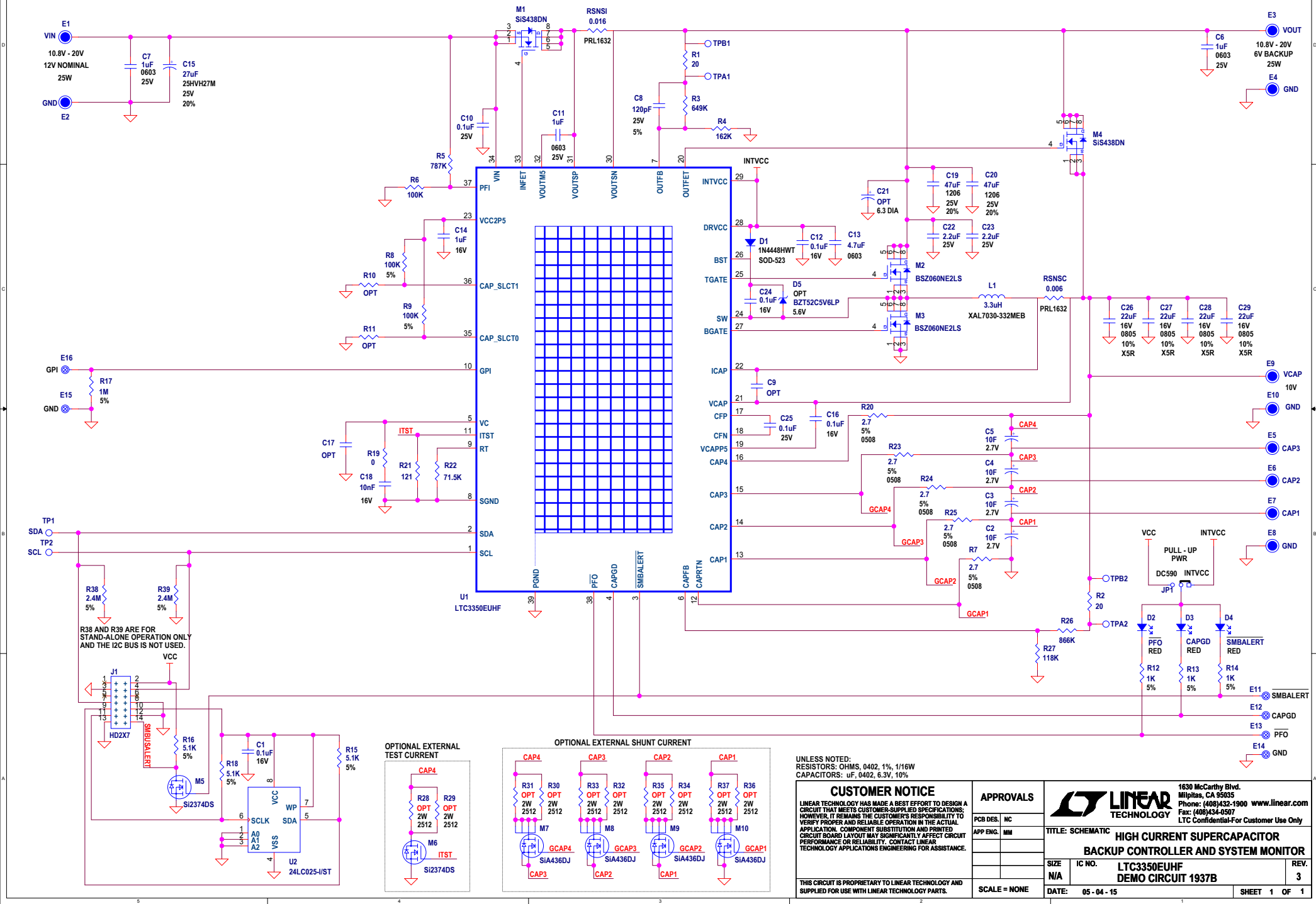


REVISION HISTORY				
ECO	REV	DESCRIPTION	APPROVED	DATE
-	3	PRODUCTION FAB	MM	05-04-15



Linear Technology Corporation

LTC3350EUHF
ENGR: M. Merchant (011-087)

