

Bill of Materials

TI DESIGNS

TIDA-00498

Item	Qty	Reference	Fitted	Part Description	Manufacturer	Manufacturer Part Number	Supplier part number	PCB Footprint
2	2	C2, C3	Fitted	CAP, CERM, 18pF, 100V, +/-5%, COG/NPO, 0603	MuRata	GRM1885C2A180JA01D	490-1333-1-ND	0603
3	1	C4	Fitted	CAP, TA, 4.7uF, 35V, +/-10%, 1.9 ohm, SMD	Vishay-Sprague	293D475X9035C2TE3	718-1083-1-ND	6032-28
4	4	C5, C8, C11, C15	Fitted	CAP, CERM, 1uF, 16V, +/-10%, X7R, 0603	TDK	C1608X7R1C105K	445-1604-1-ND	0603
5	1	C6	Fitted	CAP, CERM, 22uF, 16V, +/-10%, X5R, 1206	MuRata	GRM31CR61C226KE15L	490-6513-1-ND	1206
6	11	C9, C12, C13, C19, C23, C25, C28, C35, C47, C50, C51	Fitted	CAP, CERM, 0.1uF, 25V, +/-5%, X7R, 0603	AVX	06033C104JAT2A	478-3713-1-ND	0603
7	2	C10, C14	Fitted	CAP, CERM, 10 uF, 6.3 V, +/- 20%, X7R, 0805	TDK	C2012X7R0J106M125AB	445-7594-1-ND	0805
8	3	C16, C41, C48	Fitted	CAP, CERM, 0.1uF, 50V, +/-10%, X7R, 0603	Kemet	C0603C104K5RACTU	399-5089-1-ND	0603
9	1	C17	Fitted	CAP, CERM, 1uF, 100V, +/-10%, X7R, 1206	MuRata	GRM31CR72A105KA01L	490-3909-1-ND	1206
10	2	C18, C36	Fitted	CAP, CERM, 0.1uF, 100V, +/-10%, X7R, 0805	Kemet	C0805C104K1RACTU	399-3486-1-ND	0805
11	1	C20	Fitted	CAP, CERM, 0.01uF, 25V, +/-5%, COG/NPO, 0603	TDK	C1608C0G1E103J	445-2664-1-ND	0603
12	1	C21	Fitted	CAP, CERM, 3300pF, 50V, +/-10%, X7R, 0603	Kemet	C0603C332K5RACTU	399-1086-1-ND	0603
13	1	C22	Fitted	CAP, AL, 100uF, 100V, +/-20%, 0.12 ohm, TH	Rubycon	100YXJ100M10X20	1189-2149-ND	10x20mm
14	13	C24, C26, C27, C29, C37, C38, C39, C46, C52, C53, C54, C55, C56	Fitted	CAP, CERM, 100pF, 25V, +/-10%, X7R, 0603	AVX	06033C101KAT2A	478-7899-1-ND	0603
15	1	C30	Fitted	CAP, CERM, 1uF, 25V, +/-10%, X5R, 0603	TDK	C1608X5R1E105K080AC	445-5146-1-ND	0603
16	1	D1	Fitted	LED, Green, SMD	OSRAM	LG L29K-G2J1-24-Z	475-2709-1-ND	1.7x0.65x0.8mm
17	2	D2, D3	Fitted	LED, Green, SMD	Rohm	SML-P12PTT86	511-1592-1-ND	LED, 1x.2x.6mm
18	2	D4, D9	Fitted	Diode, P-N, 1000V, 1A, TH	Fairchild Semiconductor	1N4007	1N4007FSCT-ND	DO-41
19	1	D5	Fitted	Diode, P-N, 100 V, 1 A, TH	Diodes Inc.	1N4002-T	1N4002DICT-ND	DO-41
20	1	D6	Fitted	DIODE SCHOTTKY 100V 1A DO204AL	Fairchild Semiconductor	SB1100FSCT-ND	SB1100FSCT-ND	DO-41

