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Bidirectional

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
IPCB	1		Printed Circuit Board		XX####	Any	-	-
C1	1	3300pF	CAP, CERM, 3300pF, 100V, +/-5%, X7R, 0603	0603	06031C332JAT2A	AVX		
C2, C8, C11	3	10uF	CAP, CERM, 10uF, 16V, +/-20%, X5R, 0805	0805	0805YD106MAT2A	AVX		
C3	1	0.1uF	CAP, CERM, 0.1uF, 50V, +/-10%, X7R, 0603	0603	06035C104KAT2A	AVX		
C4, C28, C91, C93, C95, C97	6	0.1uF	CAP, CERM, 0.1uF, 25V, +/-5%, X7R, 0603	0603	06033C104JAT2A	AVX		
C5, C114	2	100pF	CAP, CERM, 100pF, 50V, +/-5%, C0G/NP0, 0603	0603	C0603C101J5GAC	Kemet		
C6	1	2.2uF	CAP, CERM, 2.2uF, 100V, +/-10%, X7R, 1206_190	1206_190	GRM31CR72A225KA73L	MuRata		
C7	1	0.47uF	CAP, CERM, 0.47uF, 100V, +/-10%, X7R, 1206	1206	C3216X7R2A474K	TDK		
C9, C61, C70, C79, C88, C99, C100, C101, C102	9	2.2uF	CAP, CERM, 2.2uF, 16V, +/-10%, X5R, 0805	0805	0805YD225KAT2A	AVX		
C10	1	100pF	CAP, CERM, 100pF, 50V, +/-5%, C0G/NP0, 0603	0603	06035A101JAT2A	AVX		
C12	1	10uF	CAP, CERM, 10uF, 25V, +/-10%, X5R, 0805	0805	C2012X5R1E106K125AB	TDK		
C13	1	10uF	CAP, CERM, 10uF, 6.3V, +/-20%, X5R, 0603	0603	C0603C106M9PACTU	Kemet		
C14, C15	2	33pF	CAP, CERM, 33pF, 100V, +/-5%, C0G/NP0, 0603	0603	06031A330JAT2A	AVX		
C16, C25, C27, C63, C72, C81, C115	7	0.01uF	CAP, CERM, 0.01uF, 100V, +/-5%, X7R, 0603	0603	06031C103JAT2A	AVX		
C17, C20, C23	3	1uF	CAP, CERM, 1uF, 16V, +/-10%, X5R, 0603	0603	C0603C105K4PACTU	Kemet		
C18, C19, C21, C24, C90	5	0.1uF	CAP, CERM, 0.1uF, 16V, +/-5%, X7R, 0603	0603	0603YC104JAT2A	AVX		
C22, C71, C80, C89, C94	5	2.2uF	CAP, CERM, 2.2uF, 10V, +/-10%, X5R, 0603	0603	C0603C225K8PACTU	Kemet		
C26, C103	2	0.022uF	CAP, CERM, 0.022uF, 25V, +/-10%, X7R, 0603	0603	C0603C223K3RACTU	Kemet		
C29, C30, C31	3	2.2uF	CAP, CERM, 2.2uF, 6.3V, +/-10%, X5R, 0603	0603	C0603C225K9PACTU	Kemet		
C33	1	100pF	CAP, CERM, 100pF, 25V, +/-10%, X7R, 0603	0603	06033C101KAT2A	AVX		
C37, C38, C40, C41, C49, C50, C52, C53	8	22uF	CAP, CERM, 22uF, 50V, +/-20%, X5R, 6x5x5mm	6x5x5mm	CKG57NX5R1H226M500JH	TDK		
C39	1	0.1uF	CAP, CERM, 0.1uF, 25V, +/-10%, X7R, 0603	0603	GRM188R71E104KA01D	MuRata		
C39, C45, C51, C57	4	1000pF	CAP, CERM, 1000pF, 100V, +/-5%, X7R, 0603	0603	06031C102JAT2A	AVX		
C42, C54, C64, C66, C73, C75, C82, C84	8	10uF	CAP, CERM, 10uF, 100V, +/-20%, X7S, 2220	2220	C5750X7S2A106M	TDK		
C43, C46, C55, C58	4	1uF	CAP, CERM, 1uF, 16V, +/-10%, X7R, 0805	0805	B37941K9105K62	EPCOS Inc		
C44, C56, C65, C67, C74, C76, C83, C85, C116, C117, C118, C119, C120, C121, C122, C123	16	47uF	CAP, CERM, 47uF, 16V, +/-20%, X5R, 1210	1210	GRM32ER61C476ME15L	MuRata		
C47	1	330uF	CAP, AL, 330uF, 100V, +/-20%, ohm, SMD	MN0	EMVE101GTR331MMN0S	Nippon Chemi-Con		
C48	1	470uF	CAP, AL, 470uF, 25V, +/-20%, ohm, SMD	JA0	EMVA250ADA471MJA0G	Nippon Chemi-Con		
C59, C68, C77, C86	4	330pF	CAP, CERM, 330pF, 50V, +/-5%, C0G/NP0, 0603	0603	06035A331JAT2A	AVX		
C60, C69, C78, C87	4	0.1uF	CAP, CERM, 0.1uF, 25V, +/-10%, X7R, 0603	0603	06033C104KAT2A	AVX		
C62	1	4.7uF	CAP, CERM, 4.7uF, 25V, +/-10%, X5R, 0805	0805	C2012X5R1E475K125AB	TDK		
C104	1	22pF	CAP, CERM, 22pF, 50V, +/-5%, C0G/NP0, 0603	0603	06035A220JAT2A	AVX		
C106, C108, C109, C112	4	1uF	CAP, CERM, 1 uF, 25 V, +/- 10%, X7R, 0603_095	0603_095	C0603C105K3RACTU	Kemet		
C107, C110, C111, C113	4	1000pF	CAP, CERM, 1000 pF, 50 V, +/- 10%, X7R, 0603	0603	C0603X102K5RACTU	Kemet		
D1, D3, D4	3	200V	Diode, Switching, 200V, 0.2A, SOT-23	SOT-23	BAS21-7-F	Diodes Inc.		
