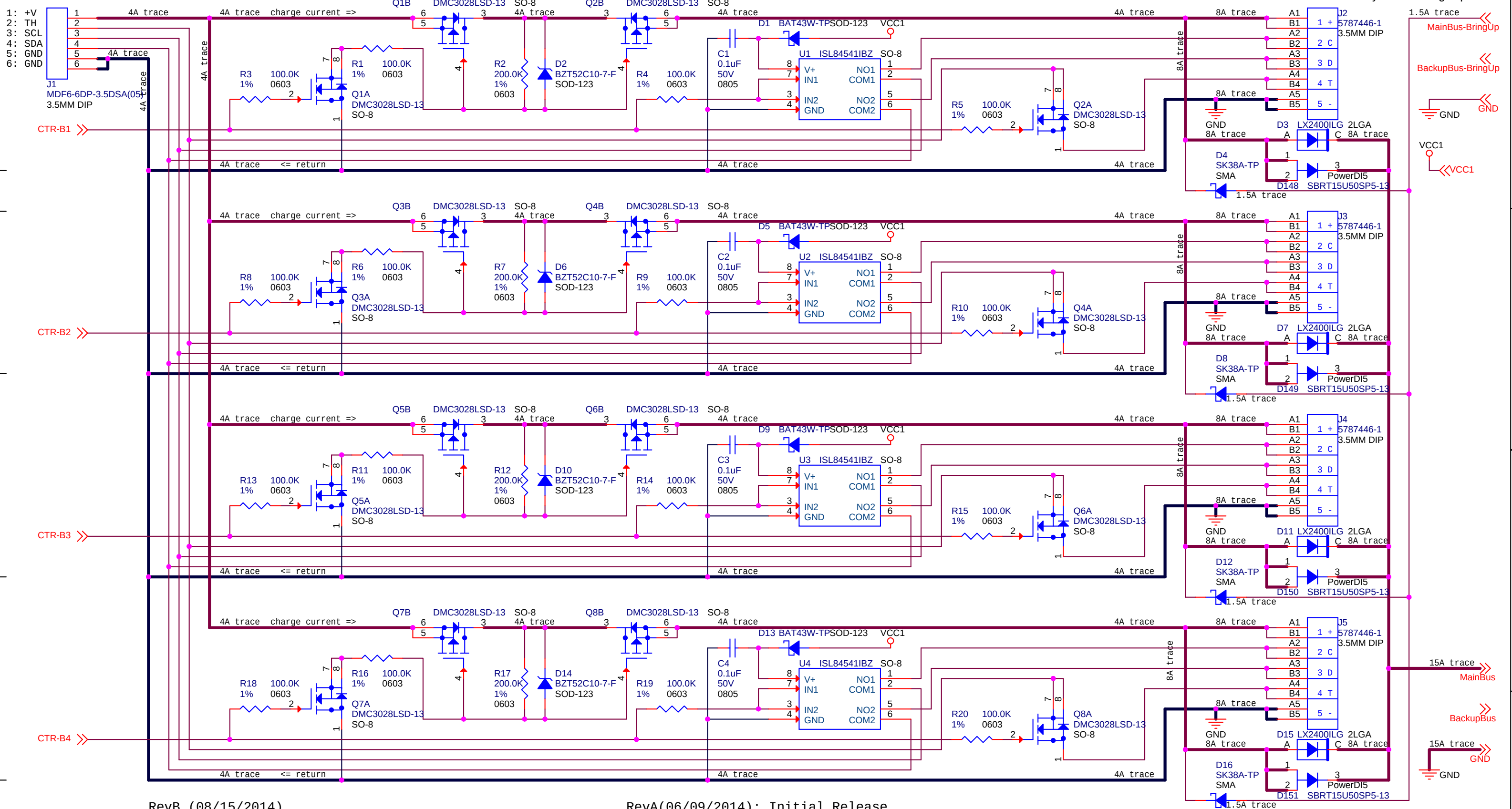


Charge Port
Ocean Server XP-08SR

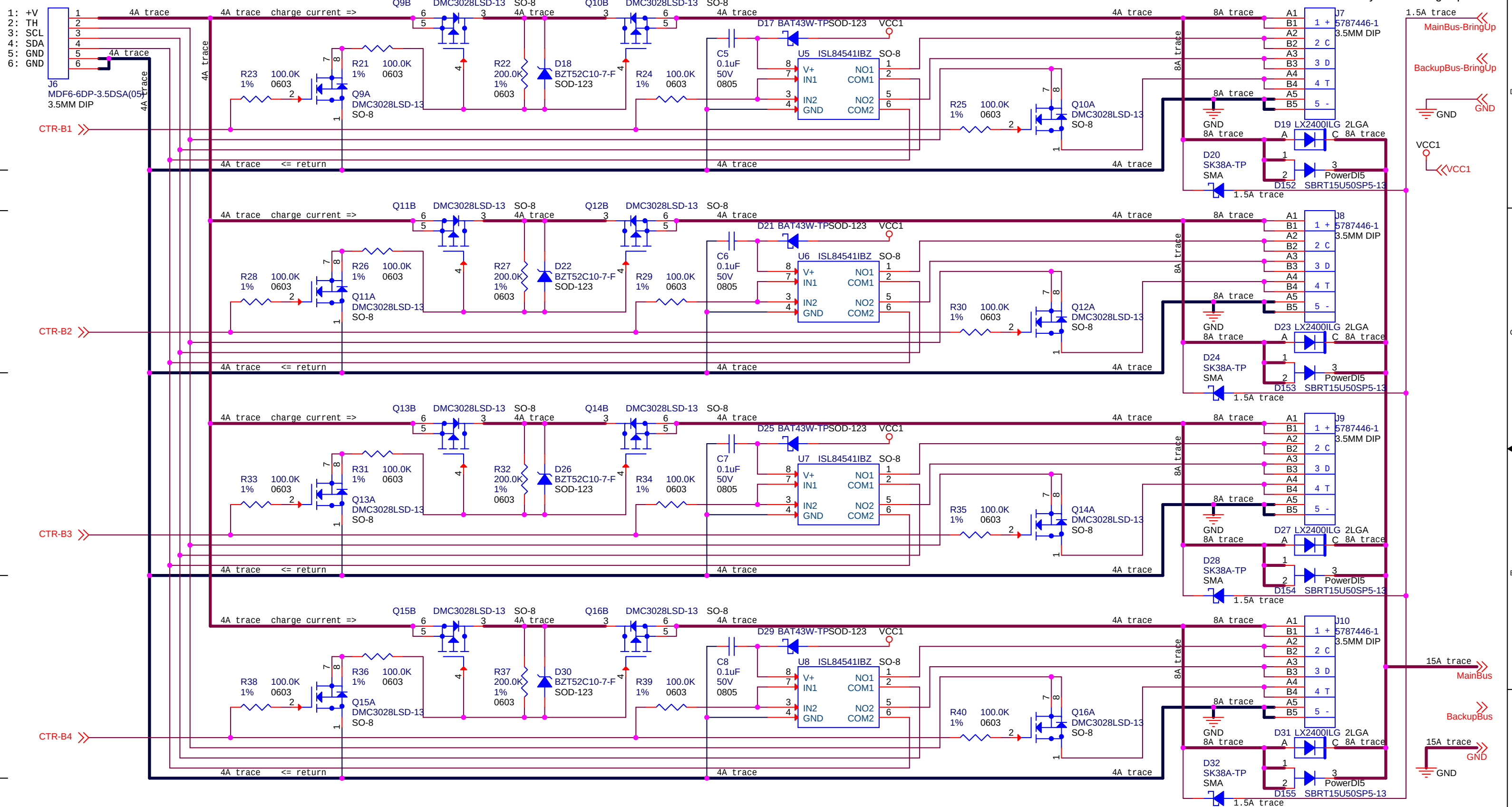


RevB (08/15/2014)
D132 LTST-C150TBKT replace with LTST-C150GKT
R166 15k/0603 replace to 499k/0603
R211 1k/0603 replace to 2.49k/0603
C52 47nF/0805 replace to 0.1uF/0805
C56 680pF/0805 replace to 1500pF/0805
C57 680pF/0805 replace to 4700pF/0805
C58 680pF/0805 replace to 6800pF/0805

RevA(06/09/2014): Initial Release
RevB(08/15/2014): 7 components changed

		Monterey Bay Aquarium Research Institute 7700 Sandholdt Rd, Moss landing CA 95076	
Engineer Klimov		Page Title BatteryPackController / Port 1	
Size B		Project: 901400	
Doc. or Part Number <Doc>		Rev A	
File Name (auto) 10021057-BPC1		Sheet: 1 of 11	
Page Modify Date (auto): Friday, August 15, 2014		Design Modify Date (auto): Friday, August 15, 2014	
Full path (auto): X:\TECHSERVICES\PCB_LAYOUT\OPEN_WORK_SPACE\LAUV10021057-BPC1\10021057-BPC1.DSN			

