


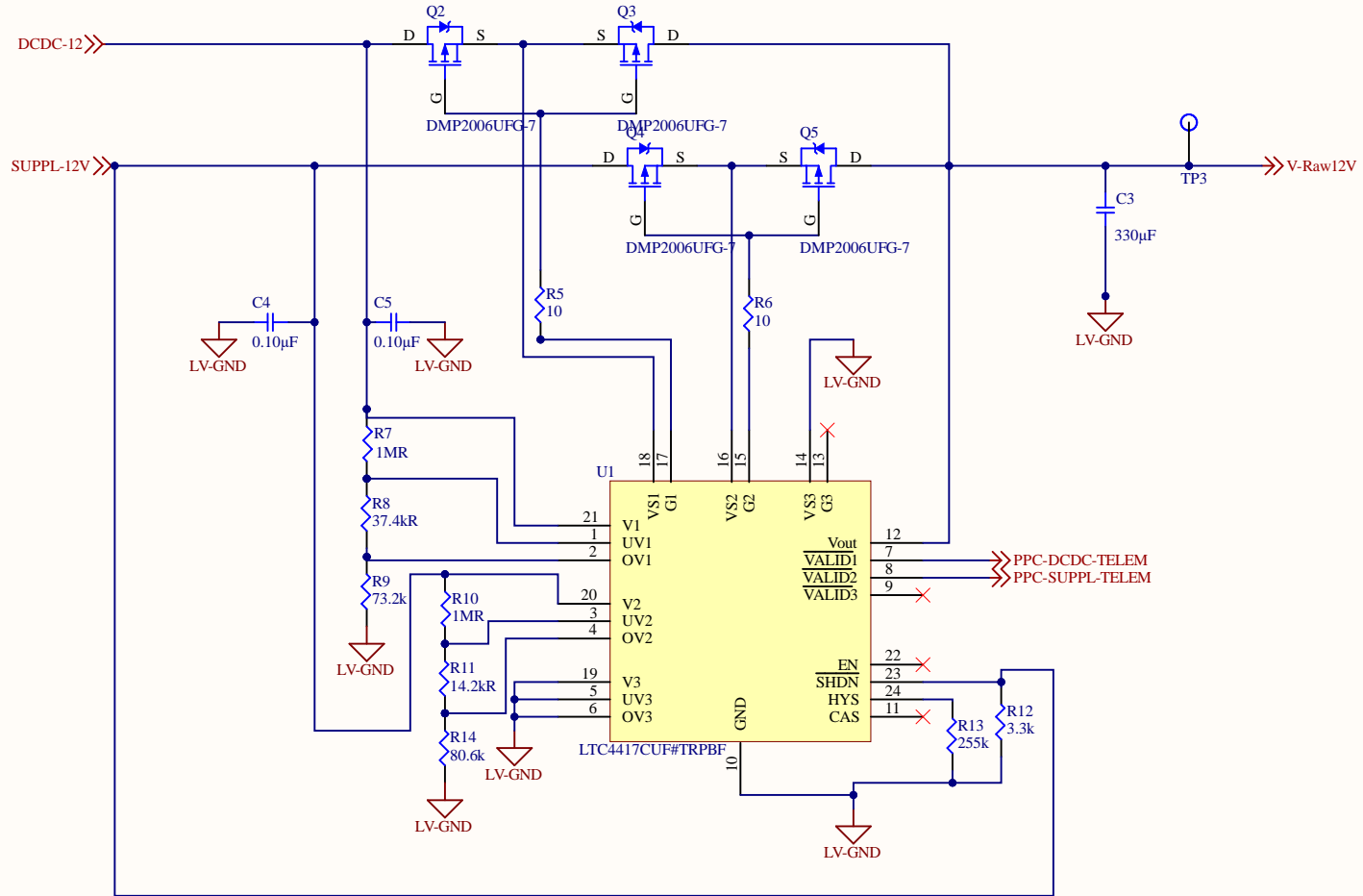
HV CONTROLLER

SOLAR CAR 1

REV A

Title <i>HV Controller</i>		Badgerloop Electrical 133 Engineering Research Building 1500 Engineering Drive Madison, WI 53706	
Engineer:	Revision:		
Date: 2/26/2022	Time: 3:24:26 PM		
File: hv_controller.SchDoc		Sheet 1 of 2	

