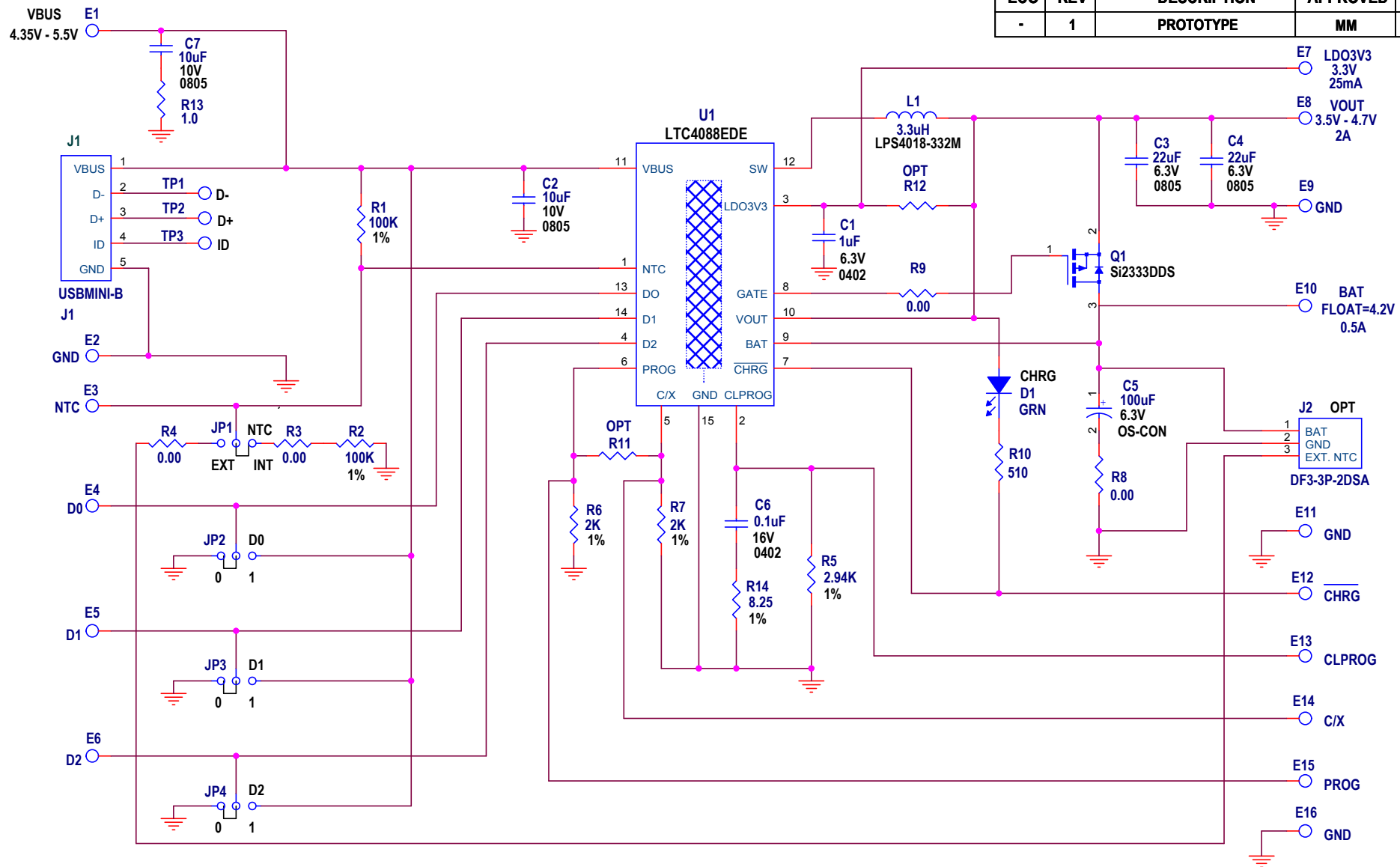


REVISION HISTORY				
ECO	REV	DESCRIPTION	APPROVED	DATE
-	1	PROTOTYPE	MM	7 - 25 - 16



INPUT CURRENT LIMIT SETTINGS

D0	D1	D2	CURRENT LIMIT	CHARGER STATUS
0	0	0	100mA (1X)	ON
0	0	1	100mA (1X)	OFF
0	1	0	500mA (5X)	ON
0	1	1	500mA (5X)	OFF
1	0	0	1A (10X)	ON
1	0	1	1A (10X)	OFF
1	1	0	500uA (SUSP)	OFF
1	1	1	2.5mA (SUSP)	OFF

## CUSTOMER NOTICE

LINEAR TECHNOLOGY HAS MADE A BEST EFFORT TO DESIGN A CIRCUIT THAT MEETS CUSTOMER-SUPPLIED SPECIFICATIONS; HOWEVER, IT REMAINS THE CUSTOMER'S RESPONSIBILITY TO VERIFY PROPER AND RELIABLE OPERATION IN THE ACTUAL APPLICATION. COMPONENT SUBSTITUTION AND PRINTED CIRCUIT BOARD LAYOUT MAY SIGNIFICANTLY AFFECT CIRCUIT PERFORMANCE OR RELIABILITY. CONTACT LINEAR TECHNOLOGY APPLICATIONS ENGINEERING FOR ASSISTANCE.

THIS CIRCUIT IS PROPRIETARY TO LINEAR TECHNOLOGY AND SUPPLIED FOR USE WITH LINEAR TECHNOLOGY PARTS.

## APPROVALS

PCB DES. NC

APP ENG. MM

SCALE = NONE



1630 McCarthy Blvd.  
Milpitas, CA 95035  
Phone: (408)432-1900 www.linear.com  
Fax: (408)434-0507  
LTC Confidential-For Customer Use Only