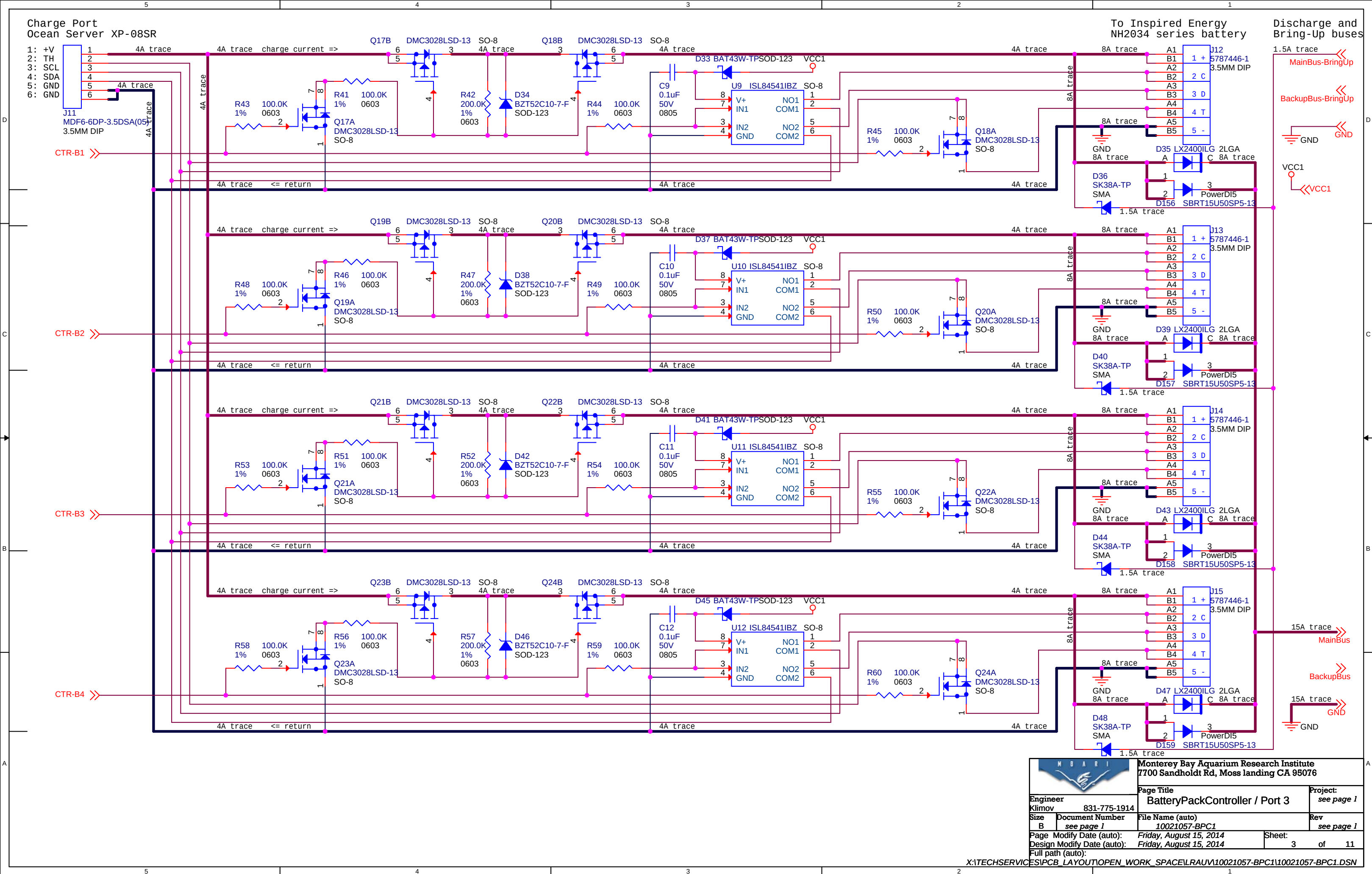
Charge Port
Ocean Server XP-08SR



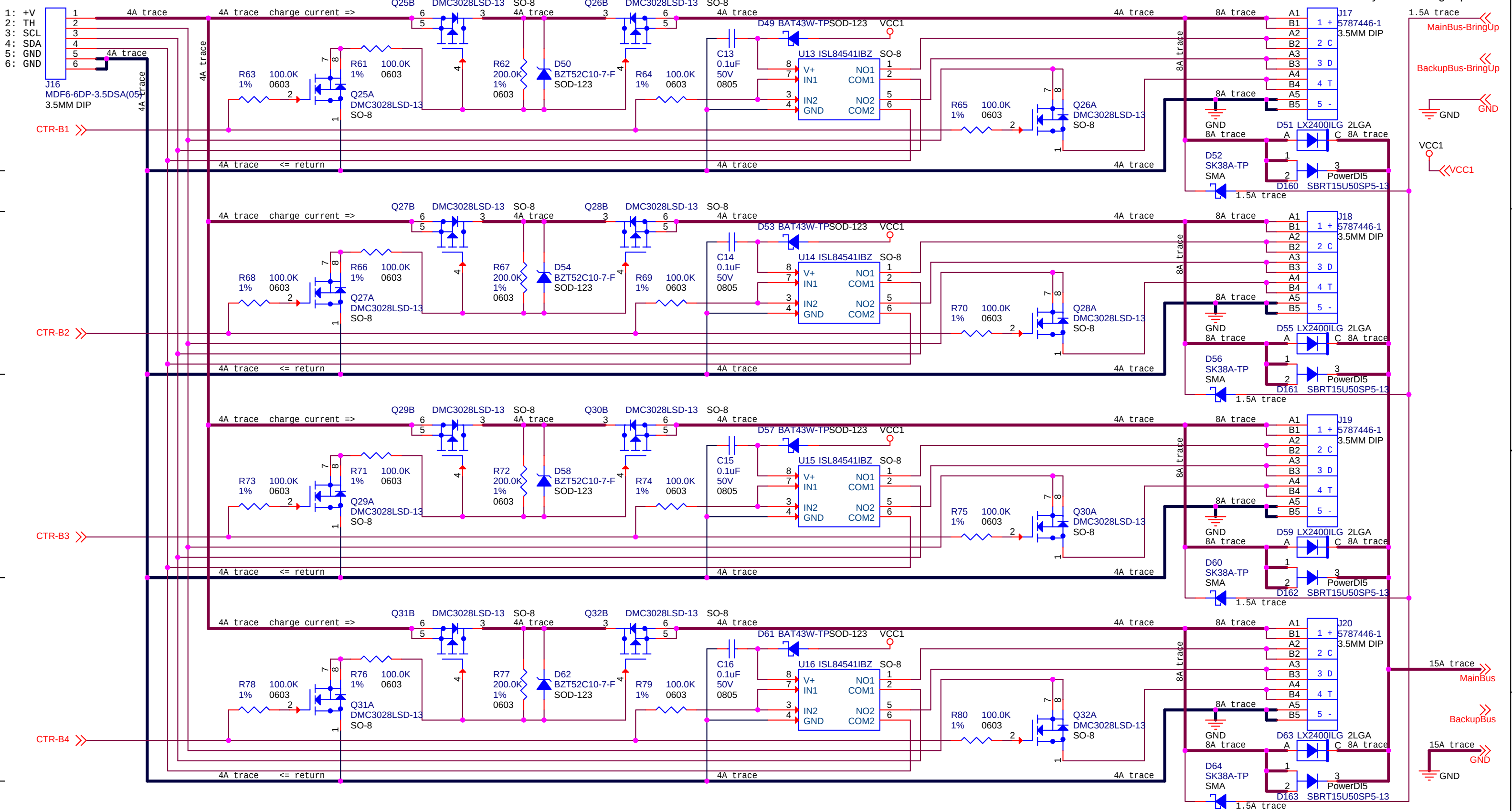
Monterey Bay Aquarium Research Institute
7700 Sandholdt Rd, Moss landing CA 95076

		Page Title		Project:	
Engineer Klimov 831-775-1914		BatteryPackController / Port 2		see page 1	
Size B	Document Number see page 1	File Name (auto) 10021057-BPC1	Rev see page 1		
Page Modify Date (auto):		Friday, August 15, 2014		Sheet:	
Design Modify Date (auto):		Friday, August 15, 2014		2 of 11	
Full path (auto):					