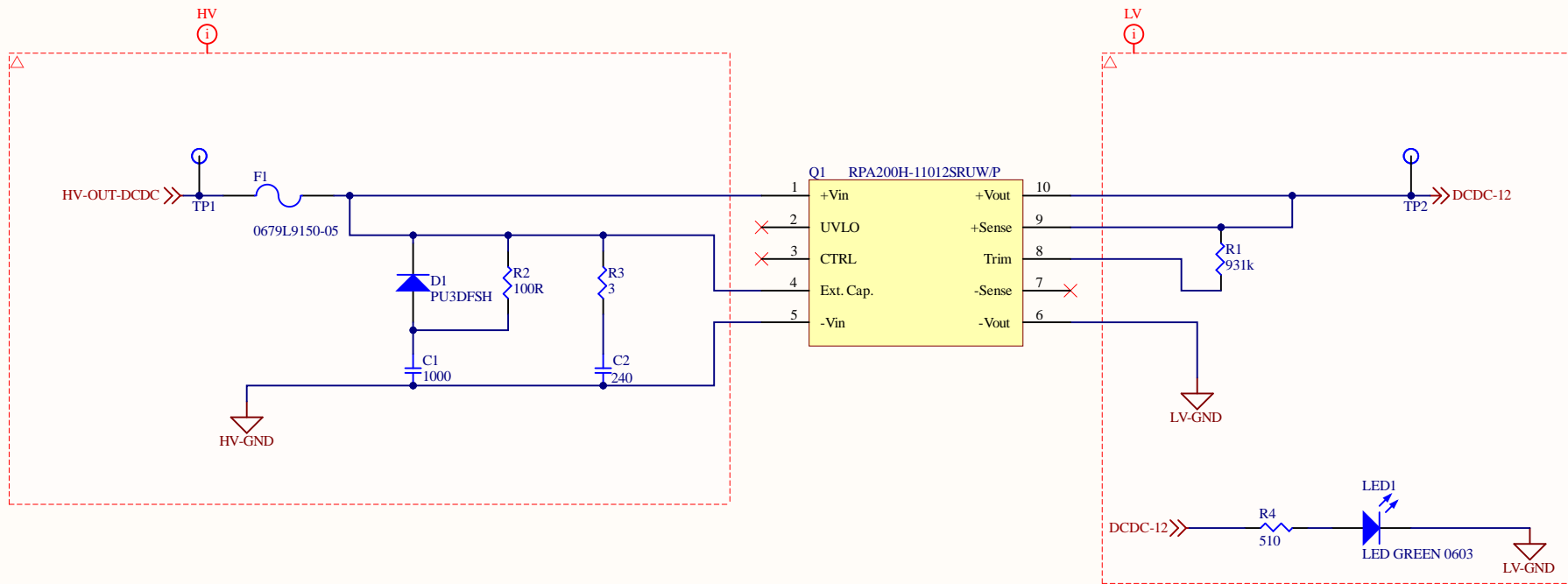
Powerpath Controller



Title Power Path Controller		<div><div></div><div><div>BADGER</div><div>LOOP</div></div></div>
Engineer: *	Revision:*	
Date: 2/26/2022	Time: 3:24:27 PM	
File: power_path.SchDoc		

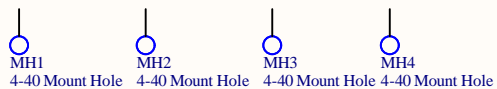
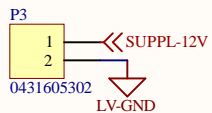
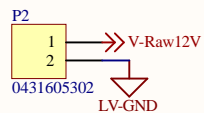
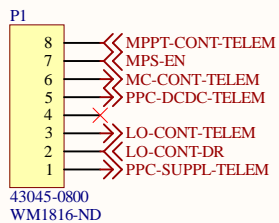
**BADGER
LOOP**