D2, D7, D16	3	Red	LED, Red, SMD	LED_0805	LTST-C170KRKT	Lite-On		
D5, D6, D17	3	40V	Diode, Schottky, 40 V, 0.5 A, SOD-123	SOD-123	MBR0540T1G	ON Semiconductor		
D8, D9, D10, D11, D12, D14, D15, D18	8	12V	Diode, Zener, 12V, 500mW, SOD-123	SOD-123	MMSZ4699-V	Vishay-Semiconductor		
D13, D19, D20, D21, D22, D23, D24, D25	8	15V	Diode, Schottky, 15 V, 1 A, DO-216-AA	DO-216-AA	UPS115UE3/TR7	Microsemi		
FID1, FID2, FID3	3		Fiducial mark. There is nothing to buy or mount.	Fiducial	N/A	N/A		
H1, H2, H3, H4, H5, H6, H7	7		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
J1	1		Header (shrouded), 100mil, 5x2, Gold, TH	5x2 Shrouded header	5103308-1	TE Connectivity		
J2, J3, J4, J5, J6, J7	6		Connector Lug, wire range #6 - 4/0, 600V	Connector Lug, 1.075x0.45x0.45 inch	90562	Morris Products		
J8, J9, J11	3		Header, 2x1, 100mil, TH	Header, 2x1, 100mil, TH	22-27-2021	Molex		
J10	1		Header, 2x1, 100mil, SMT	Header, 2x1, 100mil, TH	800-10-002-10-001000	Mill-Max		
J12	1		Header, TH, 100mil, 4x1, Gold plated, 230 mil above insulator	4x1 Header	TSW-104-07-G-S	Samtec		
L1, L2	2	1uH	Inductor, Shielded, Composite, 1uH, 57.5A, 0.000929 ohm, SMD	15.2x8x16.2mm	XAL1580-102MEB	Coilcraft		
L3, L4, L5, L6	4	4.7uH	Inductor, Shielded E Core, Ferrite, 4.7 uH, 30 A, 0.00186 ohm, SMD	29.7x15.36x27.94mm	SER2915H-472KL	Coilcraft		
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	1	-20V	MOSFET, P-CH, -20V, -2.4A, SOT-23	SOT-23	FDN302P	Fairchild Semiconductor		None
Q4, Q7, Q8, Q9, Q20, Q26, Q30, Q39	8	30V	MOSFET, N-CH, 30V, 51A, SON 5x6mm	SON 5x6mm	CSD17570Q5B	Texas Instruments		None
Q5, Q6, Q18, Q22, Q28, Q32, Q38, Q42	8	100V	MOSFET, N-CH, 100V, 1.7mOhm, DDPAK-7	DDPAK-7	IPB017N10N5	Infineon Technologies		None
Q11, Q14	2	60V	MOSFET, N-CH, 60V, 0.24A, SOT-23	SOT-23	2N7002E-T1-E3	Vishay-Siliconix		None
Q15, Q25, Q35, Q45	4	-100V	MOSFET, P-CH, -100V, -0.6A, SOT-23	SOT-23	ZXMP10A13FTA	Diodes Inc.		None
Q16, Q17, Q24, Q27, Q36, Q37, Q46, Q47	8	30 V	Transistor, PNP, 30 V, 12 A, SMD-8	SMD-8	ECH8102-TL-H	ON Semiconductor		
R1, R16	2	330	RES, 330 ohm, 1%, 0.1W, 0603	0603	RC0603FR-07330RL	Yageo America		
R2	1	39.0k	RES, 39.0k ohm, 1%, 0.1W, 0603	0603	RC0603FR-0739KL	Yageo America		
R3	1	150k/1%	RES, 150k ohm, 1%, 0.1W, 0603	0603	CRCW0603150KFKEA	Vishay-Dale		
R4	1	120k	RES, 120k ohm, 1%, 0.1W, 0603	0603	RC0603FR-07120KL	Yageo America		
R5, R122	2	49.9	RES, 49.9 ohm, 1%, 0.1W, 0603	0603	CRCW060349R9FKEA	Vishay-Dale		
R6	1	27.0k	RES, 27.0k ohm, 1%, 0.1W, 0603	0603	RC0603FR-0727KL	Yageo America		
