



Bill of Materials
TI DESIGNS

TIDM-TM4C129XSDRAM

Item	Qty	Reference	Value	Part Description	Manufacturer	Manufacturer Part Number	Alternate Part	PCB Footprint	Note
1	7	C1, C2, C3, C4, C5, C6, C7	0.1uF	CAP, CERM, 0.1uF, 6.3V, +/-10%, X5R, 0402	TDK	C1005X5R0J104K		0402	
2	2	J1, J2		SQ Post Socket, Surface Mount, Vertical, -55 to 125 decC, 2.54 mm Pits, 30-Pin, Female, RoHS	Samtec	SSW-115-22-X-D-VS-P		SMTC-SSW-115-22-X-D-VS-P	
3	1	R1	0 Ohms	RES, 0, 5%, 0.063W, 0402	Panasonic	ERJ-2GE0R00X		0402	
4	1	U1		ISSI 512Mb SDRAM	ISSI	IS42S16320D		SOIC	
5	1	Z1		BOARD, SDRAM Extender					

Item	Qty	Reference	Value	Part Description	Manufacturer	Manufacturer Part Number	Alternate Part	PCB Footprint	Note
1	2	C1, C30	3300pF	Capacitor, 3300pF, 50V, 10%, X7R, 0603	TDK	C1608X7R1H332K		0603	
2	2	C12, C55	2.2uF	Capacitor, 2.2uF, 16V, 10%, 0603, X5R	Murata	GRM188R61C225KE15D		0603	
3	34	C13, C16, C28, C29, C31,	0.1uF	Capacitor, 0.1uF 50V, 20% 0603	TDK	C1608X7R1H104M	C0603C104M5RACTU	0603	
4	1	C14	0.047uF	Capacitor, .047uF 16V 10% X7R 0805	AVX	0805YC473KAT2A		0805	
5	2	C17, C19	4.7uF	Capacitor, 4.7uF, 6.3V, 10% 0805, X5R	Taiyo Yuden	JMK212BJ475KG-T		0805	
6	1	C2	22uF	Capacitor, 22uF 6.3V 20% X5R 0805	TDK	C2012X5R0J226M/1.25		0805	
7	1	C20	0.47uF	Capacitor, 0.47uF 10V 10% X5R 0603	TDK	C1608X5R1A474K		0603	
8	1	C21	1.0uF	Capacitor, 1.0uF 25V 10% X5R 0603	TDK	C1608X5R1E105K		0603	
9	1	C24	750pF	Capacitor, 750pF, 50V, 10%, 0603, X7R	Samsung	CL10B751KB8NUNC		0603	
10	2	C26, C27	12pF	Capacitor, 12pF, 50V 5%, 0402, COG	Murata	GRM1555C1H120JZ01D		0402	
11	7	C3, C6, C22, C45, C46, C56, C60	0.1uF	Capacitor, 0.1uF 16V, 10% 0402 X7R	Taiyo Yuden	EMK105B7104KV-F		0402	
12	1	C38	4700pF	Capacitor, 4700pF, 2kV, 10%, X7R, 1812	AVX	1812GC472KAT1A		1812	
13	1	C4	2.2uF	Capacitor, 2.2uF 50V 10% X5R 0805	TDK	C2012X5R1H225K		0805	
14	1	C43	4.7uF	Capacitor, 4.7uF 10V 10% X5R 0603	TDK	C1608X5R1A475K/0.50		0603	
15	14	C5, C11, C18, C41, C57, C59, C69, C76, C77, C78, C79, C80, C85, C87	1uF	Capacitor, 1uF, X5R, 10V, 0402	TDK	C1005X5R1A105M050B B		0402	
16	7	C7, C47, C49, C58, C61, C63, C64	0.01uF	Capacitor, 0.01uF 25V, 10% 0402 X7R	Taiyo Yuden	TMK105B7103KV-F		0402	
17	4	C8, C10, C23, C25	10pF	Capacitor, 10pF, 50V, 5%, NPO/COG, 0402	Murata	GRM1555C1H100JZ01D		0402	
18	4	C9, C15, C44, C51	0.1uF	Capacitor, 0.1uF 50V, 10% 0603 X7R	Murata	GRM188R71H104KA93D		0603	
19	1	C90	1000pF	Capacitor, 1000pF, 2kV, 20%, X7R, 1210	Kemet	C1210C102MGRACTU		1210	
20	4	D1, D2, D10, D15		LED, Green 565nm, Clear 0805	Lite-On	LTST-C171GKT		0805	
21	1	D11		Diode,Schottky, 40V, 200mA SOT-23	Fairchild	FYV0704SMTF			
22	1	D12		LED, Tri-Color RGB, 0404 SMD Common Anode	Lumex	SML-LX0404SIUPGUSB		0404	
23	1	D13		Diode, Schottky, 60V, 15ma, SOD-323	Diodes Inc	SD101AWS-7-F			
24	1	D14		Diode, 8 chan, +/-15KV, ESD Protection Array, SO-8	Semtech	SLVU2.8-4.TBT			