DC-DC Converter



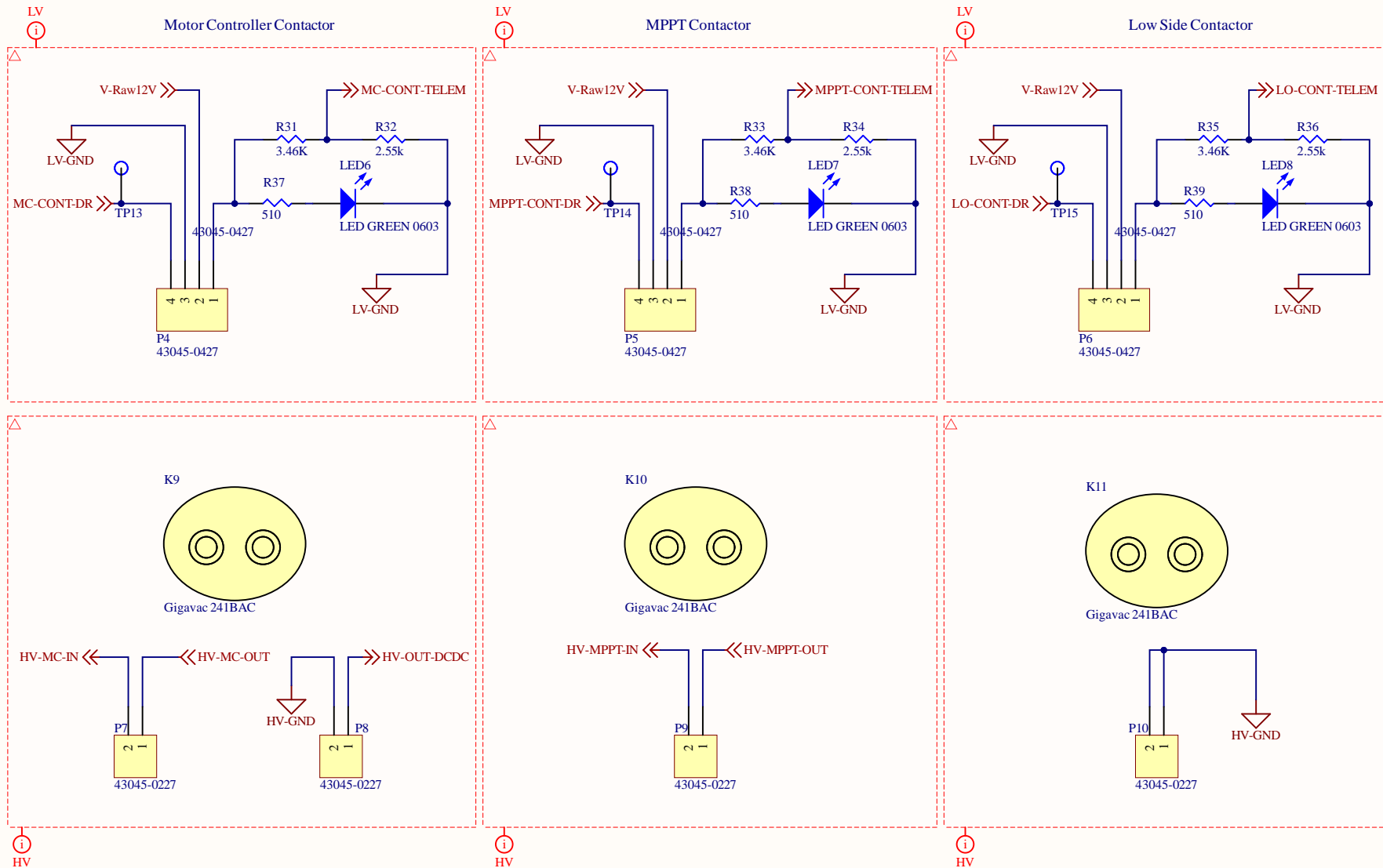
Title *		*	
Engineer: *		Revision:*	
Date: 2/26/2022	Time: 3:24:27 PM	Sheet 2 of 2	
File: dc_dc_converter.SchDoc			

