₩ TEXAS INSTRUMENTS Bill of Materials TI Designs

TIDM-TM4C123XSUB1GHZ

Part number	Quantity	Reference	Value	Description	Manufacturer	Manufacturer part number	PCB Package	Max operating temp	Note status	RoHS status
				CC13xx	EM-7XD-7793_4L					
			Antenna PCB							
	1		helix							
13-00397		A1	868/915MHz	ANTENNA, NON COMPONENT, PCB HELIX 868/915MHz, NOT APPLY	TEXAS INSTRUMENTS	ANTENNA PCB HELIX 868/915MHz		N/A	PREFERRED	ROHS_COMPLIANT
02-01324	1	C1	DNM	CAPACITOR, DO NOT MOUNT, 0603, SMD						
	2	044 000	26.5	CAPACITOR, CERAMIC COG/NPO, 3.6pF, 50V, -0.25pF/+0.25pF, -		00144555041100504040	402	4255500		
02-06008		C11,C22	3.6pF	55DEGC/+125DEGC, 0402, SMD	MURATA	GRM1555C1H3R6CA01D	402	+125DEGC	PREFERRED	ROHS_COMPLIANT
02-04679	1	C12	2.7pF	CAPACITOR, CERAMIC COG/NP0, 2.7pF, 50V, -0.25pF/+0.25pF, - 55DEGC/+125DEGC, 0402, SMD	MURATA	GRM1555C1H2R7CA01D	402	+125DEGC	PREFERRED	ROHS_COMPLIANT
02-04079		C12	2.7μг	CAPACITOR, CERAMIC COG/NPO, 6.2pF, 50V, -0.25pF/+0.25pF, -	MORATA	GRW1333C1H2R7CA01D	402	TIZSDEGC	PREFEREN	KOH3_COMPLIANT
02-04608	1	C13	6.2pF	55DEGC/+125DEGC, 0402, SMD	MURATA	GRM1555C1H6R2CA01D	402	+125DEGC	PREFERRED	ROHS_COMPLIANT
02 04000		C13	0.2pi	CAPACITOR, CERAMIC COG/NPO, 3pF, 50V, -0.25pF/+0.25pF, -	MONATA	GWW1555C1TIGNZCAG15	402	TIZSBEGG	THEFENNED	KONS_COMI EIAM
02-04606	1	C14	3pF	55DEGC/+125DEGC, 0402, SMD	MURATA	GRM1555C1H3R0CA01D	402	+125DEGC	PREFERRED	ROHS_COMPLIANT
	_			CAPACITOR, CERAMIC COG/NPO, 100pF, 50V, -5%/+5%, -						_
02-04365	2	C15,C21	100pF	55DEGC/+125DEGC, 0402, SMD	MURATA	GRM1555C1H101JA01D	402	+125DEGC	PREFERRED	ROHS_COMPLIANT
	2			CAPACITOR, CERAMIC COG/NPO, 12pF, 50V, -5%/+5%, -						
02-04168	2	C41,C51	12pF	55DEGC/+125DEGC, 0402, SMD	MURATA	GRM1555C1H120JA01D	402	+125DEGC	PREFERRED	ROHS_COMPLIANT
	6	C131,C221,C351,C441,C		CAPACITOR, CERAMIC X7R, 100nF, 6.3V, -10%/+10%, -						
02-02323		451,C481	100nF	55DEGC/+125DEGC, 0402, SMD	MURATA	GRM155R70J104KA01D	402	+125DEGC	PREFERRED	ROHS_COMPLIANT
	1			CAPACITOR, CERAMIC X5R, 1uF, 10V, -10%/+10%, -						
02-02381		C231	1uF	55DEGC/+85DEGC, 0402, SMD	MURATA	GRM155R61A105KE15D	402	+85DEGC	PREFERRED	ROHS_COMPLIANT
02.07052	2	C221 C241	22	CAPACITOR, CERAMIC, X5R, 22uF, 6.3V, -20%/+20%, -	MALIDATA	CDM4199DC0123CMFA0D	603	, OF DECC	DDEEEDDED	DOLIC COMPLIANT
02-07053		C331,C341	22uF	55DEGC/+85DEGC, 0603, SMD CAPACITOR, CERAMIC X7R, 100nF, 25V, -10%/+10%, -	MURATA	GRM188R60J226MEA0D	603	+85DEGC	PREFERRED	ROHS_COMPLIANT
02-01992	1	C342	100nF	55DEGC/+125DEGC, 0603, SMD	MURATA	GRM188R71E104KA01D	603	+125DEGC	PREFERRED	ROHS_COMPLIANT
02 01332		C5+2	100111	335EGC) - 1235EGC, 0003, 3ND	MONATA	GWIIOW IEIO-WACID	003	TIZSBEGG	THEFENNED	KOTIS_COMI EIAIVI
02-01235	1	C343	NC	CAPACITOR, CERAMIC, N/A VALUE, -55DEGC/+125DEGC, 0603, SMD	MANUFACTURER SELECTION	CAPACITOR 0603 N/A M	603	+125DEGC	PREFERRED	ROHS_COMPLIANT
