

VBUS --> 5V
PWR

VBUS --> 3V3
PWR

PCB: Place C?, C? Near U?


PCB: Place C?, C? Near U?

Design: GND to RESET

Design: GND to RESET

Design: Populate for
External Compensation

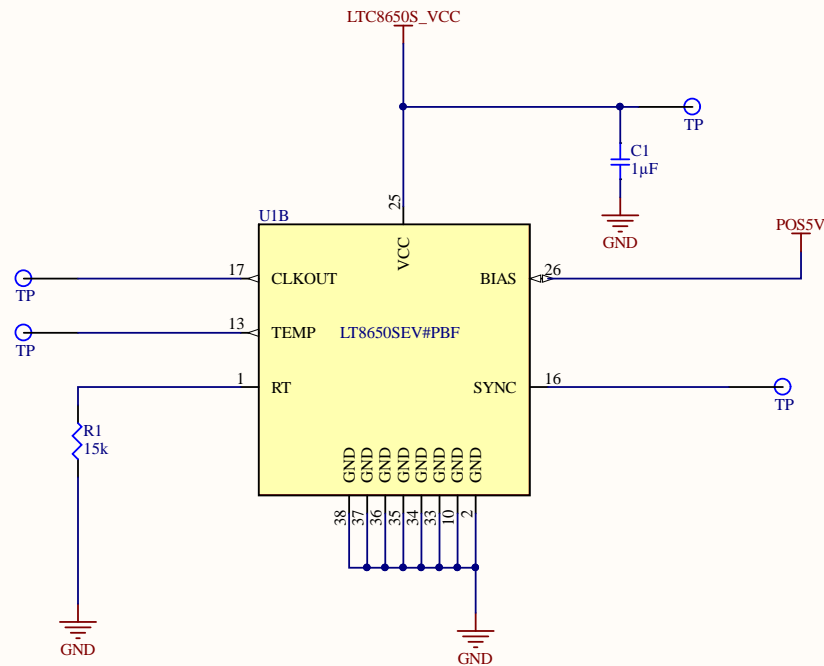
Design: Pgood pulled to GND until
Vout is within $\pm 7.5\%$ V programmed

| | | | | |
|--|------------------|--------------------|---|---|
| Title <i>power_PWR.SchDoc</i> | | | Badgerloop 133 Engineering Research Building Madison, WI 53715 |  |
| Size: A4 | Number: 1 | Revision: A | | |
| Date: 9/29/2018 | Time: 8:06:17 PM | Sheet 1 of 2 | | |
| File: C:\Users\Ryan Castle\Documents\git_repos\podiv-altium\src\prj\sch\power_PWR.schdoc | | | | |

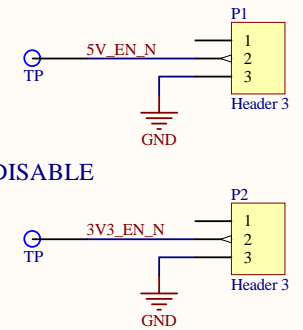
VBUS --> 5V
VBUS --> 3V3
CONTROL

Design: Soft-Start Time TBD
Design: Switching Frequency 2MHz
Design: FCM W/O SSM OR SYNC


Design: LT8650S
Vout1: 5V 4A
Vout2: 3.3V 4A



Operation: Float *_EN_N
TO ENABLE, GND TO DISABLE



TODO: Should we do a 3 input OR Gate for PGoods?

| | | | |
|--|-------------------------|----------------------------|--|
| Title <i>power_CTL.schdoc</i> | | | Badgerloop 133 Engineering Research Building Madison, WI 53715  |
| Size: A4 | Number: 1 | Revision: A | |
| Date: 9/29/2018 | Time: 8:06:17 PM | Sheet 1 of 2 | |
| File: C:\Users\Ryan Castle\Documents\git_repos\podiv-altium\src\prj\sch\power_CTL.schdoc | | | |