BADGER
LOOP



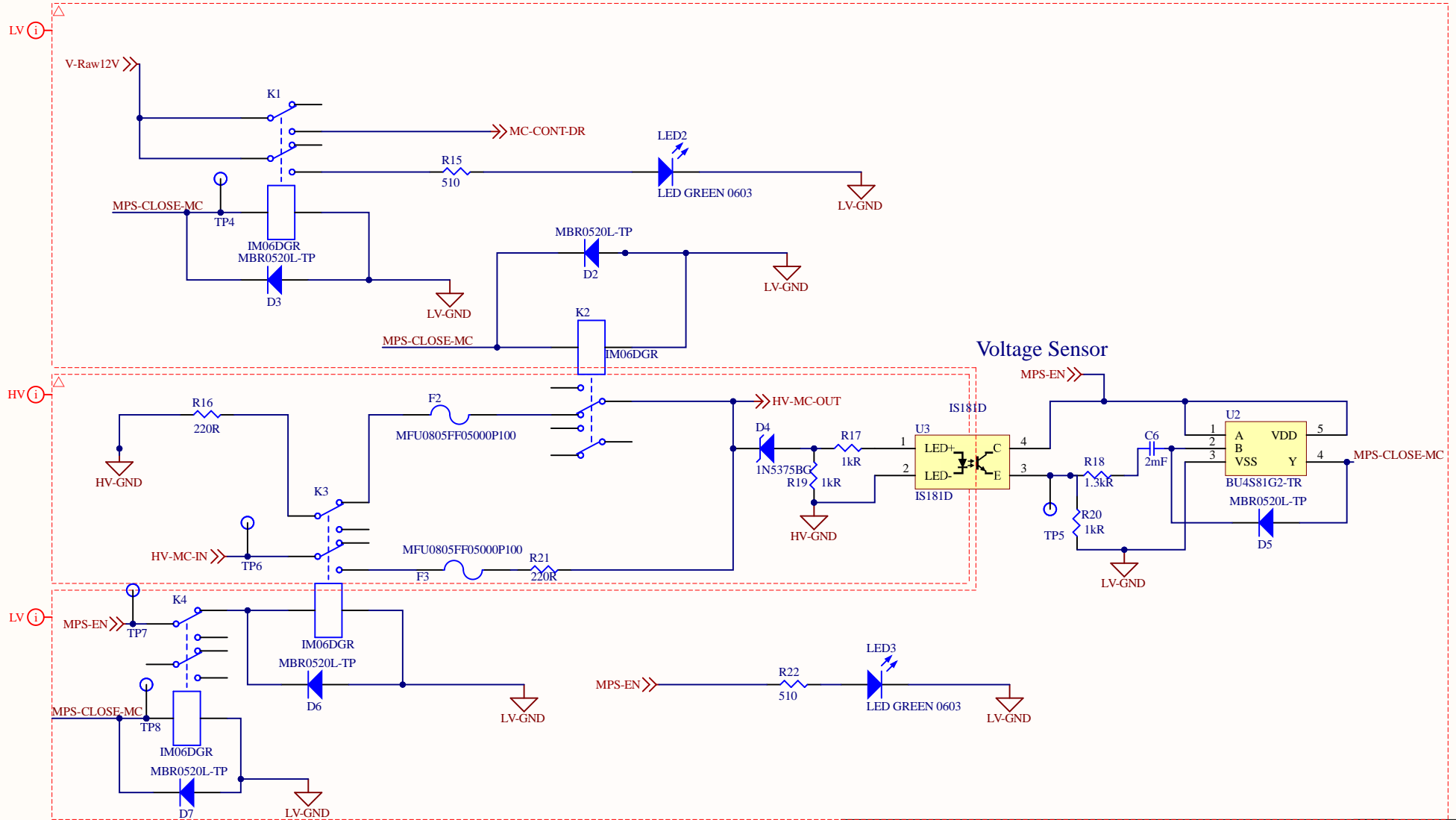
Title Connectors		* * *	BADGER LOOP
Engineer: *	Revision:*		
Date: 2/26/2022	Time: 3:24:27 PM		
File: connectors.SchDoc		Sheet 2 of 2	