BILL OF MATERIALS

DEMO BD. #1937B-3

QTY- 525

5/11/2015

Item	Qty	Reference	Part Description	Manufacturer / Part #	Kit Qty	Pkg Qty	Balance	Parts/Purch.
				NUMBER OF BOARDS =	525			
1	4	C1, C12, C16, C24	CAP, CHIP, X7R, 0.1µF, ±10%, 16V, 0402	MURATA, GRM155R71C104KA88D				
2	4	C2-C5	CAP., ULTRA, 10F, 2.7V, RADIAL	NESSCAP CO. LTD., ESHSR-0010C0-002R7				
3	3	C6, C7, C11	CAP, CHIP, X5R, 1µF, ±10%, 25V, 0603	MURATA, GRM188R61E105KA12D				
4	1	C8	CAP, CHIP, X5R, 120pF, ±5%, 25V, NPO, 0402	MURATA, GRM1555C1E121JA01D				
5	0	C9, C17 (OPT)	CAP, CHIP, 0402					
6	2	C10, C25	CAP, CHIP, X5R, 0.1µF, ±10%, 25V, 0402	TDK, C1005X5R1E104K050BC				
7	1	C13	CAP, CHIP, X5R, 4.7µF, ±10%, 6.3V, 0603	TDK, C1608X5R0J475K080AB				
8	1	C14	CAP, CHIP, X5R, 1µF, ±10%, 16V, 0402	TDK, C1005X5R1C105K050BC				
9	1	C15	CAP, 27µF, 25V, Alum. Electro, 20%, 6.3 X 4.5	SUN ELECTRONIC INDUSTRIES CORP., 25HVVH27M				
10	1	C18	CAP., 0.01uF, X7R, 16V, 10%, 0402	AVX, 0402YC103KAT2A				
11	2	C19, C20	CAP, CHIP, X5R, 47µF, ±20%, 25V, 1206	TDK, C3216X5R1E476M160AC				
12	0	C21 (OPT)	CAP, 27µF, 25V, Alum. Electro, 20%, 6.3 X 4.5	SUN ELECTRONIC INDUSTRIES CORP., 25HVVH27M				
13	2	C22, C23	CAP, CHIP, X5R, 2.2µF, ±10%, 25V, 0402	TDK, C1005X5R1E225K050BC				
14	4	C26, C27, C28, C29	CAP, CHIP, X5R, 22uF, ±10%, 16V, 0805	TDK, C2012X5R1C226K125AC				
15	1	D1	DIODE, SWITCHING, 80V, 0.125A, SOD-523	DIODES INC, 1N4448HWT-7				
16	3	D2, D3, D4	LED, SUPER RED, 660nm, 0603, 1.6X0.8mm	LUMEX, SML-LX0603SRW-TR				
17	0	D5 (OPT)	DIODE ZENER, 5.6V, 250mW, DFN1006-2	DIODES INC, BZT52C5V6LP-7				
18	10	E1 - E10	TEST POINT, TURRET, .094" MTG. HOLE	MILL-MAX, 2501-2-00-80-00-00-07-0				
