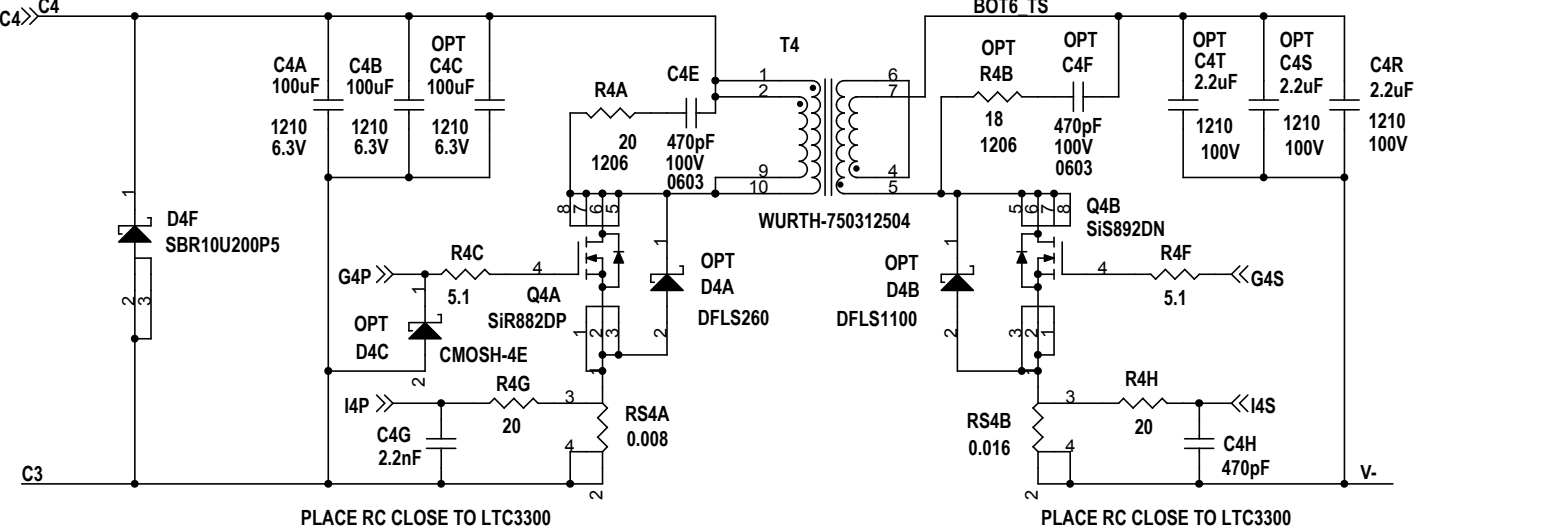
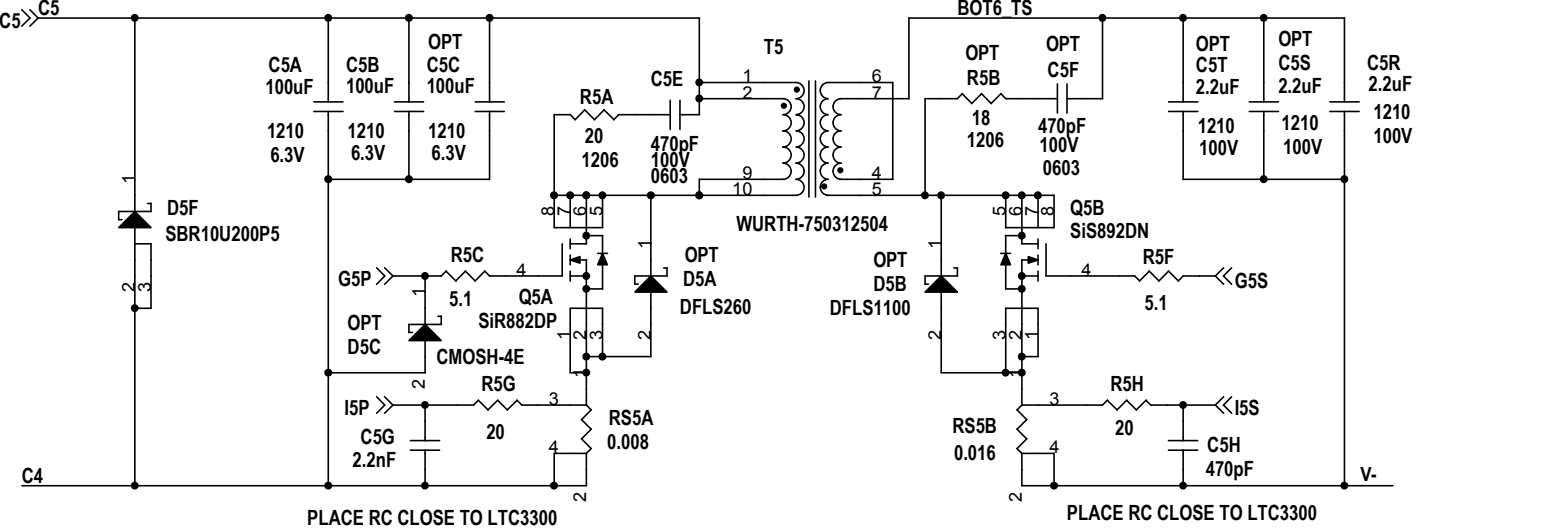
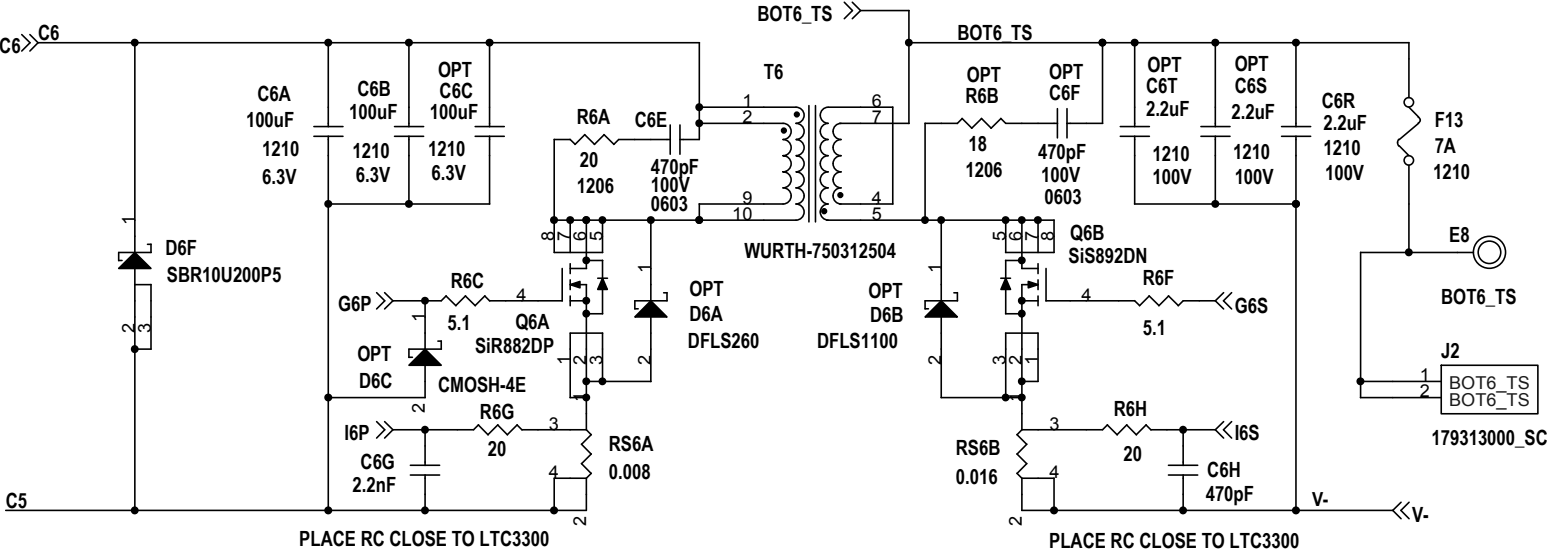
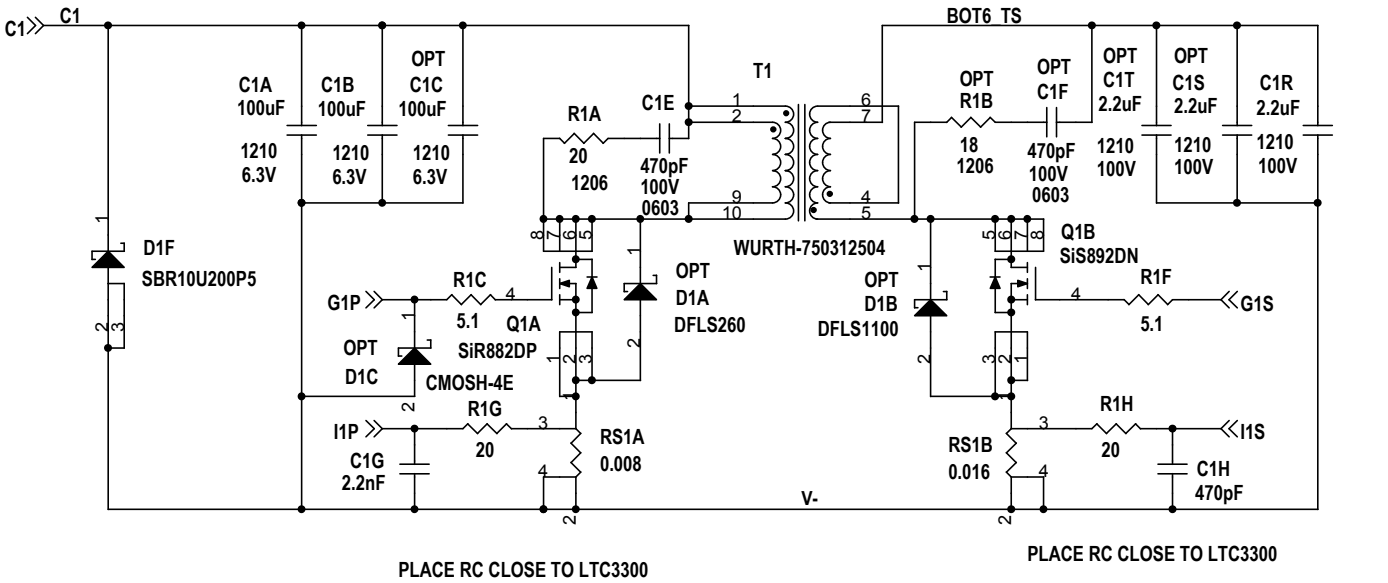
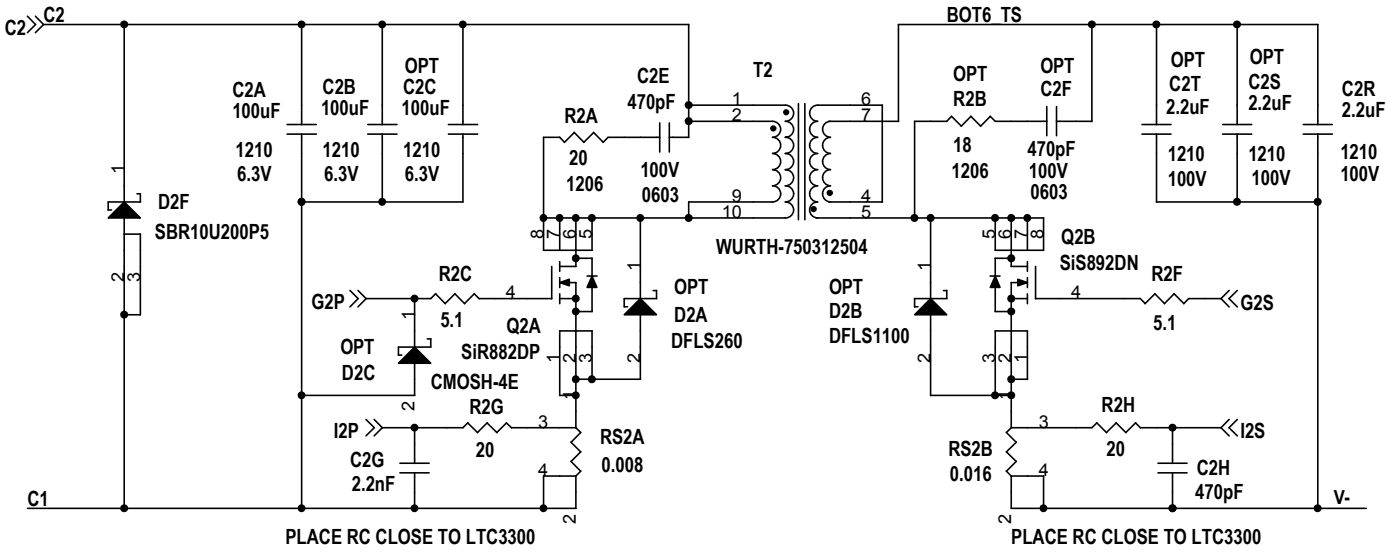
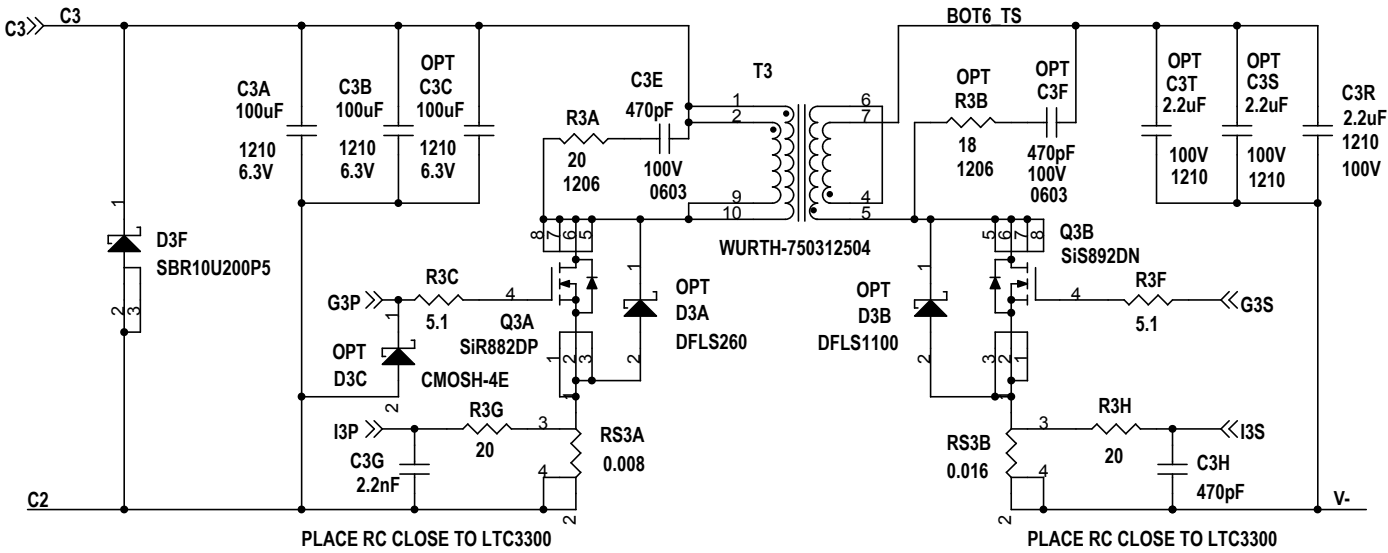


