

Bill of Materials

Proximity and Capacitive Touch Sensing Reference Design

TIDA-00466

Item	Qty	Reference	Value	Part Description	Manufacturer	Manufacturer Part Number	PCB Footprint
1	1	BT1		AA Battery Holder, Through-hole mount	Keystone	1015	
2	1	C1	10 μ F	CAP, CERM, 10 μ F, 6.3 V, +/- 20%, X5R, 0603	MuRata	GRM188R60J106ME47D	0603
3	1	C2	2.2 μ F	CAP, CERM, 2.2 μ F, 16 V, +/- 10%, X7R, 0805	MuRata	GRM21BR71C225KA12L	0805
4	1	C3	100 μ F	CAP, TA, 100 μ F, 10 V, +/- 10%, 0.1 ohm, SMD	AVX	TPSC107K010R0100	
5	2	C4, C7	0.1 μ F	CAP, CERM, 0.1 μ F, 16 V, +/- 10%, X7R, 0402	MuRata	GRM155R71C104KA88D	0402
6	2	C5, C8	1 μ F	CAP, CERM, 1 μ F, 16 V, +/- 10%, X7R, 0603	MuRata	GRM188R71C105KA12D	0603
7	2	C6, C9	10 μ F	CAP, CERM, 10 μ F, 16 V, +/- 20%, X7R, 0805	Taiyo Yuden	EMK212BB7106MG-T	0805
8	0	C10, C11	33pF	CAP, CERM, 33 pF, 50 V, +/- 5%, C0G/NP0, 0603	MuRata	GRM1885C1H330JA01D	0603
9	3	C12, C13, C15	33pF	CAP, CERM, 33 pF, 100 V, +/- 5%, C0G/NP0, 0603	MuRata	GRM1885C2A330JA01D	0603
10	1	C14	1000pF	CAP, CERM, 1000 pF, 16 V, +/- 10%, X7R, 0603	MuRata	GRM188R71C102KA01D	0603
11	1	C16	1 μ F	CAP, CERM, 1 μ F, 10 V, +/- 10%, X5R, 0402	MuRata	GRM155R61A105KE15D	0402
12	1	C17	0.1 μ F	CAP, CERM, 0.1 μ F, 10 V, +/- 10%, X7R, 0402	MuRata	GRM155R71A104KA01D	0402
13	1	C18	0.01 μ F	CAP, CERM, 0.01 μ F, 16 V, +/- 10%, X7R, 0402	MuRata	GRM155R71C103KA01D	0402
14	1	C19	0.01 μ F	CAP, CERM, 0.01 μ F, 25 V, +/- 5%, C0G/NP0, 0603	TDK	C1608C0G1E103J	0603
15	2	D1, D3		LED, Super Red, SMD	Lumex	SML-LX0603SRW-TR	
16	1	D2		LED, Green, SMD	OSRAM	LG L29K-G2J1-24-Z	
17	1	D4		LED, Green, SMD	LiteOn	LTST-C150KGKT	
18	2	D5, D6		LED, Red, SMD	Lite-On	LTST-C170KRKT	
19	0	FID1, FID2, FID3		Fiducial mark. There is nothing to buy or mount.	N/A	N/A	
20	4	H1, H2, H3, H4		Machine Screw, Round, #4-40 x 1/4, Nylon, Philips panhead	B&F Fastener Supply	NY PMS 440 0025 PH	
21	4	H5, H6, H7, H8		Standoff, Hex, 1"L #4-40 Nylon	Keystone	1902E	
22	0	J1		Header (shrouded), 100 mil, 7x2, Gold, TH	Sullins Connector Solutions	SBH11-PBPC-D07-ST-BK	
23	0	J2		Header, 100mil, 3x1, Tin, TH	TE Connectivity	5-146278-3	
24	1	L1	6.2 μ H	Inductor, Shielded Drum Core, Ferrite, 6.2 μ H, 1.8 A, 0.045 ohm, SMD	Sumida	CDRH5D28NP-6R2NC	
25	2	L2, L3		Ferrite Bead, 330 ohm @ 100 MHz, 1.5 A, 0603	MuRata	BLM18SG331TN1D	0603
26	3	L4, L5, L6	18 μ H	Inductor, Shielded, Ferrite, 18 μ H, 0.12 A, 3.3 ohm, SMD	Bourns	CMH322522-180KL	
27	1	Q1		Transistor, PNP, 40 V, 0.2 A, SOT-23	Diodes Inc.	MMBT3906-7-F	SOT-23
28	1	Q2		MOSFET, P-CH, -20 V, -20 A, SON 2x2mm	Texas Instruments	CSD25310Q2	SON 2x2mm
29	10	R1, R13, R16, R17, R19, R21, R23, R28, R29, R31	0 Ω	RES, 0, 5%, 0.125 W, 0805	Vishay-Dale	CRCW08050000Z0EA	0805
30	2	R2, R7	499k	RES, 499 k, 1%, 0.1 W, 0603	Vishay-Dale	CRCW0603499KFKEA	0603