	2			, , , , , , , , , , , , , , , , , , , ,						_
02-04164	3	C461,C471,C482	DNM	CAPACITOR, CERAMIC, N/A VALUE, -55DEGC/+125DEGC, 0402, SMD	Manufacturer selection	CAPACITOR_0402_DNM_N/A_M	402	+125DEGC	PREFERRED	PART NOT KNOWN
	6	FIDU1,FIDU2,FIDU3,FID								
19-00111	U	U4,FIDU5,FIDU6	FIDU_1MM	FIDUCIAL MARK, ROUND 1MM						
	1		BLM18HE152							
04-00470		FL1	SN1	FILTER, EMI, 1500@100MHz, -55DEGC/+125DEGC, 0603, SMD	MURATA	BLM18HE152SN1D	603	+125DEGC	PREFERRED	ROHS_COMPLIANT
00.02400	1	J1	SMA-10V21-	COMMECTOR COAVER CTRAICHT FEMALE 4 RIM CAAR	LUIC TOAN	CNAA 400/24 TCC			DDEEEDDED	N. /A
06-02188		11	TGG	CONNECTOR, COAX RF, STRAIGHT, FEMALE, 1 PIN, SMD INDUCTOR, STANDARD, CHIP, 27nH, -5%/+5%, 0.3A, -	HUS-TSAN	SMA-10V21-TGG			PREFERRED	N/A
03-06536	1	L11	27nH	55DEGC/+125DEGC, 0402, SMD	MURATA	LQG15HS27NJ02D	402	+125DEGC	PREFERRED	ROHS_COMPLIANT
03 00330			271111	INDUCTOR, CHIP, 7.5nH, -5%/+5%, IR:0.55A, -55DEGC/+125DEGC,	MONATA	EQ0131132711302B	402	TIZSBEGG	THEFENNED	KONS_COMI EIAM
03-07022	2	L12,L21	7.5nH	0402, SMD	MURATA	LQG15HS7N5J02D	402	+125DEGC	NOT PREFERRED	ROHS_COMPLIANT
	_	,		INDUCTOR, CHIP, 6.8nH, -5%/+5%, 0.3A, -55DEGC/+125DEGC, 0402,						
03-06633	2	L13,L14	6.8nH	SMD	MURATA	LQG15HS6N8J02D	402	+125DEGC	PREFERRED	ROHS_COMPLIANT
03-01022	1	L15	TBD	INDUCTOR, TO BE DECIDED, 0402, SMD	MANUFACTURER SELECTION	IND_TBD_0402			PREFERRED	ROHS_COMPLIANT
	1			INDUCTOR, CHIP, FERRITE CORE, 6.8uH, -20%/+20%, IR:1.1A, -						
03-07266	-	L331	6.8uH	55DEGC/+125DEGC, 0805, SMD	TDK	MLZ2012N6R8LT000	805	+125DEGC	PREFERRED	ROHS_COMPLIANT
	2			CONNECTOR, HEADER, FEMALE, STRAIGHT, 2 ROWS, 20 PINS, PITCH						
06-02251		P1,P2	D-A-K-TR	1.27mm, SMD	SAMTEC	SFM-110-02-SM-D-A-K-TR		+125DEGC	PREFERRED	ROHS_COMPLIANT
01 11507	2	D11 D12	_	RESISTOR, THICK FILM, 0, -5%/+5%, 0.063W, 50V, -	MANUIFACTURES CELECTION	RESISTOR_0402_0_+/-	403	.1550500	DDEEEDDED	BOUG COMPLIANT
01-11587 01-02472	1	R11,R13 R12	DNM	55DEGC/+155DEGC, 0402, SMD RESISTOR, DO NOT MOUNT, 0402, SMD	MANUFACTURER SELECTION DO NOT MOUNT	5%_50V_0.063W_M_+/-200PPM DNM	402 402	+155DEGC N/A	PREFERRED PREFERRED	PART NOT KNOWN
01-024/2	1	1/17	DIAIAI	RESISTOR, DO NOT MOONT, 0402, SMD RESISTOR, THICK FILM, 100k, -1%/+1%, 0.063W, 50V, -	DO NOT WICONT	RESISTOR 0402 100k +/-	402	14/74	LUCLEUVED	FART NOT KNOWN
01-12837	1	R351	100k	55DEGC/+155DEGC, 0402, SMD	MANUFACTURER SELECTION	1%_50V_0.063W_M_+/-100PPM	402	+155DEGC	PREFERRED	ROHS_COMPLIANT
18-28964	1	U1	CC13xx 7x7	IC, DIGITAL, CUSTOM, CC13xx 7x7, QFN48, SMD	TEXAS INSTRUMENTS	CC13xx 7x7	QFN48	N/A	PREFERRED	PART NOT KNOWN
				CRYSTAL, RESONATOR, 32.768kHz, -20PPM/+20PPM, -						
12-00546	1	Y1	32.768kHz	40DEGC/+85DEGC, SMD	EPSON	FC-135 32.7680KA-AG0	1	+85DEGC	PREFERRED	ROHS_COMPLIANT

