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USB-PD DUAL 100 W PORT

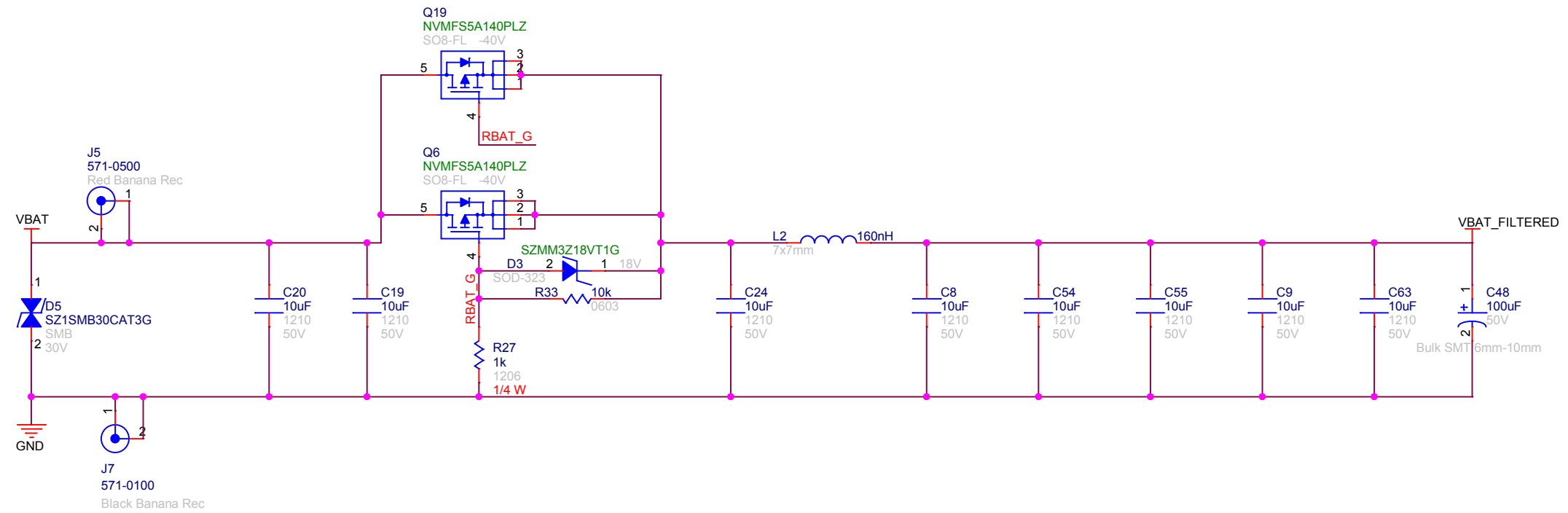
AUTOMOTIVE CHARGER

ONSEC-18-004

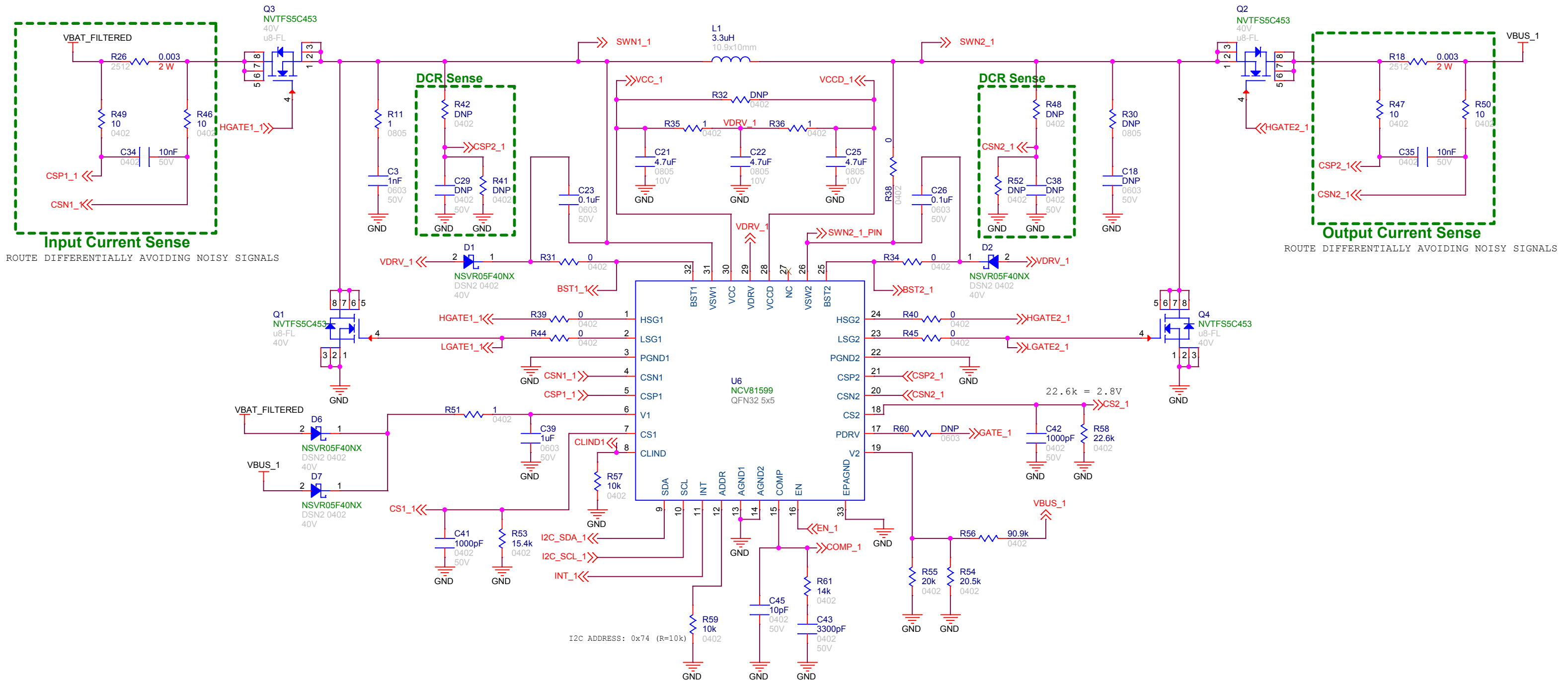
REV1

ON Semiconductor		
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INPUT FILTERS AND BATTERY PROTECTION