Item	Qty	Reference	Fitted	Part Description	Manufacturer	Manufacturer Part Number	Supplier part number	PCB Footprint
21	2	D7, D8	Fitted	Diode, Switching, 200V, 0.2A, SOT-23	Diodes Inc.	BAS21-7-F	BAS21-FDICT-ND	SOT-23
22	1	D10	Fitted	Diode, Zener, 16V, 1W, DO41	Micro Commercial Co	1N4745A-TP	1N4745A-TPCT-ND	DO-41
23	1	D11	Fitted	Diode, Zener, 39V, 1W, DO41	Micro Commercial Co	1N4754A-TP	1N4754A-TPCT-ND	DO-41
24	1	D13	Fitted	Diode, Zener, 3.9 V, 500 mW, SOD-123	ON Semiconductor	MMSZ4686T1G	MMSZ4686T1GOSCT-ND	SOD-123
25	1	FB1	Fitted	FERRITE CHIP 1000 OHM 300MA 0603	TDK Corporation	MMZ1608B102C	445-8672-1-ND	0603
26	6	FID1, FID2, FID3, FID4, FID5, FID6	Fitted	mount.	N/A	N/A		Fiducial
27	4	H1, H2, H3, H4	Fitted	Philips panhead	B&F Fastener Supply	NY PMS 440 0025 PH	H542-ND	Screw
28	4	H5, H6, H7, H8	Fitted	Standoff, Hex, 0.5"L #4-40 Nylon	Keystone	1902C	1902CK-ND	Standoff
29	1	HS1	Fitted	HEATSINK TO-220 W/PINS 1.5"TALL	Aavid Thermalloy	513102B02500G		1.500x1.375in.
30	6	J1, J10, J11, J12, J13, J14	Fitted	Terminal Block, 4x1, 2.54mm, TH	On Shore Technology Inc	OSTVN02A150	ED10561-ND	TERM_BLK, 2pos, 2.54mm
31	2	J2, J9	Fitted	Terminal Block, 8x1, 2.54 mm, TH	Phoenix Contact	1725711	277-1279-ND	8POS Terminal Block
32	1	J3	Fitted	plated, TH	Sullins Connector Solutions	SBH11-PBPC-D07-ST-BK	S9170-ND	7x2 Shrouded Header
33	5	J4, J6, J7, J15, J16	Fitted	Header, Male 2-pin, 100mil spacing,	Sullins	PEC02SAAN		0.100 inch x 2
34	1	J5	Fitted	Header, 3x1, 100mil, SMT	Mill-Max		ED7203-ND	Header, 3x1, 100mil, TH
35	1	J8	Fitted	Terminal Block, 3-pin, 15-A, 5.1mm	OST	ED120/3DS	ED1610-ND	0.60 x 0.35 inch
36	1	L1	Fitted	Inductor, 220uH .30A SMD	Bourns	SRR7032-221M	SRR7032-221MCT-ND	7x7mm
37	1	L2	Fitted	Inductor, Chip, 3.3uH 770MA 1210 10%	EPCOS Inc	B82422H1332K	495-2646-1-ND	1210
38	1	L3	Fitted	SMD	MuRata	BLM18SG331TN1D	490-3997-1-ND	0603
39	2	Q1, Q2	Fitted	MOSFET, N-CH, 50V, 0.22A, SOT-23	Fairchild Semiconductor	BSS138	BSS138CT-ND	SOT-23
40	1	Q3	Fitted	MOSFET, N-CH, 30V, 22A, SON 2X2 MM	TEXAS INSTRUMENTS	CSD17571Q2	296-37193-1-ND	DQK