TITLE: SCHEMATIC

High Efficiency Battery Charger / USB Power Manager

SIZE	IC NO.	REV.
N/A	LTC4088EDE DEMO CIRCUIT 1007C	1
DATE: 7 - 25 - 16	SHEET 1 OF 1	



# Linear Technology Corporation

LTC4088EDE

Bill Of Material  
Demo Bd. #1007C-1

QTY- 55

8/1/2016

Item	Qty	Reference	Part Description	Manufacturer / Part #	Kit Qty	Pkg Qty	Bal.
				<b>NUMBER OF BOARDS =</b>	<b>50</b>		
1	1	C1	CAP, CHIP, X5R, 1.0uF, 6.3V, 0402	MURATA, GRM155R60J105ME19D	50		-50
2	1	C2, C7	CAP, CHIP, X5R, 10uF, 10V, 0805	MURATA, GRM21BR61A106KE19L	50		-50
3	1	C3, C4	CAP, CHIP, X5R, 22uF, 6.3V, 0805	MURATA, GRM21BR60J226ME39L	50		-50
4	1	C5	CAP, CHIP OS-CON, 100uF, 6.3V, B6	PANASONIC, 6SVPC100MY	50		-50
5	1	C6	CAP, CHIP, X7R, 0.1uF, 16V, 0402	MURATA, GRM155R71C104KA88D	50		-50
6	1	D1	LED, GREEN, WATERCLEAR, 0603	Wurth, 150060GS75000	50		-50
7	1	L1	IND, 3.3uH, 0.08Ohms, 2.2A	COILCRAFT, LPS4018-332MRC	50		-50
8	1	Q1	XSTR, MOSFET P- CHANNEL	SILICONIX, Si2333DDS-T1-GE3	50		-50
9	2	R1, R2	RES, 0402, 100K OHMS, 1%, 1/16W	VISHAY, CRCW0402100KFKED	100		-100
10	4	R3, R4, R8, R9	RES, 0402 0R0 OHMS 1/16W	VISHAY CRCW04020000Z0ED	200		-200
11	1	R5	RES, 0402 2.94K OHMS 1% 1/16W	VISHAY, CRCW04022K94FKED	50		-50
12	2	R6, R7	RES, 0402 2K OHM 1% 1/16W	VISHAY, CRCW04022K00FKED	100		-100
13	1	R10	RES, 0402 510 OHMS 1% 1/16W	VISHAY, CRCW0402510R0FKED	50		-50
14	0	R11 (OPT)	RES., OPTION, 0402	OPT.	0		0
15	0	R12 (OPT)	RES, 0402 0R0 OHMS 1/16W	VISHAY CRCW04020000Z0ED	0		0
16	1	R13	RES., 1 OHM, 1%, 1/16W, 0402	VISHAY, CRCW04021R00FKED	50		-50
17	1	R14	RES, 0402 8R25 OHMS 1% 1/16W	VISHAY, CRCW04028R25FNED	50		-50
18	1	J1	CONN, USB MINI-B	TYCO 1734035-2	50		-50
19	1	J2	CONN, DF3-3P-2DSA	HIROSE, DF3-3P-2DSA	50		-50
20	6	E1,E2,E8,E9,E10,E11	TEST POINT, TURRET, 0.094",MTG. HOLE	MILL-MAX, 2501-2-00-80-00-00-07-0	300		-300
21	10	E3,E4,E5,E6,E7,E12,E13,E14,E15,E16	TEST POINT, TURRET, 0.064",MTG. HOLE	MILL-MAX, 2308-2-00-80-00-00-07-0	500		-500
22	4	JP1,JP2,JP3,JP4	CONN., HDR., MALE, 1x3, 2mm, THT, STR	SAMTEC, TMM-103-02-L-S	200		-200
23	4	JP1,JP2,JP3,JP4	CONN., SHUNT, FEMALE, 2 POS, 2mm	SAMTEC, 2SN-BK-G	200	1000	800
24	4		STAND-OFF, NYLON 0.25" tall (SNAP ON)	KEYSTONE, 8831 (SNAP ON)	200		-200
25	1	U1	IC, USB BAT CHARGER/POWER MANAGER, DFN-14	LINEAR TECHNOLOGY LTC4088EDE	50		-50
26	1		FAB, PRINTED CIRCUIT BOARD	DEMO CIRCUIT #1007C-1	50		-50
27	1		STENCIL - TOP	STENCIL #1007C-1-TOP	1		-1
28	1		STENCIL - BOTTOM	STENCIL #1007C-1-BOTTOM	1		-1



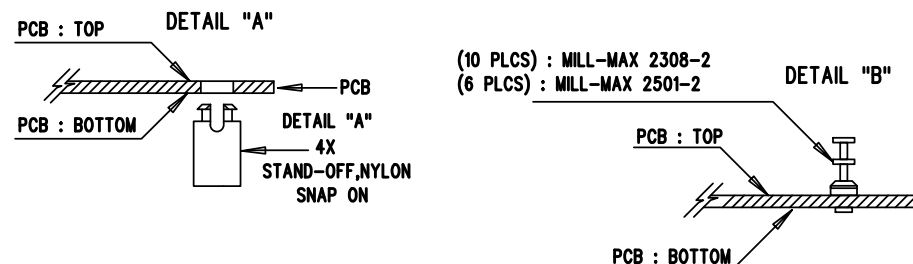
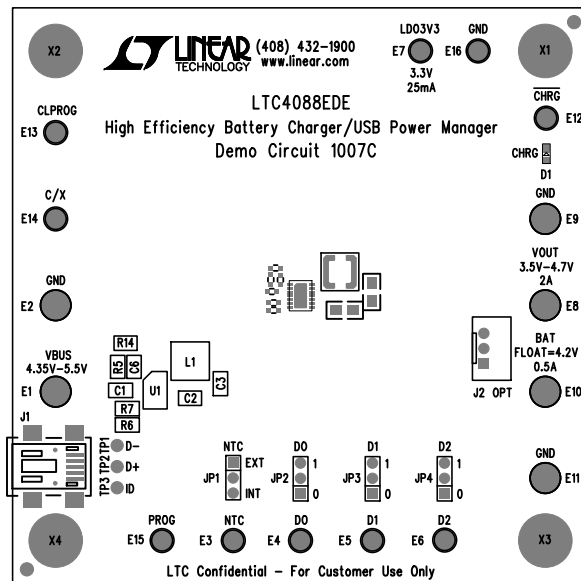
Item	Qty	Reference - Des	Part Description	Manufacturer, Part #
<b>REQUIRED CIRCUIT COMPONENTS:</b>				
1	1	C1	CAP, CHIP, X5R, 1.0uF, 6.3V, 0402	MURATA, GRM155R60J105ME19D
2	1	C2	CAP, CHIP, X5R, 10uF, 10V, 0805	MURATA, GRM21BR61A106KE19L
3	1	C3	CAP, CHIP, X5R, 22uF, 6.3V, 0805	MURATA, GRM21BR60J226ME39L
4	1	C6	CAP, CHIP, X7R, 0.1uF, 16V, 0402	MURATA, GRM155R71C104KA88D
5	1	L1	IND, 3.3uH, 0.08Ohms, 2.2A	COILCRAFT, LPS4018-332MRC
6	1	R5	RES, 0402 2.94K OHMS 1% 1/16W	VISHAY, CRCW04022K94FKED
7	2	R6, R7	RES, 0402 2K OHM 1% 1/16W	VISHAY, CRCW04022K00FKED
8	1	R14	RES, 0402 8R25 OHMS 1% 1/16W	VISHAY, CRCW04028R25FNED
9	1	U1	IC, USB BAT CHARGER/POWER MANAGER, DFN-14	LTC4088EDE
<b>ADDITIONAL DEMO BOARD CIRCUIT COMPONENTS:</b>				
10	1	C4	CAP, CHIP, X5R, 22uF, 6.3V, 0805	MURATA, GRM155R60J105ME19D
11	1	C5	CAP, CHIP OS-CON, 100uF, 6.3V, B6	PANASONIC, 6SVPC100MY
12	1	C7	CAP, CHIP, X5R, 10uF, 10V, 0805	MURATA, GRM21BR61A106KE19L
13	1	D1	LED, GREEN, WATERCLEAR, 0603	Wurth, 150060GS75000
14	1	Q1	XSTR, MOSFET P- CHANNEL	SILICONIX, Si2333DDS
15	2	R1, R2	RES, 0402, 100K OHMS, 1%, 1/16W	VISHAY, CRCW0402100KFKED
16	4	R3, R4, R8, R9	RES, 0402 0R0 OHMS 1/16W	VISHAY CRCW04020000Z0ED
17	1	R10	RES, 0402 510 OHMS 1% 1/10W	VISHAY CRCW0402 5100 1%
18	0	R11 (OPT)	RES., OPTION, 0402	OPT.
19	0	R12 (OPT)	RES, 0402 0R0 OHMS 1/16W	VISHAY CRCW04020000Z0ED
20	1	R13	RES., 1 OHM, 1%, 1/16W, 0402	VISHAY, CRCW04021R00FKED
<b>HARDWARE FOR DEMO BOARD ONLY:</b>				
21	1	J1	CONN, USB MINI-B	TYCO 440247-1
22	6	E1,E2,E8,E9,E10,E11	TEST POINT, TURRET, 0.094",MTG. HOLE	MILL-MAX, 2501-2-00-80-00-00-07-0
23	10	E3,E4,E5,E6,E7,E12,E13,E14,E15,E16	TEST POINT, TURRET, 0.064",MTG. HOLE	MILL-MAX, 2308-2-00-80-00-00-07-0
24	4	JP1,JP2,JP3,JP4	HEADER,3 PINS 2mm	COMM 2802S-03G2
25	4		STANDOFFS	KEYSTONE, 8831