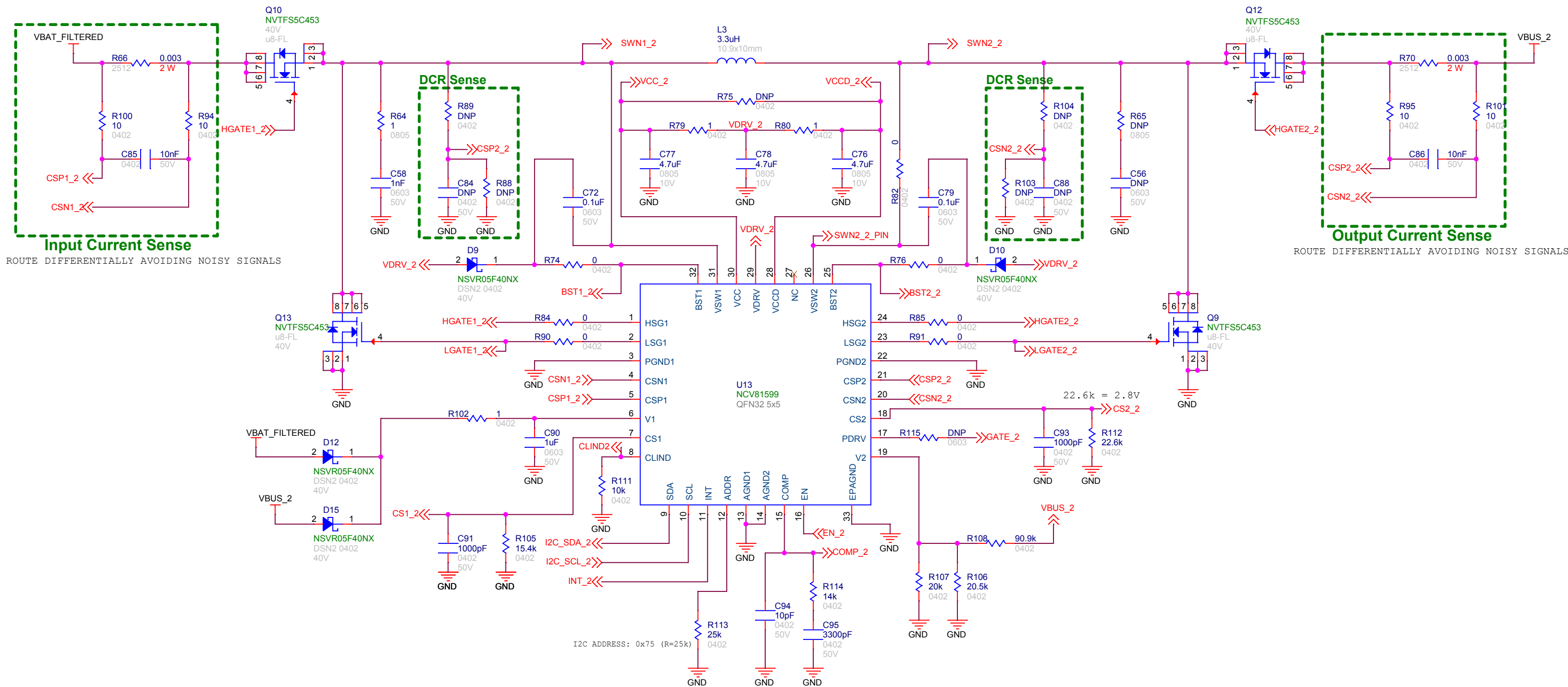
NCV81599 - POWER STAGE 1



ON Semiconductor

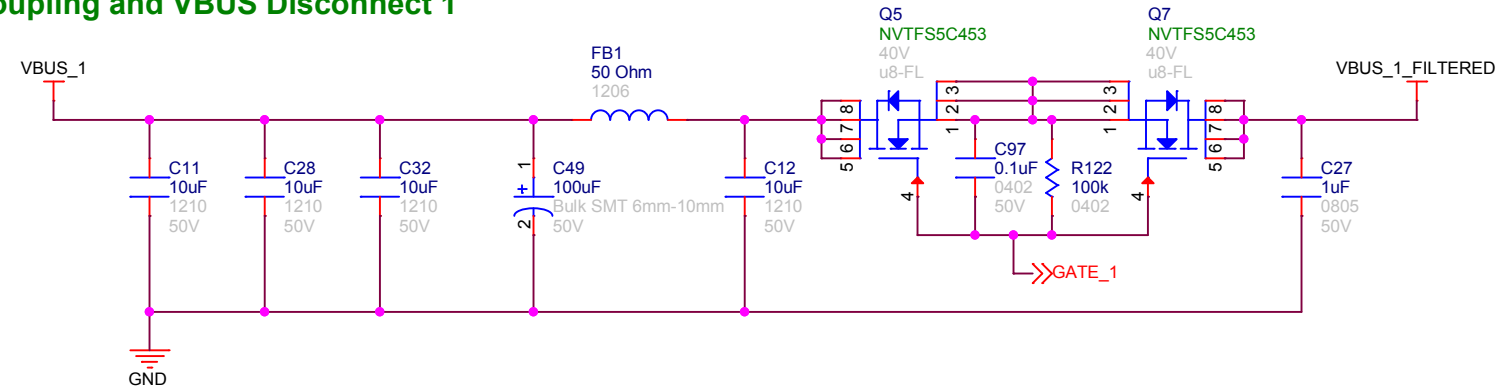
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NCV81599 - POWER STAGE 2



