

# Bill of Materials

TI DESIGNS

TIDA-00637

Item	Qty	Reference	Value	Part Description	Manufacturer	Manufacturer Part Number	Alternate Part	PCB Footprint	Note
1	5	C1, C19, C20, C25, C26	47p	CAP CER 47PF 50V C0G 0603	TDK CORPORATION (VA)	C1608C0G1H470J080AA		C0603	
2	2	C14, C16	0.47u	CAP CER 0.47UF 16V X7R 0603	TDK CORPORATION (VA)	C1608X7R1C474K080AC		C0603	
3	1	C15	0.01u	CAP CER 10000PF 100V X7R 0603	TDK CORPORATION (VA)	C1608X7R2A103K080AA		C0603	
4	1	C2	0.1u	CAP FILM 0.1UF 10% 560VDC RADIAL	KEMET	R46KF310050P0K		C102-064X133	
5	1	C21	47u	CAP ALUM 47UF 20% 400V RADIAL	PANASONIC ELECTRONIC COMPONENTS	EEU-EB2G470		E7.5-16	
6	1	C22	.1u	CAP CER 0.1UF 50V X7R 0603	AVX CORPORATION (VA)	06035C104KAT2A		C0603	
7	2	C23, C27	15n	CAP CER 0.015UF 50V X7R 0603	TDK CORPORATION (VA)	C1608X7R1H153M080AA		C0603	
8	1	C24	22u	CAP ALUM 22UF 20% 25V RADIAL	PANASONIC ELECTRONIC COMPONENTS (VA)	EEA-GA1E220H		E2.5-5	
9	1	C29	10.0u	CAP CER 10UF 6.3V X5R 0603	SAMSUNG ELECTRO-MECHANICS AMERICA, INC (VA)	CL10A106MQ8NINC		C0603	
10	1	C3	10u	CAP CER 10UF 6.3V X5R 0603	TDK CORPORATION (VA)	C1608X5R0J106M080AB		C0603	
11	3	C39, C40, C43	1u	CAP CER 1UF 25V X5R 0805	AVX CORPORATION (VA)	08053D105KAT2A		C0805	
12	10	C4, C5, C7, C12, C13, C18, C36, C37, C38, C42	0.1u	CAP CER 0.1UF 50V X7R 0603	TDK CORPORATION (VA)	C1608X7R1H104K080AA		C0603	
13	1	C41	10u	CAP TANT 10UF 6.3V 20% 1206	KEMET (VA)	T491A106M006AT		CT3216	
14	2	C44, C45	680u	CAP ALUM 680UF 20% 25V RADIAL	RUBYCON	25ZLJ680M10X16		E5-10.5	
15	1	C46	220u	CAP ALUM 220UF 20% 16V RADIAL	PANASONIC ELECTRONIC COMPONENTS	ECA-1CHG221		E2.5-6	
16	1	C47	1000p	CAP CER 1000PF 440VAC Y5U RADIAL	VISHAY BC COMPONENTS (VA)	VY2102M29Y5UG6TV7		C075-032X103	
17	4	C6, C11, C17, C28	4.7u	CAP CER 4.7UF 10V X5R 0805	MURATA ELECTRONICS (VA)	GRM21BR61A475KA73L		C0805	
18	2	C8, C10	4.7u	CAP CER 4.7UF 25V X7R 1210	TDK CORPORATION (VA)	C3225X7R1E475M200AA		SMC_B	
19	1	C9	4.7u	CAP CER 4.7UF 6.3V X5R 0603	TDK CORPORATION (VA)	C1608X5R0J475M080AB		C0603	
20	4	D1, D2, D3, D4	1N4148					SOD80C	DNP
21	1	D10		DIODE GEN PURP 1KV 1A SMA	DIODES INCORPORATED (VA)	US1M-13-F		DO214AC	
22	1	D14		DIODE GEN PURP 200V 200MA SOD323	ON SEMICONDUCTOR (VA)	BA520HT1G		SOD-323F	
23	2	D15, D16		DIODE SCHOTTKY 60V 1A SMB	DIODES INCORPORATED (VA)	B160B-13-F		DO214AA	
24	1	D17		DIODE SCHOTTKY 30V 1A SMA	DIODES INCORPORATED (VA)	B130L-13-F		DO-214AC	
25	2	D5, D6		DIODE GEN PURP 100V 150MA SOD123	MICRO COMMERCIAL CO (VA)	1N4148W-TP		SOD-123	
26	1	D7		DIODE GEN PURP 600V 1A DO214AC	VISHAY SEMICONDUCTOR DIODES DIVISION (VA)	US1J-E3/5AT		DO214AC	
27	1	D8		DIODE ZENER 130V 3W SMB	ON SEMICONDUCTOR (VA)	1SMB5952BT3G		DO214AA	
