

PROC219 REV E1 Bill of Materials

Designator	Quantity	Value	PartNumber	Manufacturer	Description	PackageReference
IPC81	1		PROC219	Any	Printed Circuit Board	
C1, C5, C18, C25, C37	5	1uF	C1608X7R1E105K080AB	TDK	CAP, CERM, 1 uF, 25 V, +/- 10%, X7R, 0603	0603
C2, C3, C4, C9, C11, C12, C14, C16, C17, C21, C28, C35, C118, C121, C122	15	22uF	CC1210KKX7R8BB226	Yageo	CAP, CERM, 22 uF, 25 V, +/- 10%, X7R, 1210	1210
C6	1	2200pF	CL05B222JB5NNNC	Samsung Electro-Mechanics	CAP, CERM, 2200 pF, 50 V, +/- 5%, X7R, 0402	0402
C7	1	3300pF	GRM155R71H332KA01D	MuRata	CAP, CERM, 3300 pF, 50 V, +/- 10%, X7R, 0402	0402
C8, C10, C13, C15, C19, C29, C33, C40, C46, C47, C56, C57, C58, C60, C63, C66, C68, C69, C70, C71, C72, C73, C74, C75, C76, C77, C78, C79, C80, C81, C82, C83, C84, C85, C86, C87, C90, C92, C114, C115, C116, C119, C120, C123, C124, C125, C127, C128, C129, C130, C131, C132, C133, C134, C135, C139, C140, C145, C147, C148, C149, C162	62	0.1uF	CC0402KRX7R8BB104	Yageo	CAP, CERM, 0.1 uF, 25 V, +/- 10%, X7R, 0402	0402
C20, C24, C32, C36, C38, C49, C52, C53, C150, C151, C152, C153, C154, C155, C158, C160	16	10nF	885012205050	Wurth Elektronik	WCAP-CSGP Multilayer Ceramic Chip Capacitor, General Purpose, size 0402, X7R, 10nF, 25VDC	0402
C22, C26, C31, C39	4	10uF	CL31B106KBHNNNE	Samsung	CAP, CERM, 10 uF, 50 V, +/- 10%, X7R, 1206	1206
C23	1	6.8pF	GRM1555C1H6R8CA01D	MuRata	CAP, CERM, 6.8 pF, 50 V, +/- 5%, C0G/NP0, 0402	0402
C27	1	0.22uF	C1005X7R1C224K050BC	TDK	CAP, CERM, 0.22 uF, 16 V, +/- 10%, X7R, 0402	0402
C30	1	5.6pF	GRM1555C1H5R6CA01D	MuRata	CAP, CERM, 5.6 pF, 50 V, +/- 5%, C0G/NP0, 0402	0402
C34, C137, C142	3	4.7nF	885012205065	Wurth Elektronik	WCAP-CSGP Multilayer Ceramic Chip Capacitor, General Purpose, size 0402, X7R, 4.7nF, 50VDC	0402
C41, C54, C55, C61, C62, C65	6	10uF	C1608X5R1E106M080AC	TDK	CAP, CERM, 10 uF, 25 V, +/- 20%, X5R, 0603	0603
C42	1	0.47uF	GRM155R60J474KE19D	MuRata	CAP, CERM, 0.47 uF, 6.3 V, +/- 10%, X5R, 0402	0402
C43, C44, C163, C164	4	12pF	GRM1555C1H120JA01D	MuRata	CAP, CERM, 12 pF, 50 V, +/- 5%, C0G/NP0, 0402	0402
C45	1	4.7uF	885012105008	Wurth Elektronik	WCAP-CSGP Multilayer Ceramic Chip Capacitor, General Purpose, size 0402, X5R, 4.7uF, 6.3VDC	0402
C48, C98, C108, C156, C157, C159, C161	7	1uF	C1005X7S1A105K050BC	TDK	CAP, CERM, 1 uF, 10 V, +/- 10%, X7S, 0402	0402
C50, C51	2	1nF	885012205061	Wurth Elektronik	WCAP-CSGP Multilayer Ceramic Chip Capacitor, General Purpose, size 0402, X7R, 1nF, 50VDC	0402
C64	1	22uF	C2012X7S1A226M125AC	TDK	CAP, CERM, 22 uF, 10 V, +/- 20%, X7S, 0805	0805
C88, C89	2	12pF	885392005127	Wurth Elektronik	WCAP-CSRF Multilayer Ceramic Chip Capacitor, High Frequency, size 0402, NP0 Class I, 12pF, 50VDC	0402