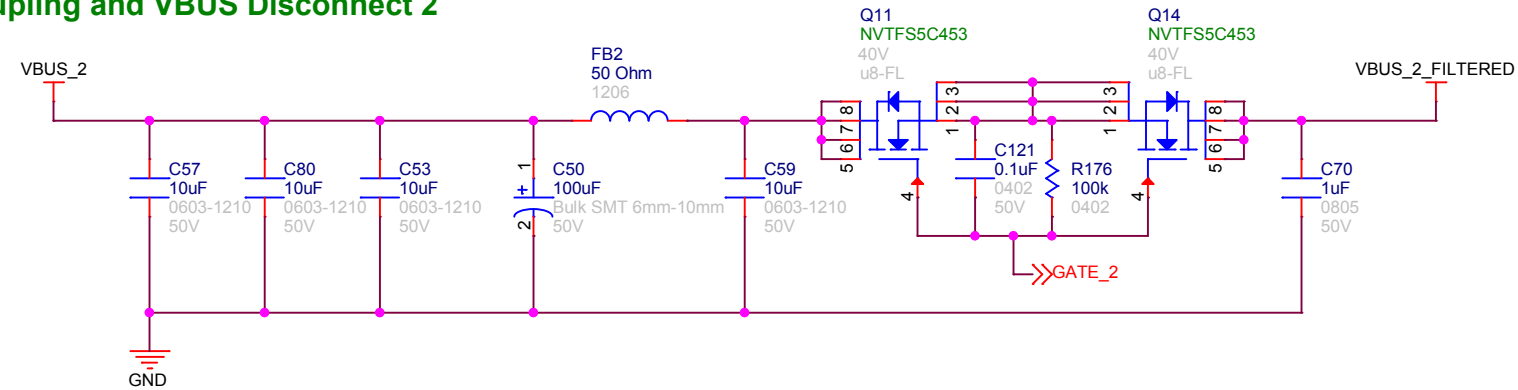
OUTPUT FILTERS AND VBUS DISCONNECT

Output Decoupling and VBUS Disconnect 1

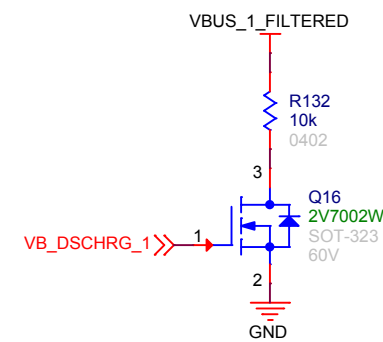
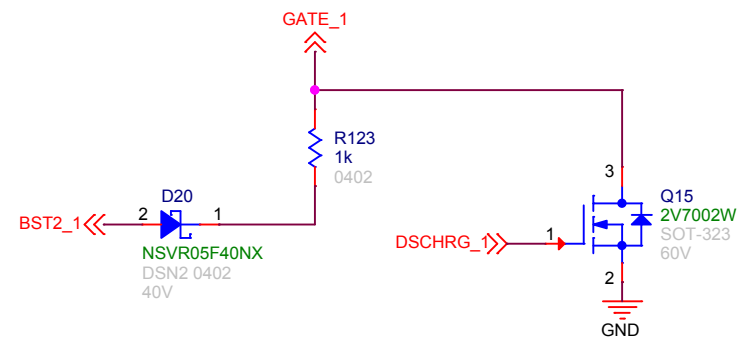


NOTE: VBUS DISCONNECT CIRCUIT IMPLEMENTED TO COMPLY WITH TYPE-C SPEC

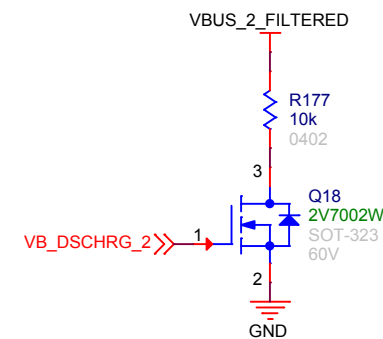
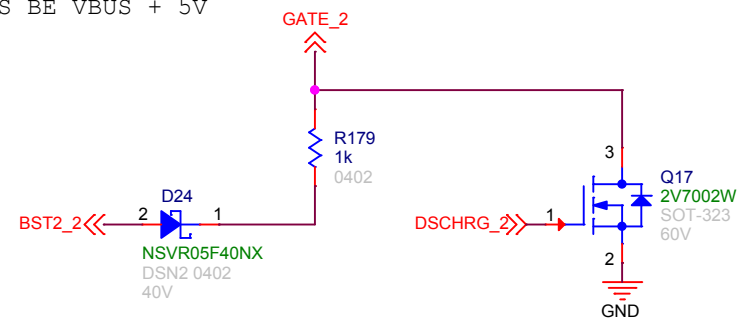
Output Decoupling and VBUS Disconnect 2



Discharge Circuits



NOTE: BST2 WILL ALWAYS BE VBUS + 5V

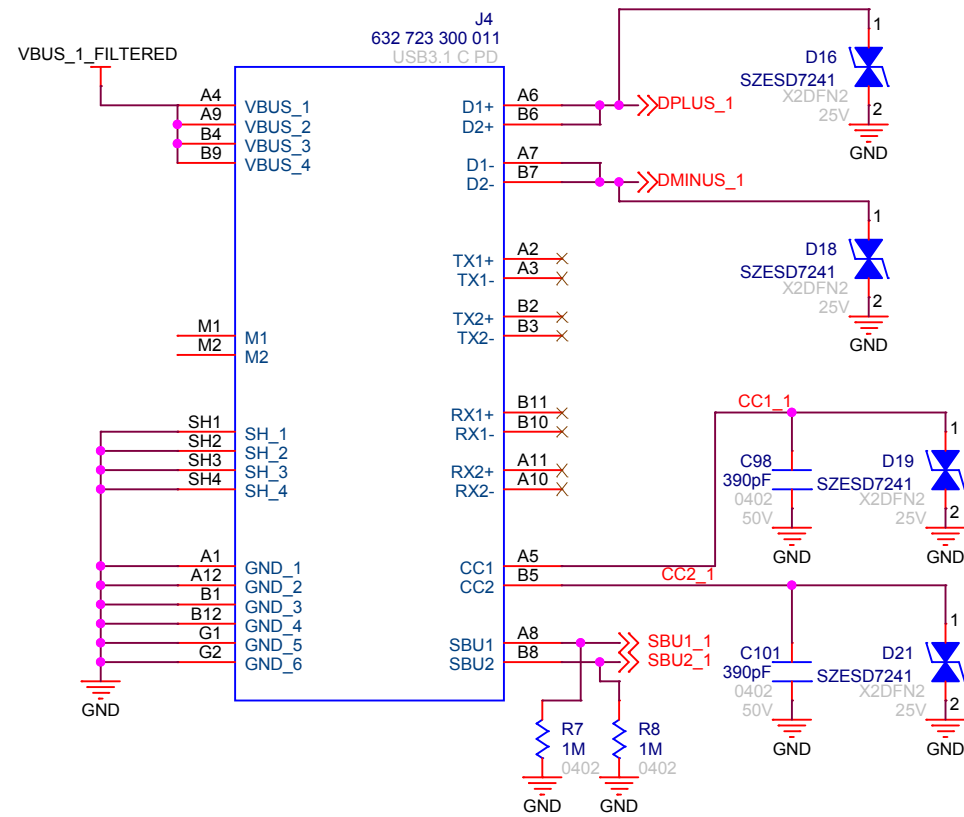


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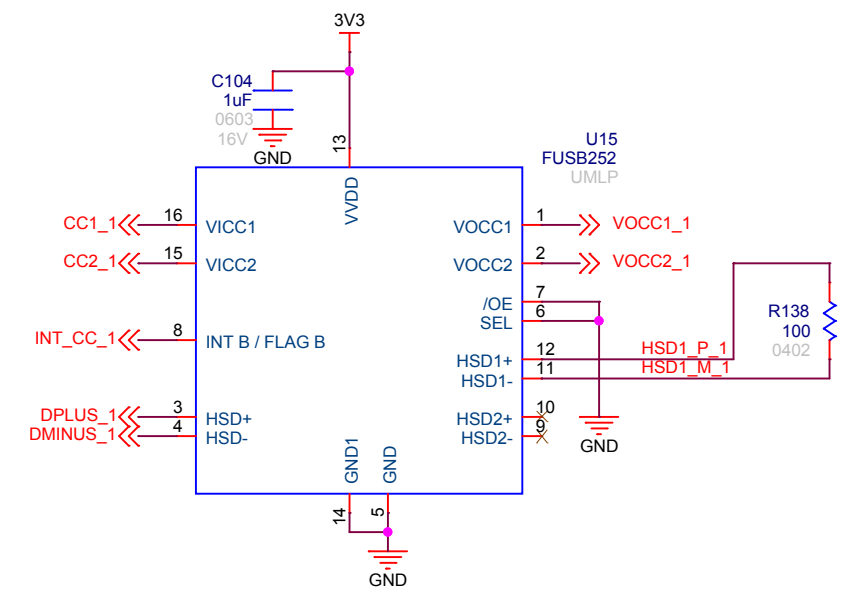
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USB-C AND PROTECTION