41	1	Q4	Fitted	MOSFET, N-CH, 60V, 50A, TO-220AB	Texas Instruments	CSD18537NKCS	296-36456-5-ND	TO-220AB
42	2	R1, R10	Fitted	RES, 20k ohm, 5%, 0.25W, 1206	Vishay-Dale	CRCW120620K0JNEA	541-20KECT-ND	1206
43	4	R5, R14, R99, R100	Fitted	RES, 300 ohm, 5%, 0.1W, 0603	Vishay-Dale	CRCW0603300RJNEA	541-300GCT-ND	0603
44	5	R6, R7, R61, R69, R76	Fitted	RES, 1.00k ohm, 1%, 0.25W, 1206	Vishay-Dale	CRCW12061K00FKEA	541-1.00KFCT-ND	1206
45	9	R93, R94	Fitted	W, 0603, RES, 0, 5%, 0.1 W, 0603, RES, 0,	Vishay-Dale	CRCW06030000Z0EA	541-0.0GCT-ND	0603
46	2	R11, R12	Fitted	RES, 221, 1%, 0.1 W, 0603	Vishay-Dale	CRCW0603221RFKEA	541-221HCT-ND	0603
47	2	R16, R18	Fitted	RES, 4.99 k, 1%, 0.1 W, 0603	Vishay-Dale	CRCW06034K99FKEA	541-4.99KHCT-ND	0603
48	26	R41, R42, R43, R55, R56, R60,	Fitted	RES, 10.0k ohm, 1%, 0.1W, 0603	Electronics Inc,	CRCW060310K0FKEA	541-10.0KHCT-ND	0603
49	1	R20	Fitted	RES, 63.4k ohm, 1%, 0.1W, 0603	Vishay-Dale	CRCW060363K4FKEA	541-63.4KHCT-ND	0603
50	1	R21	Fitted	RES, 121k ohm, 0.1%, 0.125W, 0805	Yageo America	RC0805FR-07121KL	311-121KCRCT-ND	0805
51	3	R22, R24, R51	Fitted	RES, 10 k, 5%, 0.1 W, 0603	Yageo America	RC0603JR-0710KL	311-10KGRCT-ND	0603
52	5	R23, R25, R50, R52, R77	Fitted	RES, 47 k, 5%, 0.1 W, 0603	Yageo America	RC0603JR-0747KL	311-47KGRCT-ND	0603
53	1	R26	Fitted	RES, 1.00k ohm, 1%, 0.1W, 0603	Yageo America	RC0603FR-071KL	311-1.00KHRCT-ND	0603
54	10	R54, R57, R58, R74	Fitted	RES, 100 ohm, 1%, 0.1W, 0603	Vishay-Dale	CRCW0603100RFKEA	541-100HCT-ND	0603
55	1	R28	Fitted	RES SMD 249K OHM 1% 1/8W 0805	Yageo America	RC0805FR-07249KL	311-249KCRCT-ND	0805
56	1	R29	Fitted	RES, 9.76k ohm, 1%, 0.1W, 0603	Vishay-Dale	CRCW06039K76FKEA	541-9.76KHCT-ND	0603
57	3	R33, R34, R35	Fitted	RES, 10.0k ohm, 1%, 0.25W, 1206	Vishay-Dale	CRCW120610K0FKEA	541-10.0KFCT-ND	1206
58	1	R44	Fitted	RES, 47.0 k, 1%, 0.25 W, 1206	Yageo America	RC1206FR-0747KL	311-47.0KFRCT-ND	1206
59	2	R45, R62	Fitted	RES, 1.00Meg ohm, 1%, 0.1W, 0603	Vishay-Dale	CRCW06031M00FKEA	541-1.00MHCT-ND	0603
60	1	R47	Fitted	RES, 10, 5%, 0.1 W, 0603	Vishay-Dale	CRCW060310R0JNEA	541-10GCT-ND	0603