REVISION HISTORY					
ECO	REV	DESCRIPTION	APPROVED	DATE	
-	1	PRODUCTION FAB	J.DREW	1-11-13	



BATTERY CELL VOLTAGES

$$C_N = C_{N-1}$$

2.5V - 4.5V

2.5A

### 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. J. DREW

SCALE = NONE

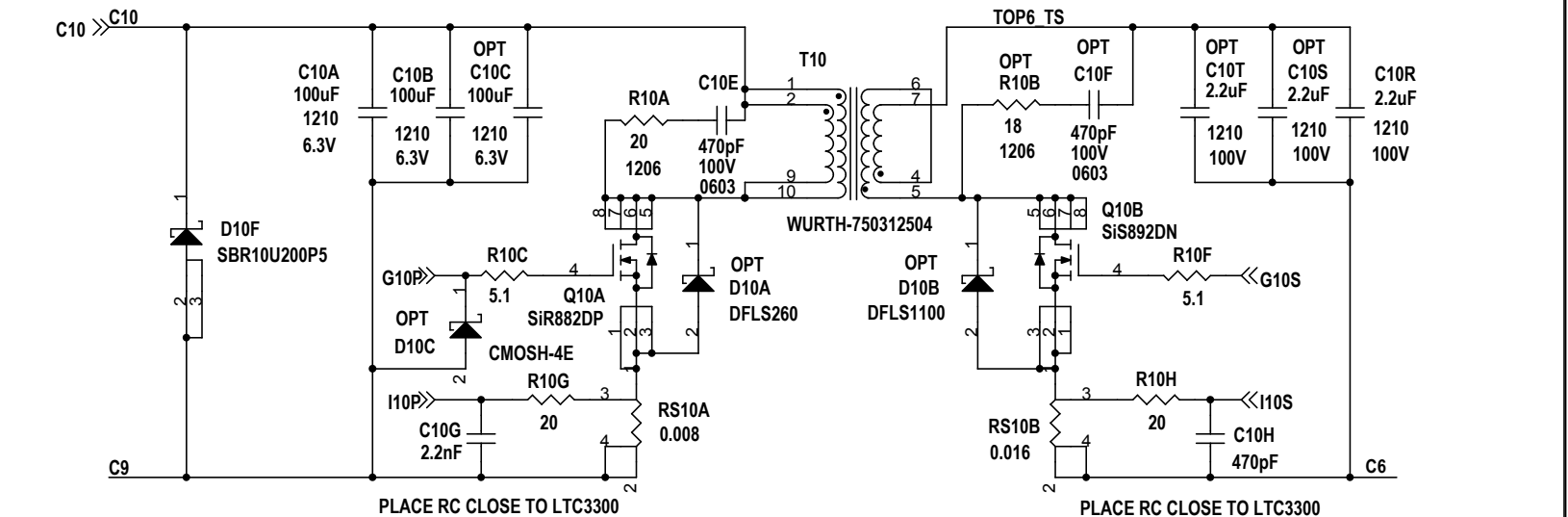


1630 McCarthy Blvd.  
Milpitas, CA 95035  
Phone: (408)432-1900 www.linear.com  
Fax: (408)434-0507  
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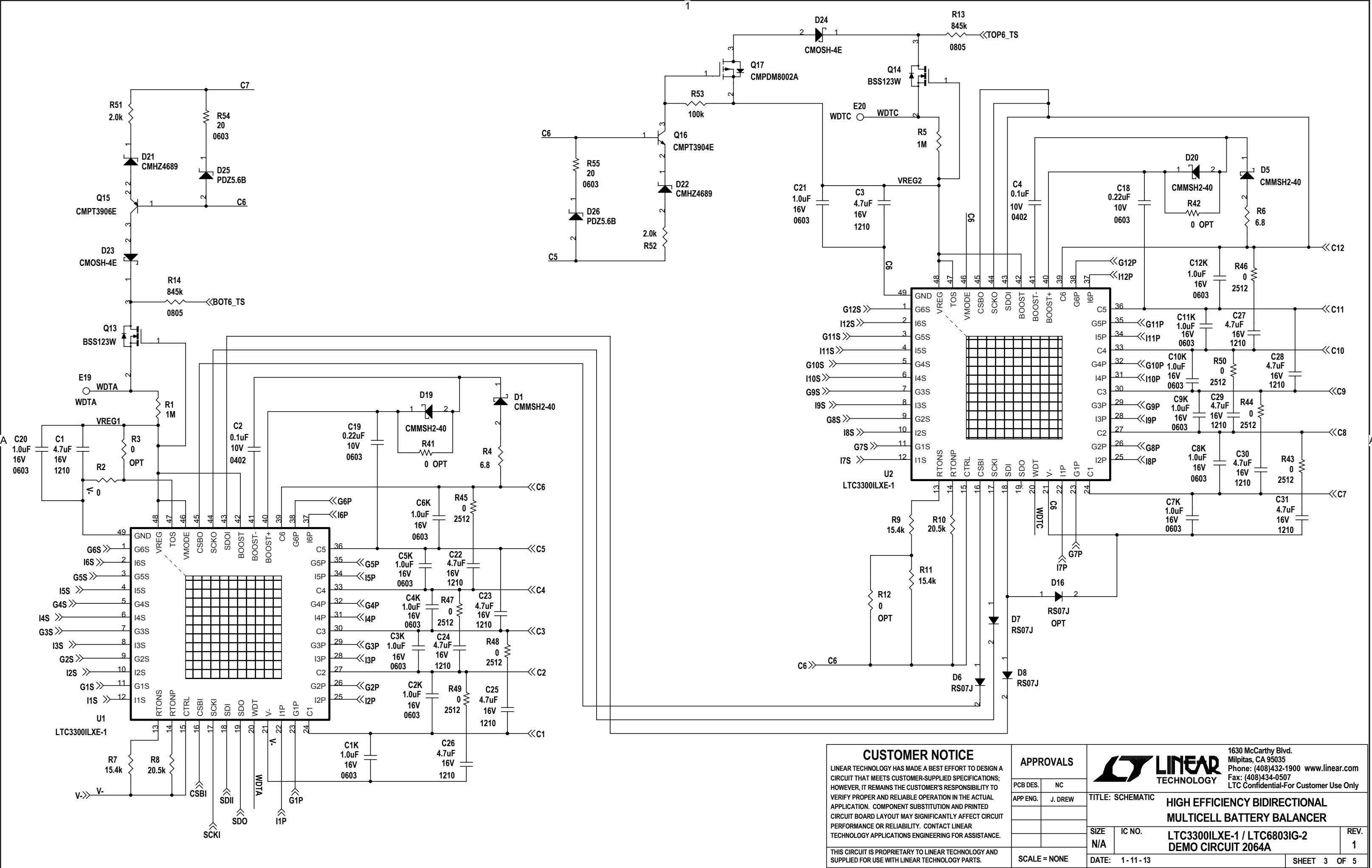
TITLE: SCHEMATIC  
**HIGH EFFICIENCY BIDIRECTIONAL  
MULTICELL BATTERY BALANCER**