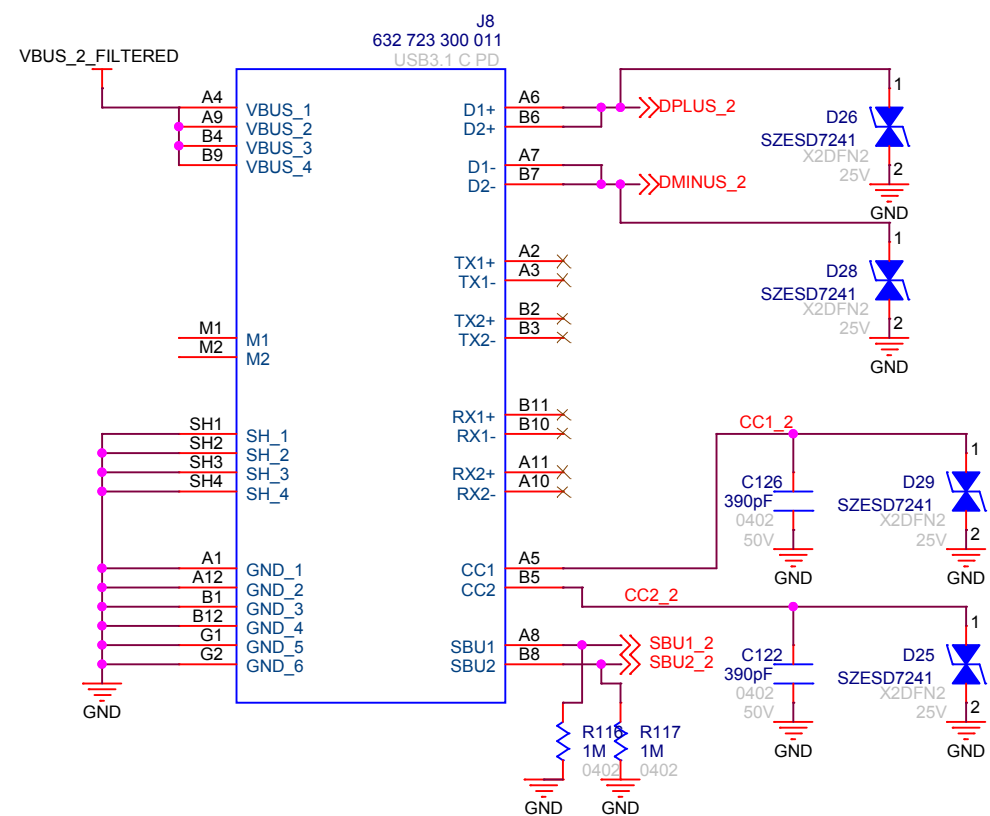
USB TYPE-C RECEPTACLE



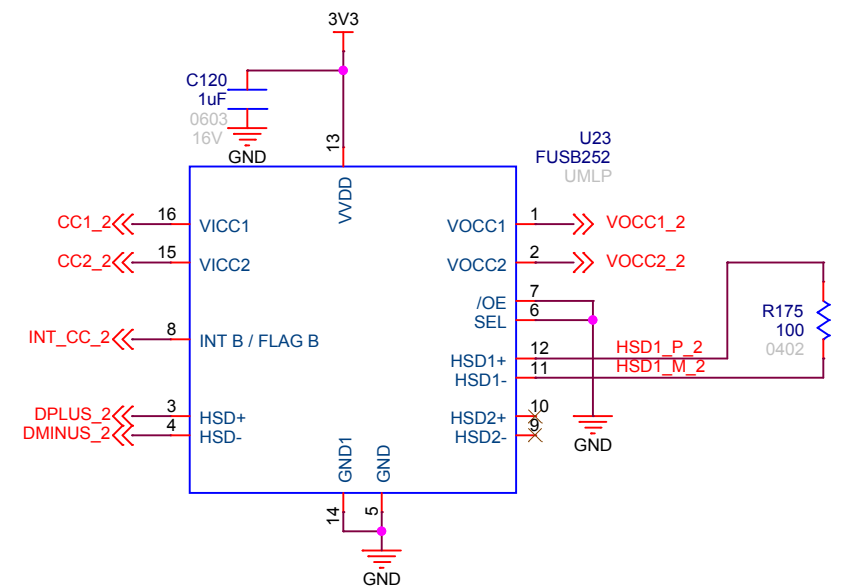
PORT 1 PROTECTION SWITCH



USB TYPE C RECEPTACLE



PORT 2 PROTECTION SWITCH

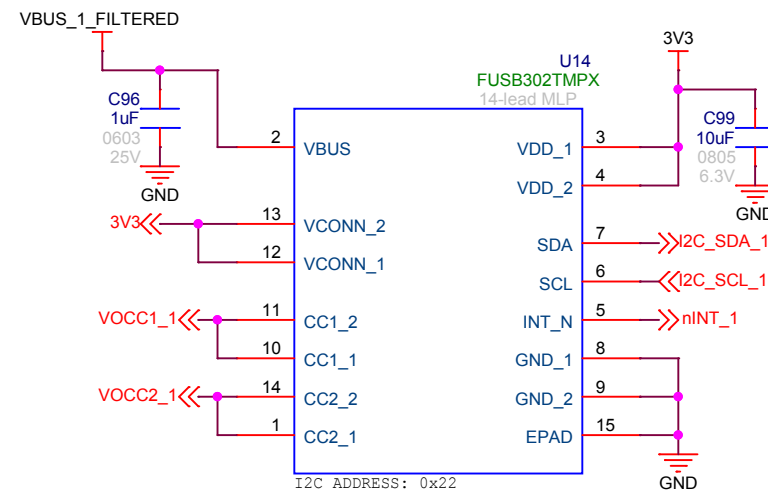


ON Semiconductor

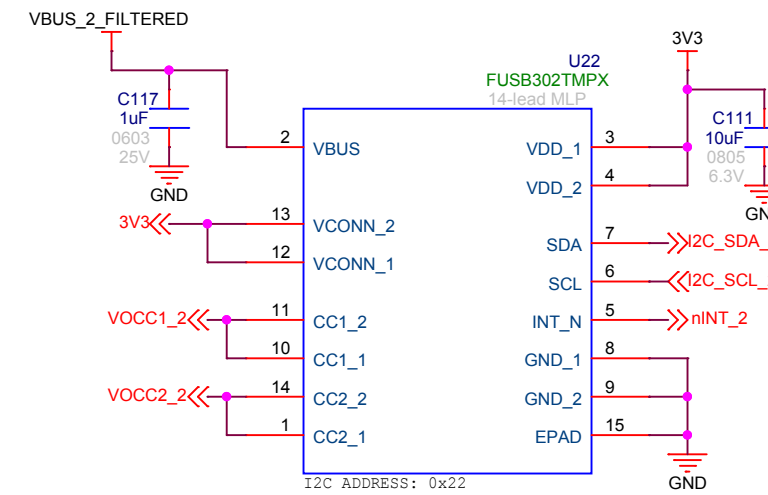
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FUSB302T PORT CONTROLLERS

