

48V_15A E-vechile charger

Ver1RevA

48V_15A charger.PpjPcb

Completed

Variant: RevA

06/03/2020

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10

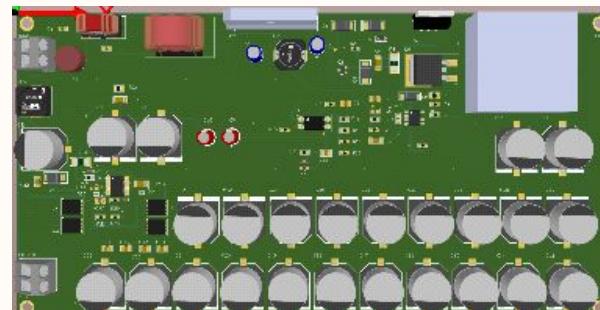
Critical Design Note

Cautionary Design Note

Critical Layout Note

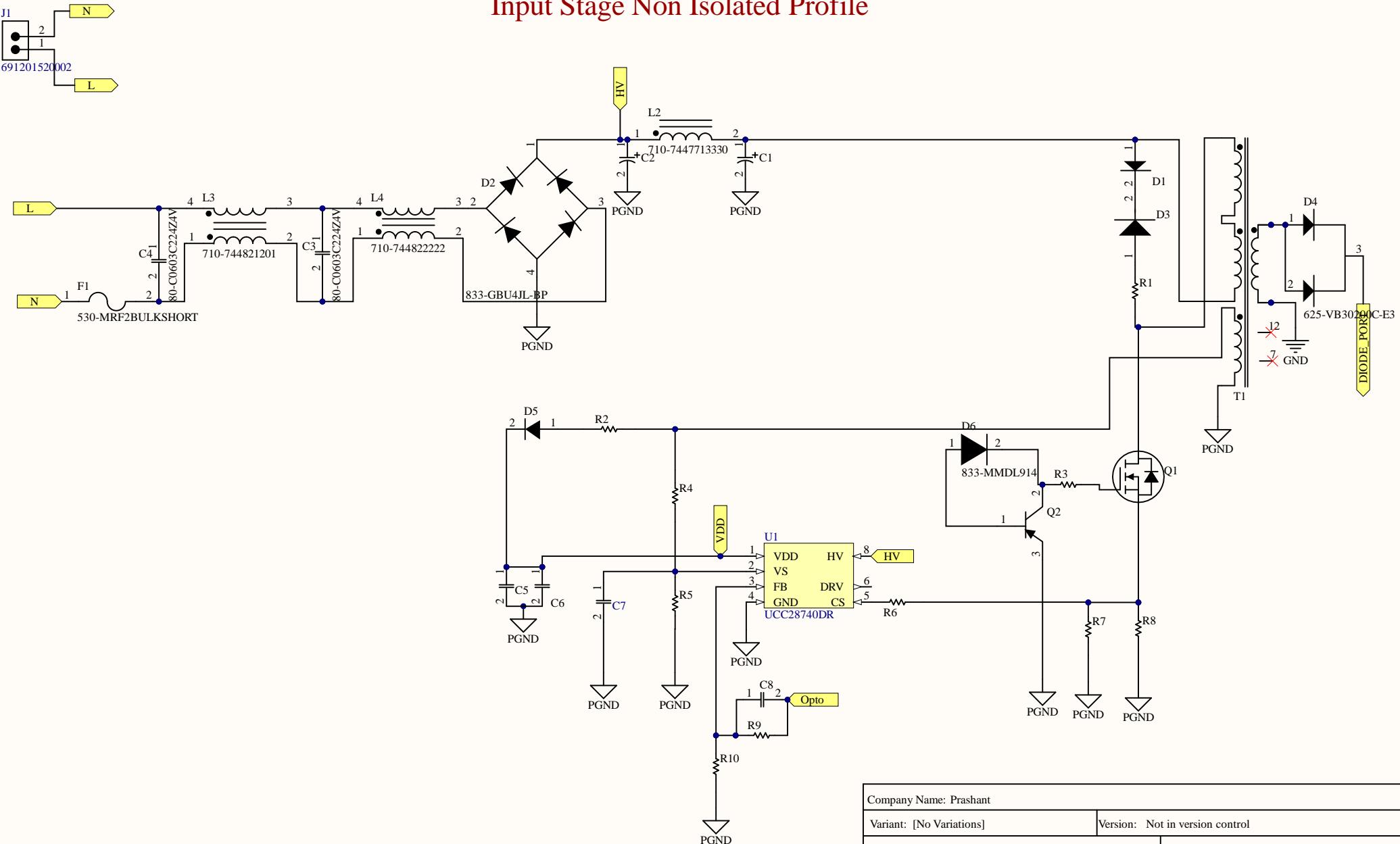
NF

Not Fitted in a particular Variant



Company Name: Prashant Sharma		
Variant: VERA_REV1	Version: A	
Title: Title Template.SchDot		Project Name: 48V_15A charger.PpjPcb
Drawn by: Prashant Sharma		DWG NO: Size: A4
Date: 07-07-2020	Sheet 1 of 5	Checked by: Prashant Sharma

Input Stage Non Isolated Profile



Company Name: Prashant				
Variant: [No Variations]	Version: Not in version control			
Title: 1st stage NonIsolted profile.SchDoc		Project Name: 48V_15A charger.PrjPcb		
Drawn by: Prashant		DWG NO:		Size: Text
Date: 07-07-2020	Sheet <u>2</u>	of 5	Checked by:	Prashant Sharma