Main Power Switch



Title Main Power Switch		* * * *	BADGER LOOP
Engineer: *	Revision:*		
Date: 2/26/2022	Time: 3:24:27 PM		
File: main_power_switch.SchDoc	Sheet* of *		

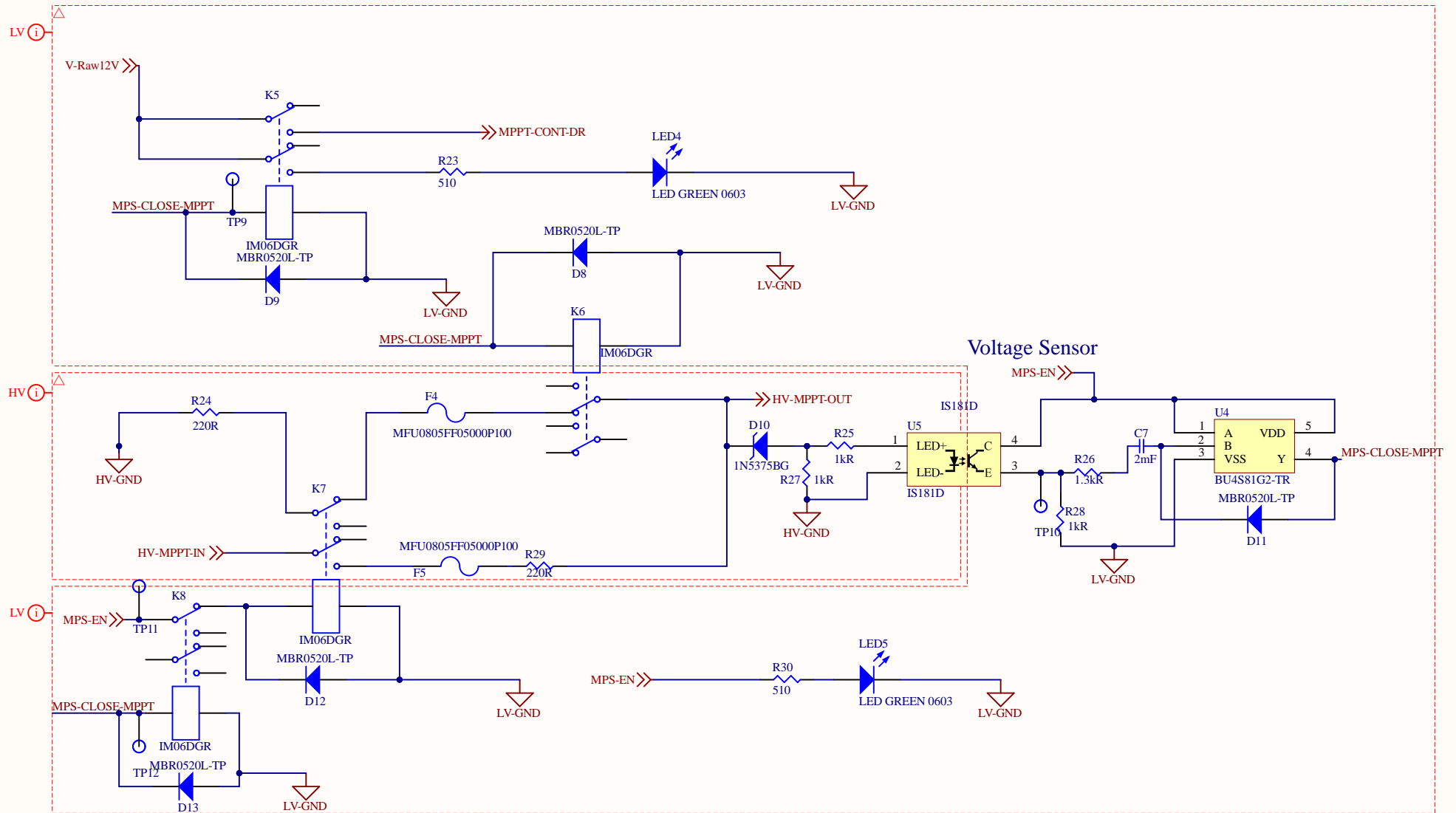
Motor Controller Precharge Relays