FUSB302T PORT 1 CONTROLLER



FUSB302T PORT 2 CONTROLLER

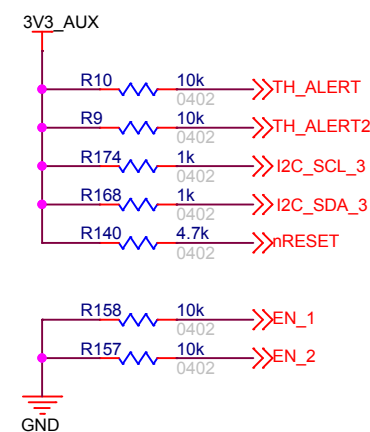
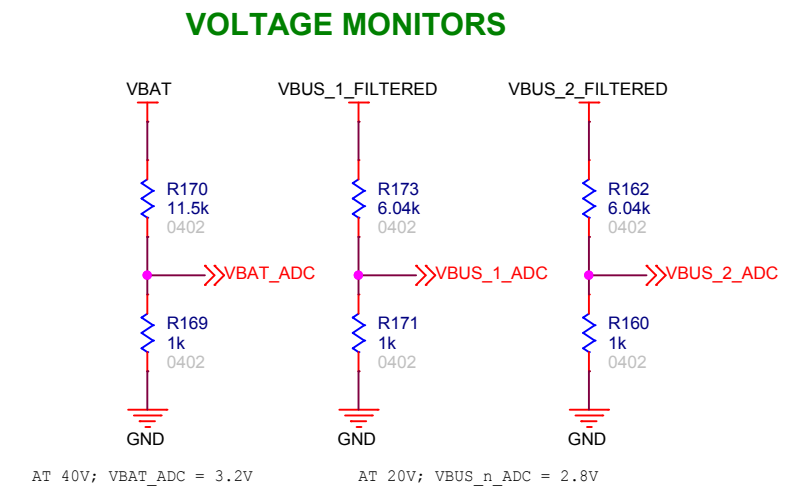
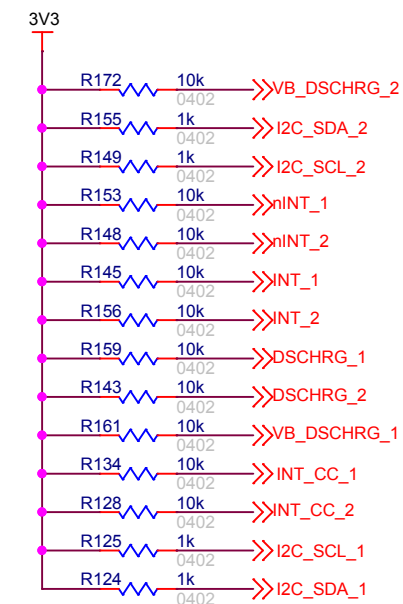
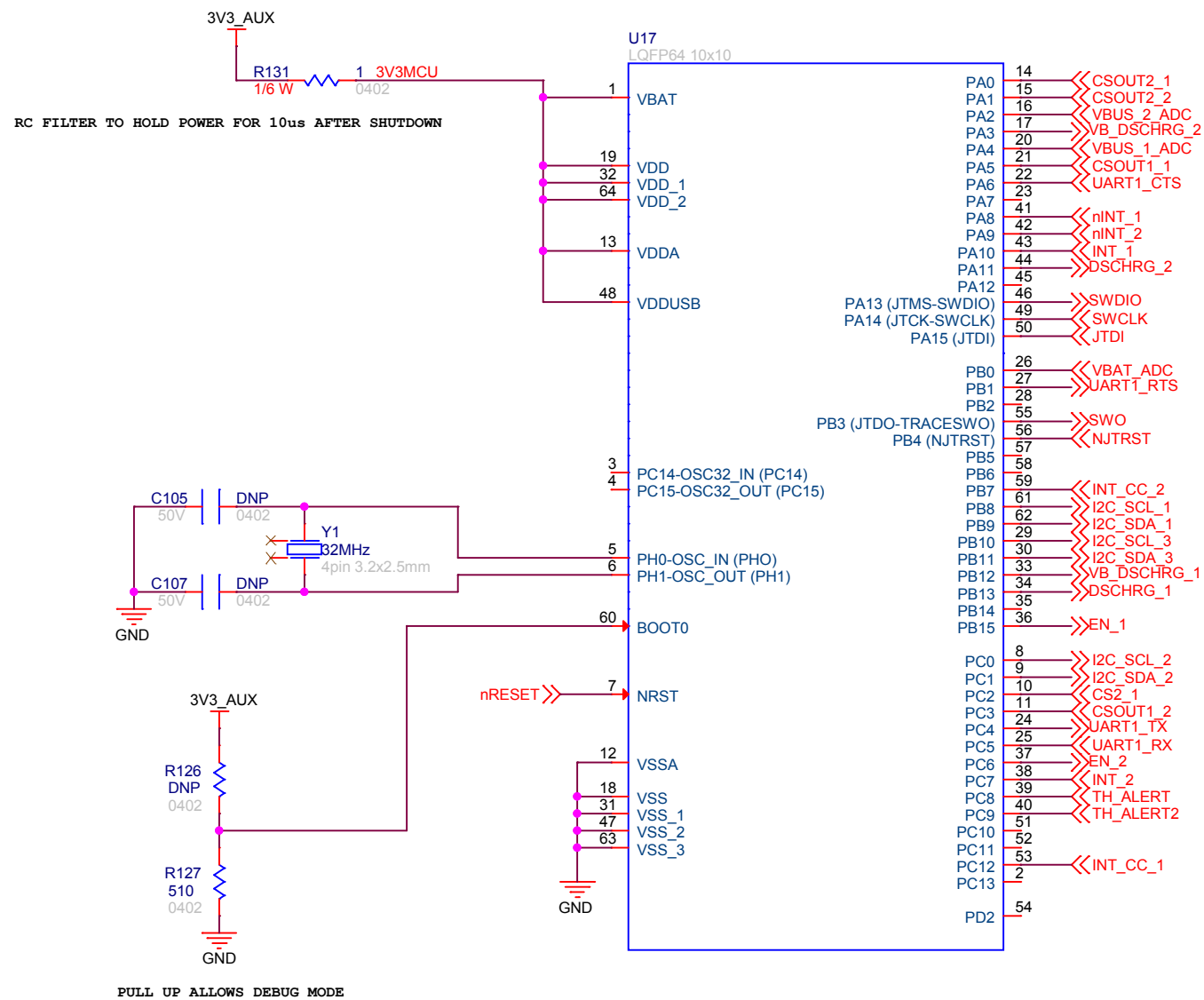


ON Semiconductor

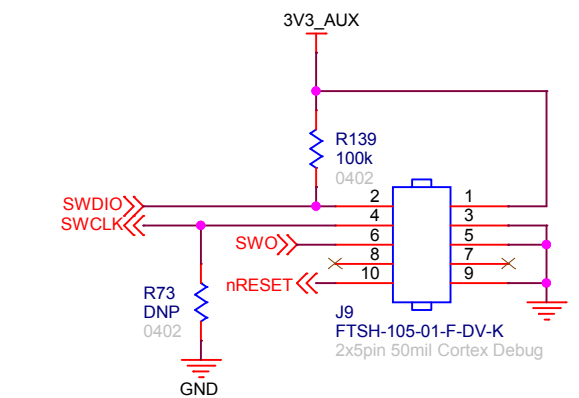
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MCU / POLICY MANAGER

