

Zamp 20A MPPT Charge Controller

Version History

Rev	Date	Description
A	19 Feb 20	1) Initial MPPT Test Design
B	20 Apr 20	1) Layout Changes to reduce noise 2) Silk Changes 3) Changed SIA and SOA pins on SM72295 4) Change R49 to 49.9Ohm 5) Measure VDDA of SM72442 on P0.28 6) Move BATT_REV_DETECT to P0.25 7) Move MPPT_ENABLE to P0.24 and change drive scheme 8) Add Crystal between P0.00 and P0.01 9) Move OVS_TRIGGER to P0.10 10) Move MPPT_STARTUP_EN to P0.22 11) Move SOLAR_REV_DETECT to P1.02 12) Change Test points for important signals to larger ones 13) DNP all Smaller test points and so just pads are there 13) Add GND test points 14) Add Snubber circuits to Buck and Boost sides of the converter to reduce ripple 15) Add P0.23 and P0.19 as test points 16) Added scaled current measure pins to ADC inputs 17) Made temp sensor inputs switchable to share ADC input 18) Replace J4 with Push in style terminal block

Notes

Schematic Page Description

01	Cover Page
02	Block Diagram
03	MCU
04	Internal Regulators
05	Buck/Boost Converter
06	SM72295
07	SM72442
08	LEDs, Connectors



Zamp Solar
63255 Jamison Rd
Bend, OR 97703

Zamp 20A MPPT Controller Rev B
Cover Page

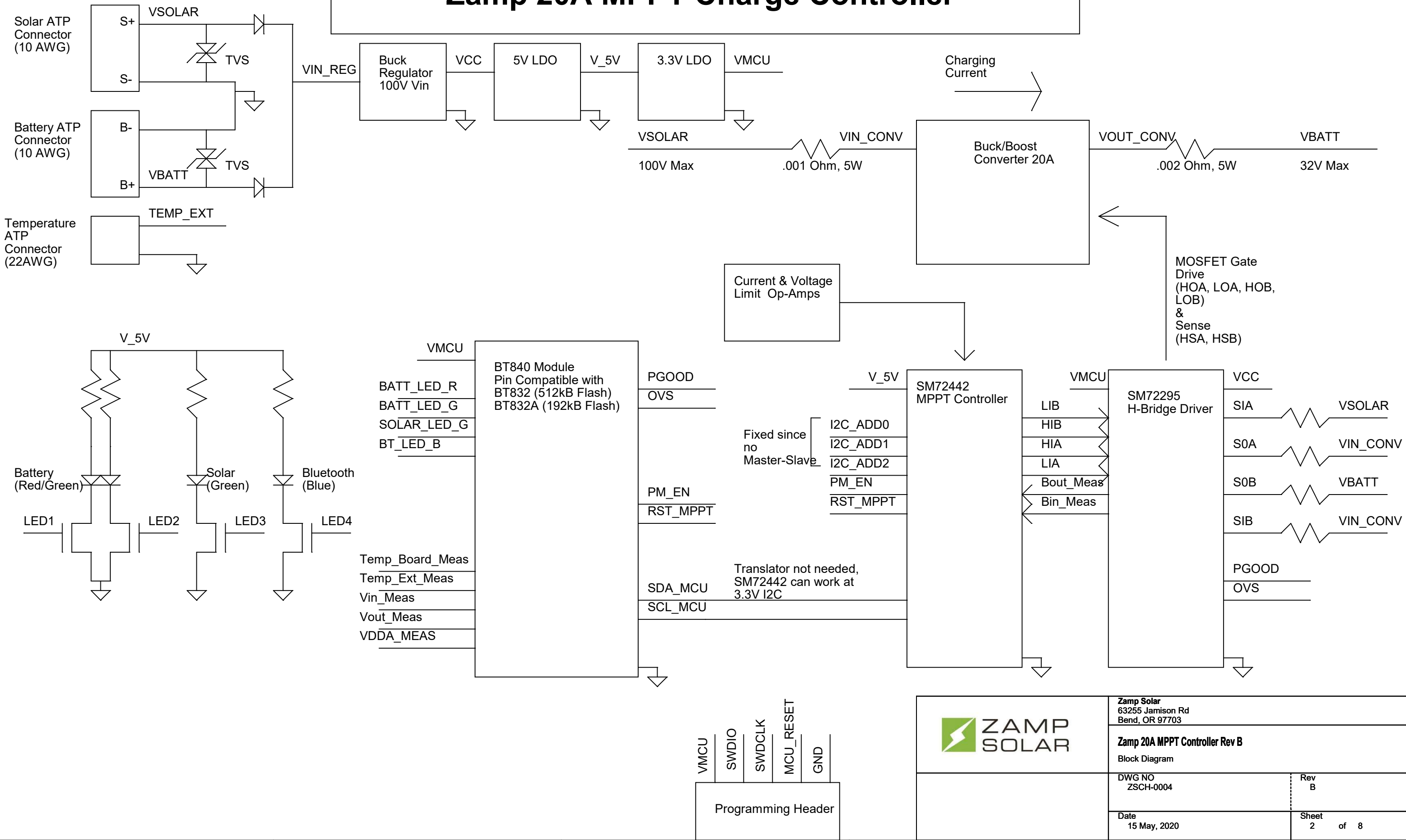
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B