Isolated output

A

A

B

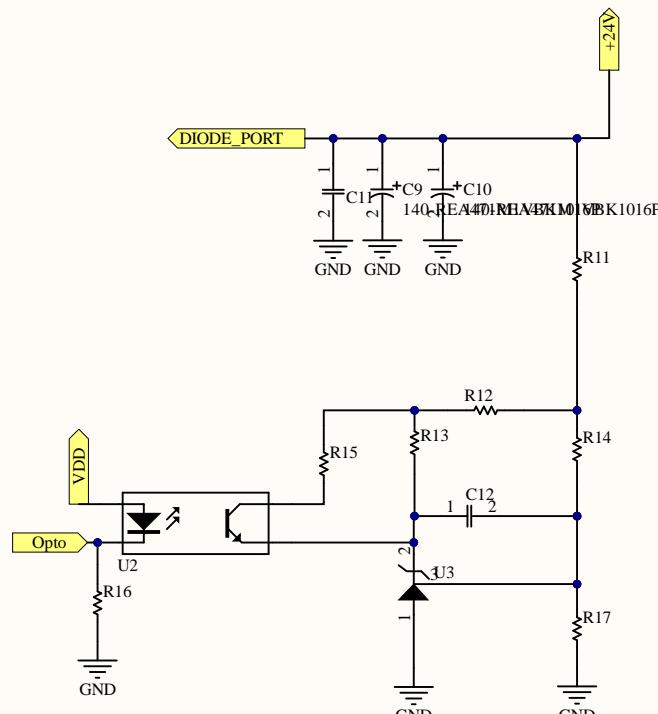
B

C

C

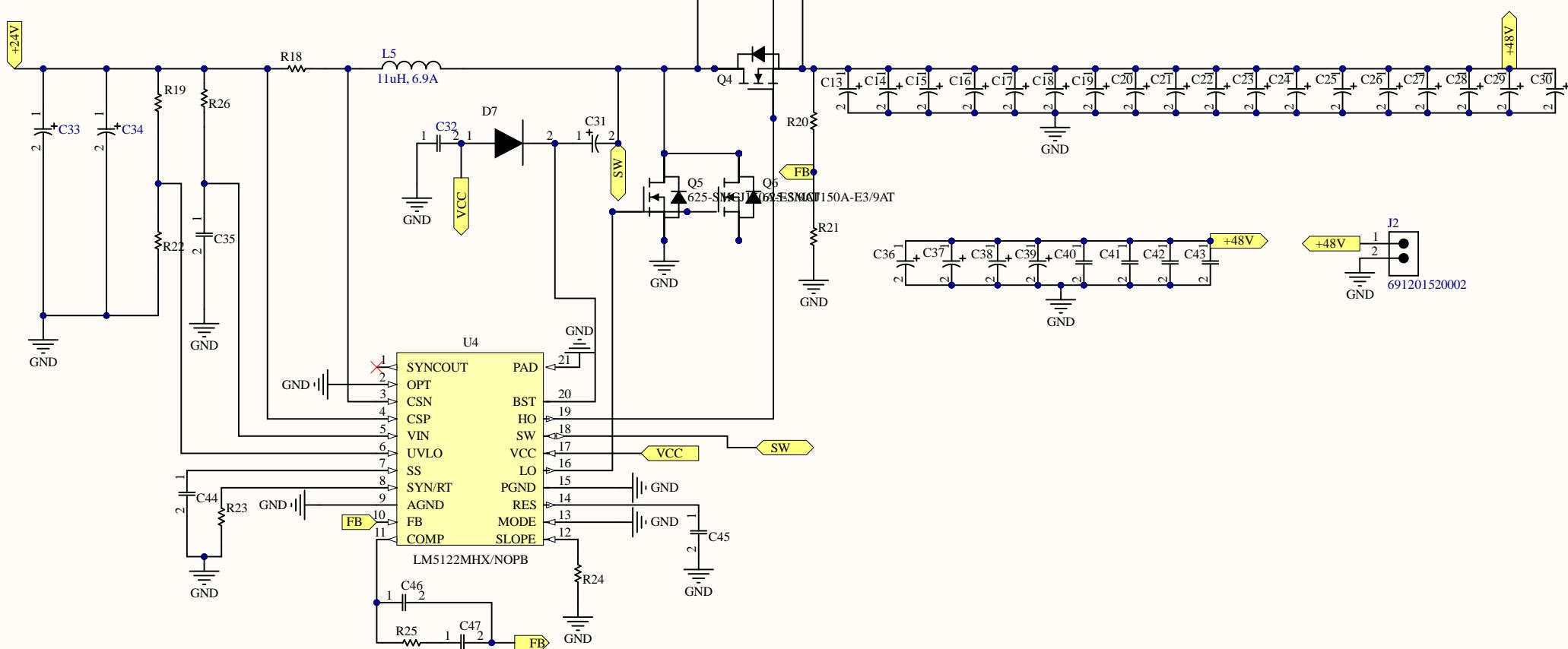
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D



Company Name: Prashant		
Variant: [No Variations]	Version: Not in version control	
Title: Isolated output.SchDoc		Project Name: 48V_15A charger.PrjPcb
Drawn by: Prashant		DWG NO: Size: Text
Date: 07-07-2020	Sheet 3 of 5	Checked by: Prashant

Final Output



Company Name: Prashant		
Variant: [No Variations]	Version: Not in version control	
Title: Output profile.SchDoc		Project Name: 48V_15A charger.PrjPcb
Drawn by: Prashant		DWG NO: Size: Text
Date: 07-07-2020	Sheet 4 of 5	Checked by: Prashant

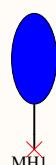
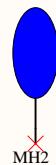
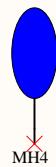
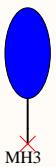
Mechanical Components