C93, C104, C117, C144, C146	5	100pF	04025A101FAT2A	AVX	CAP, CERM, 100 pF, 50 V, +/- 1%, C0G/NP0, 0402	0402
C94, C111	2	2.2uF	C1005X5R1C225K050BC	TDK	CAP, CERM, 2.2 uF, 16 V, +/- 10%, X5R, 0402	0402
C95, C112	2	68pF	885012005060	Wurth Elektronik	WCAP-CSGP Multilayer Ceramic Chip Capacitor, General Purpose, size 0402, NP0, 68pF, 50VDC	0402
C96, C113	2	680pF	885012205060	Wurth Elektronik	WCAP-CSGP Multilayer Ceramic Chip Capacitor, General Purpose, size 0402, X7R, 680pF, 50VDC	0402
C97, C107	2	2700pF	CL05B272KCB5NNNC	Samsung Electro-Mechanics	CAP, CERM, 2700 pF, 50 V, +/- 10%, X7R, 0402	0402
C99, C109	2	1.5nF	885012205062	Wurth Elektronik	WCAP-CSGP Multilayer Ceramic Chip Capacitor, General Purpose, size 0402, X7R, 1.5nF, 50VDC	0402
C100, C110	2	2.2nF	885012205063	Wurth Elektronik	WCAP-CSGP Multilayer Ceramic Chip Capacitor, General Purpose, size 0402, X7R, 2.2nF, 50VDC	0402
C101, C102	2	33pF	885012005058	Wurth Elektronik	WCAP-CSGP Multilayer Ceramic Chip Capacitor, General Purpose, size 0402, NP0, 33pF, 50VDC	0402
C103	1	22pF	885392005114	Wurth Elektronik	WCAP-CSRF Multilayer Ceramic Chip Capacitor, High Frequency, size 0402, NP0 Class I, 22pF, 50VDC	0402
C105	1	27pF	885392005116	Wurth Elektronik	WCAP-CSRF Multilayer Ceramic Chip Capacitor, High Frequency, size 0402, NP0 Class I, 27pF, 50VDC	0402
C106	1	47pF	885012005059	Wurth Elektronik	WCAP-CSGP Multilayer Ceramic Chip Capacitor, General Purpose, size 0402, NP0, 47pF, 50VDC	0402

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C126	1	330nF	885012206121	Würth Elektronik	WCAP-CSGP Multilayer Ceramic Chip Capacitor, General Purpose, size 0603, X7R, 330nF, 50VDC	0603
C136, C138, C141, C143	4	20pF	C0402C200J5GACTU	Kemet	CAP, CERM, 20 pF, 50 V, +/- 5%, C0G/NP0, 0402	0402
D1, D33, D34	3	5.1V	BZT52C5V1T-7	Diodes Inc.	Diode, Zener, 5.1 V, 300 mW, SOD-523	SOD-523
D2, D4, D20	3	Red	150060RS75000	Würth Elektronik	LED, Red, SMD	LED_0603
D3	1	200V	BAS20HT1G	ON Semiconductor	Diode, Switching, 200 V, 0.2 A, AEC-Q101, SOD-323	SOD-323
D5, D6, D13, D22, D25, D27, D28, D39	8	Green	150060VS75000	Würth Elektronik	LED, Green, SMD	LED_0603
D7, D11	2		SS2040FL_R1_00001	Panjit	Diode 40 V 2A Surface Mount SOD-123FL	SOD123FL
D8, D10	2	40V	MBR0540T1G	ON Semiconductor	Diode, Schottky, 40 V, 0.5 A, SOD-123	SOD-123
D9, D12	2	40V	SD103AWS-TP	Micro Commercial Components	Diode, Schottky, 40 V, 0.35 A, SOD-323	SOD-323
D14, D19, D21, D23	4		TSD12CDYFR	Texas Instruments	Bidirectional TVS Diodes in SOD-323 Package	SOD323
D15, D16, D24, D26, D29, D30, D36, D37	8		ESDS311DYFR	Texas Instruments	One-channel unidirectional device for 3.3V surge protection in SOD-323 package	SOT-323