28	1	D9	5V	TVS DIODE 5VWM 9.2VC DO214AC	BOURNS INC (VA)	SMAJ5.0A		DO-214	
29	1	IC1	MSP430	IC MCU 16BIT 128KB FLASH 100LQFP	TEXAS INSTRUMENTS (VA)	MSP430F6736IPZR		PZ100	
30	1	IC2	24C02CSN	IC EEPROM 2KBIT 400KHZ 8SOIC	MICROCHIP TECHNOLOGY	24C02C/SN		SO-08	
31	6	JP1, JP2, JP3, JP4, JP7, PW_SEL		CONN HEADER VERT SGL 3POS GOLD	3M	961103-6404-AR		JP2	
32	2	JP5, JP6		CONN HEADER VERT SGL 2POS GOLD	3M	961102-6404-ARL		JP1	
33	1	JTAG		SHROUDED HEADER 14 POS STRAIGHT	3M	2514-6002UB		MA07-2JTAG	
34	2	L1, L2	EXCML20A	RES SMD 0.00HM JUMPER 1/10W 0603	PANASONIC ELECTRONIC COMPONENTS (VA)	ERJ-3GEY0R00V		R0805@1	Pop w/ 0R
35	2	L3, L4	BLM21BD121SN1D	RES SMD 0.00HM JUMPER 1/10W 0603	PANASONIC ELECTRONIC COMPONENTS (VA)	ERJ-3GEY0R00V		L2012C	Pop w/ 0R
36	1	L5		CHOKE TOROID 10MH .70A VERT	WURTH ELECTRONICS INC	744821110		300	
37	1	L6		FIXED IND 1UH 2.35A 48 MOHM SMD	BOURNS INC (VA)	SRN3015-1R0Y		SRN3015	
38	2	LED1, LED2		LED RED DIFF 3MM ROUND T/H	ROHM SEMICONDUCTOR	SLI-343URC3F		LED3MM	
39	1	OPT1	TCLT1600	OPTOISOLATR 5KV TRANSISTOR 4-SOP	VISHAY SEMICONDUCTOR OPTO DIVISION (VA)	TCLT1600		TCLT1600	
40	1	O1	32.768kHz	CRYSTAL 32.7680KHZ 6PF SMD	CITIZEN FINEDEVICE CO LTD (VA)	CMR200T32768DZBT		TC26H-1	
41	1	R1	33.2	RES SMD 33.2 OHM 1% 1/10W 0603	PANASONIC ELECTRONIC COMPONENTS (VA)	ERJ-3EKF33R2V		R0805	
42	7	R10, R12, R13, R20, R61, R63, R64	1k	RES SMD 1K OHM 5% 1/10W 0603	PANASONIC ELECTRONIC COMPONENTS (VA)	ERJ-3GEYJ102V		R0603	
43	3	R11, R16, R17	330k	RES SMD 330K OHM 5% 1/10W 0603	PANASONIC ELECTRONIC COMPONENTS (VA)	ERJ-3GEYJ334V		R0603	
44	2	R14, R58	330	RES SMD 330 OHM 5% 1/10W 0603	PANASONIC ELECTRONIC COMPONENTS (VA)	ERJ-3GEYJ331V		R0603	
45	3	R15, R60, R65	150	RES SMD 150 OHM 5% 1/10W 0603	PANASONIC ELECTRONIC COMPONENTS (VA)	ERJ-3GEYJ151V		R0603	
46	1	R18	3k	RES SMD 3K OHM 5% 1/10W 0603	PANASONIC ELECTRONIC COMPONENTS (VA)	ERJ-3GEYJ302V		R0603	
47	1	R2	10	RES SMD 10 OHM 1% 1/10W 0603	PANASONIC ELECTRONIC COMPONENTS (VA)	ERJ-3EKF10R0V		R0603	
48	1	R3	47k	RES SMD 47K OHM 0.1% 1/10W 0603	PANASONIC ELECTRONIC COMPONENTS (VA)	ERA-3AE473V		R0603	
49	3	R32, R35, R66	10k	RES SMD 10K OHM 5% 1/10W 0603	PANASONIC ELECTRONIC COMPONENTS (VA)	ERJ-3GEYJ103V		R0603	
50	1	R36	910	RES SMD 1K OHM 5% 1/10W 0603	PANASONIC ELECTRONIC COMPONENTS (VA)	ERJ-3GEYJ102V		R0603	
51	18	R37, R38, R39, R40, R42, R43, R44, R45, R46, R47, R48, R49, R51, R52, R53, R54, R55, R56	0	RES SMD 0.00HM JUMPER 1/10W 0603	PANASONIC ELECTRONIC COMPONENTS (VA)	ERJ-3GEY0R00V		R0603	
52	3	R4, R5, R19	100	RES SMD 100 OHM 5% 1/10W 0603	PANASONIC ELECTRONIC COMPONENTS (VA)	ERJ-3GEYJ101V		R0603	
53	1	R41	300k	RES SMD 910 OHM 5% 1/10W 0603	PANASONIC ELECTRONIC COMPONENTS (VA)	ERJ-3GEYJ911V		R0603	

