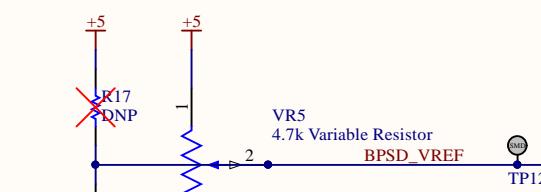
GND

Implausibility exists for more

than 500ms

EV 8.6.1.b

If both trigger stages are ON,
begin charging the capacitor at
current rate set by resistor



Signal Delay Comparison VREF

BRK_PRS_OP_HIGH_INDICATOR

DS1 LED Red 0603

BRK_PRS_OP_LOW_INDICATOR

DS2 LED Red 0603

LEM_OP_HIGH_INDICATOR

DS3 LED Red 0603

LEM_OP_LOW_INDICATOR

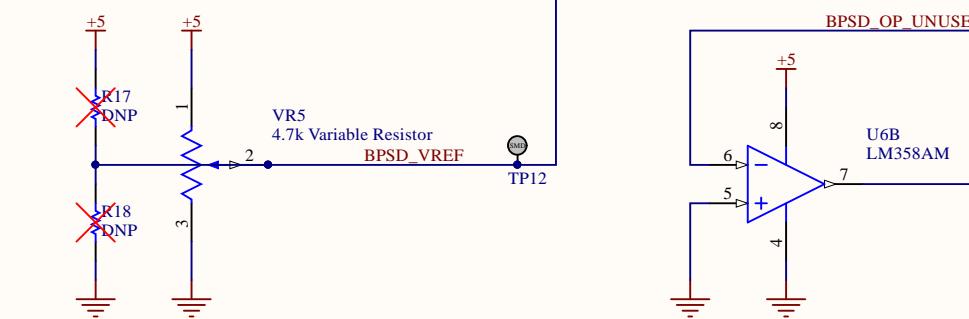
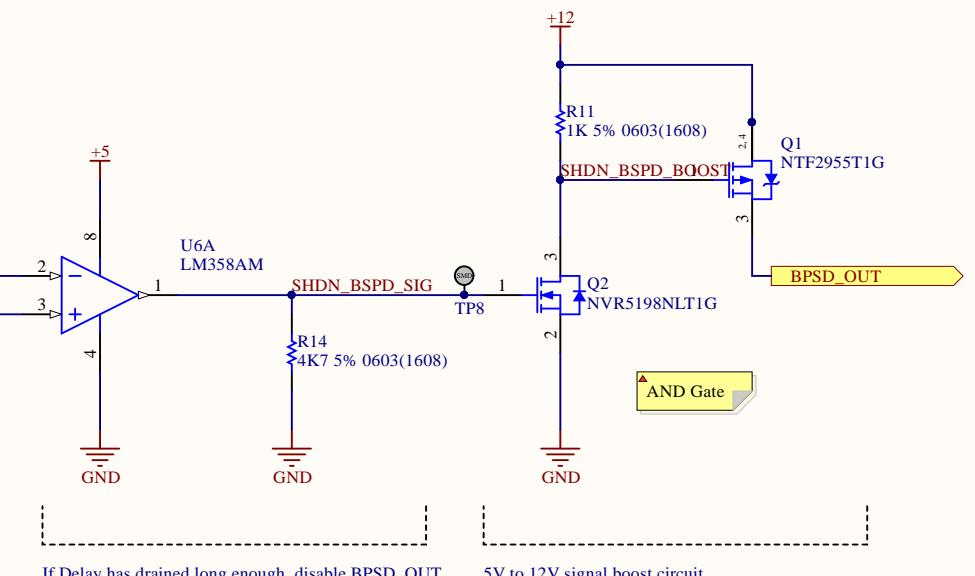
DS4 LED Red 0603