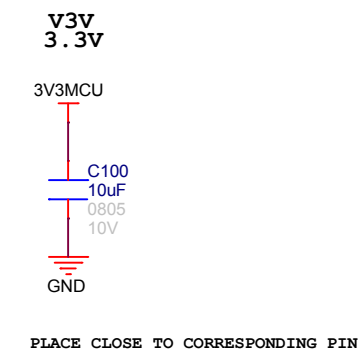
MCU / POLICY MANAGER



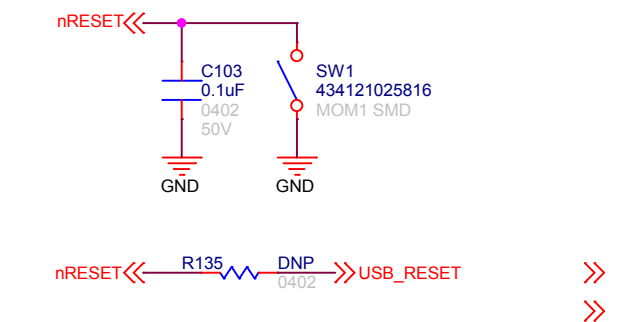
DEBUG HEADER



POWER DECOUPLING



MCU RESET



Minimum MCU Requirements:

Bit-width: 32-bit, 16-bit or 8-bit require significant porting effort and increase code size

Speed: 12 MHz

Flash: 32 kB - 128 kB depending on feature set and optimizations

RAM: 2 kB per port + additional if logging is required

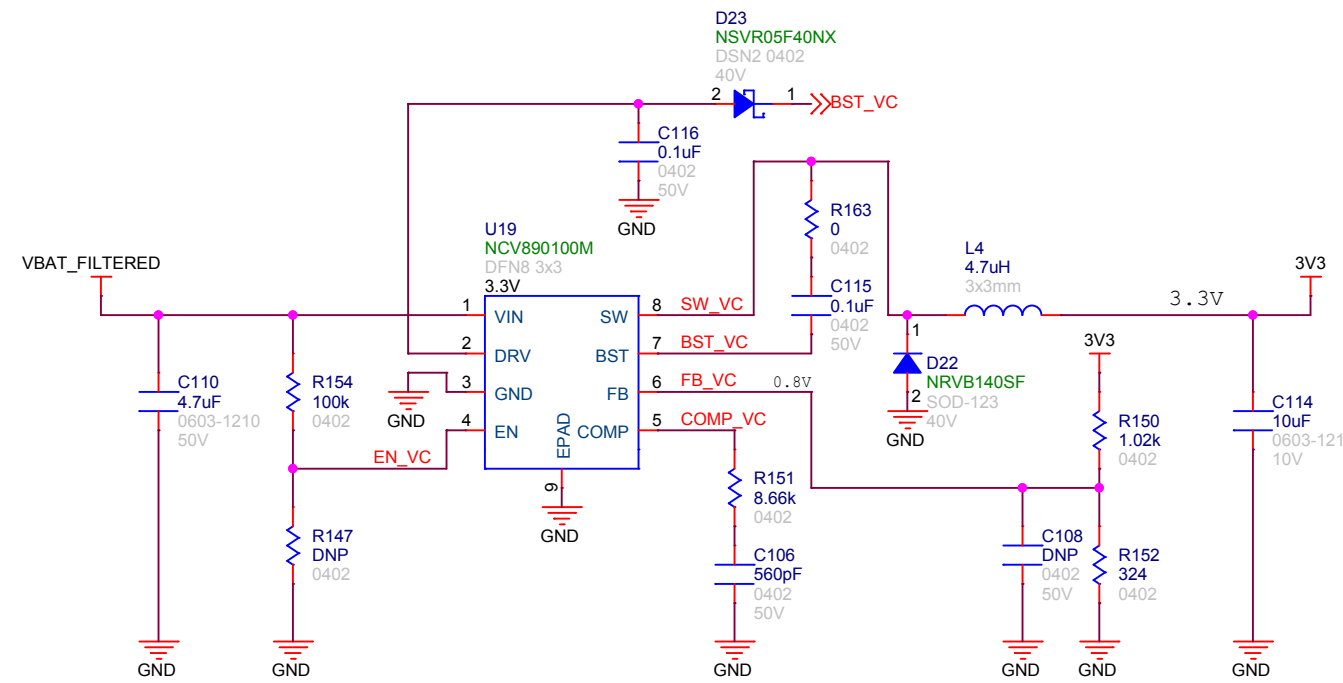
Peripherals: (1) I2C - 1MHz recommended (2) Timers - 32-bit w/ 1us resolution & 16-bit w/ 1ms resolution, 8-bit ADC if using telemetry, (2) GPIO with falling-edge interrupt capability

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3.3V REGULATOR

VCONN / MCU SUPPLY



VCONN NOTES:

1W SUPPLIED PER USB-C PORT FOR E-MARKED CABLES USING SSTX/SSRX OR ACTIVE CABLE

100mW SUPPLIED PER USB-C PORT FOR E-MARKED NON-ACTIVE CABLES NOT USING SSTX/SSRX



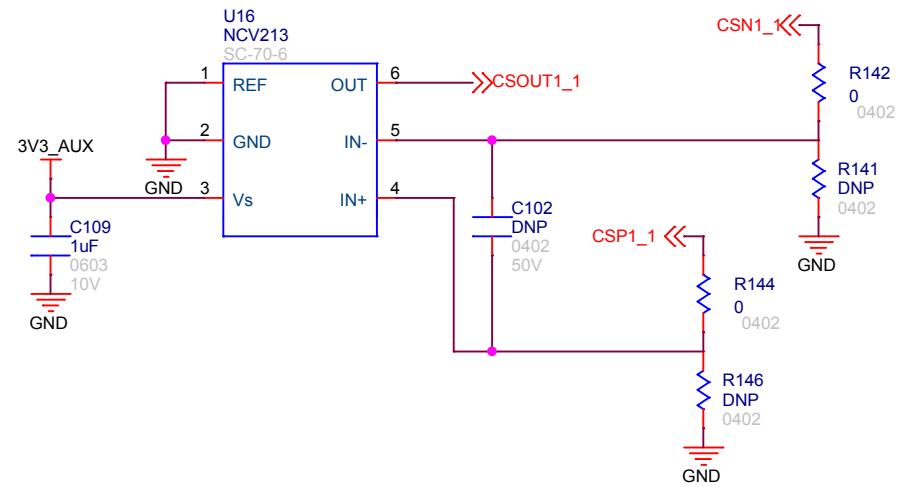
ON Semiconductor

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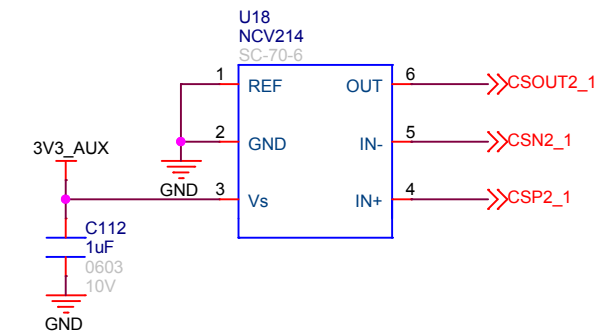
TELEMETRY