Item	Qty	Reference	Value	Part Description	Manufacturer	Manufacturer Part Number	Alternate Part	PCB Footprint	Note
54	1	R57	82k	RES SMD 82K OHM 5% 1/10W 0603	PANASONIC ELECTRONIC COMPONENTS (VA)	ERJ-3GEYJ823V		R0603	
55	1	R6	S20K275	VARISTOR 387V 8KA DISC 20MM	EPCOS INC	S20K275		S20K680-1	
56	1	R62	18k	RES SMD 18K OHM 1% 2W 2512	TE CONNECTIVITY AMP (VA)	7-2176070-9		R2512	
57	1	R67	33.2k	RES SMD 33.2K OHM 1% 1/10W 0603	PANASONIC ELECTRONIC COMPONENTS (VA)	ERJ-3EKF3322V		R0603	
58	1	R68	10	RES SMD 10 OHM 1% 1/10W 0603	VISHAY DALE (VA)	CRCW060310R0FKEA		R0603	
59	1	R69	806	RES SMD 806 OHM 1% 1/10W 0603	VISHAY DALE (VA)	CRCW0603806RFKEA		R0603	
60	6	R7, R8, R33, R34, R50, R59	100k	RES SMD 100K OHM 5% 1/10W 0603	PANASONIC ELECTRONIC COMPONENTS (VA)	ERJ-3GEYJ104V		R0603	
61	1	R70	15.0k	RES SMD 15K OHM 1% 1/10W 0603	VISHAY DALE (VA)	CRCW060315K0FKEA		R0603	
62	4	R71, R72, R73, R74	2k	RES SMD 2K OHM 5% 1/3W 0805	VISHAY DALE (VA)	CRCW08052K00JNEAHP		R0805	
63	1	R75	511	RES SMD 511 OHM 0.1% 1/8W 0805	YAGEO (VA)	RT0805BRD07511RL		R0805	
64	1	R9	13	RES SMD 13 OHM 1% 1/10W 0603	PANASONIC ELECTRONIC COMPONENTS (VA)	ERJ-3EKF13R0V		R0603	
65	1	RF1	4.7	RES 4.7 OHM 1W 5% AXIAL	YAGEO (VA)	FKN1WSJR-52-4R7		0411/12	
66	2	RH1, RH2						TFM-110-02-SM-D-A-K	
67	3	RST, S2, S3		SWITCH TACTILE SPST-NO 0.02A 15V	PANASONIC ELECTRONIC COMPONENTS (VA)	EVQ-11L05R		B3F-10XX	
68	1	SV3						MA06-1-1.27	DNP
69	1	T1	BC846	TRANS NPN 65V 0.1A SOT-23	MICRO COMMERCIAL CO (VA)	BC846B-TP		SOT23	
70	1	TR1	RLTI-1118		RENCO			RLTI-1118	Renco Custom
71	1	U1	TPS62063DSGR	IC REG BUCK 3.3V 1.6A SYNC 8WSON	TEXAS INSTRUMENTS (VA)	TPS62063DSGR		DSG0008A	
72	1	U2	OPA171	IC OPAMP GP 3MHZ RRO SOT23-5	TEXAS INSTRUMENTS (VA)	OPA171AIDBVT		DBV5	
73	1	U3	LM7321_DUAL	IC OPAMP GP 20MHZ RRO 8SOIC	TEXAS INSTRUMENTS (VA)	LM7321MAX/NOPB		M08A	
74	1	U4	UCC28910D	IC OFF-LINE SWITCH PWM 7SOIC	TEXAS INSTRUMENTS (VA)	UCC28910DR		D0007A	
75	1	U5	TPL7407L	IC MOSFET DVR 7CH 40V 16TSSOP	TEXAS INSTRUMENTS (VA)	TPL7407LPWR		TSSOP_16	
76	8	X1, X2, X3, X4, X5, X6, X9, X10		CONN TERM BLOCK 2POS 5.08MM PCB	PHOENIX CONTACT	1729128		W237-102	
77	1	X7		CONN TERM BLOCK 5POS 5.08MM PCB	PHOENIX CONTACT	1729157		W237-5P	
78	1	X8		CONN TERM BLOCK 3POS 5.08MM PCB	PHOENIX CONTACT	1729131		W237-133	

## IMPORTANT NOTICE FOR TI REFERENCE DESIGNS

Texas Instruments Incorporated ("TI") reference designs are solely intended to assist designers ("Buyers") who are developing systems that incorporate TI semiconductor products (also referred to herein as "components"). Buyer understands and agrees that Buyer remains responsible for using its independent analysis, evaluation and judgment in designing Buyer's systems and products.