LEM_OP_LOW

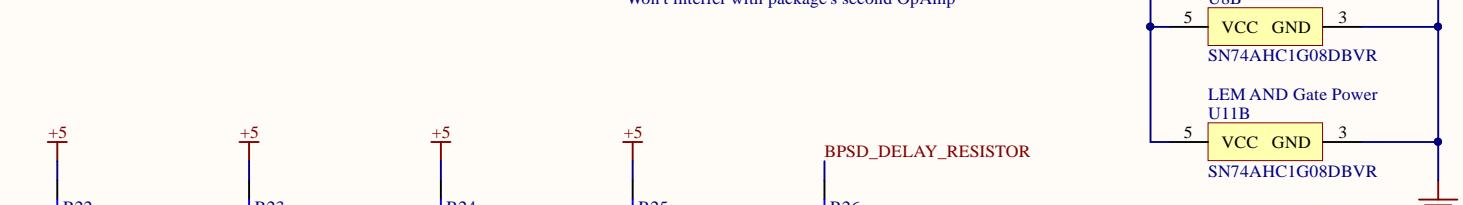
DS5 LED Red 0603

GND

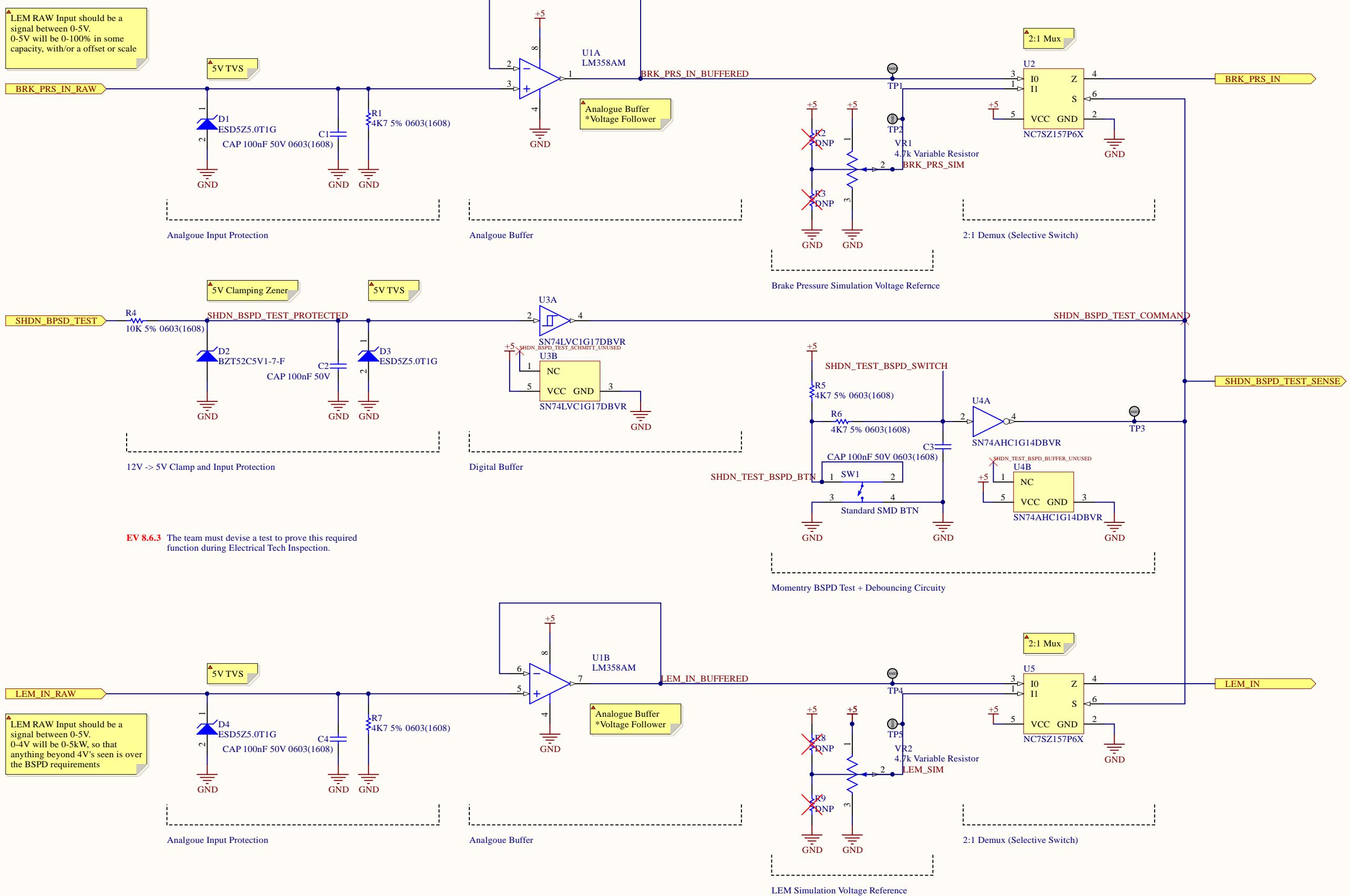
Status Indicator LEDs



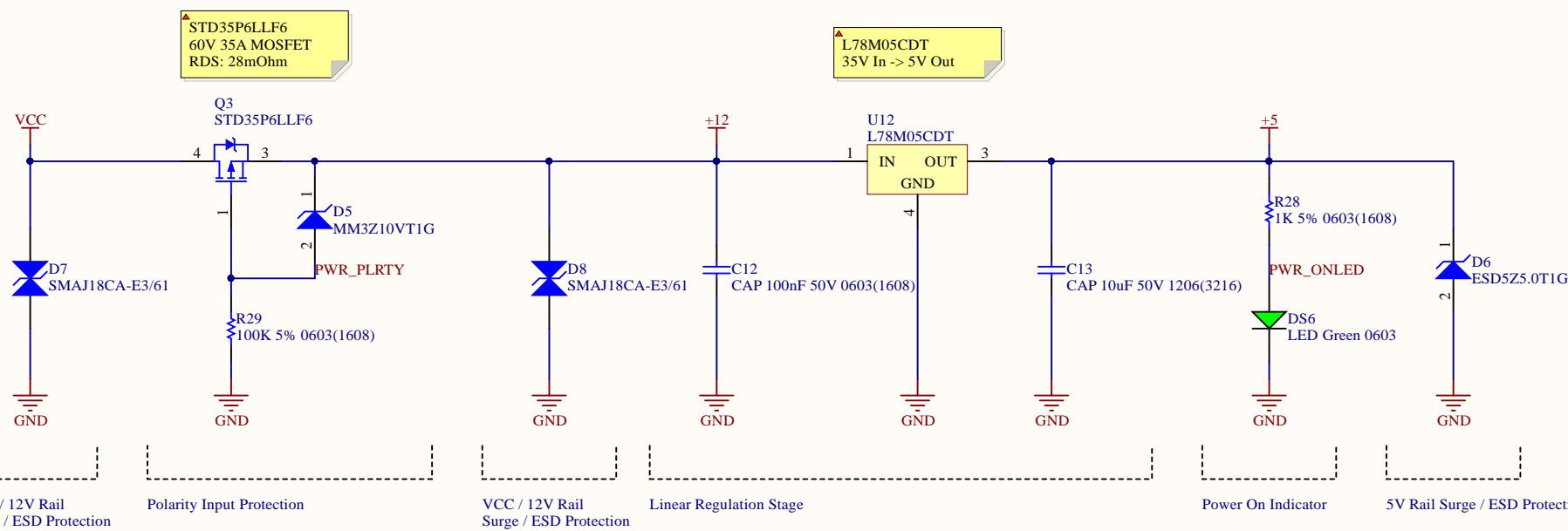
Spare Grounded / Disabled OpAmp
* Won't interfere with package's second OpAmp



Will only turn on an error state except BPSD_DELAY



A



Input power stage needs to be built for:
 - 1 Lead Acid Battery -> 14.4V Max
 - 4s#p Li-ion Battery -> 16.8V Max

Polarity Protection MOSFET https://lcsc.com/product-detail/MOSFET_STMicroelectronics_STD35P6LLF6_STMicroelectronics-STD35P6LLF6_C165929.html 1st Choice

Polarity Protection Zener https://lcsc.com/product-detail/Zener-Diodes_ON-Semicon_MM3Z10VT1G_ON-Semicon-ON-MM3Z10VT1G_C39057.html 2nd Choice