REVISION HISTORY				
ECO	REV	DESCRIPTION	APPR	DATE
-	1	PROTOTYPE	MARTY M.	1-14-16

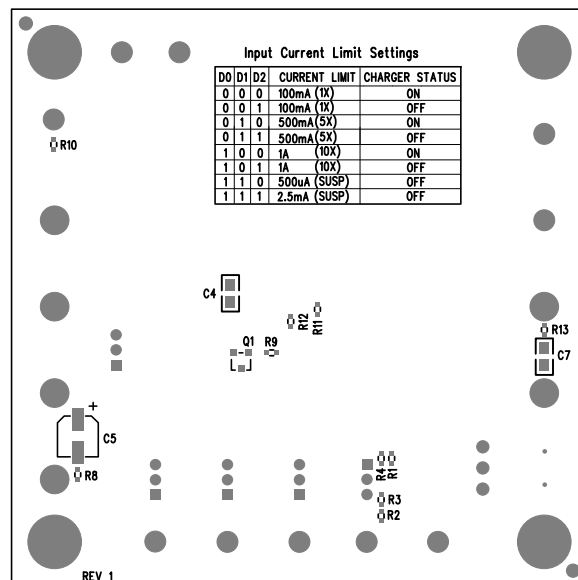
# NOTES: UNLESS OTHERWISE SPECIFIED


1. WORKMANSHIP SHALL BE IN ACCORDANCE WITH IPC-A-610, CLASS 2.
2. ASSEMBLY REFLOW PROFILE SHALL BE IN ACCORDANCE WITH J-STD-020 WITH MAXIMUM SOLDER TEMPERATURE OF 250 DEGREES CELSIUS.
3. PARTS TO OMIT WILL BE SPECIFIED ON THE BILL OF MATERIALS  
LOCATIONS OF OMITTED PARTS SHALL BE FREE OF SOLDER.  
MASK THE SOLDER STENCIL WHERE SMT PARTS ARE OMITTED.
4. INSTALL SHUNTS AS SHOWN ON ASSY DRAWING.
5. DEPANELIZE BOARDS AFTER ASSEMBLY AND ROUTE-OUT THE BREAKOUT TABS ON FOUR SIDES OF THE BOARD EDGE.
6. DO NOT APPLY ANY KIND OF ASSEMBLY STAMP OR QA STAMP TO ANY BOARD.
7. INSTALL TURRETS, STAND-OFFS AND BANANA JACKS AS SHOWN BELOW:



APPROVALS		 <div> 1630 MCCARTHY BLVD  MILPITAS, CA 95035  PH: (408)432-1900  www.Linear.com  LTC CONFIDENTIAL-  FOR CUSTOMER USE ONLY </div>	
PCB DES.	NC		
APP ENG.	MARTY M.	<b>TITLE: TOP ASSEMBLY DRAWING:</b> High Efficiency Battery Charger/USB Power Manager	
		SIZE	IC NO. LTC4088
		N/A	DEMO CIRCUIT 1007C
SCALE = NONE			REV. 1
		SHT 1 of 2	





APPROVALS		 <b>LINEAR TECHNOLOGY</b> 1630 MCCARTHY BLVD MILPITAS, CA 95035 PH: (408)432-1900 www.Linear.com LTC CONFIDENTIAL- FOR CUSTOMER USE ONLY	
PCB DES.	NC		
APP ENG.	MM	TITLE: BOTTOM ASSEMBLY DRAWING: High Efficiency Battery Charger/USB Power Manager	
		SIZE	IC NO.
		N/A	LTC4088EDE DEMO CIRCUIT 1007C
SCALE = NONE		REV.	1
		SHT 2 of 2	



# REVISIONS

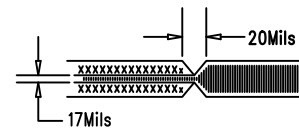
REV

APPR

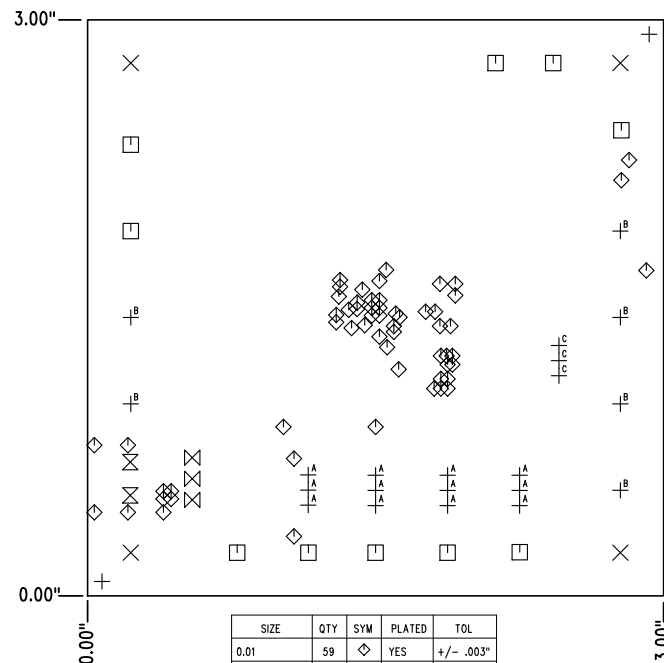
DATE

## NOTES: UNLESS OTHERWISE SPECIFIED:

1. FAB PER IPC-A-600.
2. MATERIAL: -EPOXY FIBERGLASS, NEMA GRADE FR-4  
-FINISHED THICKNESS TO BE 0.062" +/- .005"  
-TOTAL OF 4 LAYERS WITH 2 OZ. CU ON THE OUTER LAYERS  
AND 2 OZ. CU ON THE INNER LAYERS.  
-FLAMMABILITY RATING: 94 V-0 MINIMUM.
3. SIZE: CUT TO DIMENSIONS AND TOLERANCES SHOWN.  
0.00 ARE PRIMARY DATUMS.
4. DRILLING: -DRILL HOLES PER SCHEDULE. PLATE THROUGH  
HOLES WITH COPPER, 0.001" THICK MIN.  
-ALL HOLE SIZES ARE SPECIFIED AFTER PLATING.  
-HOLE LOCATION TOLERANCES ARE +/-0.003"  
IN RELATION TO CENTER
5. FINISH: -SMOBC USING LPI BOTH SIDES, COLOR GREEN.  
-GOLD IMMERSION BOTH SIDES.  
-FOR SILKSCREEN: BOTH SIDES USE WHITE NON-CONDUCTIVE INK.
6. DO NOT ALTER ARTWORK e.g. TO ADD LOGO OR DATE CODE.  
PAD SIZE CAN BE MODIFIED TO MEET END FINISH.
7. PCBs ARE TO BE RoHS COMPLIANT.
8. SCORING:



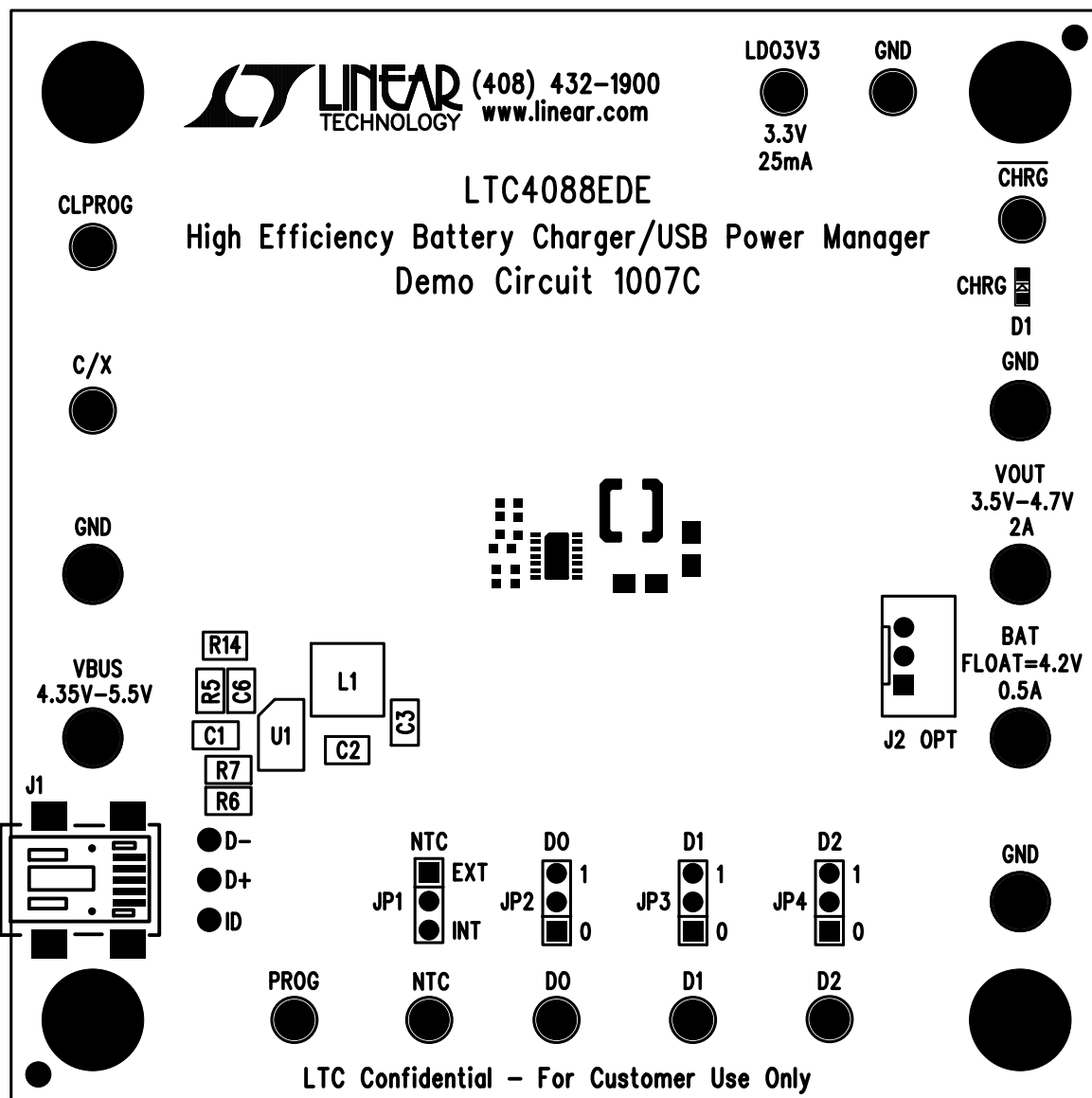
9. DO NOT ALTER SOLDER MASK MAINTAIN .0015 (1.5 MIL) CLEARANCE  
ON SMT PADS 4.7 MIL WEBBING IS REQUIRED.



SIZE	QTY	SYM	PLATED	TOL
0.01	59	◇	YES	+/- .003"
0.031	12	⊕	YES	+/- .003"
0.0311	3	⊕	YES	+/- .003"
0.035	3	⊗	YES	+/- .003"
0.035	2	⊗	NO	+/- .003"
0.063	10	□	YES	+/- .003"
0.07	2	⊕	NO	+/- .003"
0.094	6	⊕	YES	+/- .003"
0.19	4	⊗	YES	+/- .003"

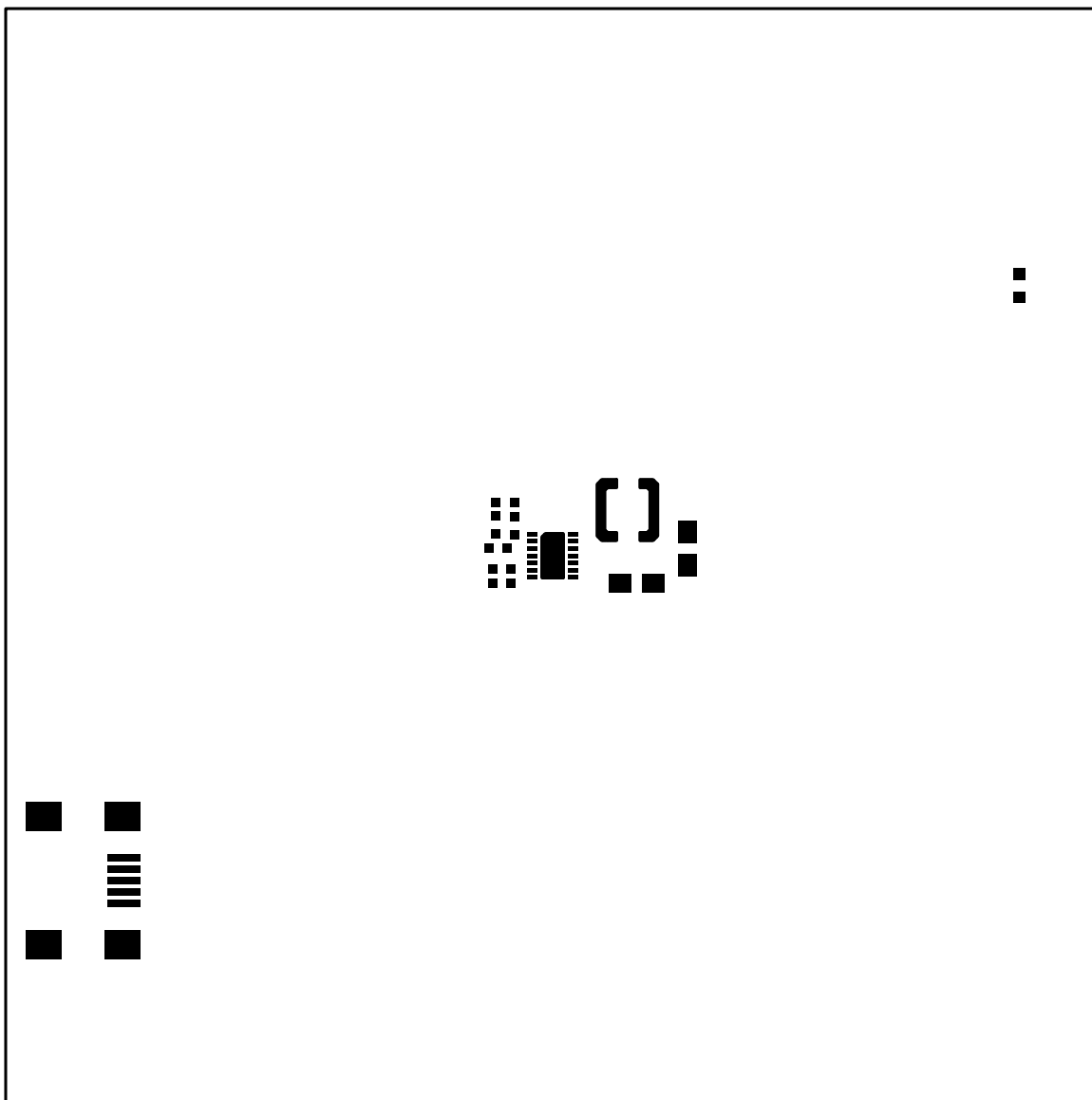
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON ANGLE 1 0.XX" = ±0.01" 0.XXX" = ±0.005" INTERPRET DIM AND TOL PER ASME Y14.5M-1994	APPROVALS			1630 MCCARTHY BLVD MILPITAS, CA 95035 PH: (408)432-1900 www.linear.com LTC CONFIDENTIAL- FOR CUSTOMER USE ONLY	
	PCB DES. NC	APP ENG. MM		TITLE: FABRICATION DRAWING: High Efficiency Battery Charger/USB Power Manager	
THIRD ANGLE PROJECTION				SIZE N/A	IC NO. LTC4088 DEMO CIRCUIT 1007C
DO NOT SCALE DRAWING	SCALE: NONE			REV. 1	SHT 1 of 1