19	6	E11 - E16	TEST POINT, TURRET, .064" MTG. HOLE	MILL-MAX, 2308-2-00-80-00-00-07-0				
20	1	J1	CONN., HEADER, SHROUDED, 2X7, 2mm, VERTICAL	MOLEX, 87831-1420				
21	1	JP1	CONN., HEADER, 1X3, 2mm	WURTH ELEKTRONIK, 62000311121				
22	1	XJP1 (SHUNT)	SHUNT 2mm 1X3	WURTH ELEKTRONIK, 60800213421				
23	1	L1	IND, SMT, 3.3µH, ±20%	IND., PWR., SHIELDED, 3.3uH, 20%, XAL7030 Series				
24	2	M1, M4	MOSFET, N-CH, 20V, 16A, PowerPAK 1212-8	VISHAY, SIS438DN-T1-GE3				
25	2	M2, M3	MOSFET, N-CH, 25V, 40A, TSDSON-8	INFINEON, BSZ060NE2LS				
26	1	M5	MOSFET, N-CH, 20V, 5.9A, SOT-23	VISHAY, SI2374DS-T1-GE3				
27	0	M6 (OPT)	MOSFET, N-CH 20V, 5.9A, SOT-23	VISHAY, SI2374DS-T1-GE3				
28	0	M7-M10 (OPT)	MOSFET, N-CH 8V, 12A, PowerPAK SC-70 6L	VISHAY, SIA436DJ-T1-GE3				
29	2	R1, R2	RES, CHIP, 20Ω, ±1%, 1/16W, 0402	VISHAY, CRCW040220R0FKED				
30	1	R3	RES., 649k, 1/16W, 1%, 0402	VISHAY, CRCW0402649KFKED				
31	1	R4	RES., 162k, 1/16W, 1%, 0402	VISHAY, CRCW0402162KFKED				
32	1	R5	RES., 787k, 1/16W, 1%, 0402	VISHAY, CRCW0402787KFKED				
33	1	R6	RES., 100k, 1/16W, 1%, 0402	VISHAY, CRCW0402100KFKED				
34	5	R7, R20, R23, R24, R25	RES., HIGH PWR., WIDE TERMINAL, 2.7 OHMS, 1/2W, 1%, 0805	ROHM SEMI, LTR10EVHFL2R70				
35	2	R8, R9	RES, CHIP, 100KΩ, ±5%, 1/16W, 0402	VISHAY, CRCW0402100KJNED				
36	0	R10, R11 (OPT)	RES, CHIP, 0402					
37	3	R12, R13, R14	RES, CHIP, 1KΩ, ±5%, 1/16W, 0402	VISHAY, CRCW04021K00JNED				
38	3	R15, R16, R18	RES, CHIP, 5.1KΩ, ±5%, 1/16W, 0402	VISHAY, CRCW04025K10JNED				
39	1	R17	RES., 1M, 1/16W, 5%, 0402	VISHAY, CRCW04021M00FKED				
40	1	R19	RES, CHIP, 0Ω JUMPER, 1/16W, 0402	VISHAY, CRCW04020000Z0ED				
41	1	R21	RES., 121 OHMS, 1/16W, 1%, 0402	VISHAY, CRCW0402121RFKED				