SIZE N/A IC NO. **LTC3300ILXE-1 / LTC6803IG-2**  
**DEMO CIRCUIT 2064A**

DATE: 1-11-13 SHEET 1 OF 5



SHEET 2 OF 5



### CUSTOMER NOTICE

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

### APPROVALS

PCB DES.	NC
APP ENG.	J. DREW
SCALE = NONE	

**LINEAR**  
TECHNOLOGY

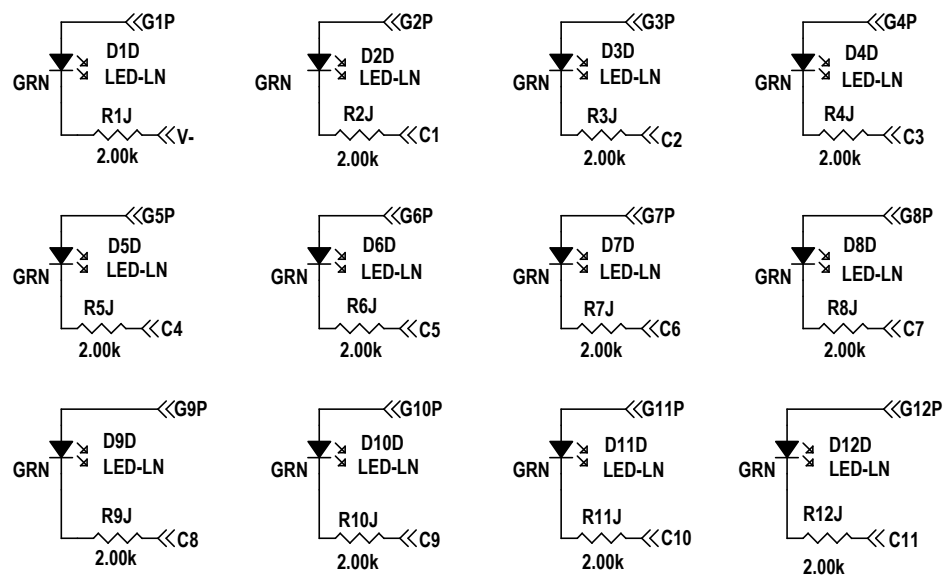
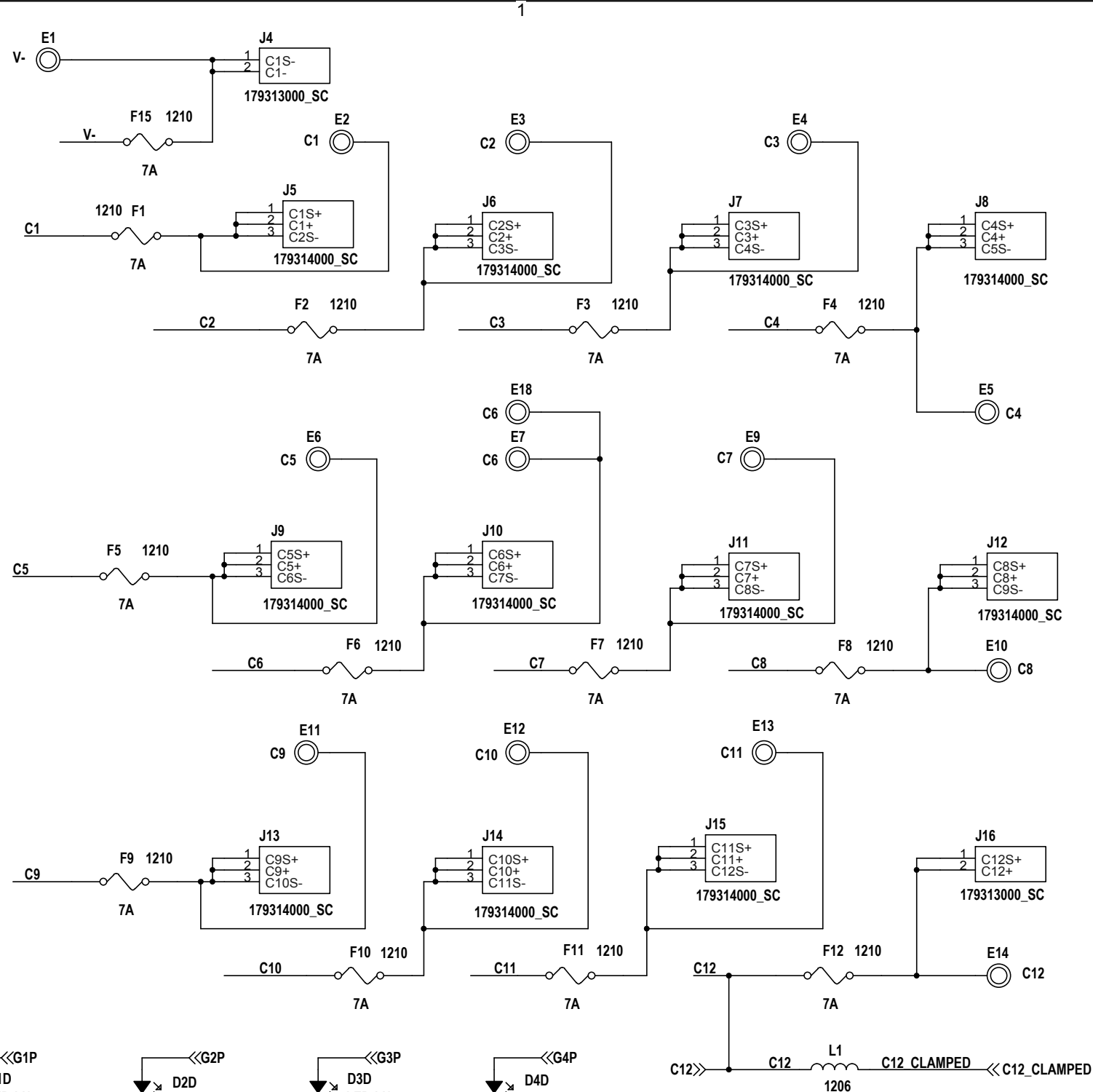
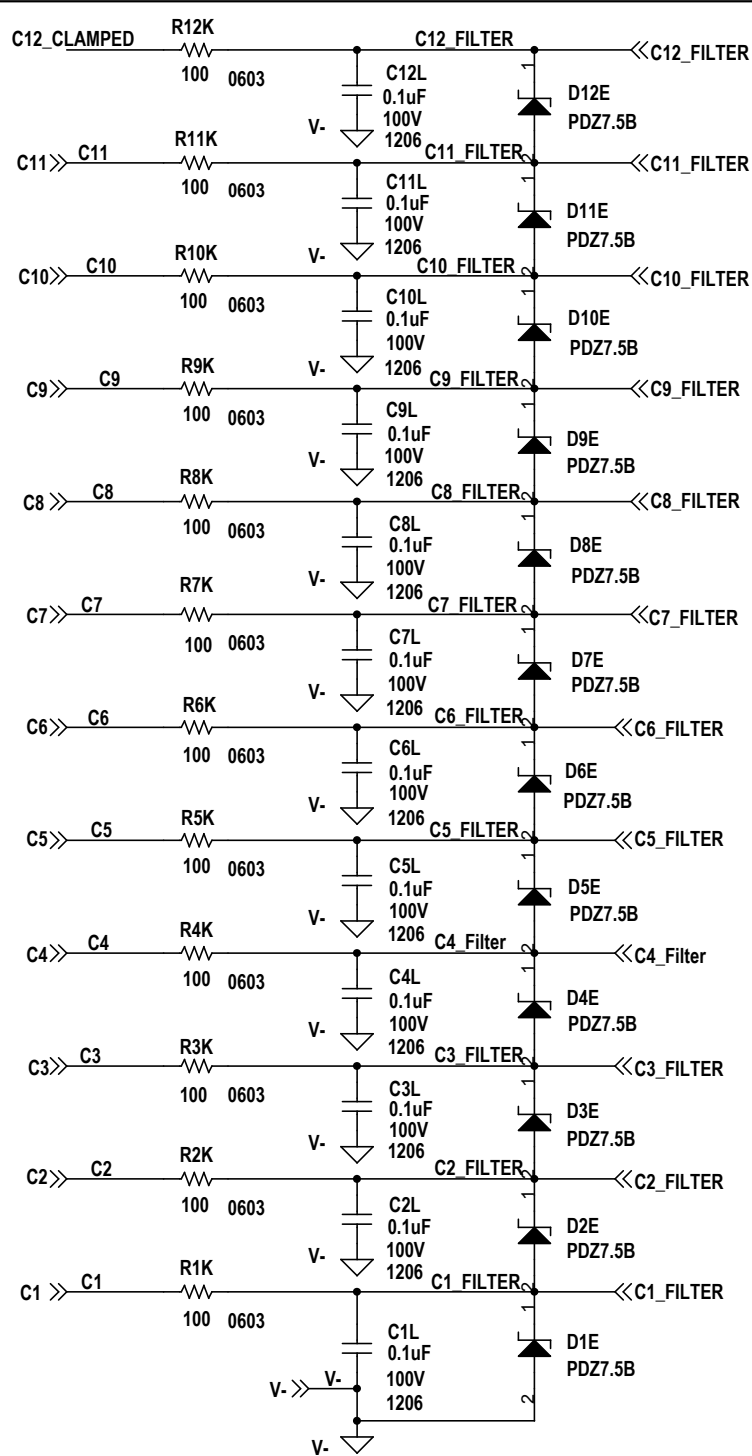
1630 McCarthy Blvd.  
Milpitas, CA 95035  
Phone: (408)432-1900 www.linear.com  
Fax: (408)434-0507  
LTC Confidential-For Customer Use Only