X:\TECHSERVICE\PCB_LAYOUT\OPEN_WORK_SPACE\LRAUV\10021057-BPC1\10021057-BPC1.DSN



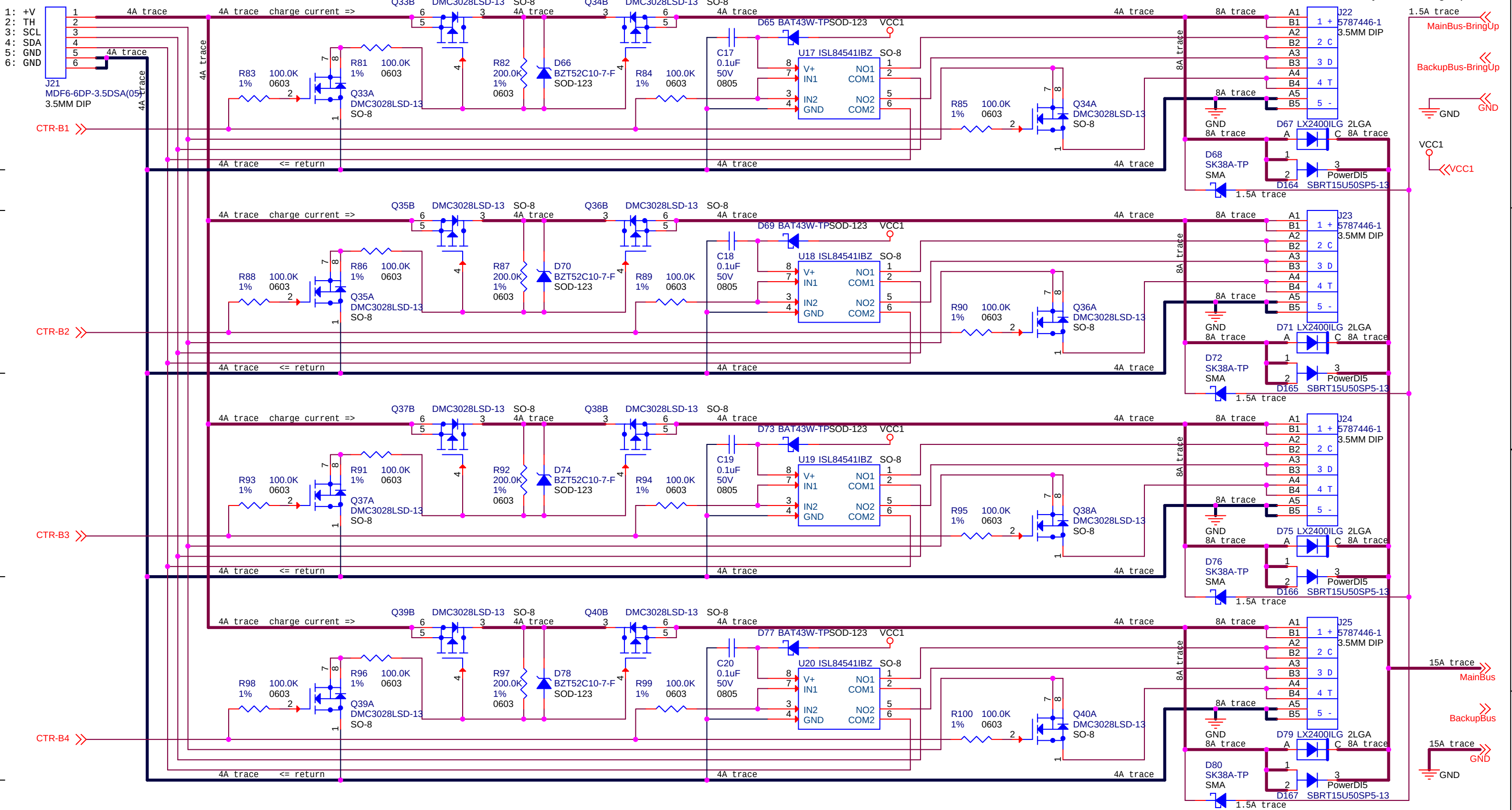
Charge Port
Ocean Server XP-08SR

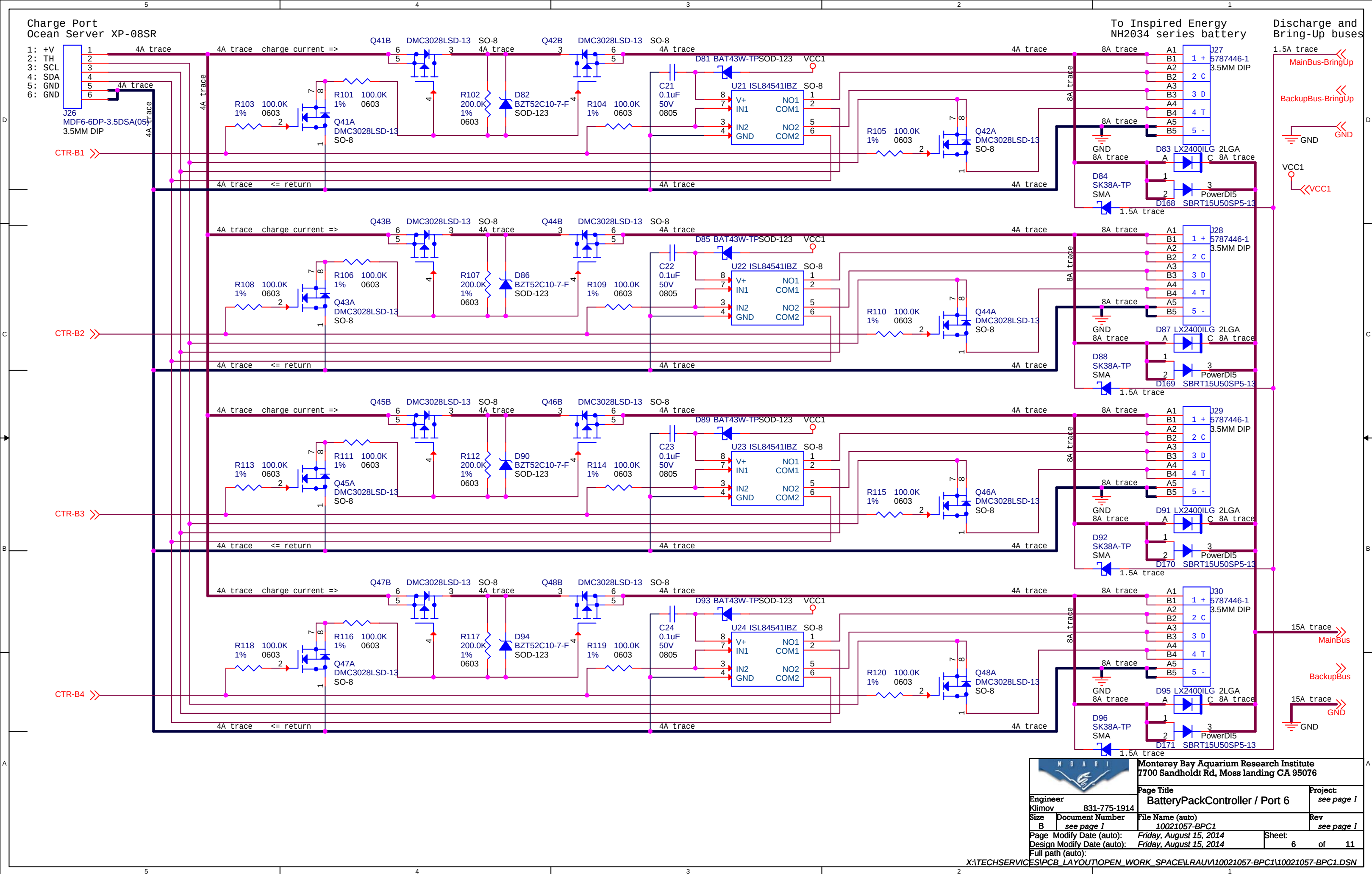


		Monterey Bay Aquarium Research Institute 7700 Sandholdt Rd, Moss landing CA 95076	
Engineer Klimov	831-775-1914	Page Title BatteryPackController / Port 4	Project: see page 1
Size B	Document Number see page 1	File Name (auto) 10021057-BPC1	Rev see page 1
Page Modify Date (auto): Design Modify Date (auto): Full path (auto):	Friday, August 15, 2014 Friday, August 15, 2014		Sheet: 4 of 11