LTC3350EUHF
ENGR: M. Merchant (011-087)

DEMO BD. #1937B-3

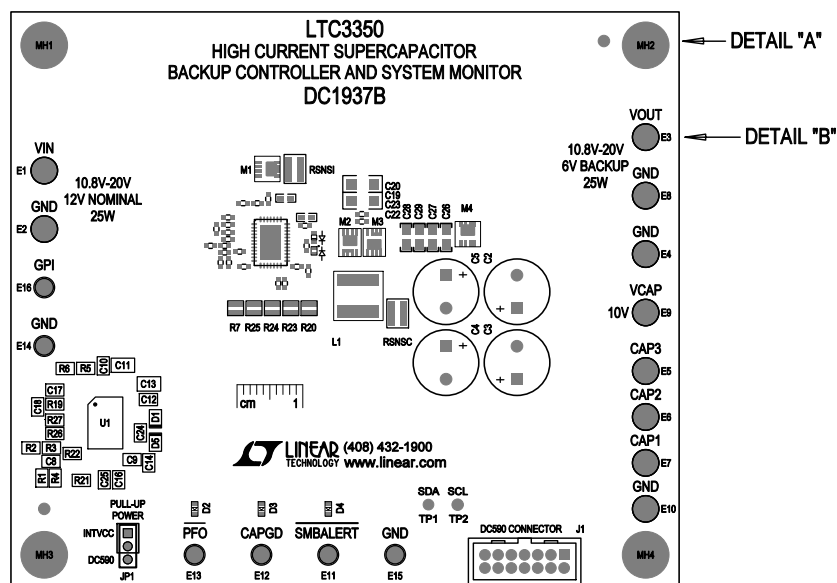
QTY- 525

5/11/2015

Page 2 - of - 2

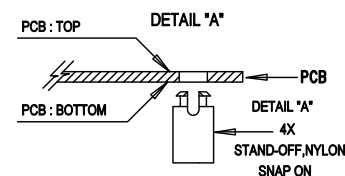
Item	Qty	Reference	Part Description	Manufacturer / Part #
REQUIRED CIRCUIT COMPONENTS:				
1	4	C2-C5	CAP, ELECTRIC DOUBLE LAYER, 10F, 2.7V	NESSCAP, ESHSR 0010C0 002R7
2	1	C8	CAP, CHIP, COG, 120pF, $\pm 5\%$, 25V, 0402	MURATA, GRM1555C1E121JA01D
3	2	C10, C25	CAP, CHIP, X5R, 0.1 μ F, $\pm 10\%$, 25V, 0402	TDK, C1005X5R1E104K050BC
4	1	C11	CAP, CHIP, X5R, 1 μ F, $\pm 10\%$, 25V, 0603	MURATA, GRM188R61E105KA12D
5	3	C12, C16, C24	CAP, CHIP, X7R, 0.1 μ F, $\pm 10\%$, 16V, 0402	MURATA, GRM155R71C104KA88D
6	1	C13	CAP, CHIP, X5R, 4.7 μ F, $\pm 10\%$, 6.3V, 0603	TDK, C1608X5R0J475K080AB
7	1	C14	CAP, CHIP, X5R, 1 μ F, $\pm 10\%$, 16V, 0402	TDK, C1005X5R1C105K050BC
8	1	C15	CAP, 27 μ F, 25V, Alum. Electro, 20%, 6.3 X 4.5	SUN ELECT, 25HVH27M
9	1	C18	CAP., 0.01 μ F, X7R, 16V, 10%, 0402	AVX, 0402YC103KAT2A
10	2	C19, C20	CAP, CHIP, X5R, 47 μ F, $\pm 20\%$, 25V, 1206	TDK, C3216X5R1E476M160AC
11	2	C22, C23	CAP, CHIP, X5R, 2.2 μ F, $\pm 10\%$, 25V, 0402	TDK, C1005X5R1E225K050BC
12	4	C26, C27, C28, C29	CAP, CHIP, X5R, 22 μ F, $\pm 10\%$, 16V, 0805	TDK, C2012X5R1C226K125AC
13	1	D1	DIODE, SWITCHING, 80V, 0.125A, SOD-523	DIODES INC, 1N4448HWT-7
14	1	L1	IND., PWR., SHIELDED, 3.3 μ H, 20%	COILCRAFT, XAL7030-332MEB
15	2	M1, M4	FET, N-MOS, 20V, 16A, POWER-PAK 1212-8	VISHAY, SIS438DN-T1-GE3
16	2	M2, M3	MOSFET N-CH 25V, 40A TSDSON-8	INFINEON, BSZ060NE2LS
17	1	R3	RES, CHIP, 649K Ω , $\pm 1\%$, 1/16W, 0402	VISHAY, CRCW0402649KFKED
18	1	R4	RES, CHIP, 162K Ω , $\pm 1\%$, 1/16W, 0402	VISHAY, CRCW0402162KFKED
19	1	R5	RES, CHIP, 787K Ω , $\pm 1\%$, 1/16W, 0402	VISHAY, CRCW0402787KFKED
20	1	R6	RES, CHIP, 100K Ω , $\pm 1\%$, 1/16W, 0402	VISHAY, CRCW0402100KFKED
21	5	R7, R20, R23, R24, R25	RES, CHIP, 2.7 Ω , $\pm 1\%$, 1/2W, 0805 WIDE	ROHM SEMI, LTR10EVHFL2R70
22	2	R8, R9	RES, CHIP, 100K Ω , $\pm 5\%$, 1/16W, 0402	VISHAY, CRCW0402100KJNED
23	3	R12, R13, R14	RES, CHIP, 1K Ω , $\pm 5\%$, 1/16W, 0402	VISHAY, CRCW04021K00JNED