		1			CRYSTAL, CRYSTAL OSCILLATOR, 24MHz, -					
12-007	57	1	Y2	24MHz	15PPM/DEGC/+15PPM/DEGC, -40DEGC/+85DEGC, SMD	EPSON	TSX-3225 24.0000MF15X-AC3	+85DEGC	PREFERRED	ROHS COMPLIANT



Bill of Materials

TI Designs

TIDM-TM4C123XSUB1GHZ

Item Numbe	Part Reference	Quantity	Description	Mfr_Name	Mfr Part Number
Item Numbe	El art reference	Quantity	EK-TM4C123GXL	IVIII_IVAIIIE	INIT_FAIT_NUMBER
1	C1 C2 C7 C12, C14	5	Capacitor, 0402, X5R, 10V, Low ESR	Johanson Dielectrics Inc	I100R07X105KV4T
2	C25 C26 C31 C32	4	Capacitor, 0402, XSK, 10V, LOW LSK Capacitor, 10pF, 50V, 5%, NPO/COG, 0402	Murata	GRM1555C1H100JZ01D
3	C28 C29	2	Capacitor, 10pr, 50V, 5%, NPO/COG, 0402	TDK	C1005C0G1H240J
4	C3 C5 C8 C15 C18 C19 C21	7	Capacitor, 0.01uF 25V, 10% 0402 X7R	Taiyo Yuden	TMK105B7103KV-F
5	C4 C6 C10 C11 C17 C20 C23 C24	8	Capacitor, 0.10 16V, 10% 0402 X7R	Taiyo Yuden	EMK105B7104KV-F
5	C4 C6 C10 C11 C17 C20 C23 C24	8	Capacitor, 0.1ur 16V, 10% 0402 X/R	raiyo ruden	EMK103B/104KV-F
6	C9 C22	2	Capacitor, 2.2uF, 16V, 10%, 0603, X5R	Murata	GRM188R61C225KE15D
7	D1	1	LED, Tri-Color RGB, 0404 SMD Common Anode	Everlight	18-038/RSGHBHC1-S02/2T
8	D4	1	LED, Green 565nm, Clear 0805 SMD	Lite-On	LTST-C171GKT
				Lite-On	LTST-C171GKT
9	H24	1	Header, 1x2, 0.100, T-Hole, Vertical Unshrouded, 0.220	3M	961102-6404-AR
			Mate	FCI	68001-102HLF
				Anyone	1x2-head
10	H25	1	Jumper, 0.100, Gold, Black, Closed	Sullins	SPC02SYAN
11	J1 J3	2	Header, 2x10, T-Hole Vertical unshrouded stacking	Samtec	SSW-110-23-S-D
12	J11	1		Hirose	ZX62-B-5PA
13	J2 J4	2	Header, 2x10, 0.100, SMT, Horozontal Unshrouded, 0.230 Mate	Samtec	TSM-110-01-S-DH-A-P-TR
				4UCON	10995
				Major League Electronics	TSHSM-110-D-02-T-H-AP-TR-P-LF
14	J9	1	Connector, USB micro AB Receptacle SMD	Hirose	ZX62-AB-5PA(11)
				Hirose	ZX62-AB-5PA
15	Q1 Q2 Q3	3	NPN SC70 pre-biased	Diodes Inc	DTC114EET1G
16	R1 R2 R9 R10 R11 R12 R13 R14 R16, R20 R26	11	Resistor, 0 OHM 1/10W 0603 SMD	Panasonic	ERJ-3GEY0R00V
17	R18 R19 R21 R22 R23 R28	6	Resistor, 10k ohm, 1/10W, 5%, 0402 Thick Film	Yageo	RC0402FR-0710KL
18	R3 R4 R5 R8 R27	5	Resistor, 330 ohm, 1/10W, 5%, 0402	Yageo	RC0402FR-07330RL
19	R31	1	Resistor, 1M Ohm 1/10W, 5%, 0402	Rohm	MCR01MRTF1004
20	RESET SW1 SW2	3	Switch, Tact 6mm SMT, 160gf	Omron	B3S-1000
21	SW3	1	Switch, DPDT, SMT 300 mA*2 @ 6V	C&K Components	JS202011SCQN
22	U1 U2	2	Stellaris TIVA MCU TM4C123GH6PMI	Texas Instruments	TM4C123GH6PMI
				Texas Instruments	LM4F120H5QRFIG
23	U8	1	Regualtor, 3.3V, 400mA, LDO	Texas Instruments	TPS73633DRBT
24	Y1	1	Crystal, 32.768KHz Radial Can	Abracon	AB26TRB-32.768KHZ-T

Ī	25	Y2 Y5	2	Crystal, 16.00MHz 5.0x3.2mm SMT	NDK	NX5032GA-16.000000MHZ
					Abracon	ABM3-16.000MHZ-B2-T

PCB Do Not Populate List (Shown for information only)

26	C13 C34	2	Capacitor, 0.1uF 16V, 10% 0402 X7R	Taiyo Yuden	EMK105B7104KV-F
27	D2	1	DIODE, Dual Schottky, SC70, BAS70 Common Cathode	Diodes Inc	BAS70W-05-7-F
28	R17	1	Resistor, 10k ohm, 1/10W, 5%, 0402 Thick Film	Yageo	RC0402FR-0710KL
29	R24	1	Resistor, 330 ohm, 1/10W, 5%, 0402	Yageo	RC0402FR-07330RL
30	R25 R29 R30	3	Resistor, 0 OHM 1/10W 0603 SMD	Panasonic	ERJ-3GEY0R00V
31	U4	1	IC, Single Voltage Supervisor, 5V, DBV	Texas Instruments	TLV803MDBZR