A

A

B

B



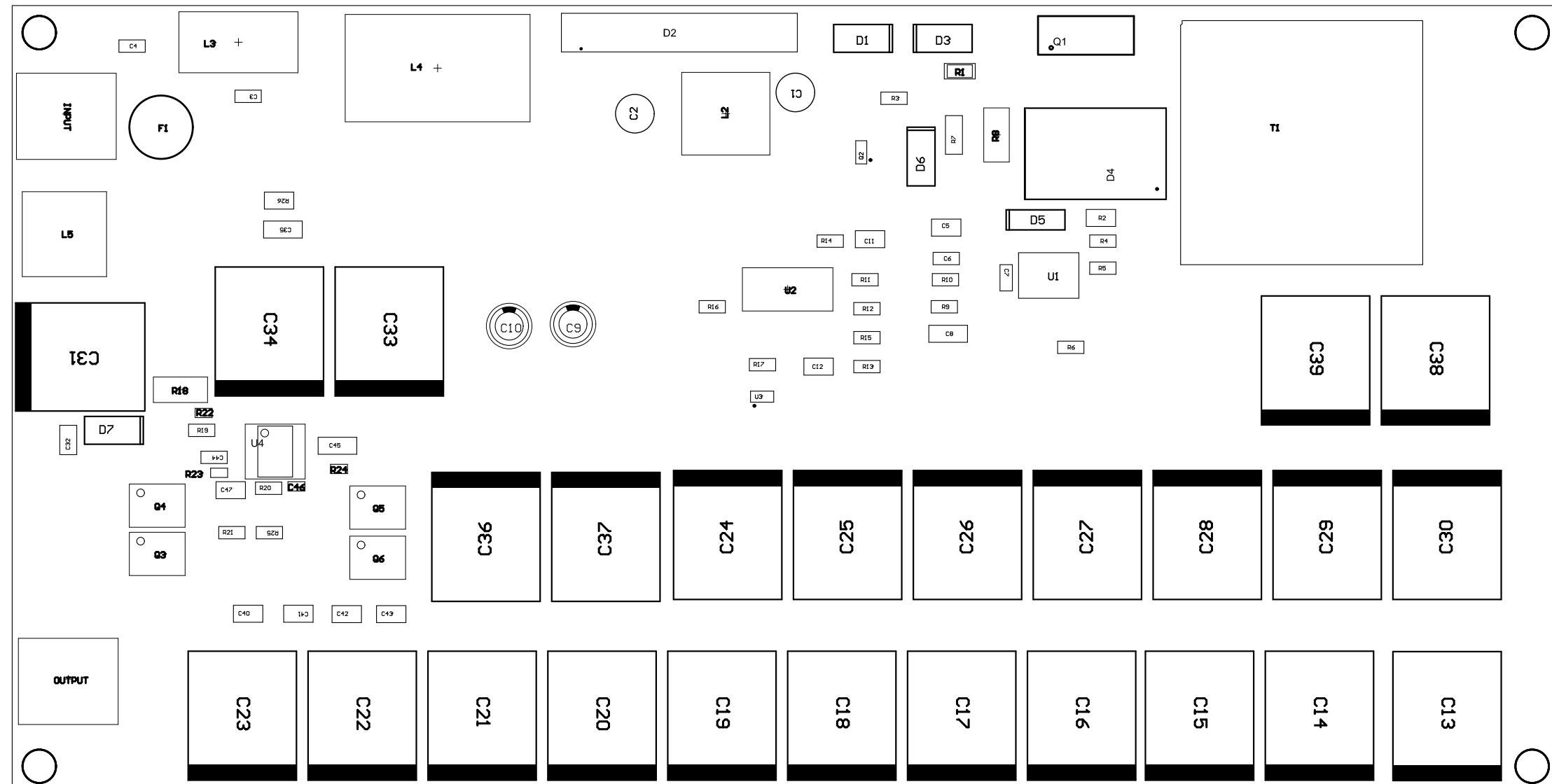
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