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Variant: 001

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updated May 21, 2014 based upon model t2 testing

SVN path: \$URL::

Q7 must be mounted with metal tab away from J5

SVN rev: \$Rev: \$

Universal Battery Charger 24Vin 10A max

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
!PCB1	1		Printed Circuit Board		PMP9668	Any	-	-
C1	1	2.2uF	CAP, CERM, 2.2uF, 50V, +/-10%, X5R, 1206	1206	GRM31CR61H225KA88L	MuRata		
C2	1	0.022uF	CAP, CERM, 0.022uF, 25V, +/-10%, X7R, 0603	0603	C0603C223K3RACTU	Kemet		
C3, C14, C15, C107	4	1uF	CAP, CERM, 1uF, 50V, +/-10%, X5R, 0603	0603	GRM188R61H105KAALD	MuRata		
C4, C5, C6, C7, C8, C9, C16, C27, C118, C120	10	0.1uF	CAP, CERM, 0.1uF, 50V, +/-10%, X7R, 0603	0603	GRM188R71H104KA93D	MuRata		
C10, C101	2	100uF	CAP, AL, 100uF, 35V, +/-20%, 0.17 ohm, SMD	8x10	UUD1V101MNL1GS	Nichicon		
C11, C12, C13, C102, C103	5	10uF	CAP, CERM, 10uF, 35V, +/-10%, X7R, 1206	1206	GMK316AB7106KL	Taiyo Yuden		
C17, C20	2	47pF	CAP, CERM, 47pF, 50V, +/-5%, C0G/NP0, 0603	0603	06035A470JAT2A	AVX		
C18	1	0.01uF	CAP, CERM, 0.01uF, 100V, +/-10%, X7R, 0603	0603	06031C103KAT2A	AVX		
C19	1	1500pF	CAP, CERM, 1500pF, 100V, +/-10%, X7R, 0603	0603	06031C152KAT2A	AVX		
C21	1	2200pF	CAP, CERM, 2200pF, 100V, +/-10%, X7R, 0805	0805	08051C222KAT2A	AVX		
C22, C201, C203, C204	4	1uF	CAP, CERM, 1uF, 25V, +/-10%, X7R, 0603	0603	GRM188R71E105KA12D	MuRata		
C23, C24	2	100uF	CAP, AL, 100uF, 25V, +/-20%, 0.34 ohm, SMD	6.3x7.7	UUD1E101MCL1GS	Nichicon		
C25, C26	2	10uF	CAP, CERM, 10uF, 25V, +/-10%, X5R, 1206	1206	GRM31CR61E106KA12L	MuRata		
C28	1	150pF	CAP, CERM, 150pF, 100V, +/-5%, C0G/NP0, 0603	0603	GRM1885C2A151JA01D	MuRata		
C104, C115	2	1000pF	CAP, CERM, 1000pF, 50V, +/-10%, X7R, 0603	0603	C1608X7R1H102K	TDK		
C105	1	0.1uF	CAP, CERM, 0.1uF, 50V, +/-10%, X7R, 0603	0603	C1608X7R1H104K	TDK		
C106	1	47pF	CAP, CERM, 47pF, 50V, +/-5%, C0G/NP0, 0603	0603	C1608C0G1H470J	TDK		