Final Assembly Bill Of Materials

Del		1	OMIT BOM for TIVA EK-TM4C123GXL Launchpad REV C					

🏺 Texas Instruments

Bill of Materials

TI Designs

TIDM-TM4C123XSUB1GHZ

Item Numbe	Quantity	Part Reference	Value	Mfr_Name	Mfr_Part_Number	Description
		To:	T	EK-TM4C1294XL	Total octobron to Til	To
1	1	C1	1000pF	Kemet	C1210C102MGRACTU	Capacitor, 1000pF, 2kV, 20%, X7R, 1210
2	26	C3, C4, C5, C10, C11, C12, C13, C16, C17, C18, C19, C21, C22, C23, C24, C25, C26, C27, C28, C29, C30, C40, C41, C42, C43, C46		Taiyo Yuden	EMK105B7104KV-F	Capacitor, 0.1uF 16V, 10% 0402 X7R
3	1	C31	0.1uF	AVX	1812GC472KAT1A	Capacitor, 4700pF, 2kV, 10%, X7R, 1812
4	2	C32, C33	4700pF	TDK	C1608X7R1H332K	Capacitor, 4700pr, 28V, 10%, X/K, 1012 Capacitor, 3300pF, 50V, 10%, X7R, 0603
		•	3300pF			
5	2	C6, C14	1uF	Johanson Dielectrics Inc	100R07X105KV4T	Capacitor, 1uF , X5R, 10V, Low ESR, 0402
6	3	C7, C15, C20	2.2uF	Murata	GRM188R61C225KE15D	Capacitor, 2.2uF, 16V, 10%, 0603, X5R
7	6	C8, C9, C44, C45, C47, C48	12pF	Murata	GRM1555C1H120JZ01D	Capacitor, 12pF, 50V 5%, 0402, COG
8	5	D0, D1, D2, D3, D4	LED	Everlight	19-217/G7C-AL1M2B/3T	Green LED 0603
9	7	31, 32, 33, 34, 35, 36, 37	Jumper	3M	969102-0000-DA	Jumper, 0.100, Gold, Black, Open
10	1	JP1	Header 2x3	FCI	67996-206HLF	Header, 2x3, 0.100, T-Hole, Vertical Unshrouded, 0.230 Mate, gold
11	2	JP2, JP3	Header 1x2	3M	961102-6404-AR	Header, 1x2, 0.100, T-Hole, Vertical Unshrouded, 0.220 Mate
				FCI	68001-102HLF	
10	2	104 105		Anyone	1x2-head	Handan 2:2 0 100 Titala Vantical Hashurudad 0 220 Mata
12	2	JP4, JP5	Header 2x2	FCI	67997-104HLF	Header, 2x2, 0.100, T-Hole, Vertical Unshrouded, 0.230 Mate
				4UCON	00998	
13	8	R1, R2, R3, R4, R5, R29, R35, R44	10K	Yageo	RC0402FR-0710KL	Resistor, 10k ohm, 1/10W, 5%, 0402 Thick Film
14	3	R17, R26, R36	100K	Rohm	MCR01MRTJ104	100k 5% 0402 resistor smd
15	2	R18, R51	100 ohm	Rohm	MCR1MRTJ101	Resistor 0402 100 ohm 5%
16	4	R23, R21, R22, R24	49.9 ohm	Rohm	MCR01MRTF49R9	Resistor 49.9 ohm 0402. 1 %
17	1	R25	4.87K	Rohm	MCR01MRTF4871	Resistor 4.87k 1% 0402 smd