**TITLE: SCHEMATIC**  
**HIGH EFFICIENCY BIDIRECTIONAL  
MULTICELL BATTERY BALANCER**

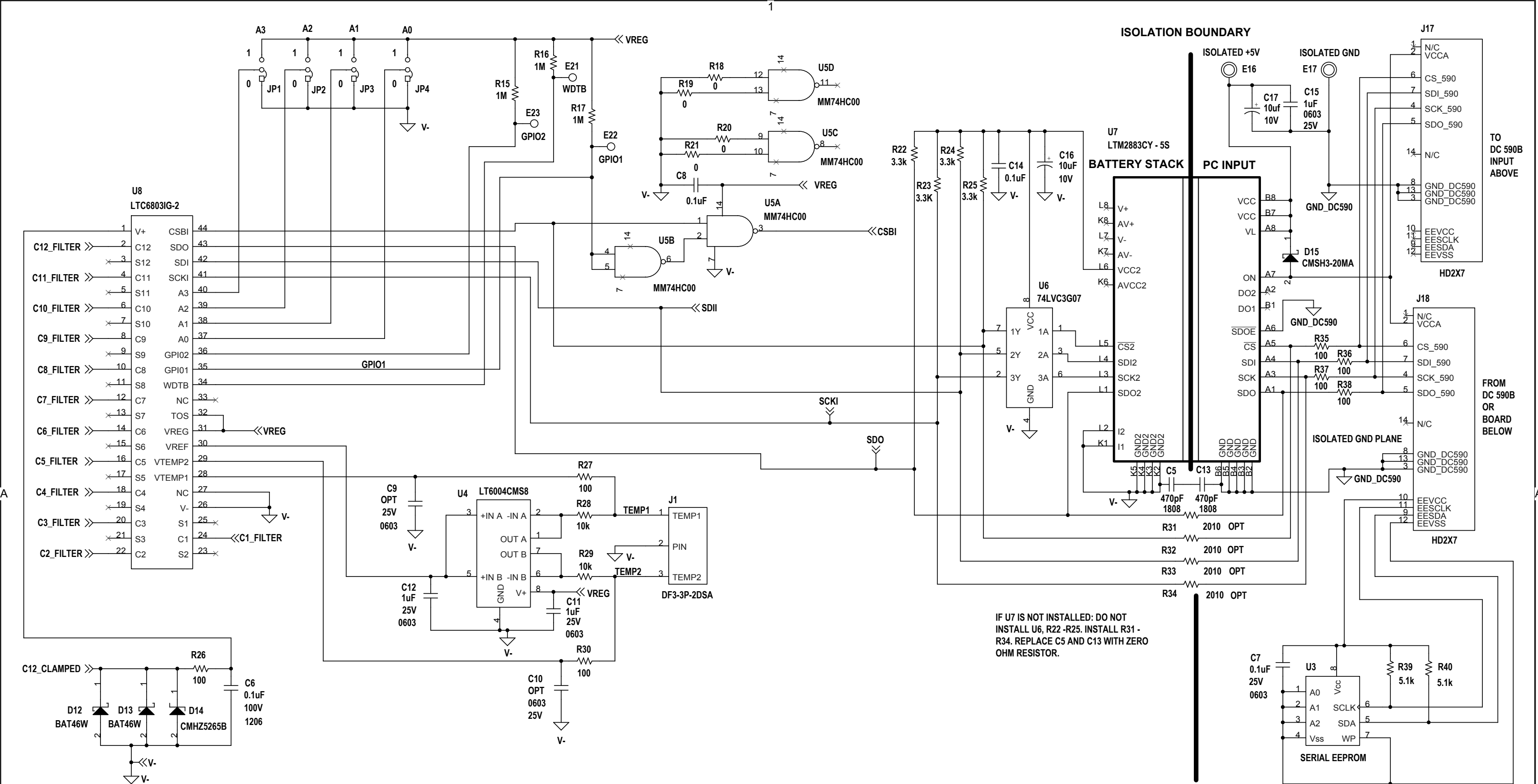
SIZE N/A	IC NO. <b>LTC3300ILXE-1 / LTC6803IG-2 DEMO CIRCUIT 2064A</b>	REV. <b>1</b>
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DATE: 1-11-13

SHEET 3 OF 5



<b>CUSTOMER NOTICE</b>		<b>APPROVALS</b>		<div> <b>LINEAR</b> TECHNOLOGY</div> <div>1630 McCarthy Blvd. Milpitas, CA 95035 Phone: (408)432-1900 www.linear.com Fax: (408)434-0507 LTC Confidential-For Customer Use Only</div>			
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.		PCB DES.	NC				
		APP ENG.	J. DREW				
THIS CIRCUIT IS PROPRIETARY TO LINEAR TECHNOLOGY AND SUPPLIED FOR USE WITH LINEAR TECHNOLOGY PARTS.		SCALE = NONE		TITLE: SCHEMATIC		HIGH EFFICIENCY BIDIRECTIONAL MULTICELL BATTERY BALANCER	
				SIZE N/A	IC NO. LTC3300ILXE-1 / LTC6803IG-2 DEMO CIRCUIT 2064A	REV. 1	
				DATE: 1 - 11 - 13		SHEET 4 OF 5	

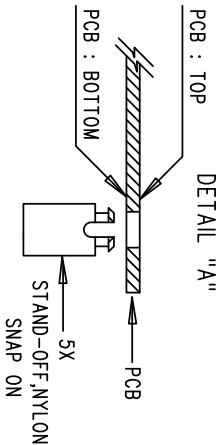


CUSTOMER NOTICE		APPROVALS		1630 McCarthy Blvd. Milpitas, CA 95035 Phone: (408)432-1900 www.linear.com Fax: (408)434-0507 LTC Confidential-For Customer Use Only		
LINEAR TECHNOLOGY HAS MADE A BEST EFFORT TO DESIGN A CIRCUIT THAT MEETS CUSTOMER-SUPPLIED SPECIFICATIONS; HOWEVER, IT REMAINS THE CUSTOMER'S 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.		PCB DES.	NC			
THIS CIRCUIT IS PROPRIETARY TO LINEAR TECHNOLOGY AND SUPPLIED FOR USE WITH LINEAR TECHNOLOGY PARTS.		APP ENG.	J. DREW	TITLE: SCHEMATIC		
				HIGH EFFICIENCY BIDIRECTIONAL MULTICELL BATTERY BALANCER		
				SIZE N/A	IC NO. LTC3300ILXE-1 / LTC6803IG-2 DEMO CIRCUIT 2064A	REV. 1
SCALE = NONE		DATE: 1-11-13		SHEET 5 OF 5		

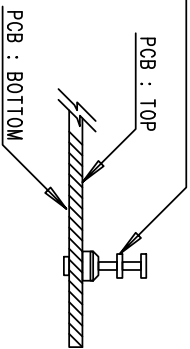
REVISION HISTORY			
ECO	REV	DESCRIPTION	DATE
-	1	PRODUCTION FAB	JUN 01 11-11-13

NOTES: UNLESS OTHERWISE SPECIFIED

1. WORKMANSHIP SHALL BE IN ACCORDANCE WITH IPC-A-610.
2. ASSEMBLY PROCESS SHALL INCLUDE: REFLOW SOLDER TOP SIDE SMD. MAXIMUM SOLDER TEMPERATURE IS 240 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:



(5 PLCS) : MILL-MAX 2308  
(18 PLCS) : MILL-MAX 2501-2



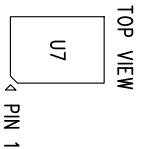
8. INSTALL LED'S DIE-D6E AS SHOWN:

LITE-ON, LTST-C193KGT-5A

DIE-D6E      PIN 1 ANODE

BOTTOM VIEW      PIN 2 CATHODE

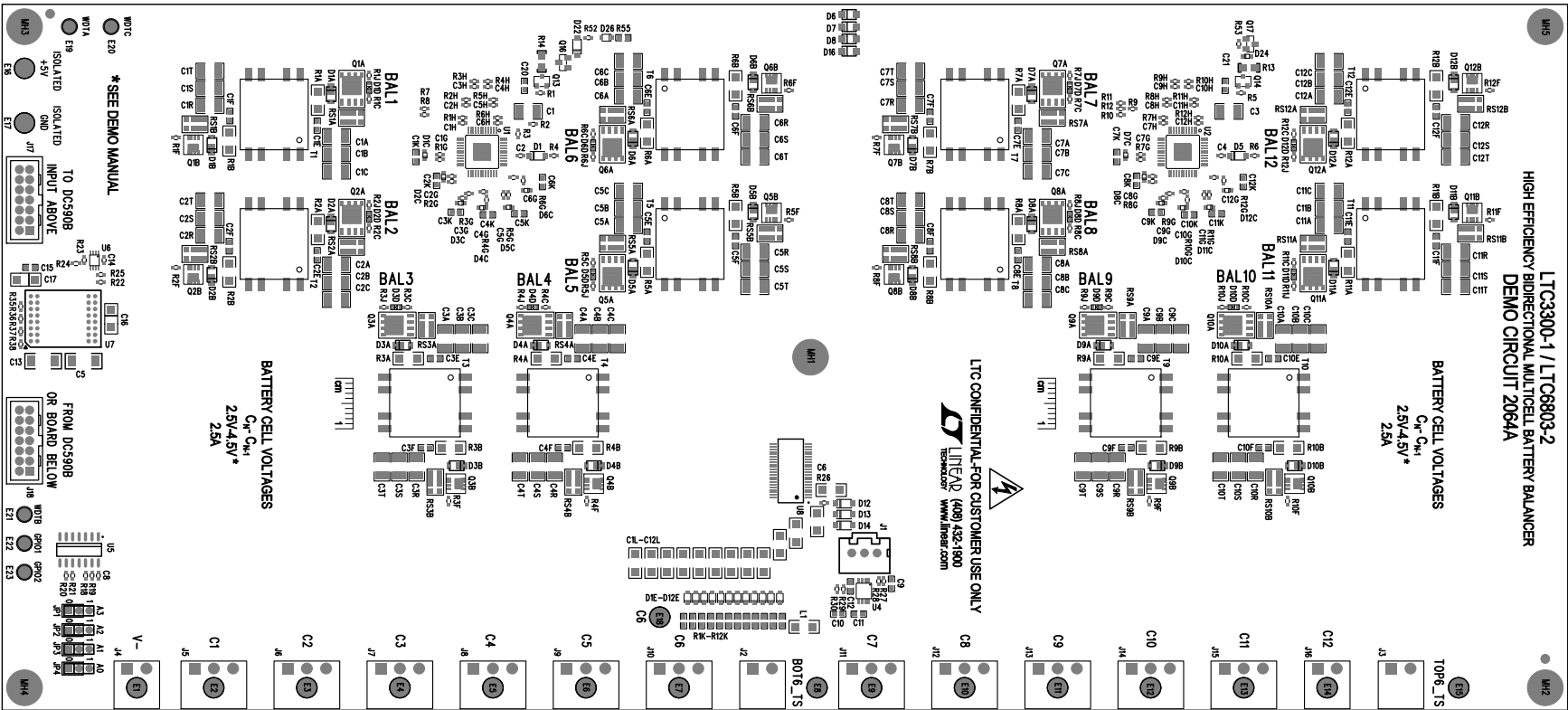
9. INSTALL U7 AS SHOWN BELOW:




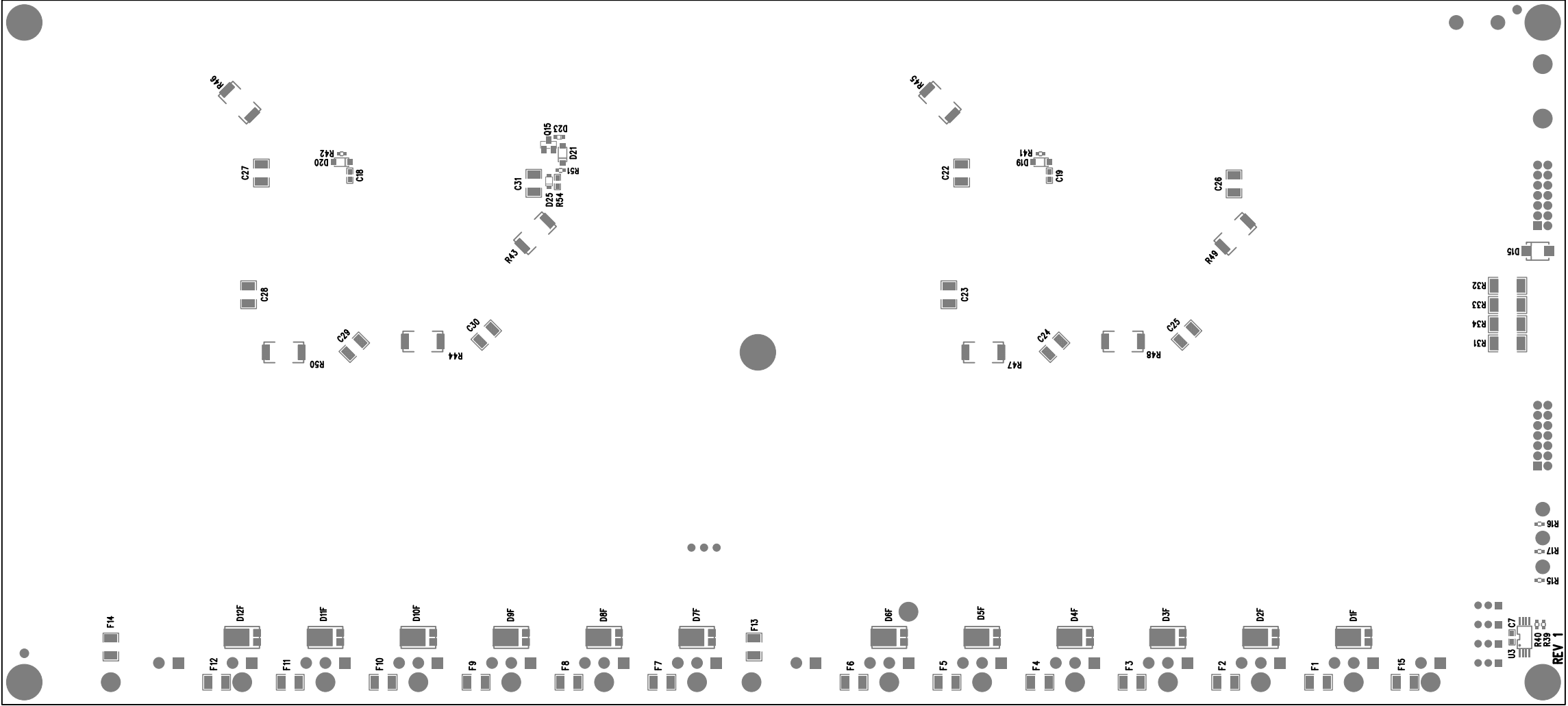
NOTE: FOR ASSEMBLY AND REFLOW RECOMMENDATIONS

PLEASE USE LINK PROVIDED BELOW:

[http://cds.linear.com/docs/en/product-info/L2\\_BGA-assy\\_july2012.pdf](http://cds.linear.com/docs/en/product-info/L2_BGA-assy_july2012.pdf)

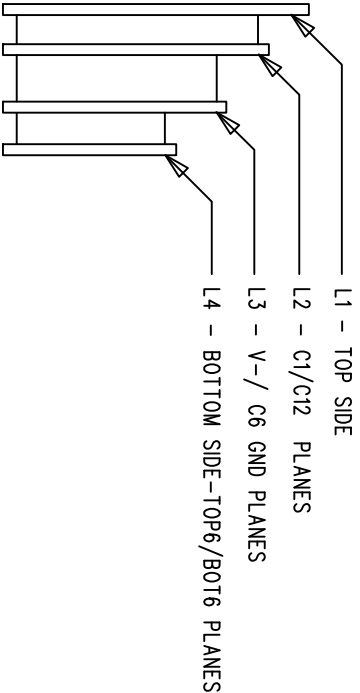


APPROVALS		 <b>LINEAR</b> TECHNOLOGY <small>3201 DECEMBER 2010 LTC3300-1/LTC6803-2 Pb (408) 432-2900 LTC CONFIDENTIAL- FOR CUSTOMER USE ONLY</small>
PCB DES.	NC	
APP ENG.	JUN 01	
TITLE: TOP ASSEMBLY DRAWING: HIGH EFFICIENCY BIDIRECTIONAL MULTICELL BATTERY BALANCER		
SIZE	IC NO. LTC3300LXE-V/LTC6803G-2 REV. 1 DENO CIRCUIT 2064A	
SCALE	NONE	
FILENAME: DC2064A-1P08		SHT 1 of 2