C108, C117	2	680pF	CAP, CERM, 680pF, 100V, +/-10%, X7R, 0603	0603	06031C681KAT2A	AVX		
C109	1	4700pF	CAP, CERM, 4700pF, 100V, +/-10%, X7R, 0603	0603	C1608X7R2A472K	TDK		
C110, C111, C112, C121, C122, C123	6	22uF	CAP, CERM, 22uF, 16V, +/-20%, X5R, 1210	1210	GRM32ER61C226ME20L	MuRata		
C113	1	0.1uF	CAP, CERM, 0.1uF, 16V, +/-10%, X7R, 0603	0603	C1608X7R1C104K	TDK		
C114	1	1uF	CAP, CERM, 1uF, 16V, +/-10%, X7R, 0603	0603	C1608X7R1C105K	TDK		
C116	1	4.7uF	CAP, CERM, 4.7uF, 16V, +/-20%, X7R, 0805	0805	Std	TDK		
C119	1	10uF	CAP, CERM, 10uF, 35V, +/-10%, X7R, 1210	1210	GRM32ER7YA106KA12L	MuRata		
C124	1	100pF	CAP, CERM, 100pF, 50V, +/-5%, C0G/NP0, 0603	0603	C1608C0G1H101J	TDK		
C125	1	0.01uF	CAP, CERM, 0.01uF, 50V, +/-10%, X7R, 0603	0603	GRM188R71H103KA01D	MuRata		
C126	1		CAP, CERM, xxxF, xxV, [TempCo], xx%, [PackageReference]	Used in PnP output	Used in BOM report	Used in BOM report	-	-
C202, C210	2	0.1uF	CAP, CERM, 0.1uF, 100V, +/-10%, X7R, 0805	0805	C0805C104K1RACTU	Kemet		
C206	1	0.01uF	CAP, CERM, 0.01uF, 50V, +/-10%, X7R, 0603	0603	C0603C103K5RACTU	Kemet		
C207	1	1000pF	CAP, CERM, 1000pF, 50V, +/-10%, X7R, 0402	0402	GRM155R71H102KA01D	MuRata		
C208	1	2200pF	CAP, CERM, 2200pF, 50V, +/-10%, X7R, 0603	0603	C0603C222K5RAC	Kemet		
C209	1	4.7uF	CAP, CERM, 4.7uF, 6.3V, +/-20%, X5R, 0805	0805	C2012X5R0J475M	TDK		
D1	1	30V	Diode, Schottky, 30V, 0.2A, SOT-523	SOT-523	BAT54CT-7-F	Diodes Inc.		
D2	1	30V	Diode, Schottky, 30V, 0.2A, SOD-323	SOD-323	BAT54HT1G	ON Semiconductor		
D3	1	NSR05F40NXT5G	Diode, Schottky Barrier, 40V, 0.5A	0402	NSR05F40NXT5G	On Semi		
D201	1	LTST-C170UKT	Diode, LED, Red, 2.1-V, 14.2-mcd, 20ma, 0805	0805	LTST-C170UKT	Lite On		
D202	1	LTST-C170FKT	Diode, LED, Green, 2.1-V, 14.2-mcd, 20ma, 0805	0805	LTST-C170FKT	Lite On		
H1, H2, H3, H4	4		Machine Screw, Round, #4-40 x 1/4, Nylon, Philips panhead	Screw	NY PMS 440 0025 PH	B&F Fastener Supply	-	-