18	1	R28	5.6K	Panasonic	ERJ-2GEJ562X	Resistor, 5.6k ohm, 1/10W, 5%, 0402
19	4	R32, R43, R45, R46	75 ohm	Rohm	MCR01MRTJ750	resistor 75 ohm 0402 5%
20	2	R34, R52	1 M	Panasonic	ERJ-3GEYJ105V	Resistor, 1M OHM 1/10W 5% 0603 SMD
21	1	R38	51 ohm	Panasonic	ERJ-2GEJ510X	Resistor, 51 ohm, 1/10W, 5%, 0402
22	1	R42	1 M	Rohm	MCR01MRTF1004	Resistor, 1M Ohm 1/10W, 5%, 0402
23	1	R47	1 M	Panasonic	ERJ-8GEYJ105V	RES 1M OHM 5% 1206 TF
24	2	R49, R50	2.0K	Panasonic	ERJ-3GEYJ202V	Resistor, 2.0k ohm, 1/10W, 5%, 0402
25	12	R6, R7, R8, R10, R11, R15, R16, R19, R20, R39, R40, R41	0 ohm	Panasonic	ERJ-2GE0R00X	Resistor, 0 ohm, 1/10W, 5%, 0402
26	5	R9, R27, R30, R31, R33	330 ohm	Yageo	RC0402FR-07330RL	Resistor, 330 ohm, 1/10W, 5%, 0402
27	4	RESET, USR_SW1, USR_SW2, WAKE	Switch	Omron	B3S-1000	Switch, Tact 6mm SMT, 160gf
28	1	U1	TM4C1294	Texas Instruments	TM4C1294NCPDT	Tiva, MCU TM4C1294NCPDT 128 QFP with Ethernet MAC + PHY
29	1	U10	Ethernet transformer	Pulse Electronics	HX1198FNL	Transformer, ethernet, 1 to 1. SOIC 16
30	1	U13	Diod	Semtech	SLVU2.8-4.TBT	Diode, 8 chan, +/-15KV, ESD Protection Array, SO-8
31	1	U14	Ethernet connector	TE Connectivity	1-406541-5	Connector, RJ45 NO MAG, shielded THRU HOLE
32	2	U2, U3	TPD4S012	Texas Instruments	TPD4S012DRYR	IC 4CH ESD SOLUTION W/CLAMP 6SON
33	1	U20	TM4C123	Texas Instruments	TM4C123GH6PMI	Stellaris TIVA MCU TM4C123GH6PMI
34	1	U22	USB connector	FCI	10118194-0001LF	USB Micro B receptical right angle with guides
35	1	U4	TPS2052	Texas Instruments	TPS2052BDRBR	Fault protected power switch, dual channel, 8-SON
36	1	U5	TPS73733	Texas Instruments	TPS73733DRV	3.3V LDO TI TPS73733DRV fixed out 5V in
37	1	U6	Header 2x5	Samtec	SHF-105-01-S-D-SM	Header 2x5, 0.050, SM, Vertical Shrouded
				Don Connex Electronics	C44-10BSA1-G	<u></u>
38	1	U7	USB connector	Hirose	ZX62D-AB-5P8	USB Micro AB receptacle. Right angle with through guides
39	4	X6, X7, X8, X9	Header 2x10	Samtec	SSW-110-23-S-D	Header, 2x10, T-Hole Vertical unshrouded stacking
40	1	Y1	Crystal	NDK	nx3225ga-25.000m-std-crg-2	Crystal 25 Mhz 3.2 x 2.5 mm