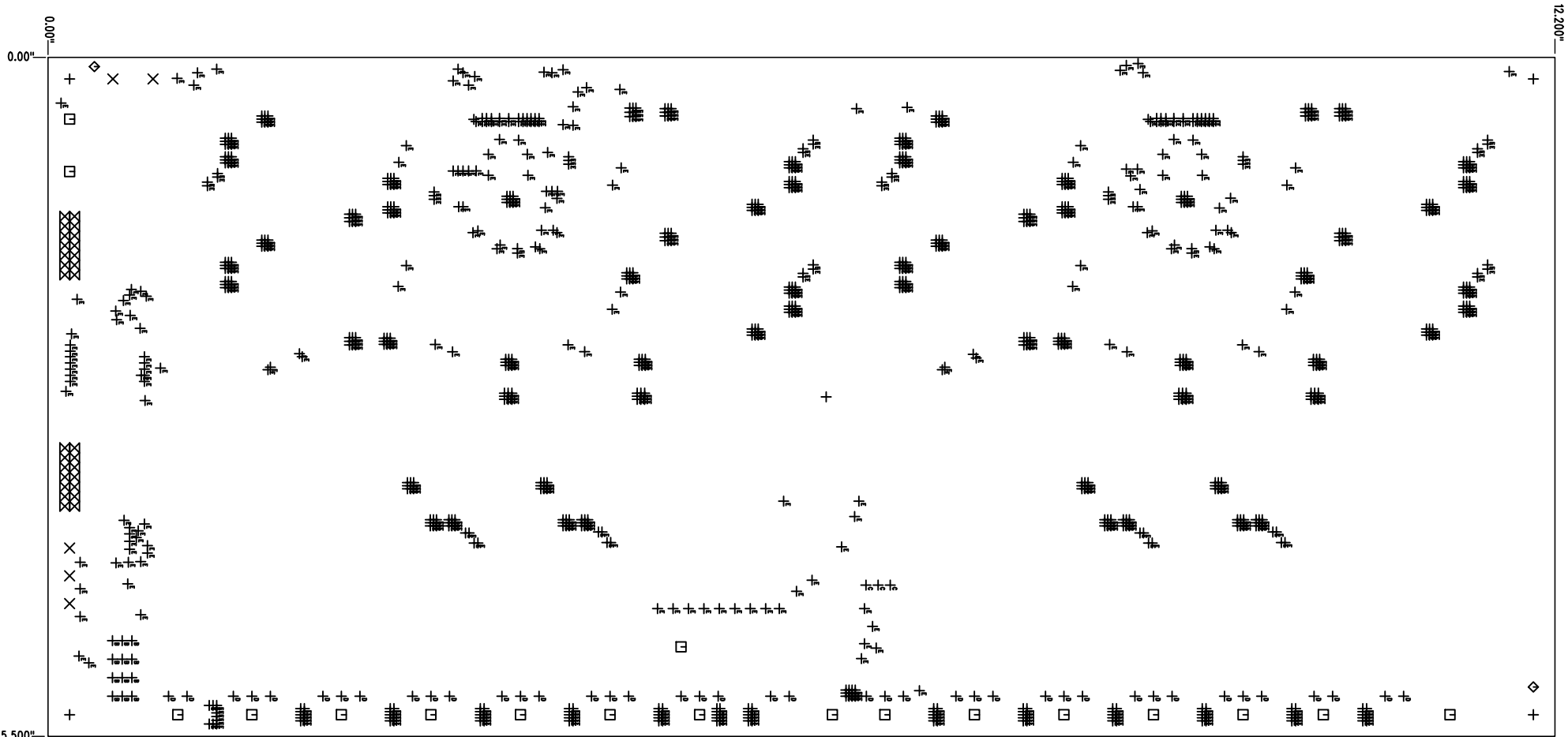
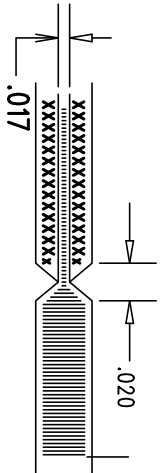
APPROVALS			<div><div><div><div></div><div>LINEAR</div><div>TECHNOLOGY</div></div><div><div>1830 MCCARTHY BLVD MILPITAS, CA 95035 PH: (408)432-1800 www.Linear.com</div><div>LTC CONFIDENTIAL FOR CUSTOMER USE ONLY</div></div></div></div>		
PCB DES.	NC		TITLE: BOTTOM ASSEMBLY DRAWING:		
APP ENG.	JIM D.		HIGH EFFICIENCY BIDIRECTIONAL MULTICELL BATTERY BALANCER		
			SIZE IC NO. LTC3300LXE-1/LTC6803IC-2		
			N/A		
			REV. 1		
SCALE = NONE			FILENAME: DC2064A-1.PCB		
			SHT 2 of 2		

REVISION HISTORY			
ECO#	REV	DESCRIPTION	DATE
-	1	PRODUCTION FAB	JIM D. 1-11-13



NOTES: UNLESS OTHERWISE SPECIFIED

- FAB PER IPC-A-600.
- MATERIAL: -LEAD FREE ASSEMBLY COMPLIANT, ISOLA FR-370HR OR EQUIVALENT.
  - 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.
- SIZE: CUT TO DIMENSIONS AND TOLERANCES SHOWN.  
0.00 ARE PRIMARY DATUMS.
- 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
- FINISH: -SMOBC USING LPI BOTH SIDES, COLOR GREEN.
  - GOLD IMMERSION BOTH SIDES.
  - (LEAD FREE SOLDER CAN BE USED FOR PROTOTYPE)
  - FOR SILKSCREEN: BOTH SIDES USE WHITE NON-CONDUCTIVE INK.
- DO NOT ALTER ARTWORK e.g. TO ADD LOGO OR DATE CODE.  
PAD SIZE CAN BE MODIFIED TO MEET END FINISH.
- PCBS ARE TO BE ROHS COMPLIANT.
- DO NOT ALTER SOLDER MASK MAINTAIN .0018" OVERSIZE ON SMT PADS. A .005" WEBBING IS REQUIRED BETWEEN SMD PADS.
- DESIGN HAS SOLDER MASK DEFINED PADS ON U7.  
U7 SOLDER MASK IS 25 MIL AND PAD SIZE IS 29 MIL.  
DO NOT CHANGE ANY SIZE ON THIS COMPONENT.
- SCORING FOR PANELIZED PCB: "PRODUCTION FAB ONLY"



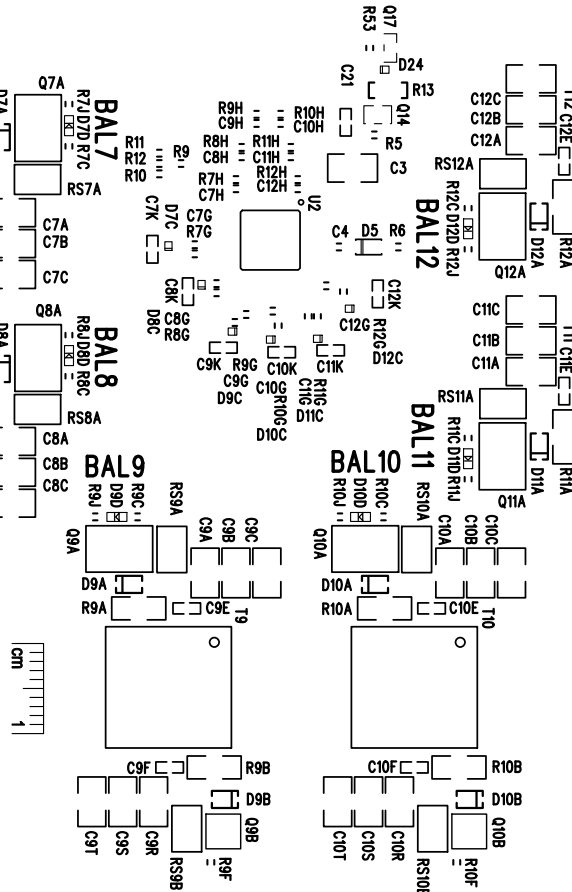
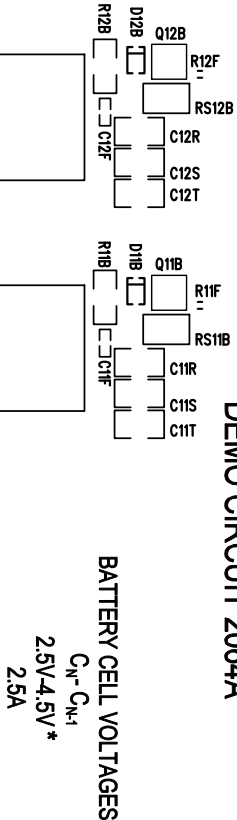
SIZE	QTY	SYM	PLATED	TOL
0.19	5	+	YES	+/- .003"
0.063	5	X	YES	+/- .003"
0.094	18	□	YES	+/- .003"
0.07	2	◇	NO	+/- .003"
0.035	28	Σ	YES	+/- .003"
0.031	12	⊥	YES	+/- .003"
0.0437	3	⊥	YES	+/- .003"
0.05512	41	⊥	YES	+/- .003"
0.012	1009	⊥	YES	+/- .003"

UNLESS OTHERWISE SPECIFIED			
DIMENSIONS ARE IN INCHES			
TOLERANCES: FRACTIONS DECIMALS			
0.XXX" = 10.001" 51"			
INTERPRET DIM AND TOL PER ASME Y14.5M-1994			
THIRD ANGLE PROJECTION			
DO NOT SCALE DRAWING		SCALE: NONE	
PGB DES. NC.		APPROVALS	
APP ENG. JIM D.		TITLE: FABRICATION DRAWING:	
		HIGH EFFICIENCY BIDIRECTIONAL	
		MULTICELL BATTERY BALANCER	
SIZE N/A		IC NO LTC3300LXE-1/LTC6803IG-2 REV. 1	
DEM0 CIRCUIT 2064A		SHT 1 of 1	