24	1	R19	RES, CHIP, 0 Ω JUMPER, 1/16W, 0402	VISHAY, CRCW04020000Z0ED
25	1	R21	RES, CHIP, 121 Ω , $\pm 1\%$, 1/16W, 0402	VISHAY, CRCW0402121RFKED
26	1	R22	RES, CHIP, 71.5K Ω , $\pm 1\%$, 1/16W, 0402	VISHAY, CRCW040271K5FKED
27	1	R26	RES, CHIP, 866K Ω , $\pm 1\%$, 1/16W, 0402	VISHAY, CRCW0402866KFKED
28	1	R27	RES, CHIP, 118K Ω , $\pm 1\%$, 1/16W, 0402	VISHAY, CRCW0402118KFKED
29	1	RSNSC	RES, CHIP, 6m Ω , $\pm 1\%$, 1W, 1632	SUSUMU, PRL1632-R006-FT1
30	1	RSNSI	RES, CHIP, 16m Ω , $\pm 1\%$, 1W, 1632	SUSUMU, PRL1632-R016-FT1
31	1	U1	SUPERCAP BACKUP CONTROLLER	LINEAR TECH., LTC3350EUHF#PBF
ADDITIONAL DEMO BOARD CIRCUIT COMPONENTS:				
32	1	C1	CAP, CHIP, X7R, 0.1 μ F, $\pm 10\%$, 16V, 0402	MURATA, GRM155R71C104KA88D
33	2	C6, C7	CAP, CHIP, X5R, 1 μ F, $\pm 10\%$, 25V, 0603	MURATA, GRM188R61E105KA12D
34	0	C9, C17	CAP, CHIP, 0402	
35	0	C21	CAP, 6.3 X 4.5	
36	3	D2, D3, D4	LED, SUPER RED, 660nm, 0603, 1.6X0.8mm	LUMEX, SML-LX0603SRW-TR
37	0	D5	DIODE ZENER, 5.6V, 250mW, DFN1006-2	DIODES INC, BZT52C5V6LP-7
38	2	R1, R2	RES, CHIP, 20 Ω , $\pm 1\%$, 1/16W, 0402	VISHAY, CRCW040220R0FKED
39	0	R10, R11	RES, CHIP, 0402	
40	3	R15, R16, R18	RES, CHIP, 5.1K Ω , $\pm 5\%$, 1/16W, 0402	VISHAY, CRCW04025K10JNED
41	1	R17	RES, CHIP, 1M Ω , $\pm 5\%$, 1/16W, 0402	VISHAY, CRCW04021M00JNED
42	0	R28-R29	RES, CHIP, 2W, 2512	
43	0	R30-R37	RES, CHIP, 2W, 2512	
44	2	R38, R39	RES, CHIP, 2.4M Ω , $\pm 5\%$, 1/16W, 0402	VISHAY, CRCW04022M40JNED
45	1	M5	MOSFET, N-CH 20V, 5.9A, SOT-23	VISHAY, SI2374DS-T1-GE3
46	0	M6	MOSFET, N-CH 20V, 5.9A, SOT-23	VISHAY, SI2374DS-T1-GE3
47	0	M7-M10	MOSFET, N-CH 8V, 12A, PowerPAK SC-70 6L	VISHAY, SIA436DJ
48	1	U2	I2C EEPROM	MICROCHIP, 24LC025-I/ST
HARDWARE-FOR DEMO BOARD ONLY:				
49	10	E1- E10	TURRET, 0.09 DIA	MILL-MAX, 2501-2-00-80-00-00-07-0
50	6	E11- E16	TURRET, 0.061 DIA	MILL-MAX, 2308-2-00-80-00-00-07-0
51	1	J1	CONN, 2x14 2mm HEADER	MOLEX, 87831-1420
52	1	JP1	HEADER, 3PINS, 2mm	WURTH, 62000311121
53	1	XJP1	SHUNT 2mm 1X3	WURTH, 60800213421
54	4		STAND-OFF, NYLON 0.50" tall	KEYSTONE, 8833(SNAP ON)
55	1		FAB, PRINTED CIRCUIT BOARD	DC1937B-3