R7, R118	2	10.0k	RES, 10.0k ohm, 1%, 0.1W, 0603	0603	CRCW060310K0FKEA	Vishay-Dale		
R8	1	1k 1%	RES, 1.0k ohm, 5%, 0.1W, 0603	0603	CRCW06031K00JNEA	Vishay-Dale		
R9	1	330	RES, 330, 5%, 0.1 W, 0603	0603	CRCW0603330RJNEA	Vishay-Dale		
R10	1	560	RES, 560 ohm, 1%, 0.1W, 0603	0603	RC0603FR-07560RL	Yageo America		
R11	1	3.0k	RES, 3.0k ohm, 5%, 0.1W, 0603	0603	CRCW06033K00JNEA	Vishay-Dale		
R12, R112, R116	3	100k	RES, 100 k, 5%, 0.1 W, 0603	0603	CRCW0603100KJNEA	Vishay-Dale		
R13, R14	2	1.50k	RES, 1.50k ohm, 0.1%, 0.1W, 0603	0603	RG1608P-152-B-T5	Susumu Co Ltd		
R15, R20, R21, R22, R23	5	0	RES, 0 ohm, 5%, 0.1W, 0603	0603	MCR03EZPJ000	Rohm		
R17, R111, R115, R117, R119	5	1.00k	RES, 1.00k ohm, 1%, 0.1W, 0603	0603	CRCW06031K00FKEA	Vishay-Dale		
R19, R38, R124, R125, R126, R127	6	1.0k	RES, 1.0k ohm, 5%, 0.1W, 0603	0603	CRCW06031K00JNEA	Vishay-Dale		
R24, R26	2	100	RES, 100 ohm, 1%, 0.1W, 0603	0603	CRCW0603100RFKEA	Vishay-Dale		
R27, R36, R52, R57, R71, R76, R90, R95	8	0.002	RES, 0.002, 1%, 1 W, 2512	2512	ERJ-M1WTF2M0U	Panasonic		
R28	1	33.0k	RES, 33.0 k, 1%, 0.1 W, 0603	0603	CRCW060333K0FKEA	Vishay-Dale		
R29	1	8.06k	RES, 8.06 k, 1%, 0.1 W, 0603	0603	CRCW06038K06FKEA	Vishay-Dale		
R30, R39, R53, R59, R72, R78, R91, R97	8	10.0k	RES, 10.0k ohm, 0.1%, 0.1W, 0603	0603	RG1608P-103-B-T5	Susumu Co Ltd		
R33	1	1.10k	RES, 1.10 k, 1%, 0.1 W, 0603	0603	RC0603FR-071K1L	Yageo America		
R34, R41, R56, R63, R75, R82, R94, R101	8	10.0k	RES, 10.0 k, 1%, 0.1 W, 0603	0603	CRCW060310K0FKEA	Vishay-Dale		
R35	1	1.00k	RES, 1.00 k, 1%, 0.1 W, 0603	0603	CRCW06031K00FKEA	Vishay-Dale		
R40, R43, R45, R46, R61, R64, R65, R80, R83, R84, R99, R102, R103	13	1.0k_1%	RES, 1.0k ohm, 5%, 0.1W, 0603	0603	CRCW06031K00JNEA	Vishay-Dale		
R42, R60, R79, R98	4	120	RES, 120, 5%, 0.1 W, 0603	0603	CRCW0603120RJNEA	Vishay-Dale		
R43, R135	2	0	RES, 0 ohm, 5%, 0.125W, 0805	0805	CRCW08050000Z0EA	Vishay-Dale		
R44, R47, R49, R62, R66, R68, R81, R85, R87, R100, R104, R106	12	26.1k	RES, 26.1k ohm, 1%, 0.1W, 0603	0603	CRCW060326K1FKEA	Vishay-Dale		
R48, R67, R86, R105	4	40.2k	RES, 40.2k ohm, 1%, 0.1W, 0603	0603	CRCW060340K2FKEA	Vishay-Dale		
R51, R70, R89, R108	4	1.64k_1%	RES, 1.65k ohm, 1%, 0.1W, 0603	0603	CRCW06031K65FKEA	Vishay-Dale		
R109, R110, R113, R114	4	2.00k	RES, 2.00k ohm, 1%, 0.1W, 0603	0603	CRCW06032K00FKEA	Vishay-Dale		
R120	1	0	RES, 0 ohm, 5%, 0.1W, 0603	0603	ERJ-3GEY0R00V	Panasonic		
R121	1	31.6k_1%	RES, 31.6k ohm, 1%, 0.1W, 0603	0603	CRCW060331K6FKEA	Vishay-Dale		
R128	1	75.0	RES, 75.0, 1%, 0.1 W, 0603	0603	CRCW060375R0FKEA	Vishay-Dale		