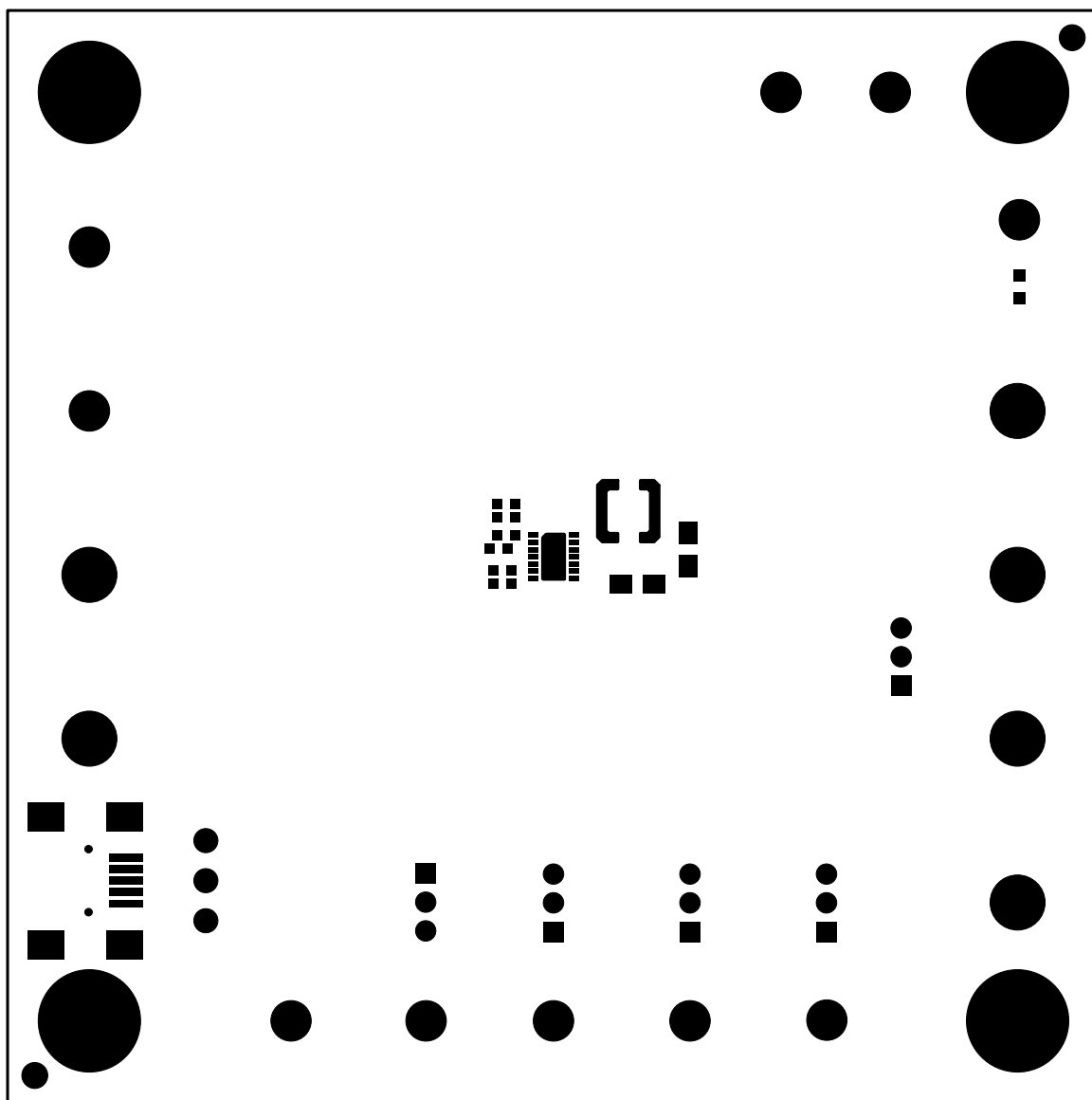
Silkscreen Top  
Linear Tech. Corp.  
Demo Circuit 1007C-1 \* LTC4088





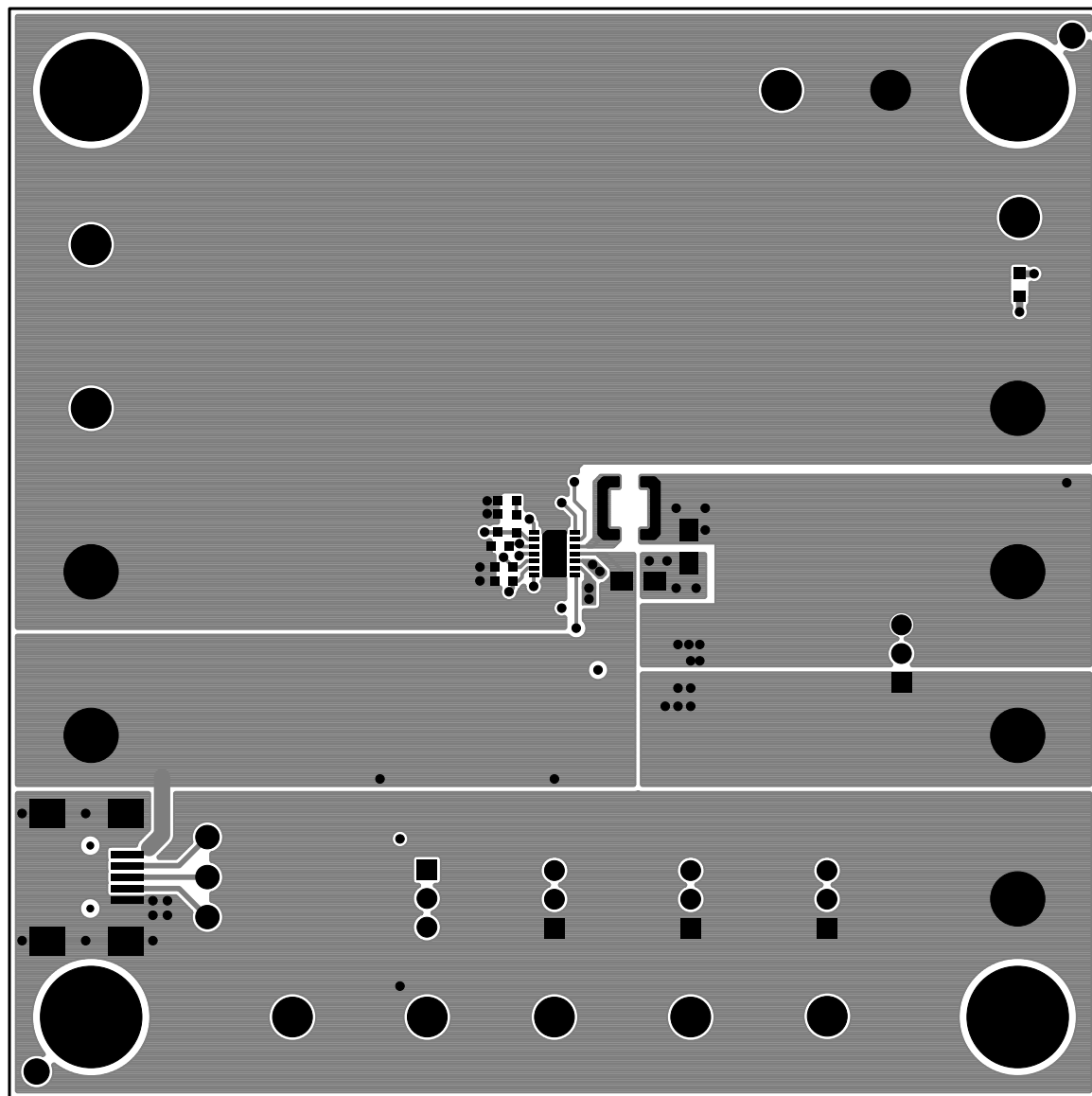
PasteMask Top  
Linear Tech. Corp.  
Demo Circuit 1007C-1 \* LTC4088