Date
15 May, 2020

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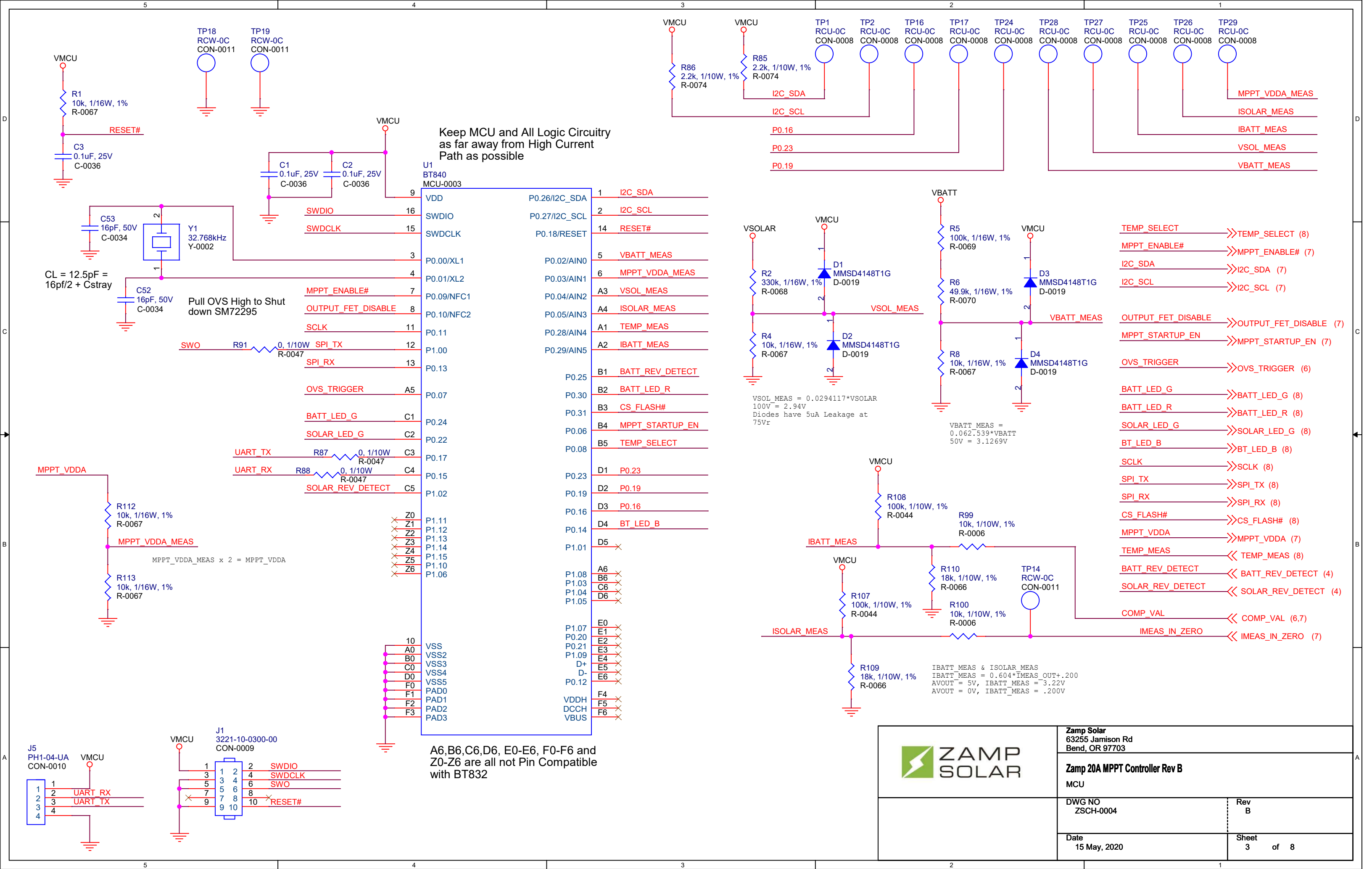
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Block Diagram