D17	1		RN242SMT2R	Rohm	RF Diode PIN - Single 30V 100 mA EMD2	EMD2
D18, D35	2		TSD12DYFR	Texas Instruments	23V Clamp 18A (8/20µs) Ipp Tvs Diode Surface Mount SOD-323	SOD323
D31, D32	2		TSD15CDYFR	Texas Instruments	15V 13A bidirectional surge-protection diode	SOD323
D38	1		150060AS75000	Würth Electronics	Amber 605nm LED Indication - Discrete 2V 0603 (1608 Metric)	0603
F1	1		044001.5WR	Littelfuse	Fuse, 1.5 A, 50VAC/VDC, SMD	1206
FB1	1	600Ω	74279220601	Würth Elektronik	74279220601 Ferrite Beads Multi-Layer High Current 600Ohm 25% 100MHz 2.1A 0.08Ohm DCR 0805 Automotive T/R	0805
J1, J7, J10, J21, J22, J23	6		691214110002S	Würth	2 Position Wire to Board Terminal Block Horizontal with Board 0.138" (3.50mm) Through Hole	HDR2
J2, J6, J12	3		61300211121	Würth Elektronik	Header, 2.54 mm, 2x1, Gold, TH	Header, 2.54mm, 2x1, TH
J3, J5, J8, J9, J29, J32	6		61300311121	Würth Elektronik	Header, 2.54 mm, 3x1, Gold, TH	Header, 2.54mm, 3x1, TH
J4, J11, J13, J14, J15, J16, J17, J18, J19, J20, J30, J31	12		691214110003S	Würth	3 Position Wire to Board Terminal Block Horizontal with Board 0.138" (3.50mm) Through Hole	CONN_TERM_BLK_3
J24	1		61301421121	Würth Electronics	Connector Header Through Hole 14 position 0.100" (2.54mm)	HDR14
J25	1		USB4215-03-A	GCT	USB-C (USB TYPE-C) USB 2.0 Receptacle Connector 24 (16+8 Dummy) Position Surface Mount, Right Angle; Through Hole	CONN_USB
J26	1		61301821121	Würth	Connector Header Through Hole 18 position 0.100" (2.54mm)	HDR18
J27	1		SSW-105-01-G-D	Samtec	Receptacle, 2.54mm, 5X2, Gold, TH	Receptacle, 2.54mm, 5X2, TH
J28	1		SSW-115-01-G-D	Samtec	30 Position Receptacle Connector 0.100" (2.54mm) Through Hole Gold	CONN_RCPT30
L1, L3	2	600 ohm	74279221601	Würth Elektronik	Ferrite Bead, 600 ohm @ 100 MHz, 2.5 A, 1206	1206
L2	1	4.7uH	744311470	Würth Elektronik	Inductor, Shielded Drum Core, Superflux, 4.7 uH, 6 A, 0.02 ohm, SMD	WE-HC4
L4, L7	2	280 ohm	74279221281	Würth Elektronik	Ferrite Bead, 280 ohm @ 100 MHz, 3.5 A, 1206	1206
L5	1	3.3uH	74437349033	Würth Elektronik	Inductor, Shielded Drum Core, Powdered Iron, 3.3 uH, 6 A, 0.019 ohm, SMD	7.30x4.80x6.60mm
L6, L8	2	10uH	744042100	Würth Elektronik	Inductor, Shielded Drum Core, Ferrite, 10 uH, 1 A, 0.12 ohm, SMD	WE-TPC-M1
L9	1	600 ohm	742792651	Würth Elektronik	Ferrite Bead, 600 ohm @ 100 MHz, 1 A, 0603	0603
L10	1		DLW43SH110XK2L	Murata	2 Line Common Mode Choke Surface Mount 360mA DCR 500mOhm	1812
L11	1	600 ohm	74279220601	Würth Elektronik	Ferrite Bead, 600 ohm @ 100 MHz, 2.1 A, 0805	0805
L12, L14	2	220 ohm	BLM15AG221SN1D	MuRata	Ferrite Bead, 220 ohm @ 100 MHz, 0.45 A, 0402	0402