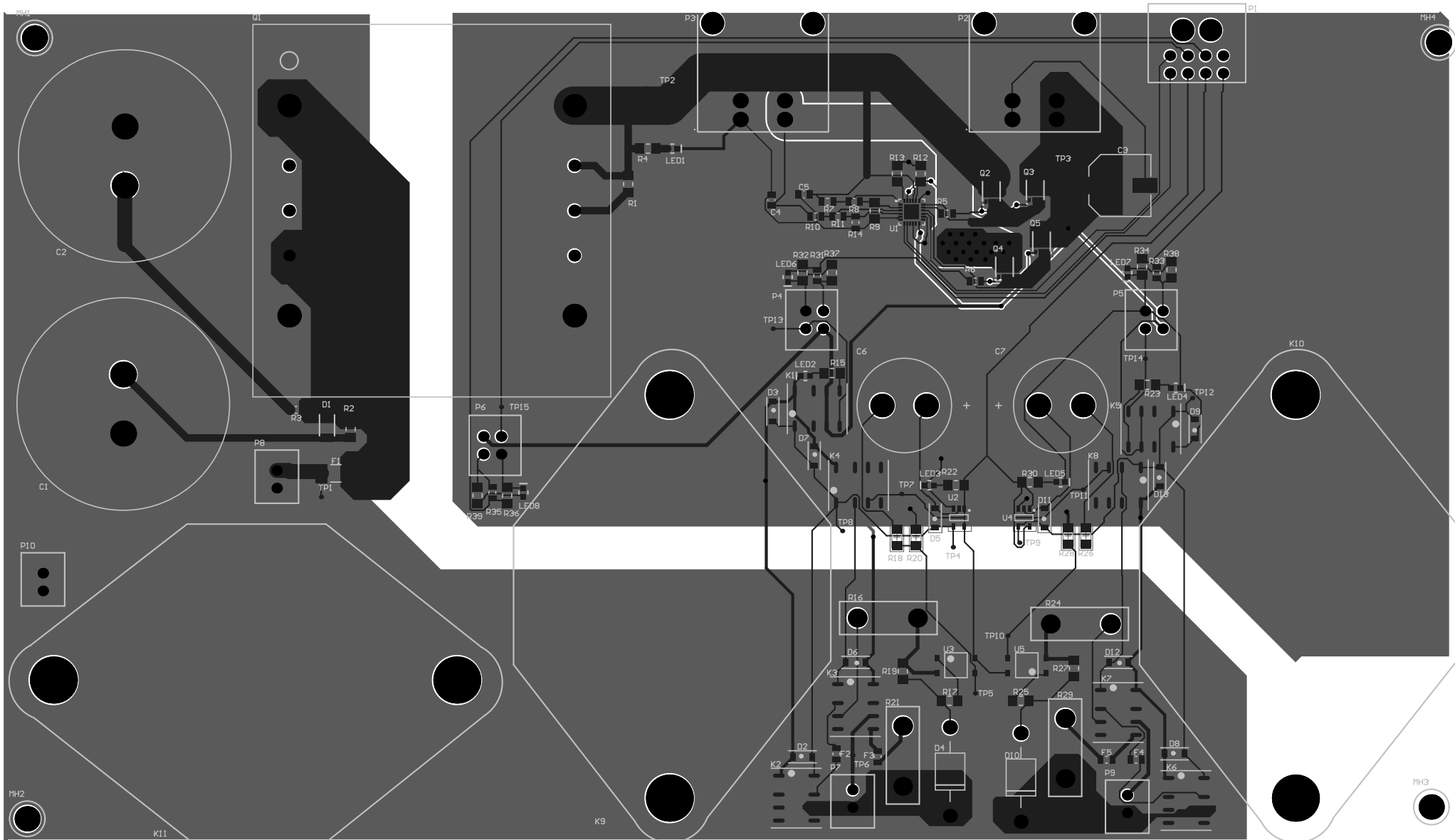
Title Precharge Relays		Badgerloop Electrical 133 Engineering Research Building 1500 Engineering Drive Madison, WI 53706	
Engineer: *		Revision:*	
Date: 2/26/2022	Time: 3:24:27 PM	Sheet* of *	
File: motor_controller_relays.SchDoc			