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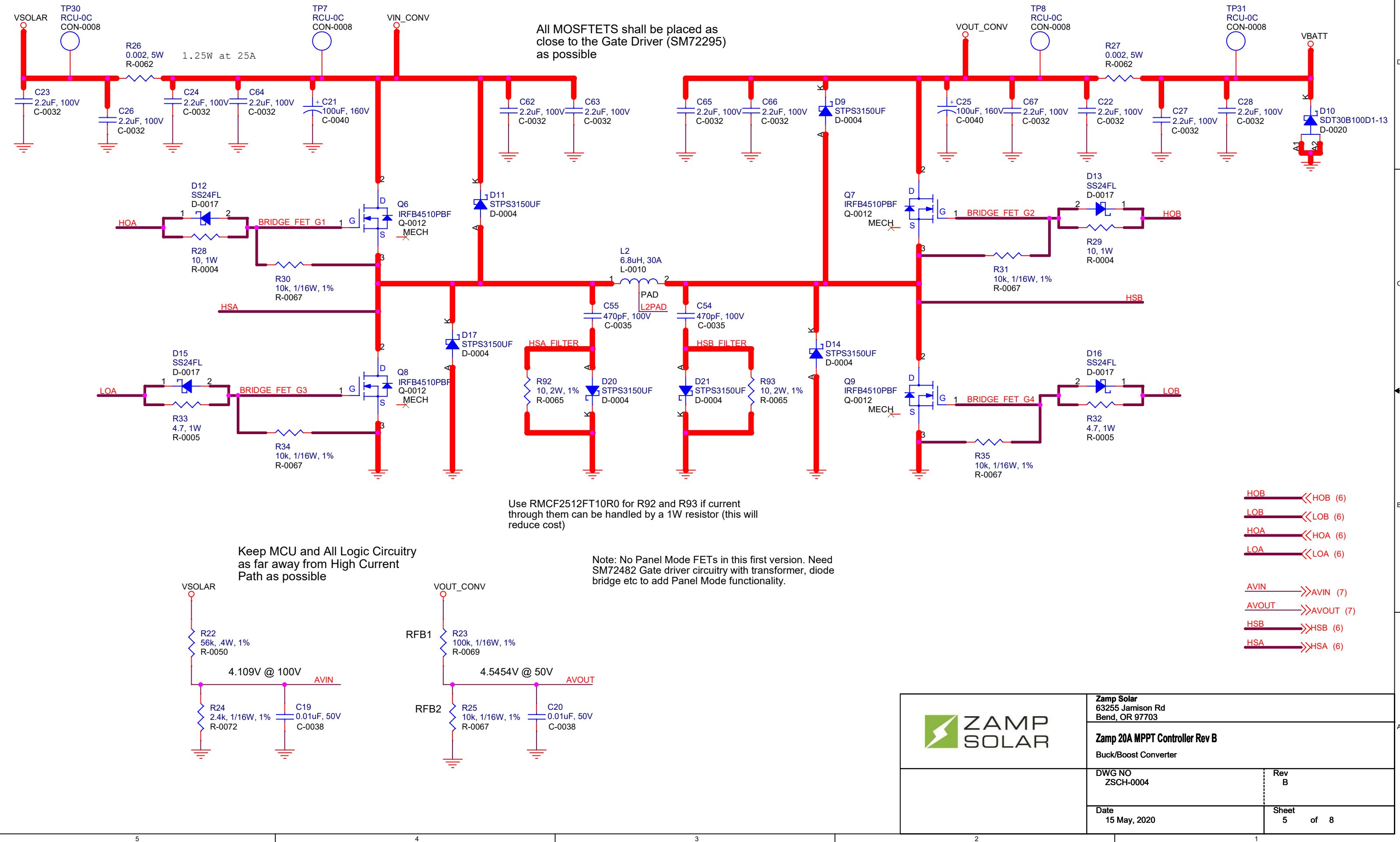
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