Item	Qty	Reference	Value	Part Description	Manufacturer	Manufacturer Part Number	Alternate Part	PCB Footprint	Note
25	1	D16		LED, Red 630nm, Clear 0805 SMD	Lite-On	LTST-C171EKT			
26	5	D3, D4, D5, D6, D7		Diode, 5.6V ESD Suppressor 0402	EPCOS	B72590D0050H160			
27	2	D8, D9		LED AMBER CLEAR 0805 SMD	Lite-On	LTST-C170AKT			
28	1	J1		Header, 2x10, 2.00mm, SMT, Vertical, Unshrouded	Samtec	ASP17298501			
29	1	J10		Header, 1x2, T-Hole Vertical unshrouded stacking	Samtec	ZW-02-15-F-S-265-090			
30	6	J11, J12, J13, J16, J17, J35		Header, 1x3, 0.100, T-Hole, Vertical Unshrouded, 0.220 Mate	FCI	68001-103HLF	00798, 961103-6404-AR, 1x3-head		
31	1	J15		Connector, DC Jack SMT 2.5x5.5mm	CUI Inc	PJ-002B-SMT			
32	2	J19, J31		Header, 2x10, 0.050, SMT, Vertical, Shrouded, Socket	Samtec	TFM-110-02-S-D-K-A			
33	9	J2, J8, J14, J18, J20, J21,		Header, 1x2, 0.100, T-Hole,	3M	961102-6404-AR	68001-102HLF, 1x2-head		
34	1	J24		Connector, USB micro AB Receptacle Reversed SMD	Hirose	ZX62R-AB-5P			
35	1	J25		Header, 2x4, 0.100, T-Hole,	FCI	67997-108HLF	PBC04DAAN		
36	2	J27, J28		Header, 2x16, 0.100, T-Hole,	FCI	67997-132HLF	TSW-116-07-S-D		
37	2	J29, J30		Header, 2x10, T-Hole Vertical unshrouded stacking	Samtec	ZW-10-15-F-D-265-090			
38	1	J3		Header, 2x10, 0.100, T-Hole,	FCI	67997-220HLF	PBC10DAAN		
39	1	J32		Connector, RJ45 NO MAG, shielded THRU HOLE	TE Connectivity	1-406541-5			
40	3	J33, J36, J37		Header, 2x3, 0.100, T-Hole, Vertical Unshrouded, 0.230 Mate, gold	FCI	67996-206HLF			
41	1	J34		Header, 2x20, 0.100, T-Hole,	FCI	67997-240HLF	TSW-120-08-G-D		
42	1	J39		Connector, FPC 60P, r/a 0.5mm pitch SMT	FCI	10085901-6015ELF			
43	1	J4		Connector, rcpt, micro usb B SMB	Hirose	ZX62-B-5PA			
44	1	J5		Connector, Micro SD card, push-push SMT	3M	2908-05WB-MG			
45	2	J6, J9		Header, 1x10, T-Hole Vertical unshrouded stacking	Samtec	ZW-10-15-F-S-265-090			
46	1	J7		Header, 2x7, 0.100, T-Hole, Vertical, Unshrouded, 0.230 Mate	FCI	67997-114HLF			
47	1	K1		Speaker, 8 Ohm, 15mm diam, 0.5W, 87dB, SM	CUI Inc	CVS-1508			
48	1	L1	10uH	Inductor 10uH, SMD 2.8x2.8mm, 0.5A, 0.47 Ohm	Würth	744029100			
49	1	L2	6.8uH	Inductor 6.8uH, SMD 4mmx4mm, 1.06A, 0.132 Ohm	Taiyo Yuden	NR4018T6R8M			
50	4	Q1, Q2, Q3, Q4		NPN SC70 pre-biased	Diodes Inc	DTC114EET1G			
51	1	R1	100K Ohms	Resistor, 100K OHM 1/10W 5% 0603 Thick	Panasonic	ERJ-3GEYJ104V		0603	
52	1	R14	1K Ohms	Resistor, 1K Ohm, 1/10W, 5%, SMD, Thick	Panasonic	ERJ-3GEYJ102V			
53	1	R18	5.6K Ohms	Resistor, 5.6k ohm, 1/10W, 5%, 0402	Panasonic	ERJ-2GEJ562X		0402	
54	2	R19, R36	1M Ohms	Resistor, 1M OHM 1/10W 5% 0603 SMD	Panasonic	ERJ-3GEYJ105V		0603	
55	3	R2, R23, R28	2.2K Ohms	Resistor, 2.2K OHM 1/10W 5% 0603 SMD	Vishay	CRCW06032K20JNEA		0603	
56	1	R20	1 Ohm	Resistor, 1 OHM 1/10W 1% 0603, Thick	Panasonic	ERJ-3RQF1R0V		0603	