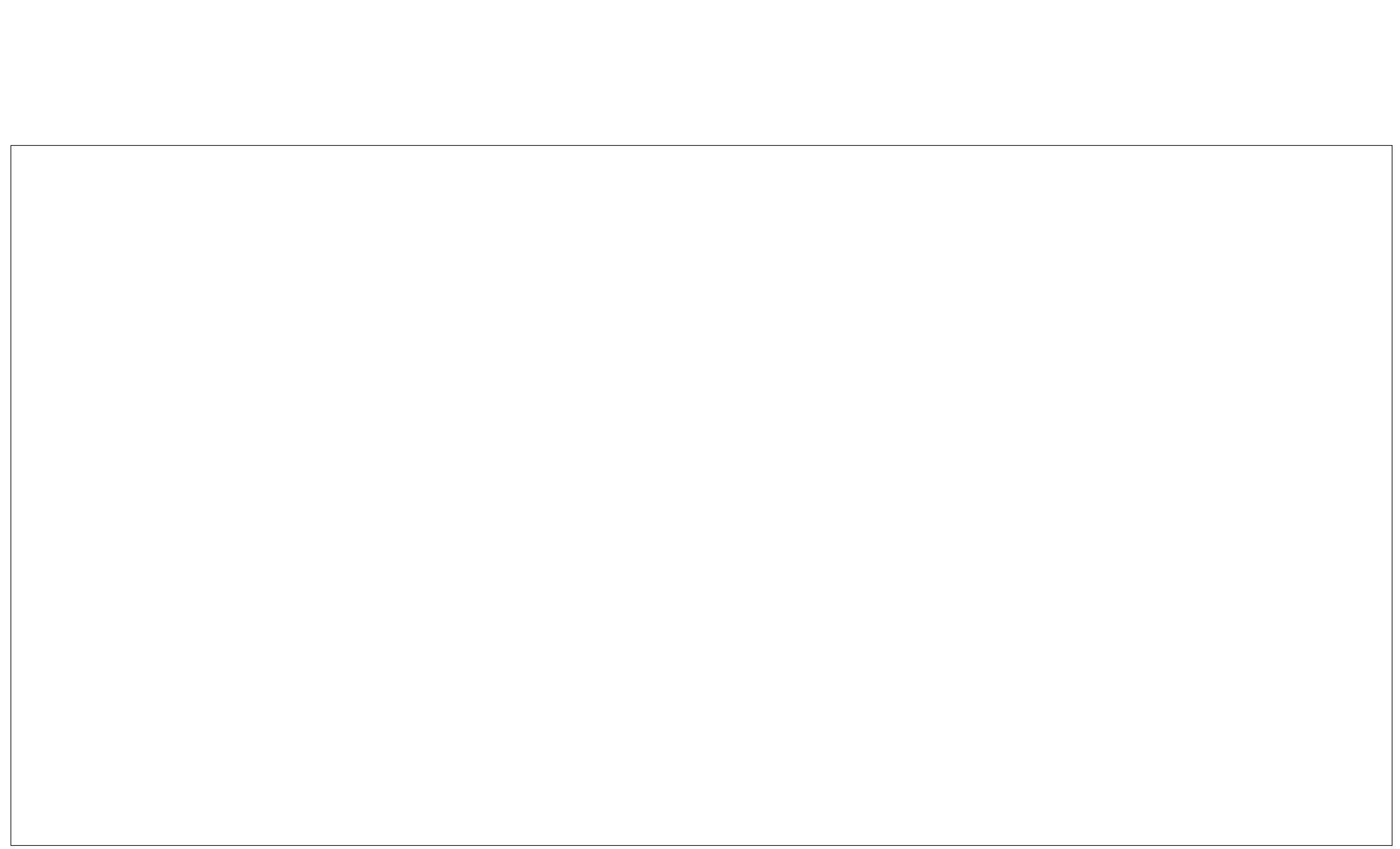
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D