41	1	Y2	Crystal	NDK	NX3225GA-16.000M-STD-CRG-2	crystal 16 mhz 3.2x2.5 mm 4 pin
42	1	Y3	Crystal	Citizen Finetech Miyota	CMR200T-32.768KDZY-UT	Crystal, 32.768KHz Radial Can
43	1	C2	0.1uF	Taiyo Yuden	EMK105B7104KV-F	Capacitor, 0.1uF 16V, 10% 0402 X7R
44	3	H1, H4, H6	Screw	McMaster	90077A112	Screw, #4 x 0.625" Pan Head, Sheet Metal, Phillips/Slotted (for fan)
45	3	R12, R13, R14	5.6K	Panasonic	ERJ-2GEJ562X	Resistor, 5.6k ohm, 1/10W, 5%, 0402
46	1	R48	52.3K	Rohm	TRR01MZPF5232	Resistor 0402 1% 52.3k
47	17	TP1, TP2, TP3, TP4, TP5, TP6, TP7, TP8, TP9, TP10, TP11, TP12, TP13, TP14, TP15, TP16, TP17	test pin	Keystone	5000	Terminal, Test Point Miniature Loop, Red, T-Hole
48	1	X1	Header 2x7	FCI	67997-114HLF	Header, 2x7, 0.100, T-Hole, Vertical, Unshrouded, 0.230 Mate
49	1	X11A	Connector	Samtec	TSW-149-09-F-S-RE	Valvano style bread board connect. Right Angle extended, 1 x 49 0.100 pitch.
50	1	X11B	Connector	Samtec	TSW-149-08-F-S-RA	valvano style breadboard header.