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
H5, H6, H7, H8	4		Standoff, Hex, 0.5"L #4-40 Nylon	Standoff	1902C	Keystone	-	-
H9, H10, H11, H12	4		Bumpon, Hemisphere, 0.44 X 0.20, Clear	Transparent Bumpon	SJ-5303 (CLEAR)	3M		
J1	1		TERMINAL BLOCK 5.08MM VERT 3POS, TH	TERM_BLK, 3pos, 5.08mm	ED120/3DS	On-Shore Technology		
J2	1		Terminal Block, 4x1, 5.08mm, TH	TERM_BLK, 4pos, 5.08mm	ED120/4DS	On-Shore Technology		
J3	1		Terminal Block, 6A, 3.5mm Pitch, 5-Pos, TH	17.5x8.2x6.5mm	ED555/5DS	On-Shore Technology		
J4, J203, J205, J206, J208, J209, J211, J214, J215	9		Header, 100mil, 2x1, Tin plated, TH	Header, 2 PIN, 100mil, Tin	PEC02SAAN	Sullins Connector Solutions		
J5, J101, J103	3		TERMINAL BLOCK 5.08MM VERT 2POS	TERM_BLK, 2pos, 5.08mm	ED120/2DS	On-Shore Technology		
J102	1	PEC02SAAN	Header, Male 2-pin, 100mil spacing,	0.100 inch x 2	PEC02SAAN	Sullins		
J201, J202	2	15-83-0064	Connector, USB	0.662 x 0.663 inch	15-83-0064	Molex		
J204	1	PEC05SAAN	Header, Male 5-pin, 100mil spacing,	0.100 inch x 5	PEC05SAAN	Sullins		
J207	1		Terminal Block, 6A, 3.5mm Pitch, 4-Pos, TH	14x8.2x6.5mm	ED555/4DS	On-Shore Technology		
J210	1	PEC04SAAN	Header, Male 4-pin, 100mil spacing,	0.100 inch x 4	PEC04SAAN	Sullins		
J212	1	2514-6002UB	Connector, Male Straight 2x7 pin, 100mil spacing, 4 Wall	0.100 inch x 2X7	2514-6002UB	3M		
J213	1	PEC03SAAN	Header, Male 3-pin, 100mil spacing,	0.100 inch x 3	PEC03SAAN	Sullins		
JP101, JP102	2		Header, TH, 100mil, 2x1, Gold plated, 230 mil above insulator	TSW-102-07-G-S	TSW-102-07-G-S	Samtec Inc.		
L1	1	4.7uH	Inductor, Shielded Drum Core, Ferrite, 4.7uH, 15.5A, 0.0064 ohm, SMD	12.1x9.5x11.4mm	7443320470	Würth Elektronik eiSos		
L101, L102	2	10uH	Inductor, Shielded, Powdered Iron, 10uH, 5.4A, 51.8 ohm, SMD	322x158x322mil	IHLP3232DZER100M11	Vishay-Dale	7443341000	Würth
LBL1	1		Thermal Transfer Printable Labels, 0.650" W x 0.200" H - 10,000 per roll	PCB Label 0.650"H x 0.200"W	THT-14-423-10	Brady	-	-
Q1, Q2	2	-20V	MOSFET, P-CH, -20V, 60A, PowerPAK SO-8	PowerPAK SO-8	SI7139DP-T1-GE3	Vishay-Semiconductor		None
Q3	1	MMBT3904SL	Bipolar, NPN, 40V, 200mA, 200mW	SOT-923F	MMBT3904SL	Fairchild		
Q4	1	50V	MOSFET, N-CH, 50V, 0.2A, SOT-323	SOT-323	BSS138W-7-F	Diodes Inc.		None
Q5, Q6, Q101, Q102	4	40V	MOSFET, N-CH, 40V, 15A, SON 5x6mm	SON 5x6mm	CSD18504Q5A	Texas Instruments		None
Q7	1	CSD18502KCS	MOSFET, N-Chan, 40V, TBD A, 3.1 mOhm	TO-220	CSD18537NKCS	TI		None
Q201	1	60V	MOSFET, N-CH, 60V, 0.17A, SOT-23	SOT-23	2N7002-7-F	Diodes Inc.		None
R1	1	0.01	RES, 0.01 ohm, 1%, 2W, 2512	2512	CSRN2512FK10L0	Stackpole Electronics Inc		
R2, R3, R121	3	1.00Meg	RES, 1.00Meg ohm, 1%, 0.1W, 0603	0603	CRCW06031M00FKEA	Vishay-Dale		
R4, R5	2	3.9	RES, 3.9 ohm, 5%, 0.25W, 1206	1206	CRCW12063R90JNEA	Vishay-Dale		