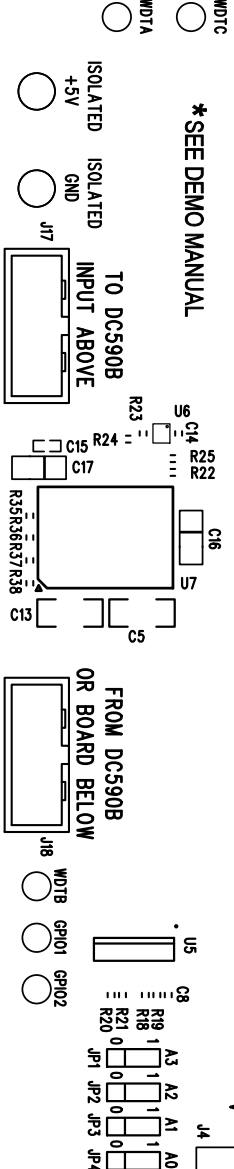
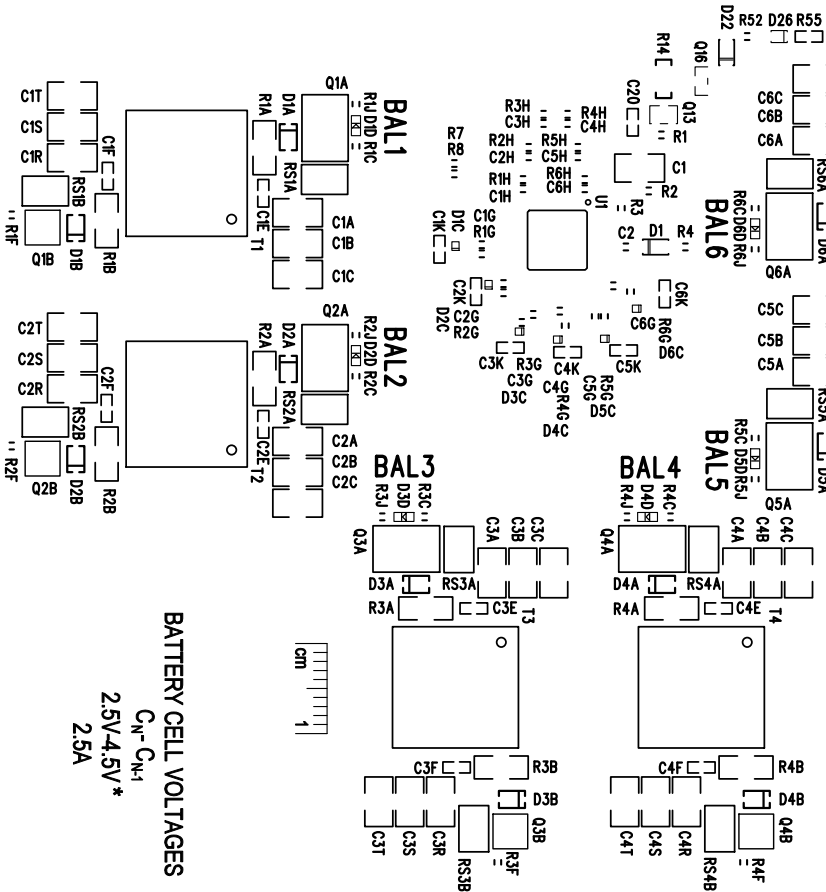
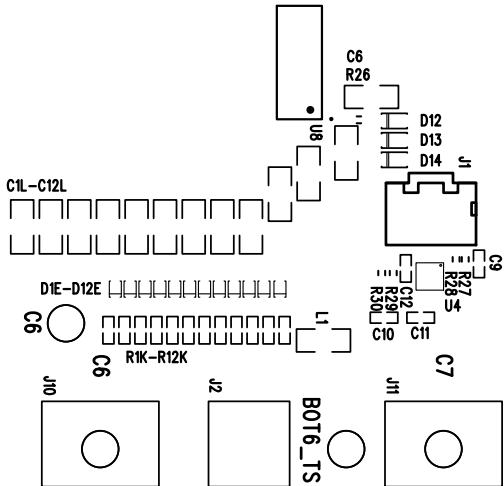
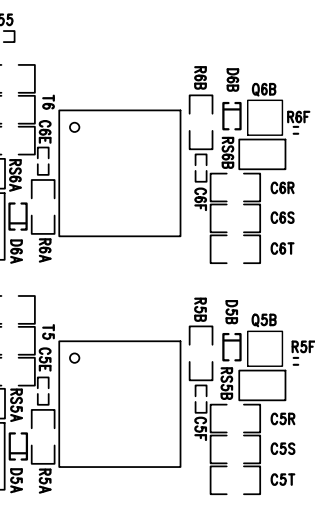


LTC3300-1 / LTC6803-2  
HIGH EFFICIENCY BIDIRECTIONAL MULTICELL BATTERY BALANCER  
DEMO CIRCUIT 2064A

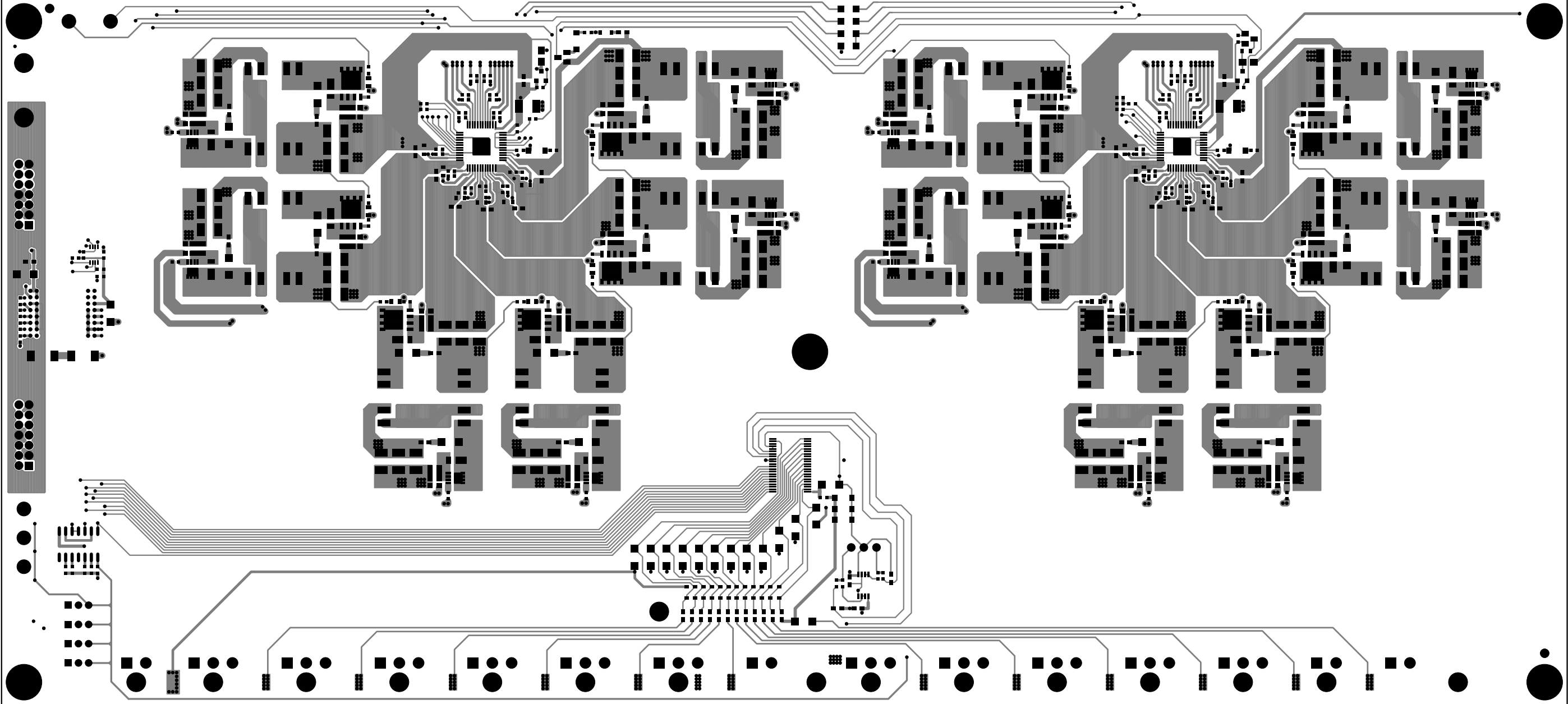


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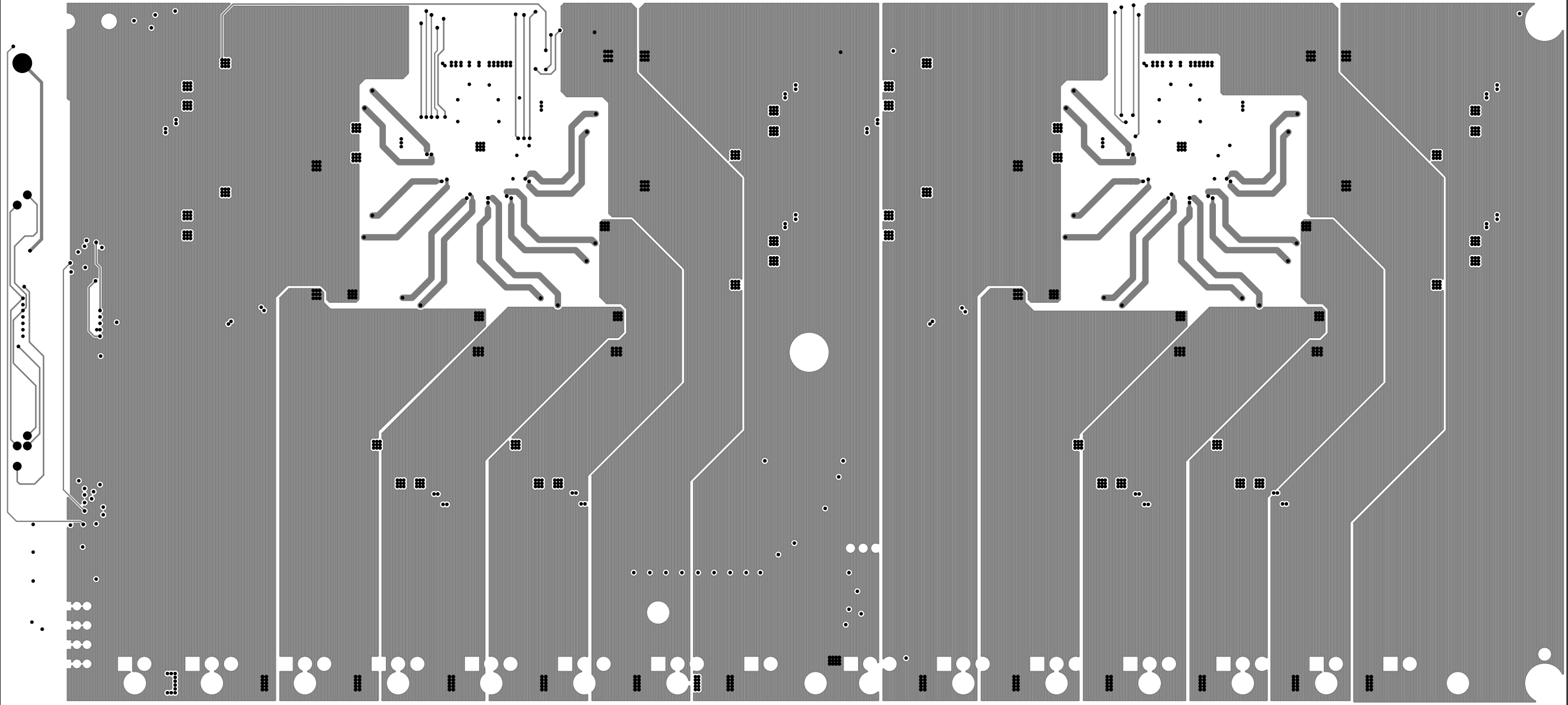
D6  
D7  
D8  
D16