Item	Qty	Reference	Fitted	Part Description	Manufacturer	Manufacturer Part Number	Supplier part number	PCB Footprint
61	1	R49	Fitted	RES SMD 510 OHM 5% 1/10W 0603	Vishay-Dale	CRCW0603510RJNEA	541-510GCT-ND	0603
62	1	R53	Fitted	RES, 470 ohm, 5%, 0.1W, 0603	Vishay-Dale	CRCW0603470RJNEA	541-470GCT-ND	0603
63	1	R59	Fitted	RES, 30k ohm, 5%, 0.1W, 0603	Vishay-Dale	CRCW060330K0JNEA	541-30KGCT-ND	0603
64	5	R63, R64, R65, R66, R67	Fitted	RES, 22 ohm, 5%, 0.25W, 1206	Vishay-Dale	CRCW120622R0JNEA	541-22ECT-ND	1206
65	1	R73	Fitted	RES, 10k ohm, 0.01%, 0.063W, 0603	Stackpole Electronics Inc	RNCF0603TKY10K0	RNCF0603TKY10K0CT-ND	0603
66	1	R79	Fitted	RES, 470 k, 1%, 0.1 W, 0603	Yageo America	RC0603FR-07470KL	311-470KHRCT-ND	0603
67	1	R80	Fitted	RES, 1.50 k, 1%, 0.1 W, 0603	Vishay-Dale	CRCW06031K50FKEA	541-1.50KHCT-ND	0603
68	4	SH-J1, SH-J2, SH-J3, SH-J4	Fitted	Shunt, 100mil, Gold plated, Black	TE Connectivity	881545-2	A26242-ND	Shunt 2 pos. 100 mil
69	1	TP8	Fitted	Test Point, Miniature, Red, TH	Keystone	5000	5000K-ND	Red Miniature Testpoint
70	1	U2	Fitted	REGULATOR WITH 25-uA QUIESCENT	TI	TPS7A6533QKVURQ1	296-36857-1-ND	PFM
71	1	U3	Fitted	Open Drain Active Low Output, 2.0V	Texas Instruments	LM8364BALMF20	LM8364BALMF20/NOPBCT-ND	MF05A
72	1	U4	Fitted	TH	TEXAS INSTRUMENTS	LMT87LP	296-37821-1-ND	TO-92
73	1	U5	Fitted	Mixed Signal Microcontroller, RGZ0048B	Texas Instruments	MSP430FR5969IRGZ	296-37875-1-ND	RGZ0048B
74	1	U6	Fitted	Synchronous Buck Regulator, DDA0008B	Texas Instruments	LM5017MRE/NOPB	296-37695-1-ND	DDA0008B
75	2	U7, U8	Fitted	OPERATIONAL AMPLIFIERS, PW0014A	Texas Instruments	OPA4314AIPW	296-37662-1-ND	PW0014A
76	1	U9	Fitted	IC, Dual Differential Comparators, 2-36 Vin	TI	LM2903D		SO-8
77	1	U10	Fitted	100 ppm/°C, 45µA-12mA, Adjustable	TI	LM4041BIDBZ	296-20914-1-ND	SOT23
78	1	U11	Fitted	DBV0005A	Texas Instruments	LMV551MF	LMV551MF/NOPBCT-ND	DBV0005A
79	1	Y1	Fitted	Crystal, 8MHz, 18pF, SMD	Abracon Corporation	ABLS-8.000MHZ-B4-T	535-10212-1-ND	Crystal, 11.4x4.3x3.8mm
80	0	C1, C7	Not Fitted	COG/NPO, 0603	MuRata	GRM1885C2A180JA01D	490-1333-1-ND	0603
81	0	C44, C45	Not Fitted	COG/NPO, 0603	TDK	C1608C0G1E103J	445-2664-1-ND	0603
82	0	C40	Not Fitted	CAP, CERM, 0.1uF, 25V, +/-5%, X7R, 0603	AVX	06033C104JAT2A	478-3713-1-ND	0603
83	0	C49	Not Fitted	0603	MuRata	GRM188R71H222KA01D	490-1500-1-ND	0603
84	0	D12	Not Fitted	Diode, Schottky, 30V, 0.2A, SOT-23	Diodes Inc.	BAT54C-7-F	BAT54C-FDICT-ND	SOT-23
85	0	R2	Not Fitted	RES, 28.7 k, 1%, 0.1 W, 0603	Vishay-Dale	CRCW060328K7FKEA	541-28.7KHCT-ND	0603
86	0	R3	Not Fitted	RES, 1.00 k, 1%, 0.1 W, 0603	Vishay-Dale	CRCW06031K00FKEA	541-1.00KHCT-ND	0603
87	0	R4	Not Fitted	RES, 1.50 k, 1%, 0.1 W, 0603	Panasonic	ERJ-3EKF1501V	P1.50KHCT-ND	0603
88	0	R86	Not Fitted	RES, 0 ohm, 5%, 0.1W, 0603	Vishay-Dale	CRCW06030000Z0EA	541-0.0GCT-ND	0603
89	0	R88, R89, R90, R91, R92	Not Fitted	RES, 22 ohm, 5%, 0.25W, 1206	Vishay-Dale	CRCW120622R0JNEA	541-22ECT-ND	1206
90	0	S1	Not Fitted	SMT	TE Connectivity	4-1437565-1	450-1129-ND	SW, SPST 6x6 mm
91	0	U1	Not Fitted	Regulator, 3-pin SOT-23	Texas Instruments	LM431CCM3	LM431CCM3/NOPBCT-ND	MF03A
92	0	Y2	Not Fitted	CRYSTAL 32.768KHZ 12.5PF SMD	CITIZEN	CMR200T-32.768KDZBT	300-8340-1-ND	-

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.