R6	1	10	RES, 10 ohm, 5%, 0.1W, 0603	0603	CRCW060310R0JNEA	Vishay-Dale		
R7	1	51	RES, 51 ohm, 5%, 0.063W, 0402	0402	CRCW040251R0JNED	Vishay-Dale		
R8, R103	2	0.1	RES, 0.1 ohm, 5%, 0.125W, 0805	0805	ERJ-6RSJR10V	Panasonic		
R9	1	15	RES, 15 ohm, 1%, 0.1W, 0603	0603	CRCW060315R0FKEA	Vishay-Dale		
R10	1	750k	RES, 750k ohm, 1%, 0.1W, 0603	0603	CRCW0603750KFKEA	Vishay-Dale		
R11, R107	2	5.1	RES, 5.1 ohm, 5%, 0.1W, 0603	0603	CRCW06035R10JNEA	Vishay-Dale		
R12, R14, R124	3	100k	RES, 100k ohm, 1%, 0.1W, 0603	0603	CRCW0603100KFKEA	Vishay-Dale		
R13	1	1.40Meg	RES, 1.40Meg ohm, 1%, 0.1W, 0603	0603	CRCW06031M40FKEA	Vishay-Dale		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
R15, R111, R112, R115, R201, R204, R207, R208, R209, R210, R214, R215, R216, R217, R218, R219, R220, R222, R223, R224, R225	21	10.0k	RES, 10.0k ohm, 1%, 0.1W, 0603	0603	CRCW060310K0FKEA	Vishay-Dale		
R16	1	82.5k	RES, 82.5k ohm, 1%, 0.1W, 0603	0603	CRCW060382K5FKEA	Vishay-Dale		
R17	1	0.008	RES, 0.008 ohm, 1%, 2W, 4527	4527	WSR28L000FEA	Vishay-Dale		
R18	1	200k	RES, 200k ohm, 1%, 0.1W, 0603	0603	CRCW0603200KFKEA	Vishay-Dale		
R19	1	0.51	RES, 0.51 ohm, 1%, 1W, 2010	2010	CRM2010-FX-R510ELF	Bourms		
R20, R108, R109, R120	4	0	RES, 0 ohm, 5%, 0.1W, 0603	0603	CRCW06030000Z0EA	Vishay-Dale		
R21	1	4.75k	RES, 4.75k ohm, 1%, 0.1W, 0603	0603	CRCW06034K75FKEA	Vishay-Dale		
R22, R23, R24	3	100	RES, 100 ohm, 1%, 0.1W, 0603	0603	CRCW0603100RFKEA	Vishay-Dale		
R101	1	150k	RES, 150k ohm, 1%, 0.1W, 0603	0603	CRCW0603150KFKEA	Vishay-Dale		
R102	1	499k	RES, 499k ohm, 1%, 0.1W, 0603	0603	CRCW0603499KFKEA	Vishay-Dale		
R104, R114	2	23.7k	RES, 23.7k ohm, 1%, 0.1W, 0603	0603	CRCW060323K7FKEA	Vishay-Dale		
R105	1	14.7k	RES, 14.7k ohm, 1%, 0.1W, 0603	0603	CRCW060314K7FKEA	Vishay-Dale		
R106	1	0	RES, 0 ohm, 5%, 0.125W, 0805	0805	CRCW08050000Z0EA	Vishay-Dale		
R110	0	open	DNP	0603		Vishay-Dale		
R113	1	1.5	RES, 1.5 ohm, 5%, 0.125W, 0805	0805	CRCW08051R50JNEA	Vishay-Dale		
R116	1	6.81k	RES, 6.81k ohm, 1%, 0.1W, 0603	0603	CRCW06036K81FKEA	Vishay-Dale		
R117	1	49.9k	RES, 49.9k ohm, 1%, 0.1W, 0603	0603	CRCW060349K9FKEA	Vishay-Dale		
R118	1	49.9	RES, 49.9 ohm, 1%, 0.1W, 0603	0603	CRCW060349R9FKEA	Vishay-Dale		
R119	1	1.00k	RES, 1.00k ohm, 1%, 0.1W, 0603	0603	CRCW06031K00FKEA	Vishay-Dale		
R122	1	274	RES, 274 ohm, 1%, 0.1W, 0603	0603	CRCW0603274RFKEA	Vishay-Dale		
R123	1	5.62k	RES, 5.62k ohm, 1%, 0.1W, 0603	0603	CRCW06035K62FKEA	Vishay-Dale		
R125	1	165k	RES, 165k ohm, 1%, 0.1W, 0603	0603	CRCW0603165KFKEA	Vishay-Dale		
R126	1	78.7k	RES, 78.7k ohm, 1%, 0.1W, 0603	0603	CRCW060378K7FKEA	Vishay-Dale		
R127	1	19.1k	RES, 19.1k ohm, 1%, 0.1W, 0603	0603	CRCW060319K1FKEA	Vishay-Dale		
R128	1	59.0k	RES, 59.0k ohm, 1%, 0.1W, 0603	0603	CRCW060359K0FKEA	Vishay-Dale		