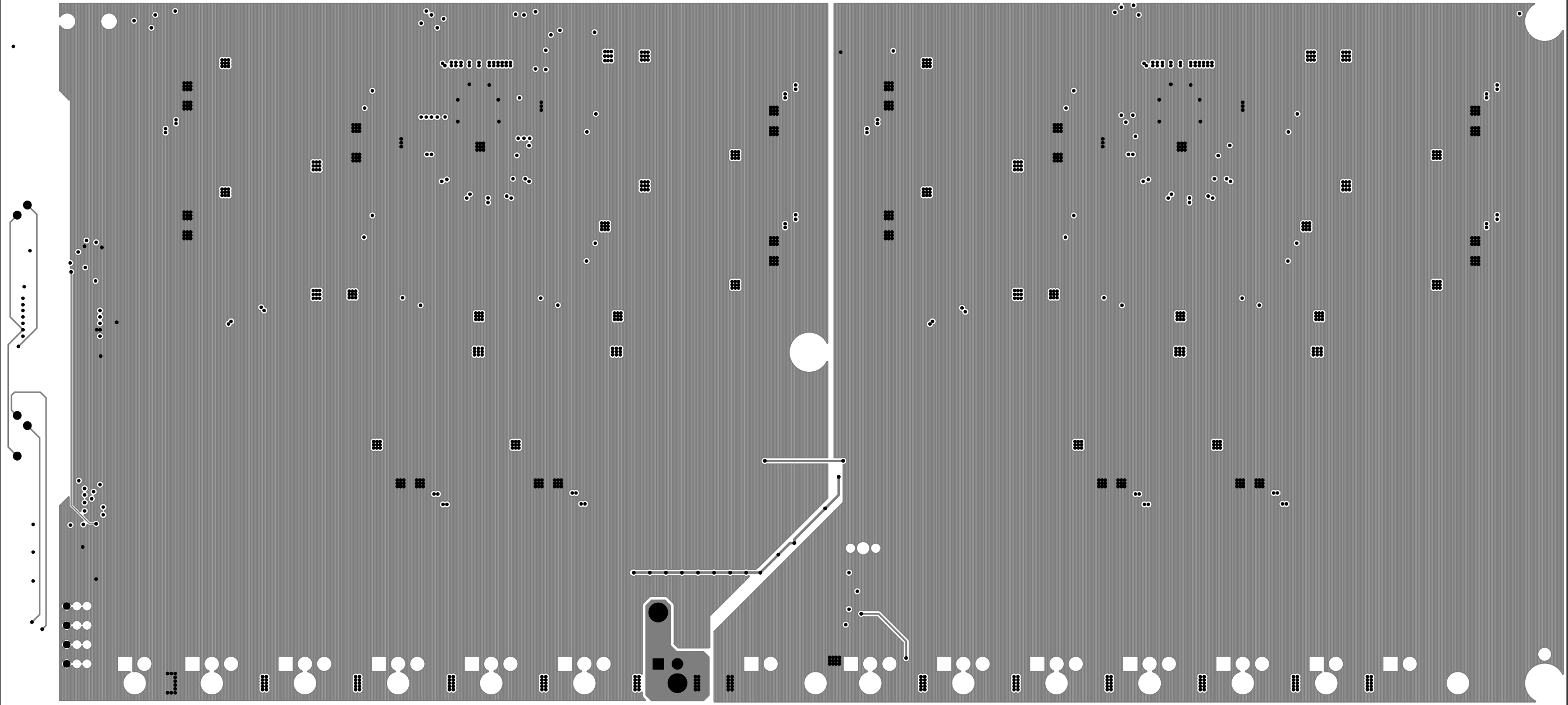
TOP SILKSCREEN  
LINEAR TECHNOLOGY  
DEMO CIRCUIT 2064A-1\* LTC3300-1/LTC6803-2  
HIGH EFFICIENCY BIDIRECTIONAL MULTICELL BATTERY BALANCER  
1-11-13



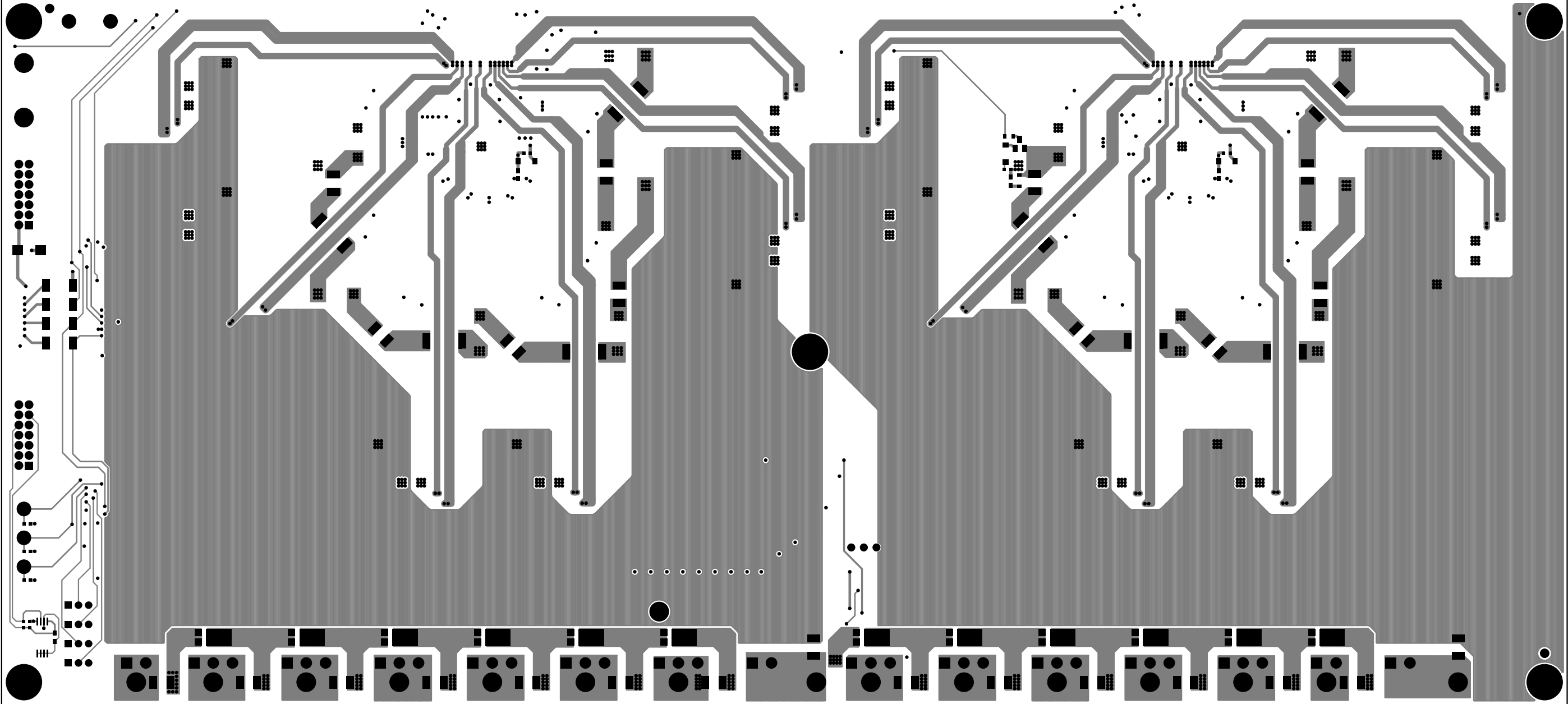
LAYER 1 - TOP SIDE  
LINEAR TECHNOLOGY  
DEMO CIRCUIT 2064A-1\* LTC3300-1/LTC6803-2  
HIGH EFFICIENCY BIDIRECTIONAL MULTICELL BATTERY BALANCER  
1-11-13



LAYER 2 - C1/C12 PLANES  
LINEAR TECHNOLOGY  
DEMO CIRCUIT 2064A-1\* LTC3300-1/LTC6803-2  
HIGH EFFICIENCY BIDIRECTIONAL MULTICELL BATTERY BALANCER  
1-11-13



LAYER 3 - V- / GND PLANES  
LINEAR TECHNOLOGY  
DEMO CIRCUIT 2064A-1\* LTC3300-1/LTC6803-2  
HIGH EFFICIENCY BIDIRECTIONAL MULTICELL BATTERY BALANCER  
1-11-13



LAYER 4 - BOTTOM SIDE-TOP6/BOT6 PLANES  
LINEAR TECHNOLOGY  
DEMO CIRCUIT 2064A-1\* LTC3300-1/LTC6803-2  
HIGH EFFICIENCY BIDIRECTIONAL MULTICELL BATTERY BALANCER  
1-11-13