Company Name: Prashant		
Variant: [No Variations]	Version: Not in version control	
Title: Mechaninical.SchDoc		Project Name: 48V_15A charger.PrjPcb
Drawn by: Prashant		DWG NO: Size: Text
Date: 07-07-2020	Sheet 5 of 5	Checked by: Prashant





Line #	Designator	Comment	Description	Quantity	Manufacturer Part Number 1	Manufacturer 1	Manufacturer Lifecycle 1	Supplier 1	Supplier Part Number 1	Supplier Unit Price 1	Supplier Subtotal 1
C1, C2	EKXL401ELL470M 40S	47uF 400V 20%	Multilayer Ceramic Capacitors MLCC - SMD/SMT 50V .1uF X7R 0603 10%TOL	2	EKXL401ELL470M 40S	United Chemi-Con	Unknown	Mouser	661-EKXL401ELL470M 4	0.864	34.56
C3, C4, C44	C0603C224ZVACTU	0.22uF,16V		3	C0603C224ZVACTU	KEMET	Volume Production	Mouser	80-C0603C224ZV	0.07	4.2
C5	C2012B1V685K125AC	6.8uF 35V 10% 0805		1	C2012B1V685K125AC	TDK	Volume Production	Mouser	810-2012B1V685K12C	0.42	8.4
C6	06035C104KAT4A	0.1uF 50V X7R 0603		1	06035C104KAT4A	Kyocera AVX	Volume Production	Mouser	581-06035C104KAT4A	0.112	2.24
C7	0.1uF 50VDC	Multilayer Ceramic Capacitors MLCC - SMD/SMT 50V .1uF X7R 0603 10%TOL		1							
C8, C35, C45	1206F474Z500CT	0.47uF 50V -20% to 80%		3	1206F474Z500CT	Walsin Technologies	Volume Production	Mouser	791-1206F474Z500CT	0.1	6
C9, C10	RE471M1VBK-1016P	470uF 35V 20% 10x16 mm		2	RE471M1VBK-1016P	Lelon	Volume Production	Mouser	140-RE471M1VBK1016P	0.264	10.56
C11	UMF212B7105MGHT	1uF 50V 20% AEC-Q200		1	UMF212B7105MGHT	Taiyo Yuden	Unknown	Mouser	963-UMF212B7105MGHT	0.114	2.28
C12, C47	CGA4J200G1H223J125AA	0.022F, 50V, 5%		2	CGA4J200G1H223J125AA	TDK	Volume Production	Digi-Key	445-6949-1-ND	0.231	9.24
C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28, C29, C30, C36, C37, C38, C39	EEV-FK2A221M	Cap Aluminum 220uF 100V 20% (18 X 16.5mm) SMD 917mA 5000 hr 105C T/R		22	EEV-FK2A221M	Panasonic	Volume Production	Mouser	667-EEV-FK2A221M	1.04	457.6
C31	EMVE630ADA1R0MD55G	1uF, 63V, 20%, ALUMINUM ELECTROLYTIC CAPACITOR		1	EMVE630ADA1R0MD55G	UCC	Unknown	Mouser	661-EMVE630ADA1R0MD5	0.223	4.46
C32, C40, C41, C42, C43	EMK212BJ106KG-T	10uF 16VDC 10% X5R		5							
C33, C34	ZKV121XUP	120uF 35VDC 20% SMD AEC-Q200		2							
C46	GRM155C1H561JA01J	560pf 50V		1	GRM155C1H561JA01J	Murata	Volume Production	Mouser	81-GRM155C1H561JA1J	0.079	1.58
D1	SMC150A-E3/9AT	1500W/150V Unidirect		1							
D2	GBU4JL-BP	Bridge Rect 1PHASE 600V 4A Gbu		1	GBU4JL-BP	MCC	Unknown	Mouser	833-GBU4JL-BP	0.7	14
D3	FM4005	Rectifiers GP Si Rectifier SMA, 1A, 600V, GP		1	FM4005	Rectron	Volume Production	Mouser	583-FM4005-T	0.13	2.6
D4	VB30200C-E3/8W	30 Amp 200 Volt Schottky Diodes & Rectifiers		1	VB30200C-E3/8W	Vishay Semiconductors	Volume Production	Mouser	625-VB30200C-E3	2.15	43