L13	1	2.2uH	74479299222	Würth Elektronik	WE-PMCI SMT Power Molded Chip Inductor, size 1210, 2.2uH, 4.5A, 75mOhm	1210
L15, L16, L19, L20	4	270nH	LQW18ANR27G80D	Murata	Wire Wound RF Inductor 270nH ±2% 260mA 2.42Ω 0603 (1608)	0603 (1608)
L17, L18	2	4.7µH	LQM21PN4R7MGRD	Murata	Multilayer Type Inductor for Power Lines, 0805 (2012), 4.7µH, 20%, 0.288Ω, 0.8A	0805 (2012)
Q1, Q2, Q3, Q4, Q6, Q7, Q9, Q10, Q11, Q14, Q16	11	30V	CSD17585F5T	Texas Instruments	MOSFET, N-CH, 30 V, 5.9 A, YJK0003A (PICOSTAR-3)	YJK0003A
Q5, Q8, Q12, Q15	4	-20V	CSD25485F5	Texas Instruments	MOSFET, P-CH, -20 V, -5.3 A, YJK0003A (PICOSTAR-3)	YJK0003A
Q13	1	30V	CSD17571Q2	Texas Instruments	MOSFET, N-CH, 30 V, 22 A, DQK0006C (WSON-6)	DQK0006C
R1, R7, R13, R19, R42, R43, R44, R50, R96, R123, R127, R134, R140, R148	14	4.70k	ERJ-2RKF4701X	Panasonic	RES, 4.70 k, 1%, 0.1 W, 0402	0402
R2	1	475k	CRCW0402475KFKED	Vishay-Dale	RES, 475 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R3, R133, R138, R139, R144	5	0	CRCW12060000Z0EAC	Vishay	Jumper 0.25W, 1/4W Chip Resistor 1206 (3216 Metric) - Thick Film	1206
R4	1	11.0k	CRCW040211K0FKED	Vishay-Dale	RES, 11.0 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R5	1	750	CRCW0402750RFKED	Vishay-Dale	RES, 750, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R6, R37	2	47.0k	RC0402FR-0747KL	Yageo America	RES, 47.0 k, 1%, 0.0625 W, 0402	0402
R8, R11, R14, R17, R33, R34, R51, R52, R53, R54, R55, R56, R67, R118, R125, R126, R128, R131	18	0	CRG0402ZR	TE Connectivity	Jumper 0.063W, 1/16W Chip Resistor 0402 (1005 Metric) - Thick Film	0402

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R9, R12, R15, R18, R23, R27, R29, R31, R32, R36, R38, R39, R40, R70, R71, R72, R75, R76, R78, R82, R85, R86, R87, R88, R90, R91, R92, R93, R95, R99, R101, R103, R110, R111, R129, R130, R146, R147, R150, R151, R161	41	10.0k	ERJ-2RKF1002X	Panasonic	RES, 10.0 k, 1%, 0.1 W, 0402	0402
R10	1	73.2k	CRCW040273K2FKED	Vishay-Dale	RES, 73.2 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R16	1	45.3k	RC0402FR-0745K3L	Yageo America	RES, 45.3 k, 1%, 0.063 W, 0402	0402
R20	1	91k	RC0402FR-1391KL	YAGEO	Res Thick Film 0402 91K Ohm 1% 0.063W(1/16W) ±100ppm/C Pad SMD T/R	0402
R21	1	976k	CRCW0402976KFKED	Vishay-Dale	RES, 976 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R22	1	93.1k	CRCW040293K1FKED	Vishay-Dale	RES, 93.1 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R24	1	68k	WR04X6802FTL	Walsin Technology	68 kOhms ±1% 0.063W, 1/16W Chip Resistor 0402 (1005 Metric) Thick Film	0402
R25	1	787k	CRCW0402787KFKED	Vishay-Dale	RES, 787 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R26, R58, R158	3	100	ERJ-2RKF1000X	Panasonic	RES, 100, 1%, 0.1 W, 0402	0402