REVISION HISTORY				
ECO	REV	DESCRIPTION	APPR	DATE
-	3	PRODUCTION FAB	MM	05-04-15

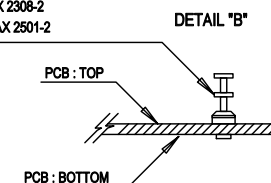


NOTES: UNLESS OTHERWISE SPECIFIED

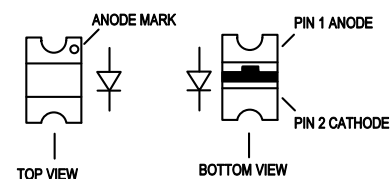
1. WORKMANSHIP SHALL BE IN ACCORDANCE WITH IPC-A-610.
2. ASSEMBLY REFLOW PROFILE SHALL BE IN ACCORDANCE WITH J-STD-020 WITH MAXIMUM SOLDER TEMPERATURE OF 250 DEGREES CELSIUS.
3. PARTS TO OMIT WILL BE SPECIFIED ON THE BILL OF MATERIALS
LOCATIONS OF OMITTED PARTS SHALL BE FREE OF SOLDER.
MASK THE SOLDER 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. APPLY ASSEMBLY STAMP OR QA STAMP TO BOTTOM OF BOARD (UNSHOWY AREA).
7. INSTALL TURRETS, STAND-OFFS AND BANANA JACKS AS SHOWN BELOW:




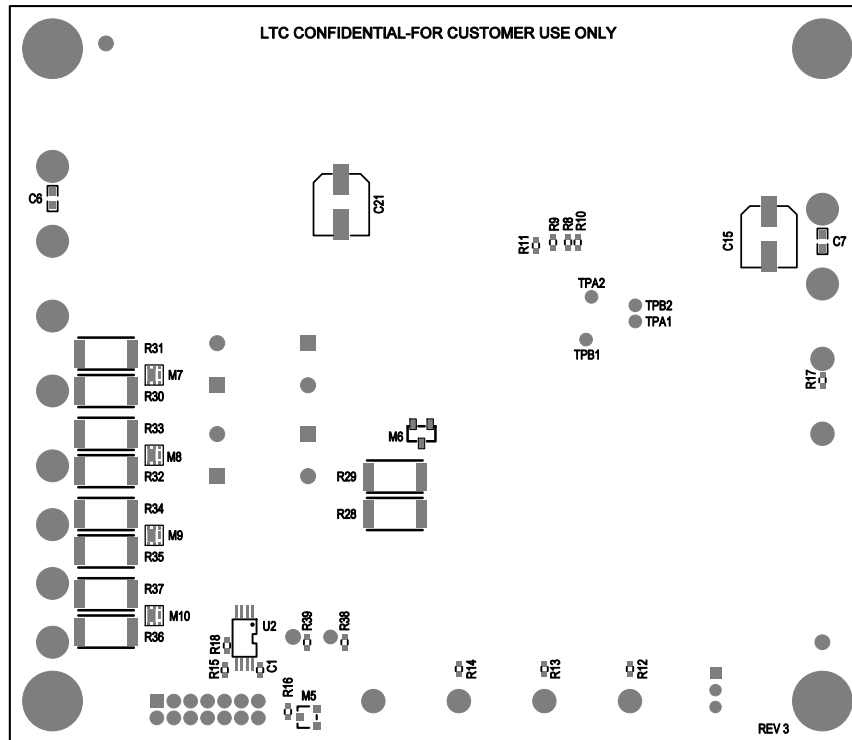
(6 PLCS) : MILL-MAX 2308-2
(10 PLCS) : MILL-MAX 2501-2