R130	1	10.0	RES, 10.0 ohm, 1%, 0.1W, 0603	0603	CRCW060310R0FKEA	Vishay-Dale		
S1	1		Switch, Push Button, SMD	2.9x2x3.9mm SMD	SKRKAEE010	Alps		
T1	1	60 uH	xfmr, 70%	12x12.5 mm	750342460	WURTH ELEKTRONIK		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
TP1, TP2, TP4, TP5, TP6, TP7, TP8, TP9, TP10, TP11, TP13, TP14, TP15, TP16, TP17, TP18, TP19, TP20, TP21, TP22, TP23, TP24, TP25, TP26, TP27, TP28, TP29, TP31, TP32, TP33, TP35, TP36, TP37, TP38, TP39, TP40,	55	White	Test Point, Miniature, White, TH	White Miniature Testpoint	5002	Keystone		
TP3	1	SMT	Test Point, Compact, SMT	Testpoint_Keystone_Compact	5016	Keystone		
U1	1	LM34927MR	IC, Integrated Secondary Side Bias Regulator	PSOP	LM34927MR	TI		None
U2	1		FIXED LOW-DROPOUT VOLTAGE REGULATOR, DCY0003A	DCY0003A	TLV11117-33IDCY	Texas Instruments		None
U3	1		UCD3138128PFC, PFC0080	PFC0080A	UCD3138128PFC	Texas Instruments		None
U4, U6, U8, U10	4	UCC2721xDRM	IC, 120V Boot, 4A Peak, High Frequency High-Side Low-Side Driver	QFN-8	UCC2721xDRM	TI		None
U5	1		1.1 nV/rHz Noise, Low Power, Precision Operational Amplifier, 4.5 to 36 V, -40 to 125 degC, 8-pin SOP (DDA0008C), Green (RoHS & no Sb/Br)	DDA0008C	OPA2211AIDDA	Texas Instruments	Equivalent	Texas Instruments
U7, U9, U11	3		1.1 nV/rHz Noise, Low Power, Precision Operational Amplifier, 4.5 to 36 V, -40 to 125 degC, 8-pin SOIC (D0008A), Green (RoHS & no Sb/Br)	D0008A	OPA211AID	Texas Instruments	Equivalent	Texas Instruments
U12	1		40-ns, microPOWER, Push-Pull Output Comparators, D0008A	D0008A	TLV3202AID	Texas Instruments		None
U13	1		Single 2-Input Positive-AND Gate, DBV0005A	DBV0005A	SN74AHC1G08DBV	Texas Instruments		Texas Instruments
U14	1		DUAL BUFFER GATE, DRL0006A	DRL0006A	SN74LVC2G34DRL	Texas Instruments		None
U15, U16, U17, U18	4		1 uA Shunt Voltage Reference, 1.25 V, 10 ppm / degC, 5 mA, -40 to 85 degC, 3-pin SOT-23 (DBZ), Green (RoHS & no Sb/Br)	DBZ0003A	REF1112AIDBZT	Texas Instruments	Equivalent	Texas Instruments
U19	1		3.3V CAN Transceiver with Standby Mode, Loop-back, 6 mA, -40 to 125 degC, 8-pin SOIC (D), Green (RoHS & no Sb/Br)	D0008A	SN65HVD233D	Texas Instruments	Equivalent	Texas Instruments
XF1, XF3, XF5, XF7	4		FuseHolder	780x320x345mil	3587	Keystone		
C32, C34, C35, C36	0	22pF	CAP, CERM, 22pF, 50V, +/-5%, C0G/NP0, 0603	0603	06035A220JAT2A	AVX		
C105	0	330pF	CAP, CERM, 330pF, 100V, +/-5%, X7R, 0603	0603	06031C331JAT2A	AVX		
Q2, Q3, Q12, Q23, Q34, Q43	0	60V	MOSFET, N-CH, 60V, 0.24A, SOT-23	SOT-23	2N7002E-T1-E3	Vishay-Siliconix		None

Notes:

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