OPTIONAL IN CUSTOMER APPLICATION

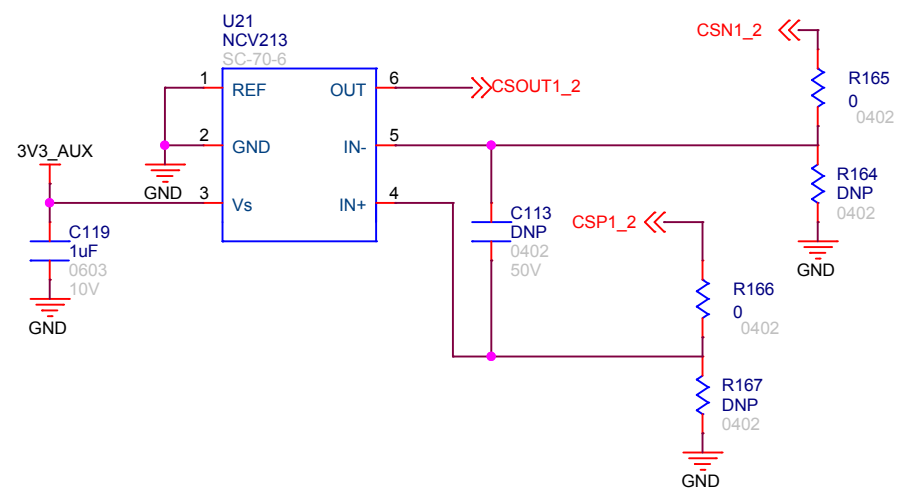
INPUT CURRENT SENSE STAGE 1



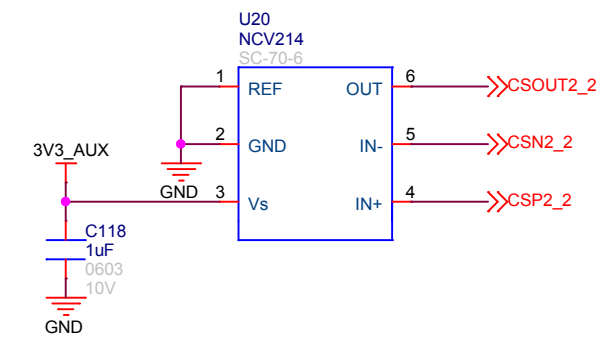
OUTPUT CURRENT SENSE STAGE 1



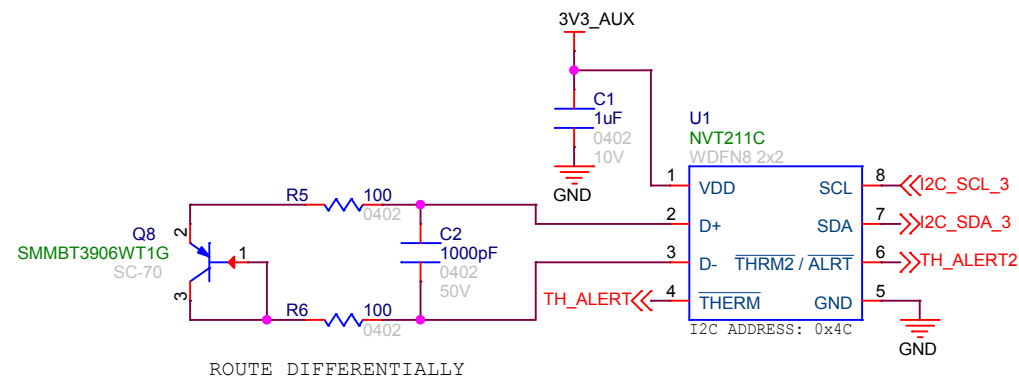
INPUT CURRENT SENSE STAGE 2



OUTPUT CURRENT SENSE STAGE 2



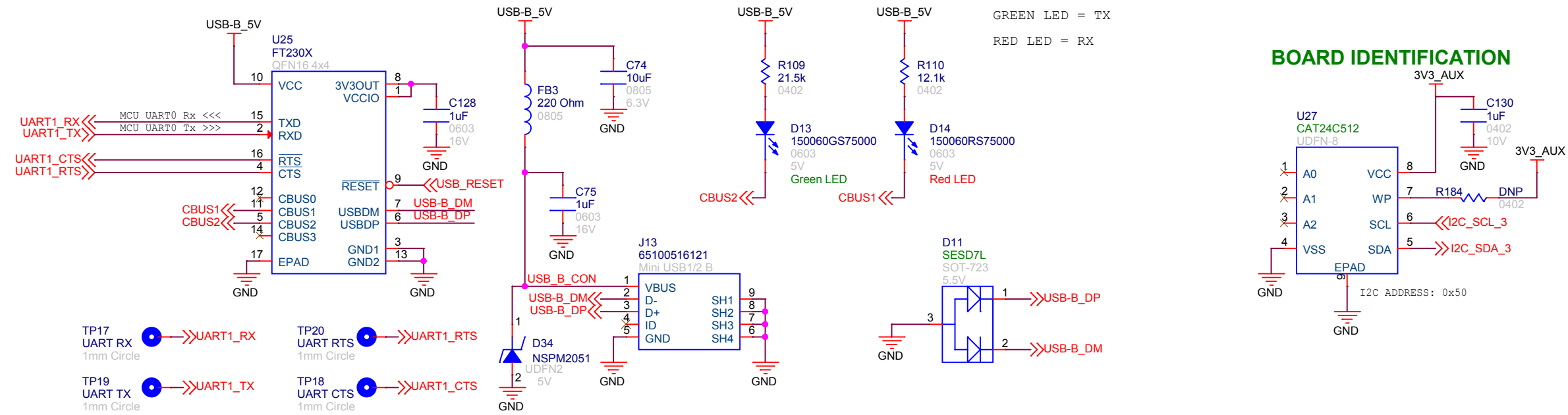
TEMP MONITOR



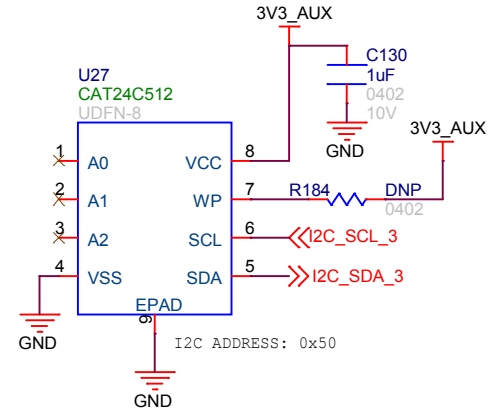
SOFTWARE TEST INTERFACE

NOT REQUIRED IN CUSTOMER APPLICATION

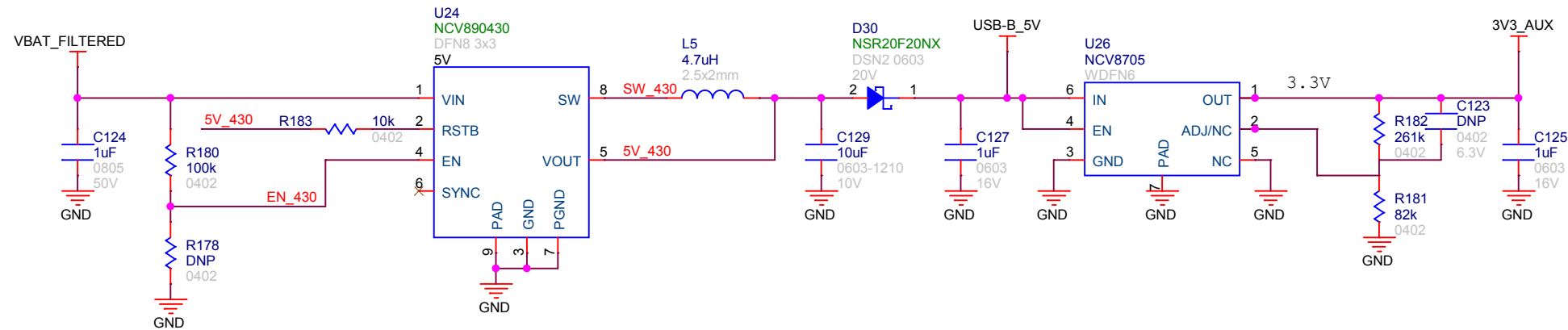
USB TEST INTERFACE



BOARD IDENTIFICATION



AUXILIARY 3V MCU SUPPLY



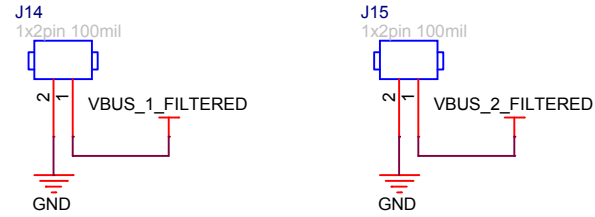
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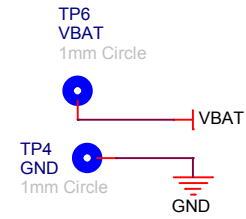
TEST CIRCUITS

NOT REQUIRED IN CUSTOMER APPLICATION

