

24Vin, 5Vout for Factory Automation & Industrial Robotics

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
IPC81	1		Printed Circuit Board		PMP9688	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	-	-
H5, H6, H7, H8	4		Standoff, Hex, 0.5"L #4-40 Nylon	Standoff	1902C	Keystone	-	-
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		

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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		
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	Bourns		
R20, R108, R109, R120	4	0	RES, 0 ohm, 5%, 0.1W, 0603	0603	CRCW0603000Z0EA	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	CRCW0805000Z0EA	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	30.1k	RES, 30.1k ohm, 1%, 0.1W, 0603	0603	CRCW060330K1FKEA	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_Minature	5015	Keystone		
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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