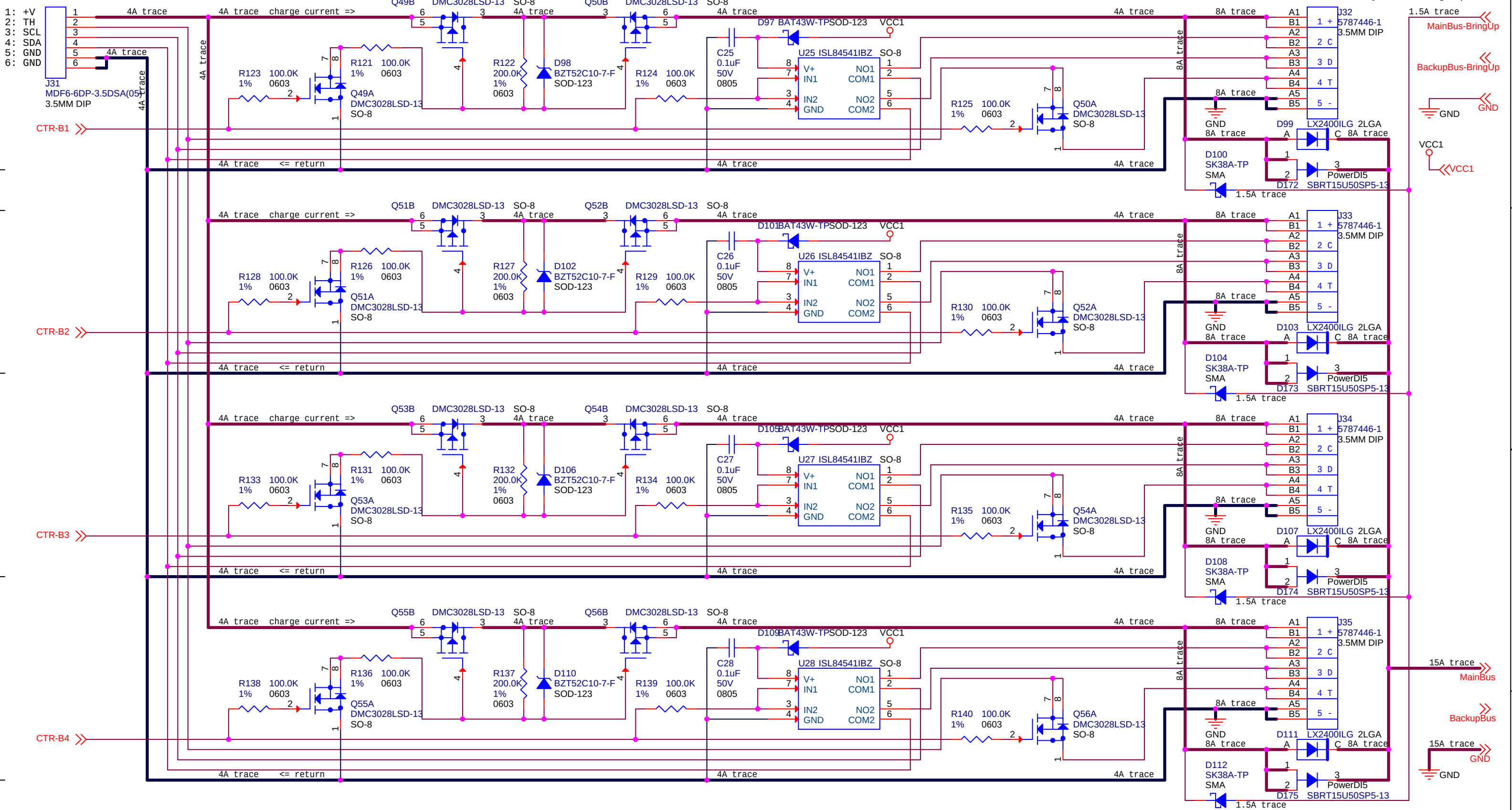
X:\TECHSERVICE\PCB_LAYOUT\OPEN_WORK_SPACE\LAUV10021057-BPC1\10021057-BPC1.DSN

Charge Port
Ocean Server XP-08SR



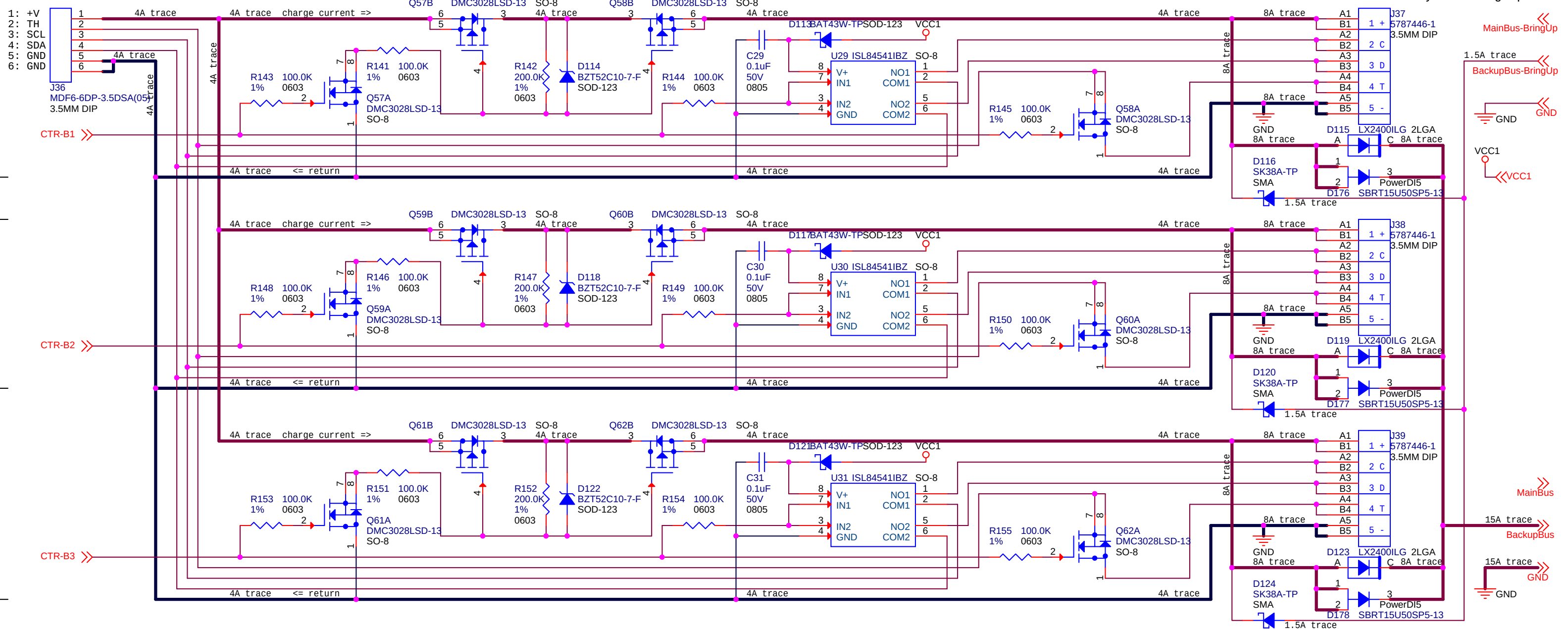


Charge Port
Ocean Server XP-08SR



		Monterey Bay Aquarium Research Institute 7700 Sandholdt Rd, Moss landing CA 95076	
Engineer Klimov		Page Title BatteryPackController / Port 7	Project: see page 1
Size B	Document Number see page 1	File Name (auto) 10021057-BPC1	Rev see page 1
Page Modify Date (auto): Design Modify Date (auto): Full path (auto):		Friday, August 15, 2014 Friday, August 15, 2014 X:\TECHSERV\ICES\PCB_LAYOUT\OPEN_WORK_SPACE\LAUV\10021057-BPC1\10021057-BPC1.DSN	Sheet: 7 of 11