IMPORTANT NOTICE FOR TI REFERENCE DESIGNS

Texas Instruments Incorporated ('TI") reference designs are solely intended to assist designers ("Designer(s)") who are developing systems that incorporate TI products. TI has not conducted any testing other than that specifically described in the published documentation for a particular reference design.

Tl's provision of reference designs and any other technical, applications or design advice, quality characterization, reliability data or other information or services does not expand or otherwise alter Tl's applicable published warranties or warranty disclaimers for Tl products, and no additional obligations or liabilities arise from Tl providing such reference designs or other items.

TI reserves the right to make corrections, enhancements, improvements and other changes to its reference designs and other items.

Designer understands and agrees that Designer remains responsible for using its independent analysis, evaluation and judgment in designing Designer's systems and products, and has full and exclusive responsibility to assure the safety of its products and compliance of its products (and of all TI products used in or for such Designer's products) with all applicable regulations, laws and other applicable requirements. Designer represents that, with respect to its applications, it has all the necessary expertise to create and implement safeguards that (1) anticipate dangerous consequences of failures, (2) monitor failures and their consequences, and (3) lessen the likelihood of failures that might cause harm and take appropriate actions. Designer agrees that prior to using or distributing any systems that include TI products, Designer will thoroughly test such systems and the functionality of such TI products as used in such systems. Designer may not use any TI products in life-critical medical equipment unless authorized officers of the parties have executed a special contract specifically governing such use. Life-critical medical equipment is medical equipment where failure of such equipment would cause serious bodily injury or death (e.g., life support, pacemakers, defibrillators, heart pumps, neurostimulators, and implantables). Such equipment includes, without limitation, all medical devices identified by the U.S. Food and Drug Administration as Class III devices and equivalent classifications outside the U.S.

Designers are authorized to use, copy and modify any individual TI reference design only in connection with the development of end products that include the TI product(s) identified in that reference design. HOWEVER, NO OTHER LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE TO ANY OTHER TI INTELLECTUAL PROPERTY RIGHT, AND NO LICENSE TO ANY TECHNOLOGY OR INTELLECTUAL PROPERTY RIGHT OF TI OR ANY THIRD PARTY 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 products 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 the reference design or other items described above 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 AND OTHER ITEMS DESCRIBED ABOVE ARE PROVIDED "AS IS" AND WITH ALL FAULTS. TI DISCLAIMS ALL OTHER WARRANTIES OR REPRESENTATIONS, EXPRESS OR IMPLIED, REGARDING THE REFERENCE DESIGNS OR USE OF THE REFERENCE DESIGNS, INCLUDING BUT NOT LIMITED TO ACCURACY OR COMPLETENESS, TITLE, ANY EPIDEMIC FAILURE WARRANTY AND ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT OF ANY THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

TI SHALL NOT BE LIABLE FOR AND SHALL NOT DEFEND OR INDEMNIFY DESIGNERS AGAINST ANY CLAIM, INCLUDING BUT NOT LIMITED TO ANY INFRINGEMENT CLAIM THAT RELATES TO OR IS BASED ON ANY COMBINATION OF PRODUCTS AS DESCRIBED IN A TI REFERENCE DESIGN OR OTHERWISE. IN NO EVENT SHALL TI BE LIABLE FOR ANY ACTUAL, DIRECT, SPECIAL, COLLATERAL, INDIRECT, PUNITIVE, INCIDENTAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES IN CONNECTION WITH OR ARISING OUT OF THE REFERENCE DESIGNS OR USE OF THE REFERENCE DESIGNS, AND REGARDLESS OF WHETHER TI HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Tl's standard terms of sale for semiconductor products (http://www.ti.com/sc/docs/stdterms.htm) apply to the sale of packaged integrated circuit products. Additional terms may apply to the use or sale of other types of TI products and services.

Designer will fully indemnify TI and its representatives against any damages, costs, losses, and/or liabilities arising out of Designer's non-compliance with the terms and provisions of this Notice.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265 Copyright © 2016, Texas Instruments Incorporated