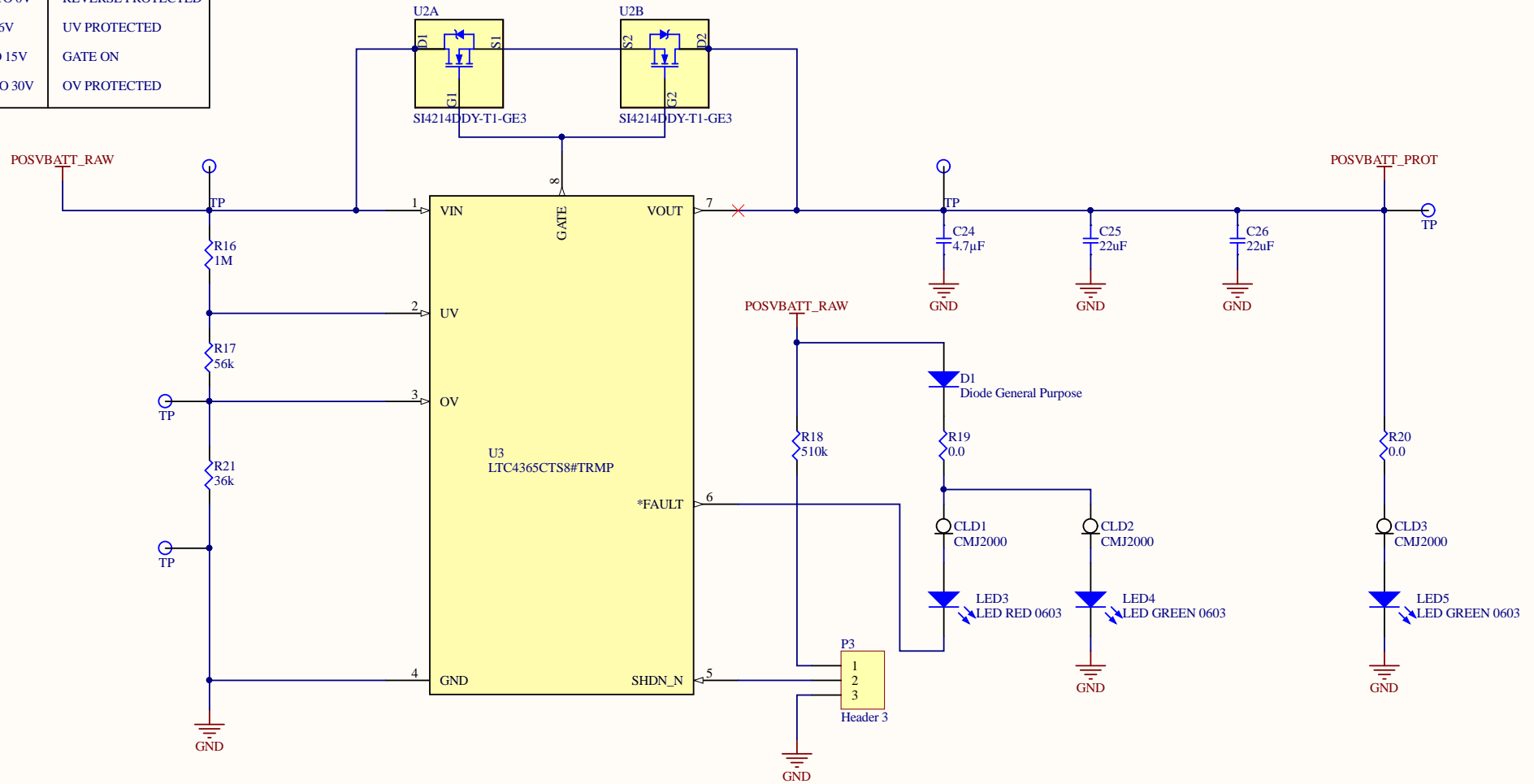
| | | | | |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | |
| A | | | | A |
| B | | | | B |
| C | | | | C |
| D | | | | D |
| 1 | 2 | 3 | 4 | |


| | | | |
|---|------------------|---|--|
| Title nav_main_connector.schdoc | | Badgerloop 133 Engineering Research Building Madison, WI 53715 | |
| Size: A4 | Number: 1 | Revision: A | |
| Date: 9/29/2018 | Time: 8:06:17 PM | Sheet 2 of 2 | |
| File: C:\Users\Ryan Castle\Documents\git_repos\podiv-altium\src\prj\sch\power_main_connector.SchDoc | | | |

BADGER
LOOP

DESIGN:

| VIN | VOUT |
|-----------|-------------------|
| -30 TO 0V | REVERSE PROTECTED |
| 0 to 6V | UV PROTECTED |
| 6 TO 15V | GATE ON |
| 15 TO 30V | OV PROTECTED |



| | | | | |
|--|-------------------------|-----------|---|---|
| Title <i>power_PROTECTION.SchDoc</i> | | | Badgerloop 133 Engineering Research Building Madison, WI 53715 |  |
| Size: A4 | Number: | Revision: | | |
| Date: 9/29/2018 | Time: 8:06:17 PM | Sheet of | | |
| File: C:\Users\Ryan Castle\Documents\git_repos\podiv-altium\src\prj\sch\power_PROTECTION.SchDoc | | | | |

Bill of Materials

BADGERLOOP

Source Data From:

power_project.Pr|PCB

Project:

power_project.Pr|PCB

Variant:

None

Calculate Pricing

Resize Rows/Shade

Creation Date:

9/29/2018

8:06:22 PM

Print Date:

29-Sep-18

8:06:47 PM

Production Quantity:

1

Currency:

<NONE>

Unhide/Hide Supplier 1

Unhide/Hide Supplier 2

Unhide/Hide Assem Manf

| Reference | Designator | Description | Manufacturer | #Column Name Error | Quantity | #Column Name Error:Supplier 1 | #Column Name Error | #Column Name Error | Supplier Unit Price | Supplier 1 Subtotal | #Column Name Error:Supplier 2 | #Column Name Error | #Column Name Error | Supplier Unit Price | Supplier 2 Subtotal | #Column Name Error | #Column Name Error | #Column Name Error | Assem Unit | Assem Subtotal | | |
|-----------------------|---|--|----------------------------------|--------------------|----------|-------------------------------|--------------------|--------------------|---------------------|---------------------|-------------------------------|--------------------|--------------------|---------------------|---------------------|--------------------|--------------------|--------------------|------------|----------------|----|---|
| <Parameter Reference> | C1, C11, C14 | CAP CER 1UF 50V X5R 0603 | Murata Electronics North America | | 3 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | C2, C4 | CAP CER 10UF 50V X5R 1206 | Murata Electronics North America | | 2 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | C3, C5 | CAP CER 1UF 50V X7R 0805 | Murata Electronics North America | | 2 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | C6, C7 | CAP CER 0.22UF 25V X7R 0603 | Murata Electronics North America | | 2 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | C8, C15 | CAP CER 4.7UF 25V X5R 0603 | Murata Electronics North America | | 2 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | C9, C10, C16, C17 | CAP CER 47UF 10V X5R 1206 | Murata Electronics North America | | 4 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | C12, C13 | CAP CER 4.7PF 50V NPO 0603 | Murata Electronics North America | | 2 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | C18, C19, C20, C21 | CAP CER 0.047UF 16V X7R 0402 | Murata Electronics North America | | 4 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | C22, C23 | CAP CER 10000PF 25V X7R 0603 | Murata Electronics North America | | 2 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | C24 | CAP CER 4.7UF 50V X5R 0805 | Murata Electronics North America | | 1 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | C25, C26 | CAP CER 10000PF 250V X7T 0805 | TDK Corporation | | 2 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | CLD1, CLD2, CLD3 | DIODE CURRENT LIMITING SINGLE SM | Central Semiconductor Corp | | 3 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | D1 | DIODE GEN PURP 100V 150MA SOD123 | Micro Commercial Co | | 1 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | FET1, FET2 | MOSFET N-CH 60V 200MA SOT23-3 | Zetex | | 2 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | L1, L2 | XFL5030-102ME | Lite-On Inc. | | 2 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | LED1, LED2 | Red 631nm LED Indication - Discrete 2V 0603 (1608 Metric) | Lite-On Inc. | | 2 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | LED3 | | | | 1 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | LED4, LED5 | | | | 2 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | P1, P2, P3 | Header, 3-Pin | | | 3 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | R1 | RES SMD 15K OHM 5% 1/10W 0402 | Panasonic Electronic Components | | 1 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | R2, R3, R4, R5, R6, R7, R14, R15, R16 | RES SMD 1M OHM 1% 1/10W 0402, RES SMD 1M OHM 5% 1/10W 0402 | Panasonic Electronic Components | | 9 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | R8, R9 | RES SMD 191K OHM 1% 1/10W 0402 | Panasonic Electronic Components | | 2 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | R10, R11 | RES SMD 25.5 OHM 1% 1/8W 0805 | Panasonic Electronic Components | | 2 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | R12, R13 | RES SMD 100K OHM 5% 1/10W 0402 | Panasonic Electronic Components | | 2 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | R17 | RES SMD 56K OHM 5% 1/10W 0402 | Panasonic Electronic Components | | 1 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | R18 | RES SMD 510K OHM 5% 1/10W 0402 | Panasonic Electronic Components | | 1 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | R19, R20 | RES SMD 0.0OHM JUMPER 1/10W 0402 | Panasonic Electronic Components | | 2 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | R21 | RES SMD 36K OHM 1% 1/10W 0402 | Panasonic Electronic Components | | 1 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | TP1, TP2, TP3, TP4, TP5, TP6, TP7, TP8, TP9, TP10, TP11, TP12, TP13 | | | | 13 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | U1 | LT8650S - Dual Channel 4A, 42V, Synchronous Step-Down Silent Switcher 2 with 6.2µA Quiescent Current | | | 1 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | U2 | Mosfet Array 2 N-Channel (Dual) 30V 8.5A 3.1W Surface Mount 8-SO | | | 1 | | | | \$ | - | | | | | | | | | | | | |
| <Parameter Reference> | U3 | Overvoltage,Undervoltage and Reverse Supply Protection Controller | | | 1 | | | | \$ | - | | | | | | | | | | | | |
| | | | | | 79 | | | | | \$ | - | | | | | \$ | - | | | | \$ | - |

Approved

Notes