R28, R30, R84, R102	4	100k	RC0402FR-07100KL	Yageo America	RES, 100 k, 1%, 0.0625 W, 0402	0402
R35, R94, R107, R109, R120	5	220	CRCW0402220RJNED	Vishay-Dale	RES, 220, 5%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R41, R46	2	10	RC0603FR-0710RL	Yageo	RES, 10.0, 1%, 0.1 W, 0603	0603
R59	1	5.76k	CRCW04025K76FKED	Vishay-Dale	RES, 5.76 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R60, R62, R63	3	200k	ERJ-2RKF2003X	Panasonic	RES, 200 k, 1%, 0.1 W, 0402	0402
R61	1	1.00k	RP73PF2A1K0BTDF	TE Connectivity	RES, 1.00 k, 0.1%, 0.25 W, 0805	0805
R64, R106	2	54.9k	CRCW040254K9FKED	Vishay-Dale	RES, 54.9 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R65	1	63.4k	CRCW040263K4FKED	Vishay-Dale	RES, 63.4 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R66, R83, R108, R117, R154, R155, R156, R157	8	1.00k	RC0402FR-071KL	Yageo America	RES, 1.00 k, 1%, 0.0625 W, 0402	0402
R68	1	2.74k	CRCW04022K74FKED	Vishay-Dale	RES, 2.74 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R69	1	1.30k	CRCW04021K30FKED	Vishay-Dale	RES, 1.30 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R73, R97, R104	3	1.00k	RP73D2B1K0BTG	TE Connectivity	RES, 1.00 k, 0.1%, 0.25 W, 1206	1206
R74	1	10.0k	RT0805BRD0710KL	Yageo America	RES, 10.0 k, 0.1%, 0.125 W, 0805	0805
R77	1	1.00Meg	RC0402FR-071ML	Yageo America	RES, 1.00 M, 1%, 0.063 W, 0402	0402
R79, R100	2	3.6k	CRCW04023K60JNED	Vishay-Dale	RES, 3.6 k, 5%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R80	1	2.74k	RT0603BRD072K74L	Yageo America	RES, 2.74 k, 0.1%, 0.1 W, 0603	0603
R81	1	1.30k	RT0603BRD071K3L	Yageo America	RES, 1.30 k, 0.1%, 0.1 W, 0603	0603
R89	1	14.7k	CRCW040214K7FKED	Vishay-Dale	RES, 14.7 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R98, R105	2	200	RT0805BRD07200RL	Yageo America	RES, 200, 0.1%, 0.125 W, 0805	0805
R113, R115	2	150	TNPW0402150RBEED	Vishay Dale	150 Ohms ±0.1% 0.063W, 1/16W Chip Resistor 0402 (1005 Metric) Anti-Sulfur, Automotive AEC-Q200, Moisture Resistant Thin Film	0402
R114	1	25.5k	CRCW040225K5FKED	Vishay-Dale	RES, 25.5 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R116	1	0.5	CSRN2512FKR500	Stackpole Electronics Inc	RES, 0.5, 1%, 2 W, 2512	2512
R121, R122, R152	3	10.0k	RT0402BRD0710KL	Yageo America	RES, 10.0 k, .1%, .0625 W, 0402	0402
R124	1	120	SDR10EZPF1200	Rohm	Res Thick Film 0805 120 Ohm 1% 0.5W(1/2W) ±100ppm/C Pad SMD T/R Automotive	0805
R136, R137, R142, R143	4	59	CRCW120659R0FKEA	Vishay-Dale	RES, 59.0, 1%, 0.25 W, AEC-Q200 Grade 0, 1206	1206
R153	1	3.32k	CRCW04023K32FKED	Vishay-Dale	RES, 3.32 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R159, R160	2	470	RC0402FR-07470RL	Yageo America	RES, 470, 1%, 0.063 W, 0402	0402