R202, R203	2	2.00k	RES, 2.00k ohm, 1%, 0.1W, 0603	0603	CRCW06032K00FKEA	Vishay-Dale		
R205	1	332	RES, 332 ohm, 1%, 0.1W, 0603	0603	CRCW0603332RFKEA	Vishay-Dale		
R206	1	24.9k	RES, 24.9k ohm, 1%, 0.1W, 0603	0603	CRCW060324K9FKEA	Vishay-Dale		
R211	1	301k	RES, 301k ohm, 1%, 0.1W, 0603	0603	CRCW0603301KFKEA	Vishay-Dale		
R213	1	30.1k	RES, 30.1k ohm, 1%, 0.1W, 0603	0603	CRCW060330K1FKEA	Vishay-Dale		
R221	1	47.5k	RES, 47.5k ohm, 1%, 0.1W, 0603	0603	RC0603FR-0747K5L	Yageo America		
SH-JP101	1	1x2	Shunt, 100mil, Gold plated, Black		382811-6	AMP		
TH201, TH202	2		Thru Hole, 15 mil, plated					
TP1, TP3	2	Red	Test Point, Miniature, Red, TH	Keystone5000	5000	Keystone		
TP2, TP4	2	Black	Test Point, Miniature, Black, TH	Keystone5001	5001	Keystone		
TP5	1	White	Test Point, Miniature, White, TH	White Miniature Testpoint	5002	Keystone		
TP6	1	SMT	Test Point, Miniature, SMT	Testpoint_Keystone_ Miniature	5015	Keystone		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
TP101, TP102, TP104, TP105, TP107, TP110, TP112	7	Red	Test Point, TH, Miniature, Red	Keystone5000	5000	Keystone		
TP103, TP109, TP113	3	Black	Test Point, TH, Miniature, Black	Keystone5001	5001	Keystone		
TP106	1	Red	Test Point, Miniature, Red, TH	Red Miniature Testpoint	5000	Keystone		
TP108	1	Black	Test Point, Miniature, Black, TH	Black Miniature Testpoint	5001	Keystone		
TP111	1	Yellow	Test Point, TH, Miniature, Yellow	Keystone5004	5004	Keystone		
TP115	1	White	Test Point, TH, Miniature, White	Keystone5002	5002	Keystone		
U1	1		SMBus-Controlled Level 2 Multi-Chemistry Battery Charger with Input Current Detect Comparator, 7 V, 0 to 125 degC, 28-pin VQFN (RHD), Green (RoHS & no Sb/Br)	RHD0028B	BQ24745RHDR	Texas Instruments		None
U101	1		4.5-v to 60-v wide-input synchronous PWM buck controller, RGY0020A	RGY0020A	TPS40170RGY	Texas Instruments		None
U102	1		4.5V TO 28V INPUT, 3A OUTPUT, SYNCHRONOUS STEP DOWN SWIFT CONVERTER, DDA0008E	DDA0008E	TPS54335DDA	Texas Instruments		None
U201	1		DUAL CHANNEL AUTO DETECT USB CHARGING CONTROLLER, DBV0006A	DBV0006A	TPS2513ADBV	Texas Instruments		None
U202	1		DUAL CHANNEL PRECISION ADJUSTABLE CURRENT-LIMITED POWER SWITCHES, DRC0010A	DRC0010A	TPS2561ADRC	Texas Instruments		None
U203	1		Mixed Signal Microcontroller, PW0028A	PW0028A	MSP430G2553IPW28	Texas Instruments		None
U204	1	TPS70933DBV	IC,150mA, Ultra Low IQ, 1uA LDO Regulator with Enable Fixed 3.3V	SOT-23	TPS70933DBV	TI		None
FID1, FID2, FID3	0		Fiducial mark. There is nothing to buy or mount.	Fiducial	N/A	N/A		

Notes:

Unless otherwise noted in the Alternate PartNumber and/or Alternate Manufacturer columns, all parts may be substituted with equivalents.

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