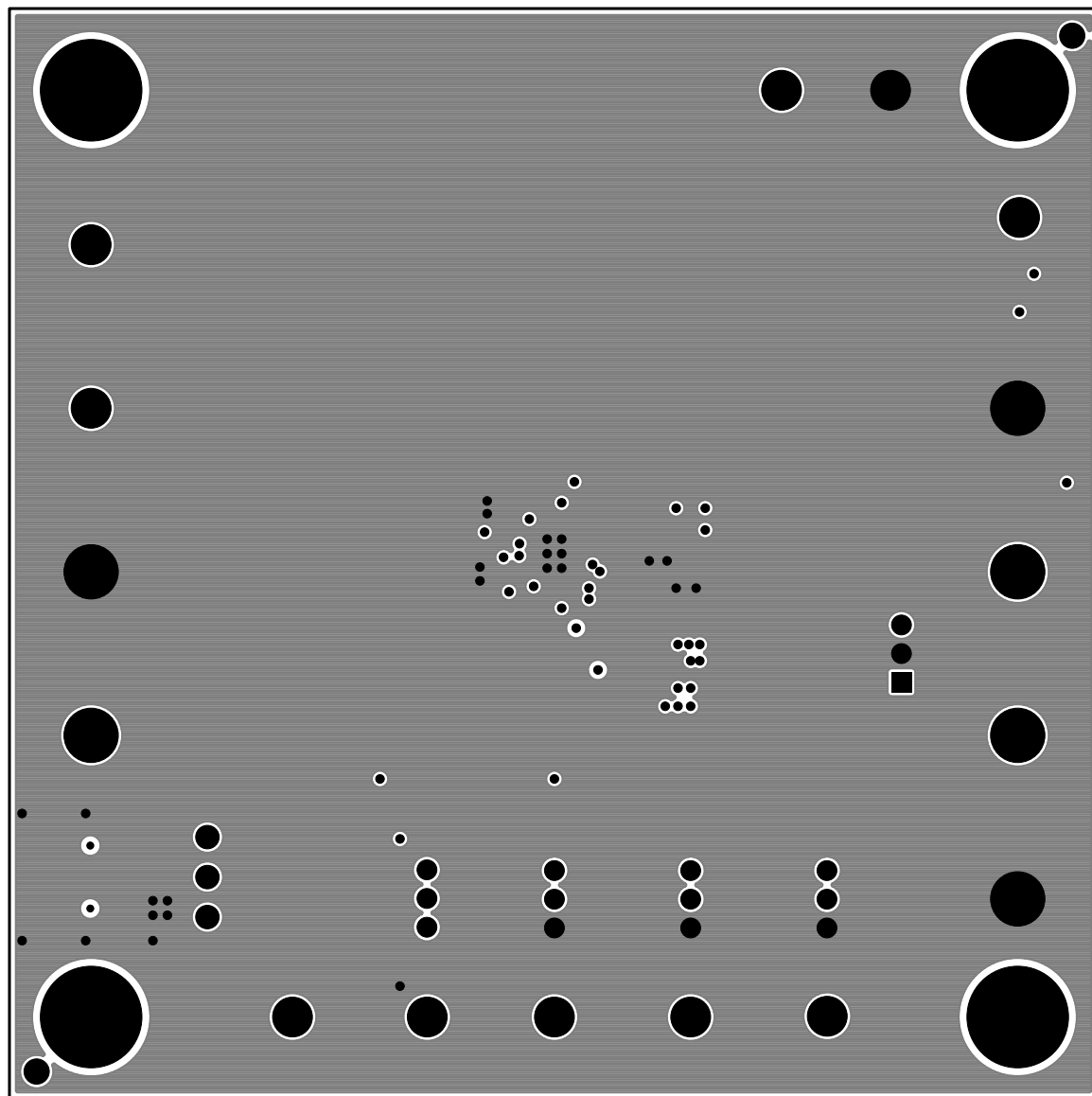
Solder Mask Top  
Linear Tech. Corp.  
Demo Circuit 1007C-1 \* LTC4088





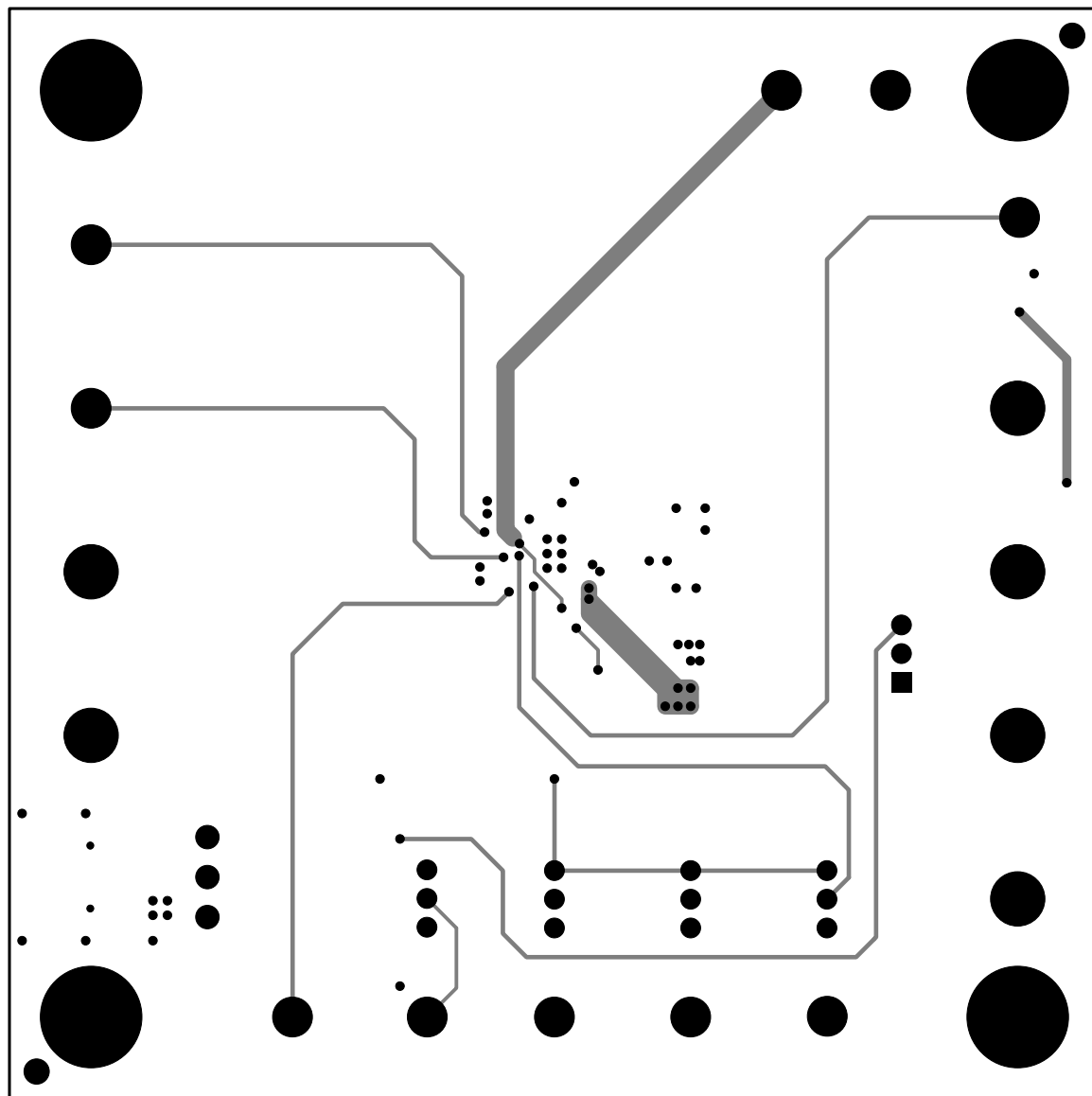
Component Side  
Linear Tech. Corp.  
Demo Circuit 1007C-1 \* LTC4088