D5	E51C	ON SEMICONDUCTOR - E51C - Diode mit kurzer/ultrakurzer Erholzeit, 150 V, 1 A, Einfach, 920 mV, 15 ns, 30 A		1	E51C	ON Semiconductor / Fairchild	Volume Production	Mouser	512-E51C	0.233	4.66
D6	MMDL914-TP	MMDL914-TP Mcc Diode Gen Purp 100V 200MA SOD323 R Ohs		1	MMDL914-TP	MCC	Volume Production	Mouser	833-MMDL914	0.14	2.8
D7	VS-10BQ100-M3/5BT	100 V 1 A Surface Mount Schottky Rectifier - DO-214AA (SMB) VS-10BQ100-M3		1	VS-10BQ100-M3/5BT	Vishay Semiconductors	Volume Production	Mouser	78-VS-10BQ100-M35BT	0.327	6.54
F1	MRF2-BULK-SHORT	FUSE 2A 350V RADIAL		1	MRF2-BULK-SHORT	Bei TRP	Not Recommended for New Design	Mouser	530-MRF2BULKSHORT	0.296	5.92
J1, J2	691201520002	WR-TBL Series 2015 45deg Entry Modular, Rising Cage Clamp, pitch 5.08mm, 2p		2							
J2	7447713330	Fixed Ind 33UH 1.35A 204 Mohm		1	7447713330	Wurth Electronics	Volume Production	Mouser	710-7447713330	1.96	39.2
J3	744821201	1mH, 2A, Choke		1	744821201	Wurth Electronics	Volume Production	Mouser	710-744821201	3.58	71.6
J4	744822222	2.2mH COMMON MODE CHOKE WE-CMB		1	744822222	Wurth Electronics	Volume Production	Mouser	710-744822222	4.23	84.6
J5	11uH, 6.9A	WE-PDF SMT Power Inductor, size 1064, 11uh, 6.9A		1							
M1H, M2H, M3H, M4H	Mounting Hole	Mounting Hole		4							
O1	IPA60R650CEKSA1	MOSFET N-Ch 600V 7A TA220FP-3		1							
O2	MMBT2907A-7-F	Trans GP BiT PNP 60V 0.6A Automotive 3-Pin SOT-23 T/R		1	MMBT2907A-7-F	Diodes Zetex	Volume Production	Mouser	621-MMBT2907A-F	0.123	2.46
O3, O4	CSD18533Q5A	MOSFET 60V N-Chnl NexFET Pwr MSFT, CSD18533Q5		2							
O5, O6	CSD18540Q5B	1500 W 150 V Uni Directional SMT Transient Voltage Suppressor Diode - DO-214AB		2	SMC150A-E3/9AT	Vishay Semiconductors	Volume Production	Mouser	625-SMC150A-E3/9AT	0.415	16.6
R1	LTR18EPZP1200	Res, 20R, 5%, 0.75W, 1206, Thick Film Rohs Compliant: Yes		1	LTR18EPZP1200	Rohm	Volume Production	Mouser	755-LTR18EPZP1200	0.111	2.22
R2	CRCW080533R0JNEAH P	33R Ohm 5% 200 ET1 E3 SMD		1	CRCW080533R0JNEAH P	Vishay Dale	Not Recommended for New Design	Mouser	71-CRCW080533R0JNEAH		
R3, R12	CRCW0603-0000Z0EA	Resistor SMD 0 Ohm 6003 PU=5000 ST, CRCW06030000Z0EA, Vishay		2	CRCW06030000Z0EA	Vishay	Unknown	Mouser	71-CRCW0603-0-E3	0.018	0.72
R4	CRCW060386K6FKEA	Res Thick Film 0603 86.6k Ohm 1% 1/10W ±10ppm/°C Molded SMD Paper T/R		1	CRCW060386K6FKEA	Vishay	Volume Production	Mouser	71-CRCW0603-86.6K-E3	0.037	0.74
R5, R25	CRCW060328K7FKEA	28.7k Ohm 1% 1/10W ±10ppm/°C Molded SMD Paper T/R		2	CRCW060328K7FKEA	Vishay	Volume Production	Mouser	71-CRCW0603-28.7K-E3	0.036	1.44