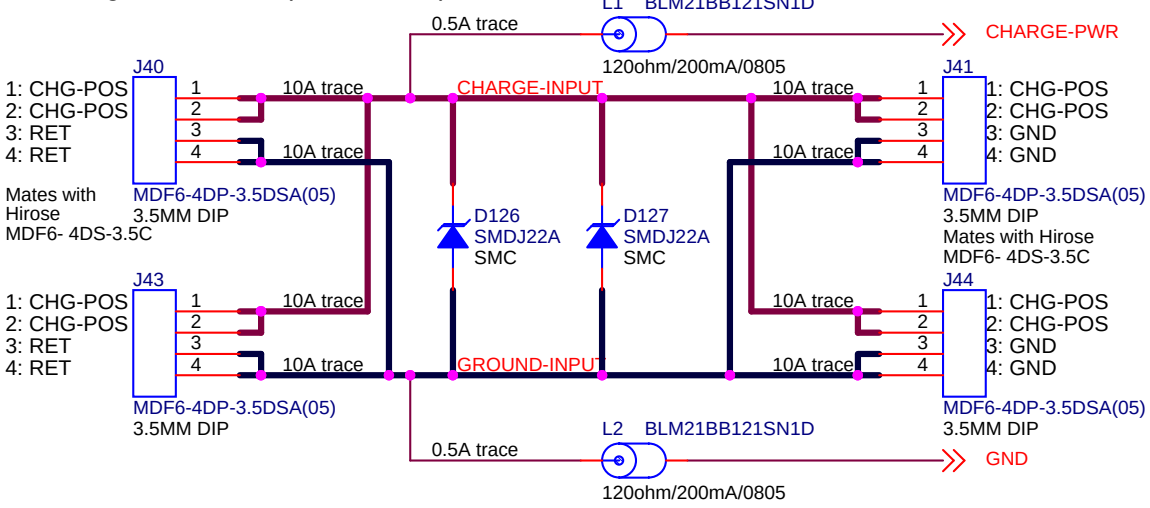
Charge Port
Ocean Server XP-08SR



Backup batteries Port 8, banks B1, B2, B3

		Monterey Bay Aquarium Research Institute 7700 Sandholdt Rd, Moss landing CA 95076	
Engineer Klimov		Page Title BatteryPackController / Port 8	
Size B		Project: see page 1	
Document Number see page 1		Rev see page 1	
File Name (auto) 10021057-BPC1		Sheet: 8 of 11	
Page Modify Date (auto): Friday, August 15, 2014		Design Modify Date (auto): Friday, August 15, 2014	
Full path (auto): X:\TECHSERVICES\PCB_LAYOUT\OPEN_WORK_SPACE\LAUV\10021057-BPC1\10021057-BPC1.DSN			

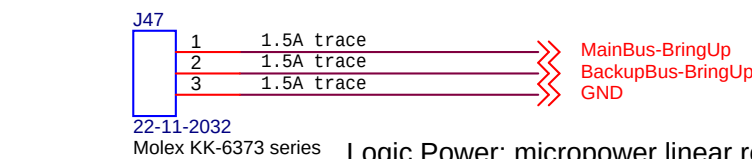