R163	1	4.87k	CRCW04024K87FKED	Vishay-Dale	RES, 4.87 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R164	1	51	CRCW040251R0JNED	Vishay-Dale	RES, 51, 5%, 0.063 W, AEC-Q200 Grade 0, 0402	0402
R165, R166	2	5.1k	RMCF0402FT5K10	Stackpole Electronics	5.1kΩ ±1% 0.063W 0402 Thick Film Chip Resistor AEC-Q200 compliant	0402
SH-J1, SH-J2, SH-J3, SH-J4, SH-J5, SH-J6, SH-J7, SH-J8, SH-J9, SH-J10, SH-J11, SH-J12	12		60900213421	Würth Elektronik	Shunt, 2.54mm, Gold, Black	Shunt, 2.54mm, Black
SW1, SW2, SW3	3		JS202011JCQN	C&K	SWITCH SLIDE DPDT 300MA 6V	
T1	1		PWB3010LC	Coilcraft	Wideband RF transformer, 1:1, 0.0035-125 MHz, SMT, RoHS	SMD6
TP58	1		5011	Keystone Electronics	Test Point, Multipurpose, Black, TH	Black Multipurpose Testpoint
U1	1		TPS259470ARPWR	Texas Instruments	2.7 - 23 V, 5.5 A, 28 mΩ True Reverse Current Blocking eFuse with Input Reverse Polarity Protection	VQFN-HR10
U2	1		TVS1401DRBR	Texas Instruments	14 V Bidirectional Flat-Clamp Surge Protection Device, DRB0008A (VSON-8)	DRB0008A
U3, U4	2		TPS563211DRLR	Texas Instruments	4.2-V to 17-V Input, 3-A Synchronous Buck Converter, DRL0008A (SOT-5X3-8)	DRL0008A
U5	1		TPS65130RGER	Texas Instruments	Positive and Negative Output DC-DC Converter, 2.7 to 5.5 V, -40 to 85 degC, 24-pin QFN (RGE24), Green (RoHS & no Sb/Br)	RGE0024B
U6	1		TPS7A3901DSCR	Texas Instruments	Dual, 150mA, Wide-Vin, Positive and Negative Low-Dropout (LDO) Voltage Regulator, DSC0010J (WSON-10)	DSC0010J
U7	1		MSPM0G3507SPM	Texas Instruments	Mixed-Signal Microcontrollers With CAN-FD Interface LQFP64	LQFP64
U8	1		SN74LVC1G125DBVR	Texas Instruments	Single Bus Buffer Gate With 3-State Outputs, DBV0005A, LARGE T&R	DBV0005A
U9	1		IS31CG5317-LQLS3	Lumissil Microsystems	IS31CG5317-LQLS3	LQFP80

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U10	1		TLV1805DBVR	Texas Instruments	40 V, microPower, Push-Pull Comparator with Shutdown, DBV0006A (SOT-23-6)	DBV0006A
U11, U12	2		TS12A4515DBVR	Texas Instruments	Low-Voltage, Low On-State Resistance SPST CMOS Analog Switches, DBV0005A (SOT-23-5)	DBV0005A
U13	1		TLV9151IDBVR	Texas Instruments	Single 4.5-MHz, 16-V rail-to-rail input/output, low-offset voltage, low-noise op amp 5-SOT-23 -40 to 125	SOT-23-5
U14	1		TPS281C100BDNTR	Texas Instruments	60-V, 100-mΩ, Single-Channel Smart High-Side Switch	WSON12
U15, U18	2		TLV7011DCKR	Texas Instruments	Low power, small size comparator with push-pull output, DCK0005A (SOT-SC70-5)	DCK0005A
U16	1		DRV8220DSG	Texas Instruments	1.6A H-bridge motor driver, PWM, PH/EN, ½ bridge control, with low power sleep mode	WSON8