R6	1.47 kOhms	Thick Film Resistors - SMD 1/10watt 1.47Kohms 1%		1							
R7	CRL1206-FW-3R90ELF	3.9ohm 1% Thick Film Resistors - SMD		1	CRL1206-FW-3R90ELF	Bourns	Volume Production	Mouser	652-CRL1206FW3R90ELF	0.067	1.34
R8	CSRN2010FKR250	250mR Thick Film Current Sensing Surface Mount Chip Resistor, Narrow		1	CSRN2010FKR250	Stackpole Electronics	Volume Production	Digi-Key	CSRN2010FKR250CT-ND	0.44	8.8
R9, R11, R19	CRCW060349K9FKEAC	49.9k Ohm 1% 1/10W ±100ppm/°C Molded SMD Paper T/R		3	CRCW060349K9FKEAC	Vishay	Unknown	Mouser	71-CRCW060349K9FKEAC	0.026	1.56
R10, R16	CRCW060310K0FKEA	10 kohm, CRCW e3 Series, 75 V, Thick Film, 100 mW		2	CRCW060310K0FKEA	Vishay	Volume Production	Mouser	71-CRCW0603-10K-E3	0.034	1.36
R13	CRCW06033K01FKEA	3.01 kohms: 0.1W: 1%: Resistor: Thick Film: SMT: 0603: TCR 37 ppm/DegC, Cut Tape		1	CRCW06033K01FKEA	Vishay	Volume Production	Mouser	71-CRCW0603-3.01K-E3	0.037	0.74
R14	RT0603FRE07200KL	200k Ohm 1% 1/10W ±50ppm/°C Molded SMD SMD Paper T/R		1	RT0603FRE07200KL	Yageo	Volume Production	Mouser	603-RT0603FRE07200KL	0.046	0.92
R15, R21	CRCW06031K00FKEA	1 kohm 75 V, Thick Film, 100 mW		2	CRCW06031K00FKEA	Vishay Dale	Volume Production	Mouser	71-CRCW0603-1.0K-E3	0.028	1.12
R17	CRCW06031K3FKEA	VISHAY CRCW06031K3FKEA, Surface Mount Chip Resistor, Thick Film, AEC-Q200 CRCW Series, 11.3 kohm, 100 mW, 1%, 75 V		1	CRCW06031K3FKEA	Vishay	Volume Production	Mouser	71-CRCW0603-11.3K-E3	0.04	0.8
R18	CSNL2010FT1L00	0.001 Ohm 1% 1.5W ±50ppm/°C Molded SMD SMD Plastic T/R		1	CSNL2010FT1L00	Stackpole Electronics	Volume Production	Digi-Key	CSNL2010FT1L00CT-ND	0.539	10.78
R20	RC0603FR-0739KL	39k Ohm 1% (0.1W/1.1W) ±100ppm/C Pad SMD T/R		1	RC0603FR-0739KL	Yageo	Volume Production	Mouser	603-RC0603FR-0739KL	0.018	0.36
R22	CRCW04023K74FKED	RES SMD 3.74K OHM 1% 1/16W 0402		1	CRCW04023K74FKED	Vishay	Volume Production	Mouser	71-CRCW0402-3.74K-E3	0.039	0.78
R23	CRCW040278K7FKED	78.7k Ohm 1% 1/16W ±100ppm/°C Molded SMD SMD Paper T/R		1	CRCW040278K7FKED	Vishay	Volume Production	Mouser	71-CRCW0402-78.7K-E3	0.038	0.76
R24	CRCW0402267KFKED	267KOHM, 63mW, 1%		1	CRCW0402267KFKED	Vishay	Volume Production	Mouser	71-CRCW0402-267K-E3	0.042	0.84
R26	RC0805FR-073RL	Thick Film Resistors 3 OHM 1%		1	RC0805FR-073RL	Yageo	Volume Production	Mouser	603-RC0805FR-073RL	0.052	1.04
T1	750811248			1							
U1	UCC28740DR	Switching Controllers Constant-VTG-Crrt Flyback Cntlr		1							
U2	FOD817A	Transistor Output Optocouplers Phototransistor Output		1							
U3	LMV431AIMF	Voltage References		1							
U4	LM5122MHX/NOPB	Switching Controllers Wide Input Sync Boost Controller		1							