8. INSTALL LED'S D2, D3 AND D4 AS SHOWN:



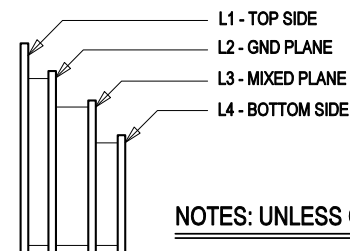
APPROVALS		 1930 MCCARTHY BLVD MILPITAS, CA 95035 PH: (408)432-1800 www.linear.com LTC CONFIDENTIAL - FOR CUSTOMER USE ONLY	
PCB DES.	NC		
APP ENG.	MM	TITLE: TOP ASSEMBLY DRAWING:	
		HIGH CURRENT SUPERCAPACITOR BACKUP CONTROLLER AND SYSTEM MONITOR	
		SIZE	IC NO. LTC3350EUHF
		N/A	REV. 3
		FILENAME: DC1937B-3.PCB	SHT 1 of 2
SCALE = NONE			



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: BOTTOM ASSEMBLY DRAWING: HIGH CURRENT SUPERCAPACITOR BACKUP CONTROLLER AND SYSTEM MONITOR	
		SIZE	IC NO. LTC3350EUHF
		N/A	DEMO CIRCUIT 1937B
SCALE = NONE		FILENAME: DC1937B-3.PCB	REV. 3
		SHT 2 of 2	

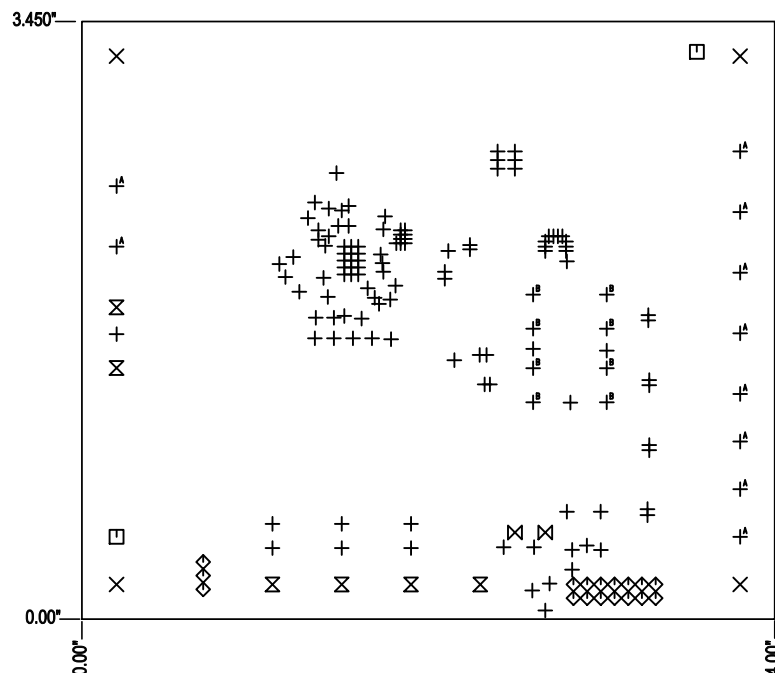
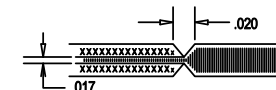
REVISION HISTORY				
ECO	REV	DESCRIPTION	APPR	DATE
-	3	PRODUCTION FAB	MM	05-04-15