Charge inputs, power distribution to XP-08SR, charge power to charge flag section
To Charge Harnesses (Main, Boost) To Ocean Server XP-08SR



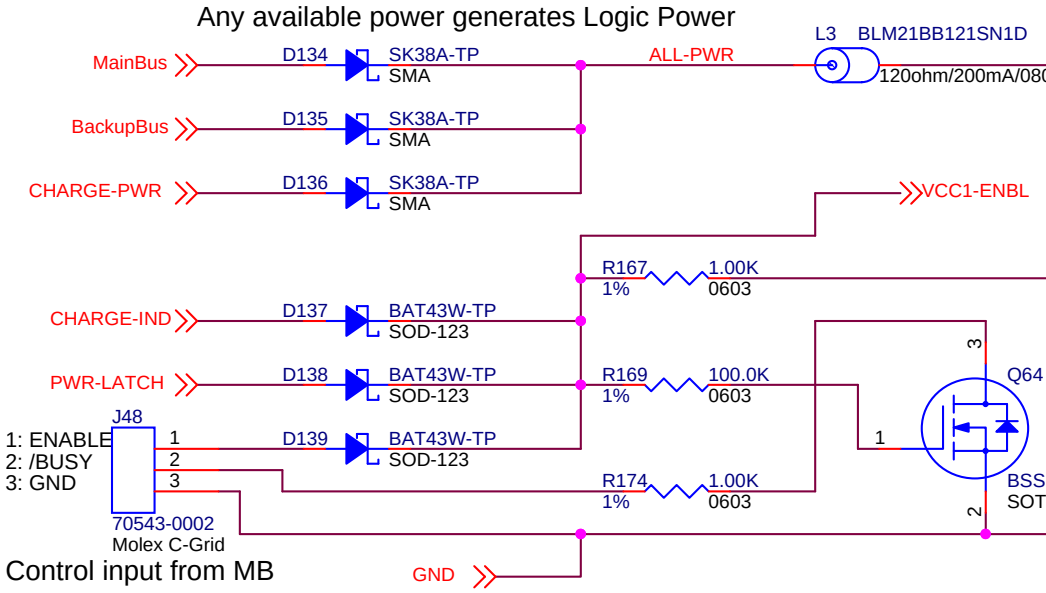
RS-232 pass-thru from discharge harness to Ocean Server XP-08SR
RS-232 port to MB RS-232 to Ocean Server



Battery bring-up interface



Logic Power: micropower linear regulator 5.5 to 80V in, 5V 50mA out.

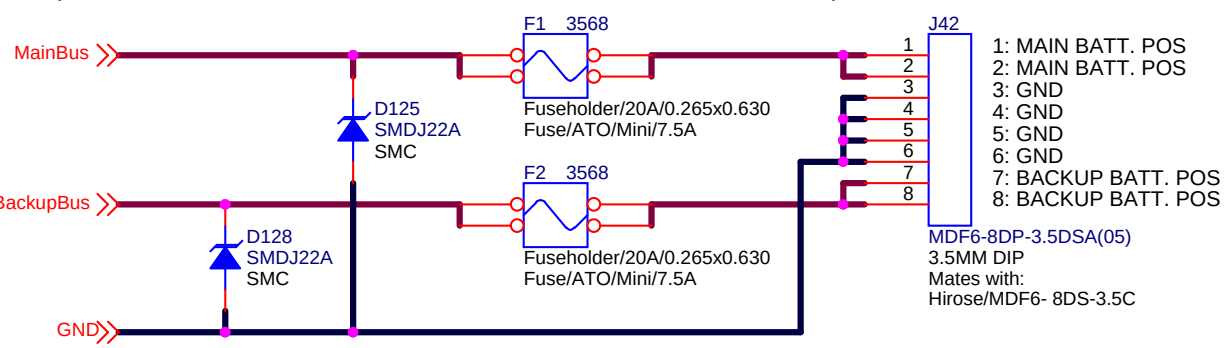


Control input from MB

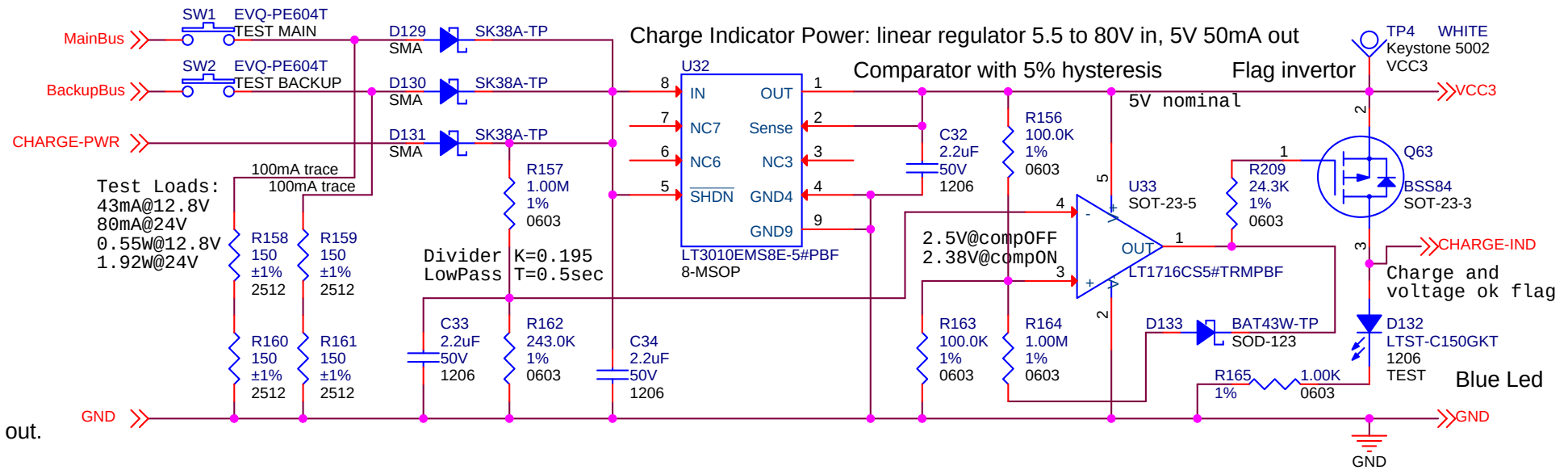
Charging currents required per Half-Pack:
18V: 8A initial, 12A final
20V: 7.9A initial, 11.2A final
22V: 7.2A initial, 10.2A final
24V: 6.6A initial, 9.4A final