5V Rail TVS https://lcsc.com/product-detail/Diodes-ESD_ON-Semicon_ESD5Z5-0T1G_ON-Semicon-ON-ESD5Z5-0T1G_C82044.html

VCC / 12V Rail TVS https://lcsc.com/product-detail/TVS_Littelfuse_SMAJ18CA_SMAJ18CA_C151240.html

Output Cap https://lcsc.com/product-detail/Multilayer-Ceramic-Capacitors-MLCC-SMD-SMT_SAMSUNG_CL31A106KBHNNNE_10uF-106-10-50V_C13585.html

Linear Reg Actual https://lcsc.com/product-detail/Linear-Voltage-Regulators_ON-Semicon_MC7805BDTRKG_ON-Semicon-ON-MC7805BDTRKG_C110908.html
 Listed https://lcsc.com/product-detail/Others_STMicroelectronics_L78M05CDT-1_STMicroelectronics-L78M05CDT-1_C262914.html
 Any DPak package linear reg (not low dropout!) will be sufficient, Just check the pinout just in case

Title **QUTMS Shutdown V2.1 - Power Stage**

Size: A4	Number: 6	Revision: 2	QUT Motorsport, O-120 O Block, QUT Gardens Point Brisbane, QLD, Australia
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A

A

B

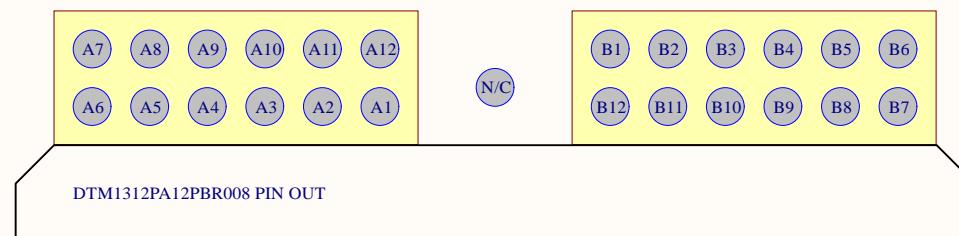
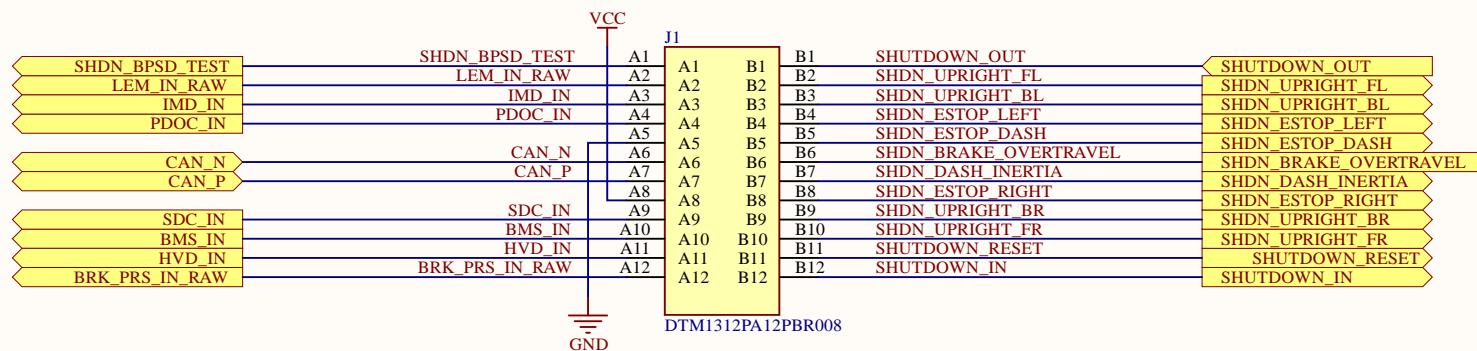
B

C

C

D

D



Title **QUTMS Shutdown V2.1 - Connector**

Size: A4	Number: 7	Revision: 3	QUT Motorsport, O-120 O Block, QUT Gardens Point Brisbane, QLD, Australia
Date: 9/03/2020	Time: 11:09:27 AM	Sheet 7 of 7	