TI reference designs have been created using standard laboratory conditions and engineering practices. **TI has not conducted any testing other than that specifically described in the published documentation for a particular reference design.** TI may make corrections, enhancements, improvements and other changes to its reference designs.

Buyers are authorized to use TI reference designs with the TI component(s) identified in each particular reference design and to modify the reference design in the development of their end products. HOWEVER, NO OTHER LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE TO ANY OTHER TI INTELLECTUAL PROPERTY RIGHT, AND NO LICENSE TO ANY THIRD PARTY TECHNOLOGY OR INTELLECTUAL PROPERTY RIGHT, IS GRANTED HEREIN, including but not limited to any patent right, copyright, mask work right, or other intellectual property right relating to any combination, machine, or process in which TI components or services are used. Information published by TI regarding third-party products or services does not constitute a license to use such products or services, or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

TI REFERENCE DESIGNS ARE PROVIDED "AS IS". TI MAKES NO WARRANTIES OR REPRESENTATIONS WITH REGARD TO THE REFERENCE DESIGNS OR USE OF THE REFERENCE DESIGNS, EXPRESS, IMPLIED OR STATUTORY, INCLUDING ACCURACY OR COMPLETENESS. TI DISCLAIMS ANY WARRANTY OF TITLE AND ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, QUIET ENJOYMENT, QUIET POSSESSION, AND NON-INFRINGEMENT OF ANY THIRD PARTY INTELLECTUAL PROPERTY RIGHTS WITH REGARD TO TI REFERENCE DESIGNS OR USE THEREOF. TI SHALL NOT BE LIABLE FOR AND SHALL NOT DEFEND OR INDEMNIFY BUYERS AGAINST ANY THIRD PARTY INFRINGEMENT CLAIM THAT RELATES TO OR IS BASED ON A COMBINATION OF COMPONENTS PROVIDED IN A TI REFERENCE DESIGN. IN NO EVENT SHALL TI BE LIABLE FOR ANY ACTUAL, SPECIAL, INCIDENTAL, CONSEQUENTIAL OR INDIRECT DAMAGES, HOWEVER CAUSED, ON ANY THEORY OF LIABILITY AND WHETHER OR NOT TI HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, ARISING IN ANY WAY OUT OF TI REFERENCE DESIGNS OR BUYER'S USE OF TI REFERENCE DESIGNS.

TI reserves the right to make corrections, enhancements, improvements and other changes to its semiconductor products and services per JESD46, latest issue, and to discontinue any product or service per JESD48, latest issue. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All semiconductor products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its components to the specifications applicable at the time of sale, in accordance with the warranty in TI's terms and conditions of sale of semiconductor products. Testing and other quality control techniques for TI components are used to the extent TI deems necessary to support this warranty. Except where mandated by applicable law, testing of all parameters of each component is not necessarily performed.

TI assumes no liability for applications assistance or the design of Buyers' products. Buyers are responsible for their products and applications using TI components. To minimize the risks associated with Buyers' products and applications, Buyers should provide adequate design and operating safeguards.

Reproduction of significant portions of TI information in TI data books, data sheets or reference designs is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Buyer acknowledges and agrees that it is solely responsible for compliance with all legal, regulatory and safety-related requirements concerning its products, and any use of TI components in its applications, notwithstanding any applications-related information or support that may be provided by TI. Buyer represents and agrees that it has all the necessary expertise to create and implement safeguards that anticipate dangerous failures, monitor failures and their consequences, lessen the likelihood of dangerous failures and take appropriate remedial actions. Buyer will fully indemnify TI and its representatives against any damages arising out of the use of any TI components in Buyer's safety-critical applications.

In some cases, TI components may be promoted specifically to facilitate safety-related applications. With such components, TI's goal is to help enable customers to design and create their own end-product solutions that meet applicable functional safety standards and requirements. Nonetheless, such components are subject to these terms.

No TI components are authorized for use in FDA Class III (or similar life-critical medical equipment) unless authorized officers of the parties have executed an agreement specifically governing such use.

Only those TI components that TI has specifically designated as military grade or "enhanced plastic" are designed and intended for use in military/aerospace applications or environments. Buyer acknowledges and agrees that any military or aerospace use of TI components that have **not** been so designated is solely at Buyer's risk, and Buyer is solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI has specifically designated certain components as meeting ISO/TS16949 requirements, mainly for automotive use. In any case of use of non-designated products, TI will not be responsible for any failure to meet ISO/TS16949.