Charging time at 24V and full current with cycling
loss and top-off:
 $(6.2 \text{ AH} \times 4 \times 2) / 3\text{A} \times 1.12 \times 1.04 = 19.3 \text{ hours}$

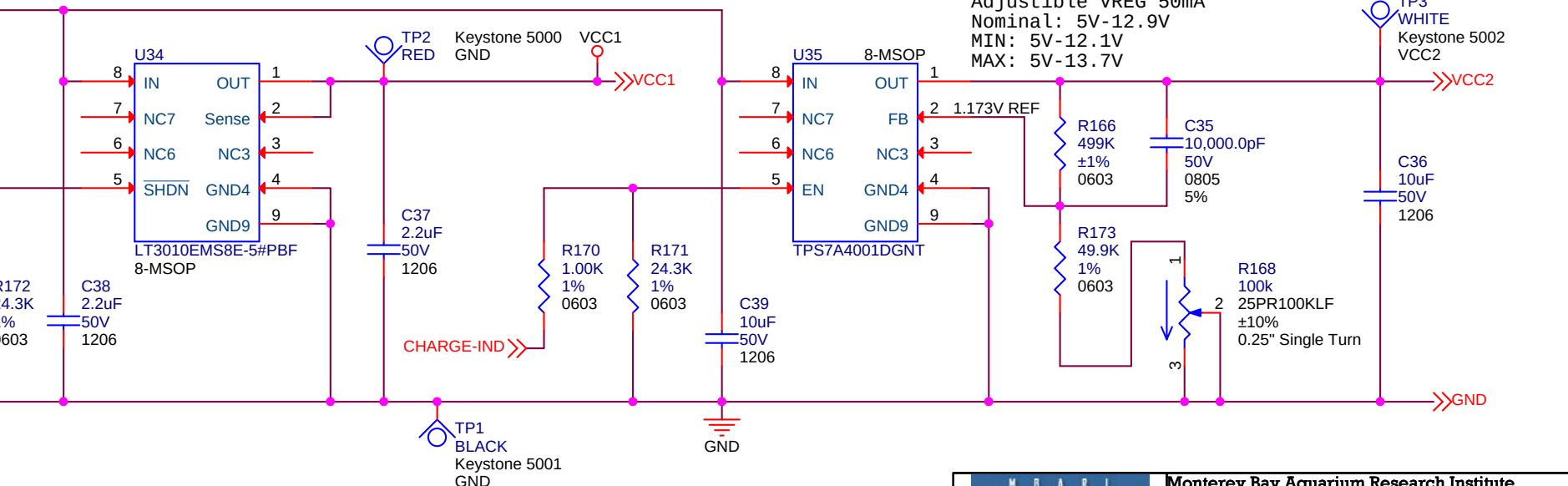
Outputs to mother board with ATO Mini fuse holders and 24V TVS protection



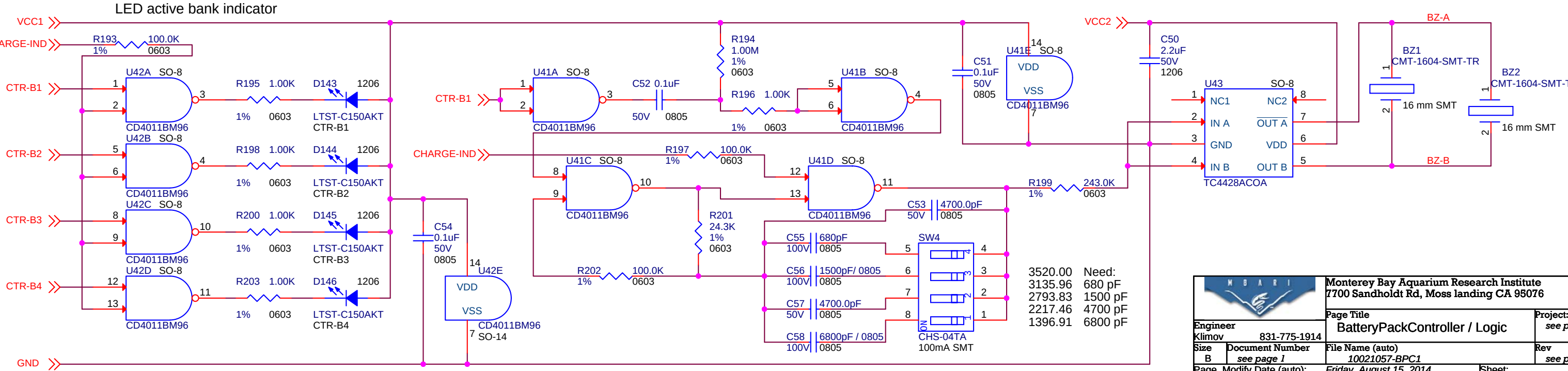
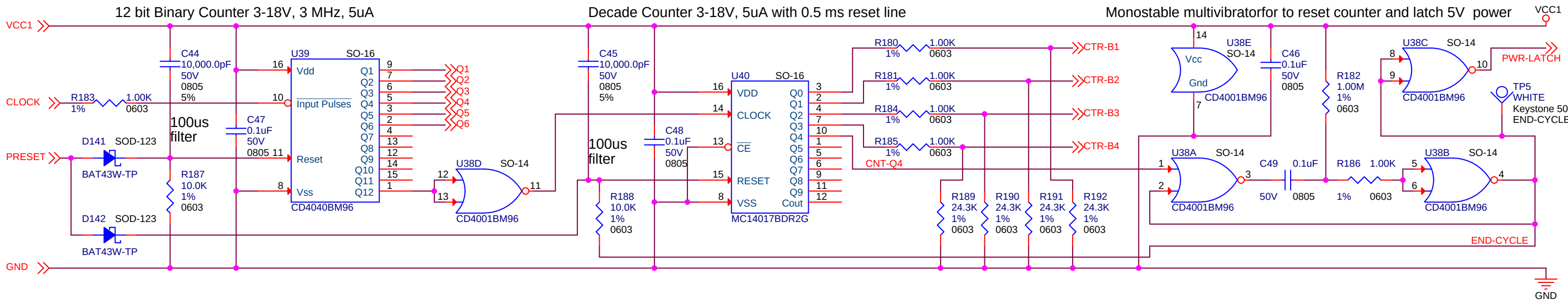
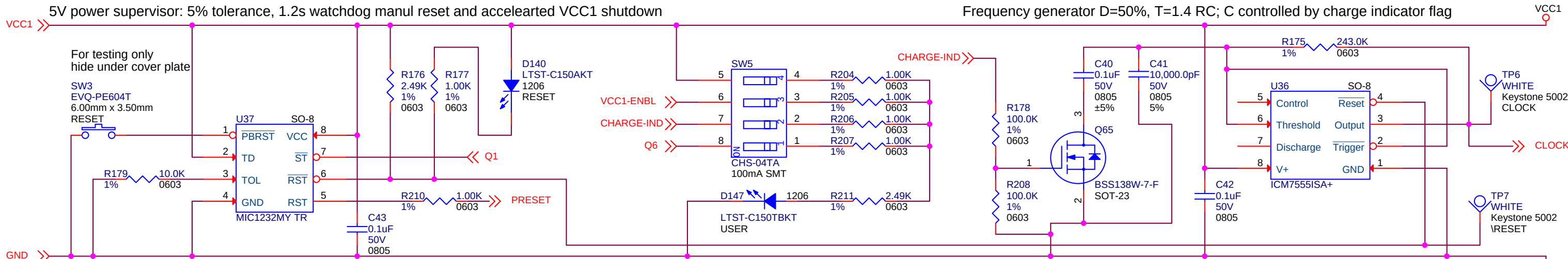
If batt. voltage > 12.8V @ 45mA for 0.5sec, OR charge voltage > 12.8V for 0.5sec, LED lights up and scan cycle starts