BADGER
LOOP

MPPT Precharge Relays



Title <i>MPPT Relays</i>		Badgerloop Electrical 133 Engineering Research Building 1500 Engineering Drive Madison, WI 53706 
Engineer: *	Revision:*	
Date: 2/26/2022 Time: 3:24:27 PM	Sheet* of *	
File: mppt_relays.SchDoc		



Comment	Description	Designator	Footprint	Ref	Quantity
1000	CAP ALUM 1000UF 20% 250V SNAP	C1	ALA70A241DE600	ALA70A3020250	1
ALA70A241DE600	CAP ALUM 1000UF 20% 600V SNAP	C2	ALA70A241DE600	ALA70A241DE600	1
GB1E321MCM1G5	Aluminum Organic Polymer Capacitors 25V 230uf	C3	CAPAE110103X110N	GB1E321MCM1G5	1
0.10uF	CAP CER 0.1UF 50V X7R0805	C4, C5	SMD-0805C	GC1218R71H104KA01L	2
EEU-TP1E20S	Aluminum Electrolytic Capacitor -25V, 2000uF	C6, C7	EEU-TP1E20S	EEU-TP1E20S	2
PU3DF5H	Diode Standard 200 V 1A (DO) Surface Mount 500-128	D1	PU3DF5H	PU3DF5H	1
MBR0520L-TP	Rectifier Diode, Schottky - 1 Phase, 1 Element, 0.5A, 20V V(88uA), Silicon	D2, D3, D5, D6, D7, D8, D9, D11, D12, D13	MBR0520L1G - SOD123	MBR0520L-TP	10
1N5375BG	Zener Diode, 82V V(Z), 5W, SW, Silicon, Unidirectional	D4, D10	1N5375BG	1N5375BG	2
0679K9150-05		F1	0679K9150-05 - Fuse smf	0679K9150-05	1
MFU0805FF0500P10 0	Electric Fuse, Very Fast Blow, 5A, 32VDC, 50A (IR), Surface Mount	F2, F3, F4, F5	SMD-0805-RES	MFU0805FF0500P10 0	4
1-1462039-8	Electromechanical Relay, DPDT, 140mV Coil), 5A (Contact), 220VDC (Contact), Random, A/C/DC Output	K1, K2, K3, K4, K5, K6, K7, K8	1-1462039-8 - relay	1-1462039-8	8
Gigavac 2418AC		K9, K10, K11	Gigavac 200	Gigavac 2418AC	3
LED GREEN 0603		LED1, LED2, LED3, LED4, LED5, LED6, LED7, LED8	LED 0603 GREEN	LED GREEN 0603	8
4-40 Mount Hole		MR1, MR2, MR3, MR4	MMH	4-40 Mount Hole	4
43045-0800	CONN HEADER 8/24 P/OS 2MM	P1	430450800	43045-0800	1
0431605302	Conn Power HDR 2 POS 7 49mm Solder 6A Thru Hole 4 Terminal 1 Port Solder™ Tray	P2, P3	CONN HDR 2POS 7.50MM	0431605302	2
43045-0427	Board Connector, 4 Contact(s), 2 Row(s), Male, Straight, Solder Terminal, Locking, Black Insulator, Receptacle	P4, P5, P6	430450427	43045-0427	3
43045-0227	Board Connector, 2 Contact(s), 2 Row(s), Male, Straight, Solder Terminal, Locking, Black Insulator, Receptacle	P7, P8, P9, P10	43045-0227	43045-0227	4
RPA200H-110125RLW	DC-DC CONVERTER 12V-200W	Q1	RPA200H	RPA200H-110125RLW	1