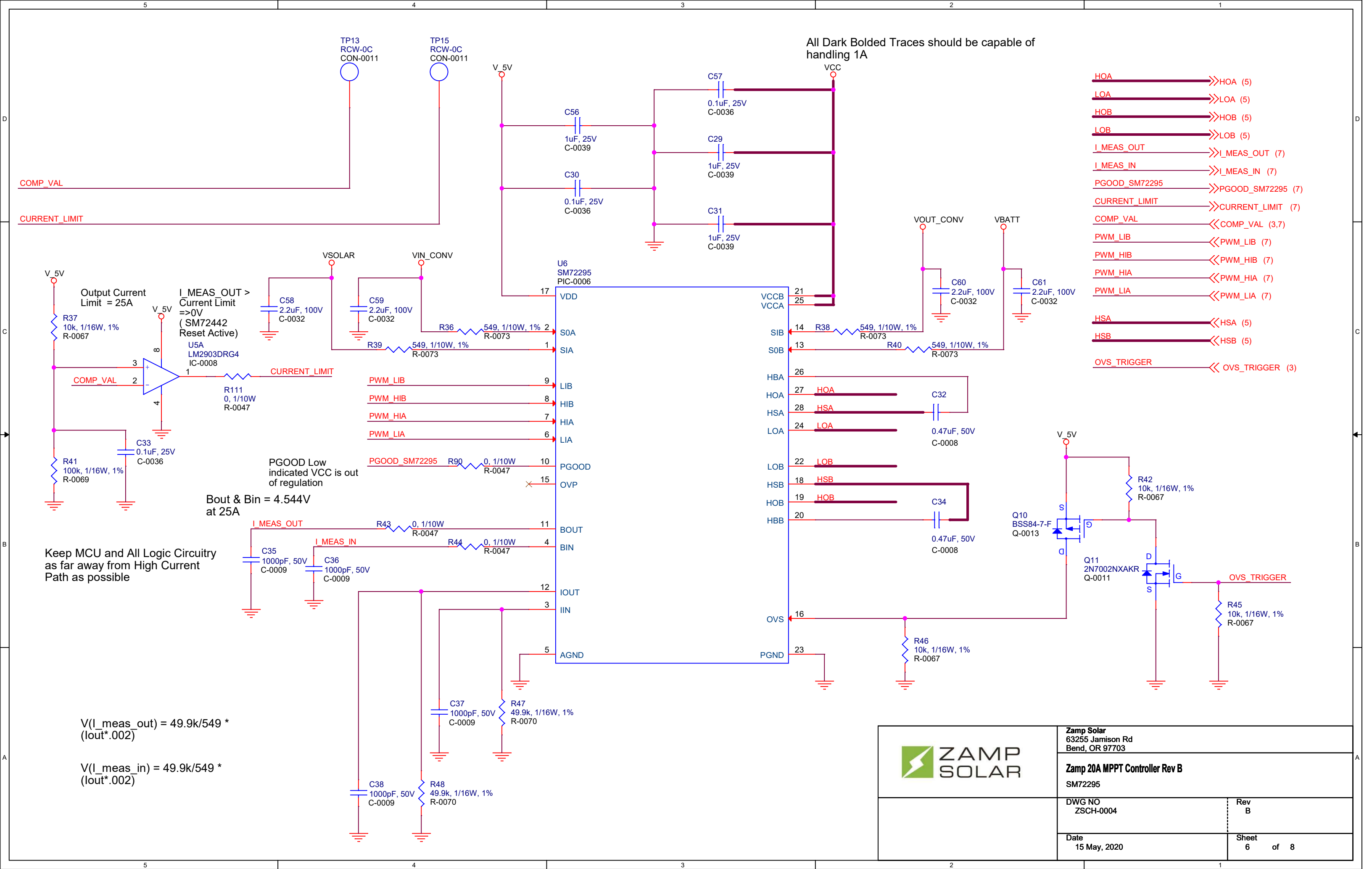
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All Red Boded Traces should be capable of handling 30A