Item	Qty	Reference	Value	Part Description	Manufacturer	Manufacturer Part Number	PCB Footprint
31	1	R3	1.10MΩ	RES, 1.10 M, 1%, 0.1 W, 0603	Vishay-Dale	CRCW06031M10FKEA	0603
32	1	R4	1.00MΩ	RES, 1.00 M, 1%, 0.063 W, 0402	Vishay-Dale	CRCW04021M00FKED	0402
33	1	R5	200Ω	RES, 200, 1%, 0.1 W, 0603	Vishay-Dale	CRCW0603200RFKEA	0603
34	1	R6	196kΩ	RES, 196 k, 1%, 0.1 W, 0603	Vishay-Dale	CRCW0603196KFKEA	0603
35	1	R8	10.0kΩ	RES, 10.0 k, 1%, 0.1 W, 0603	Vishay-Dale	CRCW060310K0FKEA	0603
36	3	R9, R20, R22	1.0kΩ	RES, 1.0 k, 5%, 0.063 W, 0402	Vishay-Dale	CRCW04021K00JNED	0402
37	1	R10	10.0Ω	RES, 10.0, 1%, 0.1 W, 0603	Vishay-Dale	CRCW060310R0FKEA	0603
38	2	R11, R12	4.7kΩ	RES, 4.7 k, 5%, 0.063 W, 0402	Vishay-Dale	CRCW04024K70JNED	0402
39	3	R14, R15, R25	0Ω	RES, 0, 5%, 0.1 W, 0603	Vishay-Dale	CRCW06030000Z0EA	0603
40	1	R18	47kΩ	RES, 47 k, 5%, 0.063 W, 0402	Vishay-Dale	CRCW040247K0JNED	0402
41	1	R24	0Ω	RES, 0, 5%, 0.25 W, 1206	Vishay-Dale	CRCW12060000Z0EA	1206
42	0	R26	0Ω	RES, 0, 5%, 0.1 W, 0603	Vishay-Dale	CRCW06030000Z0EA	0603
43	3	R27, R30, R33	300Ω	RES, 300, 5%, 0.1 W, 0603	Vishay-Dale	CRCW0603300RJNEA	0603
44	0	R32, R34	0Ω	RES, 0, 5%, 0.125 W, 0805	Vishay-Dale	CRCW08050000Z0EA	0805
45	1	S1		Switch, Slide, SPDT, 0.2A, GULL, 12V, SMD	Copal Electronics	CL-SB-12B-01T	
46	1	S2		Switch, Tactile, SPST-NO, 0.05A, 12V, SMT	TE Connectivity	4-1437565-1	
47	8	TP1, TP2, TP3, TP4, TP5, TP6, TP7, TP8		Test Point, Miniature, SMT	Keystone	5015	
48	1	U1		Adjustable, 1.8-A Switch, 96% Efficient Boost Converter with Down-Mode, DRC0010J	Texas Instruments	TPS61029DRCR	DRCR
49	1	U2		Mixed Signal Microcontroller, RGZ0048B	Texas Instruments	MSP430FR5969IRGZR	IRGZR
50	1	U3		Multi-Channel 12/26-Bit Capacitance to Digital Converter (FDC) for Capacitive Sensing, RGH0016A	Texas Instruments	FDC2214RGHR	RGHR
51	1	Y1		OSC, 40 MHz, 1.6 to 3.63 V, SMD	AVX	KC2520B40.0000C10E00	

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.