DMP2006JFG-7	Power Field Effect Transistor, 17.5A (ID), 20V, 0.0055ohm, 1- Element, P-Channel Silicon, Metal-oxide Semiconductor FET	Q2, Q3, Q4, Q5	DMP2006JFG	DMP2006JFG-7	4
931k	Fixed Resistor, Metal Glaze/Thick Film, 0.5W, 470ohm, 200V 1% +/- Tol, 100ppm/Cel, Surface Mount, 1206	R1	SMD-1206-RES	931-8ENF9313V	1
100R	Fixed Resistor, Thin Film, 1W, 100ohm, 200V, 0.5% +/- Tol, 20ppm/Cel, Surface Mount, 1206	R2	SMD-1206-RES	480C3214P-1000-0-T1	1
1	Fixed Resistor	R3	SMD-0805-RES	SCAN0805K 800K J15	1
84KCF1206FT510R	Fixed Resistor, Metal Glaze/Thick Film, 0.25W, 510ohm, 200V, 1% +/- Tol, 100ppm/Cel, Surface Mount, 1206	R4, R15, R22, R23, R30, R37, R38, R39	SMD-1206-RES	84KCF1206FT510R	8
10	RES SMD 10 OHM 5% 1/8W 0805	R5, R6	SMD-0805-RES	80U-6GEY1000V	2
1MR	RES 1M OHM 1% 1/8W 0805	R7, R10	SMD-0805-RES	30CW08051M00FKEA C	2
37.4kR	RES SMD 37.4K OHM 1% 1/8W 0805	R8	SMD-0805-RES	30CW080537K4FKEA	1
73.2k	RES SMD 73.2K OHM 1% 1/8W 1206	R9	SMD-1206-RES	80U-8ENF7322V	1
14.2kR	RES 14.2K OHM 0.1% 1/2W 0805	R11	SMD-0805-RES	78PM080514K28EEA	1
3.3k	RES SMD 3.3K OHM 1% 1/8W 1206	R12	SMD-1206-RES	80U-8ENF3301V	1
255k	RES SMD 255K OHM 1% 1/8W 1206	R13	SMD-1206-RES	80U-8ENF2553V	1
80.6k	RES SMD 80.6K OHM 1% 1/8W 0805	R14	SMD-0805-RES	80U-4ENF8062V	1
AP101220R	Fixed Resistor, 1000 220ohm, 20W, 2% +/- Tol, 100ppm/Cel, Through Hole Mount	R16, R21, R24, R29	TO-247-2	AP101220R	4
05534260781E0XRS3	0.25W, 1000ohm, 100V, 1% +/- Tol, 100ppm/Cel, Surface Mount, 1206	R17, R19, R20, R25, R27, R28	SMD-1206-RES	05534260781E0XRS3	6
6RA-04EB132V	0.25W, 1000ohm, 150V, 0.1% +/- Tol, 20ppm/Cel, Surface Mount, 1206	R18, R26	SMD-1206-RES	6RA-04EB132V	2
1.4kK	Fixed Resistor, Metal Glaze/Thick Film, 0.125W, 3400ohm, 150V, 1% +/- Tol, 100ppm/Cel, Surface Mount, 0805	R21, R23, R25	SMD-0805-RES	30CW08053K4AFKEA	3
2.55k	RES SMD 2.55K OHM 1% 1/4W 1206	R32, R34, R36	SMD-1206-RES	80U-8ENF2551V	3
TP	SMD TEST POINT	TP1, TP2, TP3, TP4, TP5, TP6, TP7, TP8, TP9, TP10, TP11, TP12, TP13, TP14, TP15	Test Point	TP	15
LTCA417CJLF1TR9F	Pentastack PowerPath Controller 24 Pin CPIN 1P7.0E	U1	LT4417 QNF	LTCA417CJLF1TR9F	1
BU4581G2-TR	AND Gate, 4000/14000/40000 Series, 1 Func, 3- Input, CMOS, PDSO5	U2, U4	BU4581G2	BU4581G2-TR	2
IS181D	Transistor Output Optocoupler	U3, U5	IS181D	IS181D	2