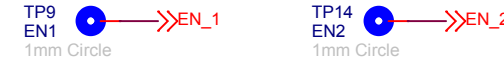
VBUS



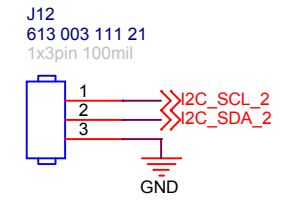
INPUT VOLTAGE



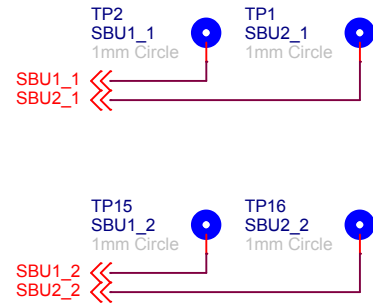
NCV81599 ENABLE



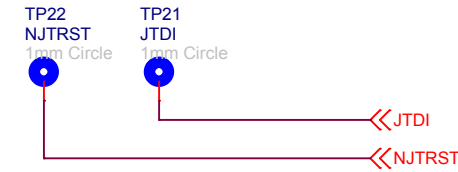
I2C HEADER PORT 1



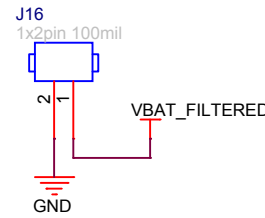
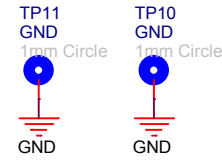
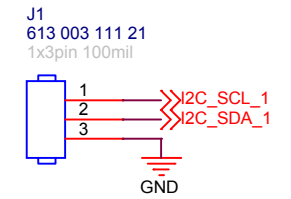
SIDEBAND HEADER



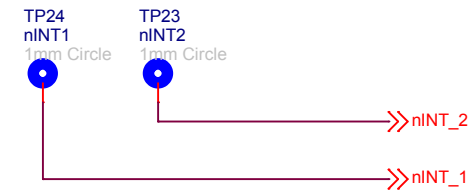
JTAG TEST POINTS



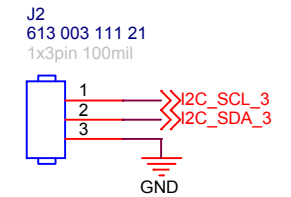
I2C HEADER PORT 2



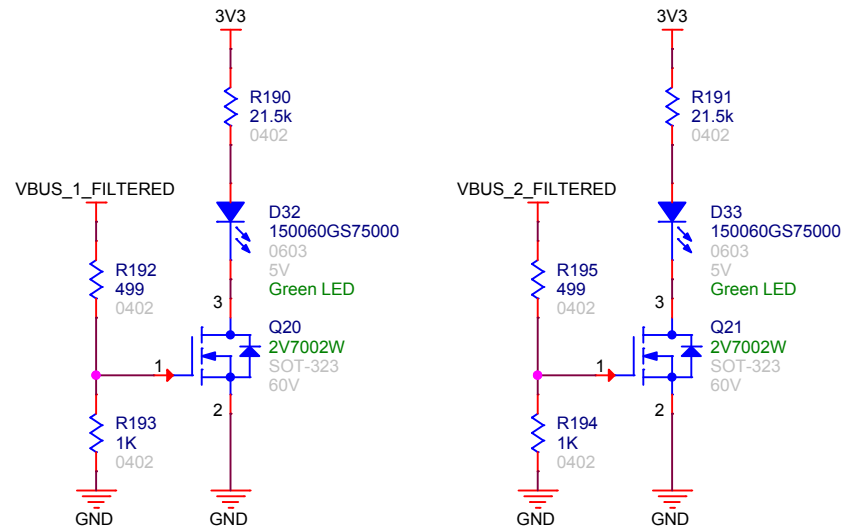
FUSB302T INTERRUPTS



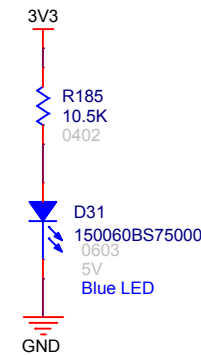
I2C HEADER PORT LOW SPEED



OUTPUT VOLTAGE INDICATORS



INPUT VOLTAGE INDICATOR



ON Semiconductor

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