U17	1		TL431AQDBVR	Texas Instruments	Adjustable Precision Shunt Regulator, 34 ppm / degC, 100 mA, -40 to 125 degC, 5-pin SOT-23 (DBV), Green (RoHS & no Sb/Br)	DBV0005A
U19	1		THVD2429DRCR	Texas Instruments	3-V to 5.5-V Small RS-485 Transceivers With Integrated 4-kV Surge Protection and High Bus-Fault Protection in Small Packages	VSON10
U20	1		TRSF3221EIRGTR	Texas Instruments	3- to 5.5-V single channel 1Mbps RS-232 line driver/receiver with +/-15-kV IEC-ESD protection	VQFN16
U21, U23	2		TCAN1044AVDDFRQ1	Texas Instruments	Enhanced automotive CAN transceiver with standby and 1.8-V I/O support 8-SOT-23-THIN -40 to 150	TSOT23-8
U22, U24	2		ESD2CAN24DBZR	Texas Instruments	24-V, 2-Channel ESD Protection Diode for In-Vehicle Networks	SOT-23-3
U25, U27	2		SN74LVC1G17DBVR	Texas Instruments	Single Schmitt-Trigger Buffer, DBV0005A, LARGE T&R	DBV0005A
U26	1		TPL7407LA		7-Channel Low Side Driver, 0 to 40 V VOUT, -40 to 125 degC, 16-Pin TSSOP (PW), RoHS, Tape and Reel	PW0016A
U28	1		TLV9001IDBV	Texas Instruments	Low-Power, Rail-to-Rail In and Out, 1-MHz Operational Amplifier, DBV0005A (SOT-23-5)	DBV0005A
U29	1		MSP432E401YTPDT	Texas Instruments	MSP432E401YTPDT, PDT0128A (TQFP-128)	PDT0128A
U30, U31, U35	3		ESDS314DBVR	Texas Instruments	Data-Line Surge and ESD Protection Diode Array, DBV0005A (SOT-23-5)	DBV0005A
U32, U33, U34	3		TPD2E001DRLR	Texas Instruments	Low-Capacitance + / - 15 kV ESD-Protection Array for High-Speed Data Interfaces, 2 Channels, -40 to +85 degC, 5-pin SOT (DRL), Green (RoHS & no Sb/Br)	DRL0005A
Y1	1		830103622909	Wurth Electronics	32 MHz ±10ppm Crystal 9pF 40 Ohms 4-SMD, No Lead	SMT_CRYSTAL_3M M4_2MM7
Y2	1		ABM8W-25.0000MHZ-8-D1X-T3	Abracon	Crystal 25MHz ±10ppm (Tol) ±20ppm (Stability) 8pF FUND 100Ohm 4-Pin SMD T/R	SMD4
Y3	1		NX3225GA-16.000M-STD-CRG-1	NDK	Crystal, 16 MHz, 8pF, SMD	3.2x0.75x2.5mm
C59, C67	0	0.1uF	CC0402KRX7R8BB104	Yageo	CAP, CERM, 0.1 µF, 25 V, +/- 10%, X7R, 0402	0402
C91	0	300pF	GCM1555C1H301JA16D	MuRata	CAP, CERM, 300 pF, 50 V, +/- 5%, C0G/NP0, 0402	0402
L21, L22	0	100uH	ACT45B-101-2P-TL003	TDK	100µH @ 100kHz 2 Line Common Mode Choke Surface Mount 5.8 kOhms @ 10MHz 150mA DCR 2Ohm	SMT_4MM5_3MM2
R45, R47, R48, R49, R135, R141, R167, R168, R169, R170	0	4.70k	ERJ-2RKF4701X	Panasonic	RES, 4.70 k, 1%, 0.1 W, 0402	0402
R57, R119	0	1.00Meg	RC0402FR-071ML	Yageo America	RES, 1.00 M, 1%, 0.063 W, 0402	0402
R112, R132, R145, R149, R162	0	10.0k	ERJ-2RKF1002X	Panasonic	RES, 10.0 k, 1%, 0.1 W, 0402	0402
T2	0	215µH	ZA9756-AED	Coilcraft	215µH Isolation and Data Interface (Encapsulated) Pulse Transformer 1:1 Surface Mount	SMD8

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