Logic Power: micropower linear regulator 5.5 to 80V in, 5V 50mA out.

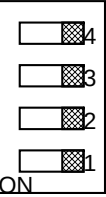


Monterey Bay Aquarium Research Institute 7700 Sandholdt Rd, Moss landing CA 95076			
Page Title BatteryPackController / Power		Project: see page 1	
Engineer Klimov	831-775-1914	File Name (auto) 10021057-BPC1	Rev see page 1
Size B	Document Number see page 1	Page Modify Date (auto): Friday, August 15, 2014	Sheet: 9 of 11
Full path (auto): X:\TECHSERVICE\PCB_LAYOUT\OPEN_WORK_SPACE\LAUV10021057-BPC1\10021057-BPC1.DSN			

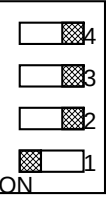


		Monterey Bay Aquarium Research Institute 7700 Sandholdt Rd, Moss landing CA 95076	
Engineer Klimov	831-775-1914	Page Title BatteryPackController / Logic	Project: see page 1
Size B	Document Number see page 1	File Name (auto) 10021057-BPC1	Rev see page 1
Page Modify Date (auto): Design Modify Date (auto): Full path (auto):		Friday, August 15, 2014 Friday, August 15, 2014 X:\TECHSERV\CES\PCB_LAYOUT\OPEN_WORK_SPACE\LAUUV10021057-BPC1\10021057-BPC1.DSN	
Sheet: 10 of 11			

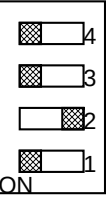
SW5 – multifunctional DIP switch, affects indication of D147 and operating modes based on interconnection of signals
D147, User selectable LED function indicates any or all of following signals:
Bit 4: VCC1, +5V logic power
Bit 3: VCC1 Enable, activates Fast Scan (14 sec/bank, 58 sec total)
Bit 2: Charge Indicator, enables Slow (150 sec/ bank, 10 min total for 4 banks), and all indicator LEDs active
Bit 1: "Hearthbeat" counter data line Q6, flashes 5 times per sec in Fast Scan or 1 per 2.4 sec in Slow Scan mode



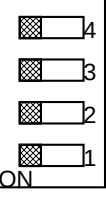
Default configuration
Preferred MB3.0 DEPLOYMENT CONFIGURATION
Slow (150 x4 sec) bank scan in charge mode
Fast (15 x4 sec) in external Enable mode
Once scan started, runs thru banks, then shutdown
LEDs and Beginning-Of-Scan-Beep enabled in Charge Mode



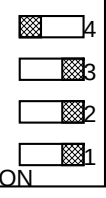
Preferred configuration in the lab, with external Enable signal from MB
Once scan is triggered, it will be finished and go in shutdown
D147 "hearthbit" active indicating active scan process
Rate of blinking indicate slow of fast scan mode.



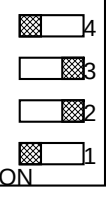
Continous Fast scan without need for external Enable signal
Charge Mode (Vin >13V) enables LEDs and audio indicators
Heartbit LED always active indicating scan process
Rate of blinking indicates slow or fast charge



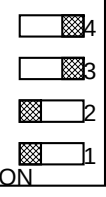
Continous Slow scan without need for external Enable Signal or Charge Voltage >13V
Essentially the same as continous charge mode but without connected charge box
All LEDs and audio indicators enabled
Heartbit LED always active indicating scan process
Rate of blinking (1 in 2.4 sec) indicates Slow scan



Bring-up and debugging mode
"VCC1 Power"
D147 indicates presence of VCC1 logic power and thus active scan process

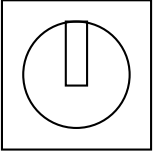


Bring-up and debugging mode
"Faint Hearthbeat"
D147 indicates sum of Q6 data line and logical power



Bring-up and debugging mode
Intermediate scan rate by external enable from MB
By coupling Q6 to Charge Indicator, half of counter time is accelerated to Fast mode
Switch time: 150 sec/ 2 + 14sec /2 = 82 sec per bank
Presense of charge voltage >13V activates normal slow Charge Mode

Audio indicator volume
left- max, right - min



Main and backup Battery Test Pushbuttons
Push and Hold. If battery voltage >13V:
D132 lights up green while button is hold
D140 lights up for 0.6 sec then scan starts

LED Indicators upper right corner of the board

- D143 ORANGE BANK 1
- D144 ORANGE BANK 2
- D145 ORANGE BANK 3
- D146 ORANGE BANK 4
- D132 Green Battery Test / Charge Mode
- D140 ORANGE Reset mode
- D147 BLUE User / multifunctional

		Monterey Bay Aquarium Research Institute 7700 Sandholdt Rd, Moss landing CA 95076	
Engineer Klimov 831-775-1914		Page Title BatteryPackController / NOTES	Project: see page 1
Size B	Document Number see page 1	File Name (auto) 10021057-BPC1	Rev see page 1
Page Modify Date (auto): Friday, August 15, 2014		Sheet: 11 of 11	
Design Modify Date (auto): Friday, August 15, 2014		Full path (auto):	

X:\TECHSERVICES\PCB_LAYOUT\OPEN_WORK_SPACE\LAUV\10021057-BPC1\10021057-BPC1.DSN