All Dark Boded Traces should be capable of handling 1A





Keep MCU and All Logic Circuitry as far away from High Current Path as possible

TEMP_SELECT	Active NTC
Hi-Z	Battery
High	Board
Low	Battery

J4
1792863
CON-0012

Q20
2N7002NXAKR
Q-0011

Q22
2N7002NXAKR
Q-0011

Q21
2N7002NXAKR
Q-0011

Use Same NTC as DHC

Place NTC near MCU

RT1
NCU18XH103F60RB
RT-0003

3.1395V @ -40C
1.365V @ 25C
0.16639V @ 125C

M1
137mil Mech Hole
MECH-0001

M2
137mil Mech Hole
MECH-0001

M3
137mil Mech Hole
MECH-0001

M4
137mil Mech Hole
MECH-0001

M5
137mil Mech Hole
MECH-0001

M6
137mil Mech Hole
MECH-0001

TEMP_MEAS >>> TEMP_MEAS (3)

BATT_LED_G <<< BATT_LED_G (3)

BATT_LED_R <<< BATT_LED_R (3)

SOLAR_LED_G <<< SOLAR_LED_G (3)

BT_LED_B <<< BT_LED_B (3)

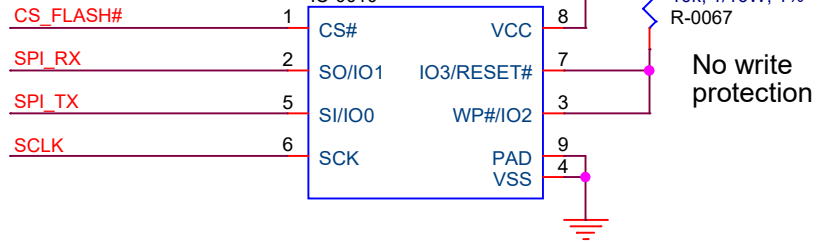
SCLK <<< SCLK (3)

SPI_TX <<< SPI_TX (3)

SPI_RX <<< SPI_RX (3)

CS_FLASH# <<< CS_FLASH# (3)

TEMP_SELECT <<< TEMP_SELECT (3)



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LEDs, Connectors

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