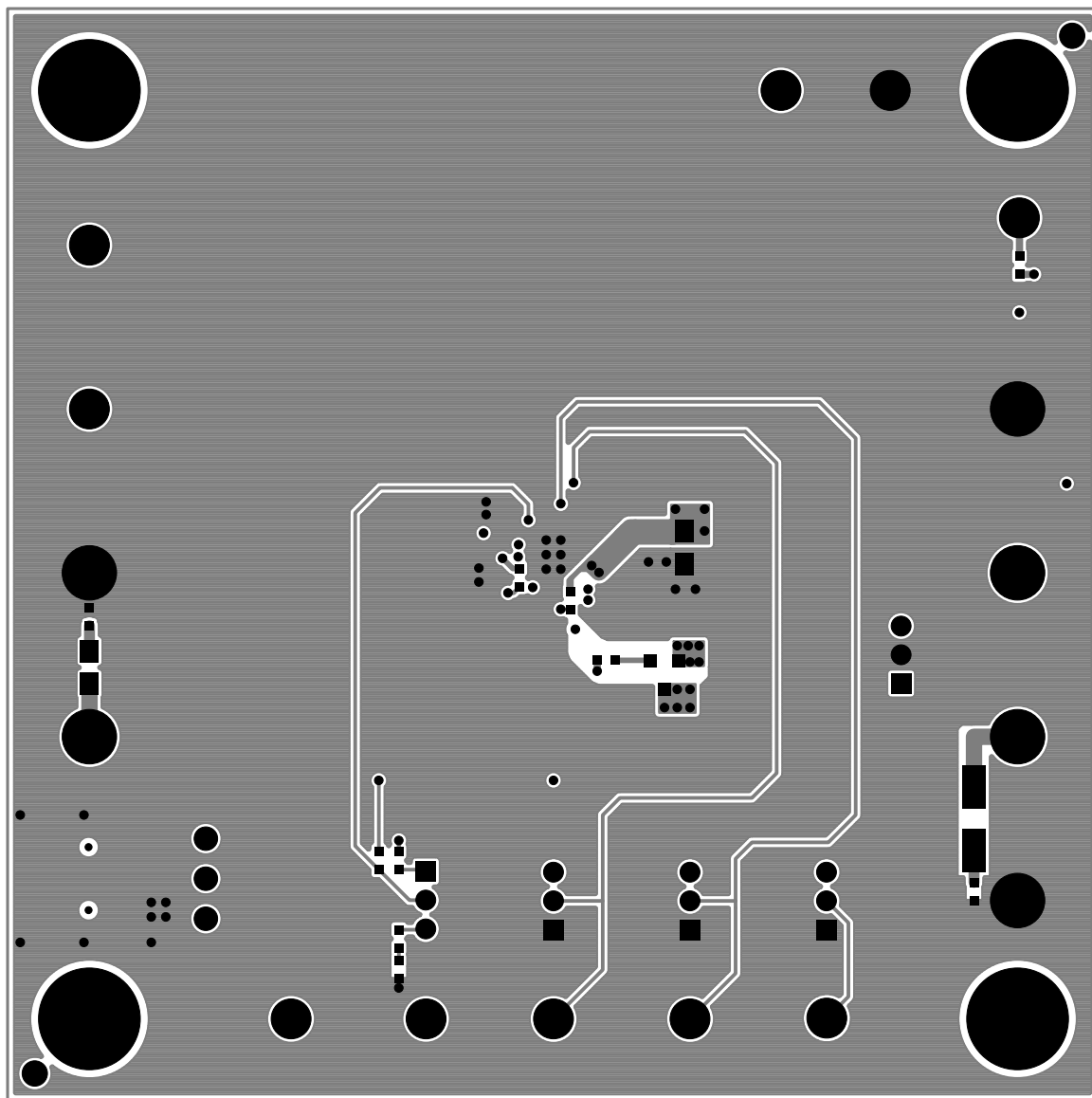
Layer2  
Linear Tech. Corp.  
Demo Circuit 1007C-1 \* LTC4088





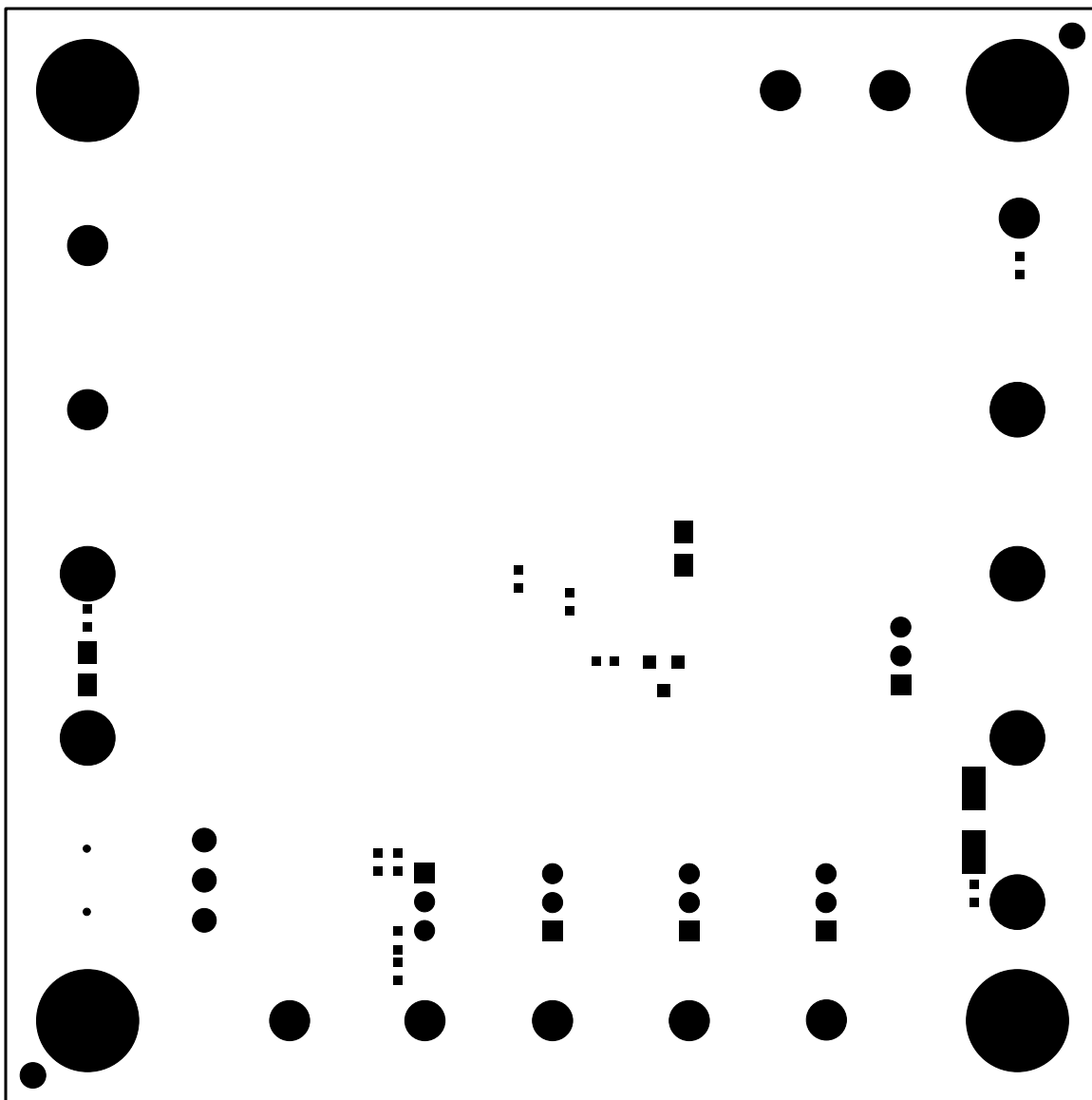
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Linear Tech. Corp.  
Demo Circuit 1007C-1 \* LTC4088