Item	Qty	Reference	Value	Part Description	Manufacturer	Manufacturer Part Number	Alternate Part	PCB Footprint	Note
57	2	R26, R35	20K Ohms	Resistor, 20K OHM 1/10W 5% 0603 Thick	Yageo	RC0603JR-0720KL		0603	
58	5	R3, R10, R45, R46, R47	330 Ohms	Resistor, 330 OHM 1/10W 5% 0603 SMD	Panasonic	ERJ-3GEYJ331V		0603	
59	1	R33	0 Ohms	Resistor, 0 ohm, 1/10W, 5%, 0402	Panasonic	ERJ-2GE0R00X		0402	
60	4	R37, R40, R41, R42	49.9 Ohms	Resistor, 49.9 OHM 1/10W 1% 0603 Thick	Panasonic	ERJ-3EKF49R9V		0603	
61	1	R38	4.87K Ohms	Resistor, 4.87K Ohm, 1/10W, 1%, SMD, Thick	Panasonic	ERJ-3EKF4871V			
62	1	R44	1M Ohms	RES 1M OHM 5% 1206 TF	Panasonic	ERJ-8GEYJ105V		1206	
63	2	R48, R49	330 Ohms	Resistor, 330 ohm, 1/10W, 5%, 0402	Yageo	RC0402FR-07330RL		0402	
64	14	R5, R24, R29, R31, R32, R43, R51, R52, R53, R54, R58, R59, R60, R62	10K Ohms	Resistor, 10K OHM 1/10W 5% 0603 SMD	Panasonic	ERJ-3GEYJ103V		0603	
65	1	R50	13 Ohms	Resistor, 13.0 OHM 1/10W 1% 0603 Thick	Panasonic	ERJ-3EKF13R0V		0603	
66	3	R55, R56, R57	1.2K Ohms	Resistor, 1.2k ohm, 1/10W, 5%, 0402	Panasonic	ERJ-2GEJ122X		0402	
67	1	R6	33 Ohms	Resistor, 33 ohm, 1/10W, 5%, 0402	Panasonic	ERJ-2GEJ330X		0402	
68	1	R63	51 Ohms	Resistor, 51 ohm, 1/10W, 5%, 0402	Panasonic	ERJ-2GEJ510X		0402	
69	4	R64, R65, R66, R67	75 Ohms	Resistor, 75 Ohm, 1/10W, 1%, SMD, Thick	Panasonic	ERJ-3EKF75R0V			
70	11	R7, R11, R12, R13, R17, R21, R22, R27, R34, R39, R61	10K Ohms	Resistor, 10k ohm, 1/10W, 5%, 0402 Thick Film	Yageo	RC0402FR-0710KL		0402	
71	1	R8	0 Ohms	Resistor, 0 OHM 1/10W 0603 SMD	Panasonic	ERJ-3GEY0R00V		0603	
72	4	SW1, SW2, SW3, SW4		Switch, Tact 6mm SMT, 160gf	Omron	B3S-1000			
73	1	T1		Transformer, ethernet, 1 to 1. SOIC 16	Pulse Electronics	HX1188NL			
74	6	TL1, TL2, TL3, TL4, TL5, TL6		Terminal, Test Point Miniature Loop, Red, T-Hole	Keystone	5000			
75	1	U1		Stellaris MCU TM4C129XNCZAD 212 BGA, super	Texas Instruments	TM4C129XNCZAD			
76	1	U2		Serial Flash 512Mbit 3.3V WSON- 8	Macronix	MX66L51235FZ2I-10G			
77	1	U3		Stellaris TIVA MCU TM4C123GH6PMI	Texas Instruments	TM4C123GH6PMI			
78	1	U4		IC, Digital Temperature Sensor - 55C to +125C, +/-3C, SOT23-6	Texas Instruments	TMP100NA			
79	1	U5		Load Switch, 5.5V, SOT23-5, TPS2051BDBV	Texas Instruments	TPS2051BDBVT			
80	1	U6		Op Amp, 0.35W AUDIO MONO AB, 8TSSOP	Texas Instruments	LM4819MM			
81	1	U7		Regulator, Step Down 3.3V, 0.5A	Texas Instruments	TPS62177DQC			
82	1	U8		Precision 3.0V reference MSOP	Texas Instruments	REF3230AIDBVT			
83	1	U9		White LED Driver IC 30V 1.5A SOT23-5	Texas Instruments	TPS61042DRBR			
84	1	Y1		Crystal, 16.00MHz 5.0x3.2mm SMT	NDK	NX5032GA- 16.000000MHZ			
85	1	Y2		Crystal, 25.00MHz 5.0x3.2mm SMT	NDK	NX5032GA- 25.000000MHZ			
86	1	Y3		Crystal, 32.768KHz Radial Can	Citizen Finetech Miyota	CMR200T-32.768KDZY- UT			

Item	Qty	Reference	Value	Part Description	Manufacturer	Manufacturer Part Number	Alternate Part	PCB Footprint	Note
87	1	ZZ		BOARD, Snowflake Development Kit Rev 2.0					

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.