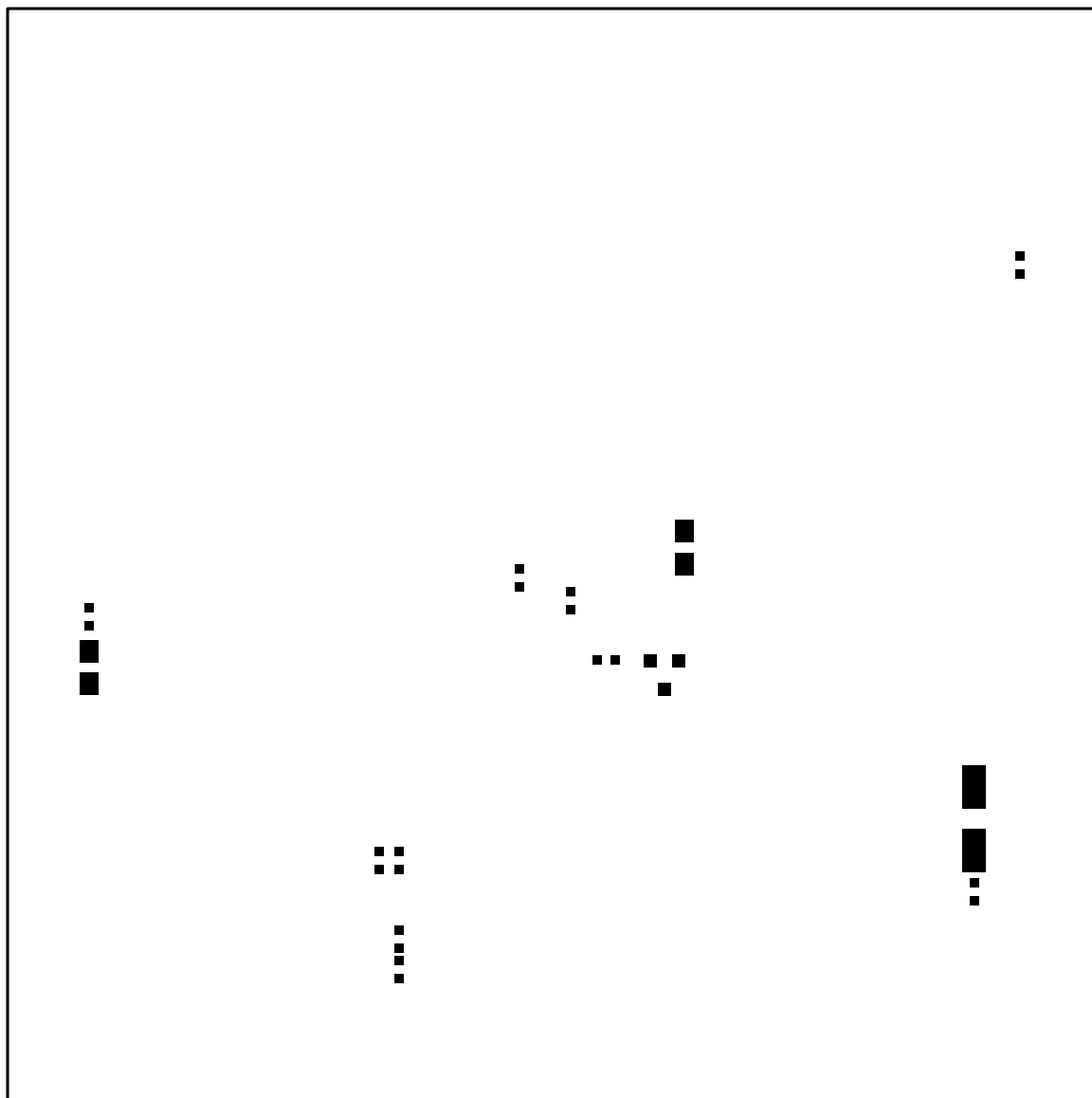
Layer4  
Linear Tech. Corp.  
Demo Circuit 1007C-1 \* LTC4088





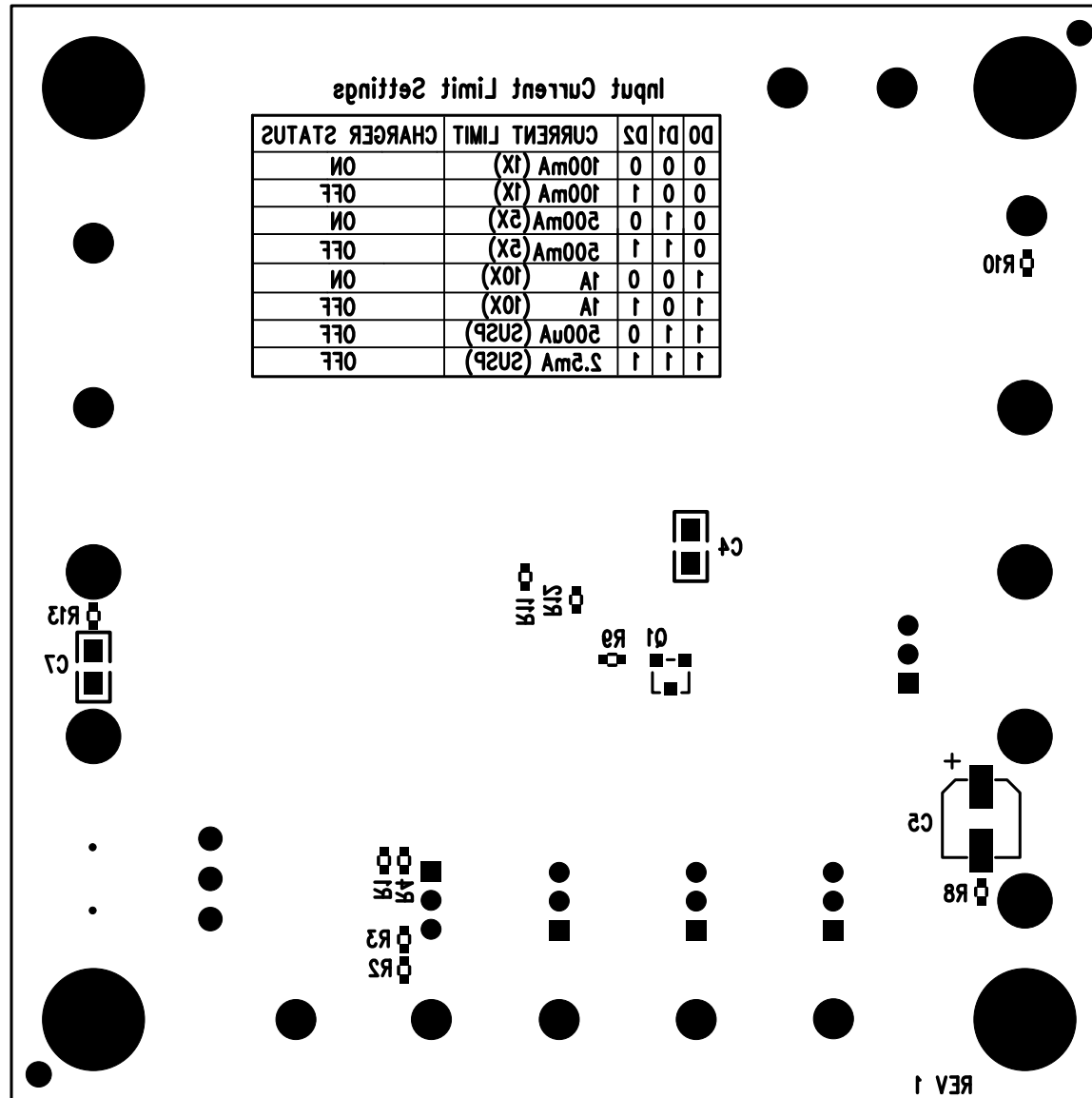
SolderMask Bottom  
Linear Tech. Corp.  
Demo Circuit 1007C-1 \* LTC4088





PasteMask Bottom  
Linear Tech. Corp.  
Demo Circuit 1007C-1 \* LTC4088





Silkscreen Bottom  
 Linear Tech. Corp.  
 Demo Circuit 1007C-1 \* LTC4088