LAYER STRUCTURE


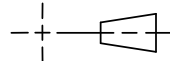


NOTES: UNLESS OTHERWISE SPECIFIED

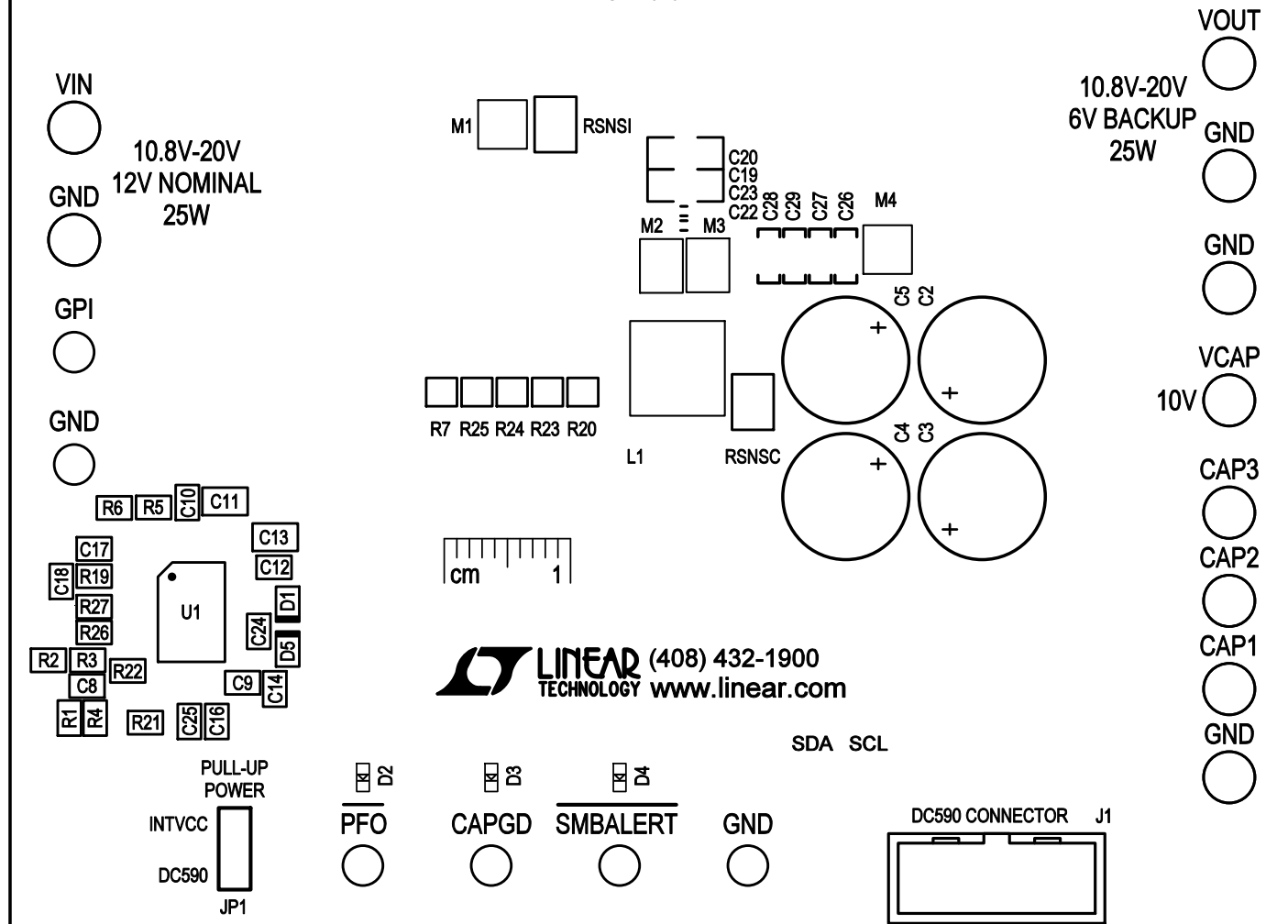
- FAB PER IPC-A-600.
- MATERIAL: -EPOXY FIBERGLASS, NEMA GRADE FR-4
-FINISHED THICKNESS TO BE 0.062" +/- .005"
-TOTAL OF 4 LAYERS WITH 2 OZ. CU ON THE OUTER LAYERS
AND 2 OZ. CU ON THE INNER LAYERS.
-FLAMMABILITY RATING: 94 V-0 MINIMUM.
- SIZE: CUT TO DIMENSIONS AND TOLERANCES SHOWN.
0.00 ARE PRIMARY 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 .003" OVERSIZE
ON SMT PADS. A .005" WEBBING IS REQUIRED BETWEEN SMD PADS.
- SCORING FOR PANELIZED PCB: "PRODUCTION FAB ONLY"



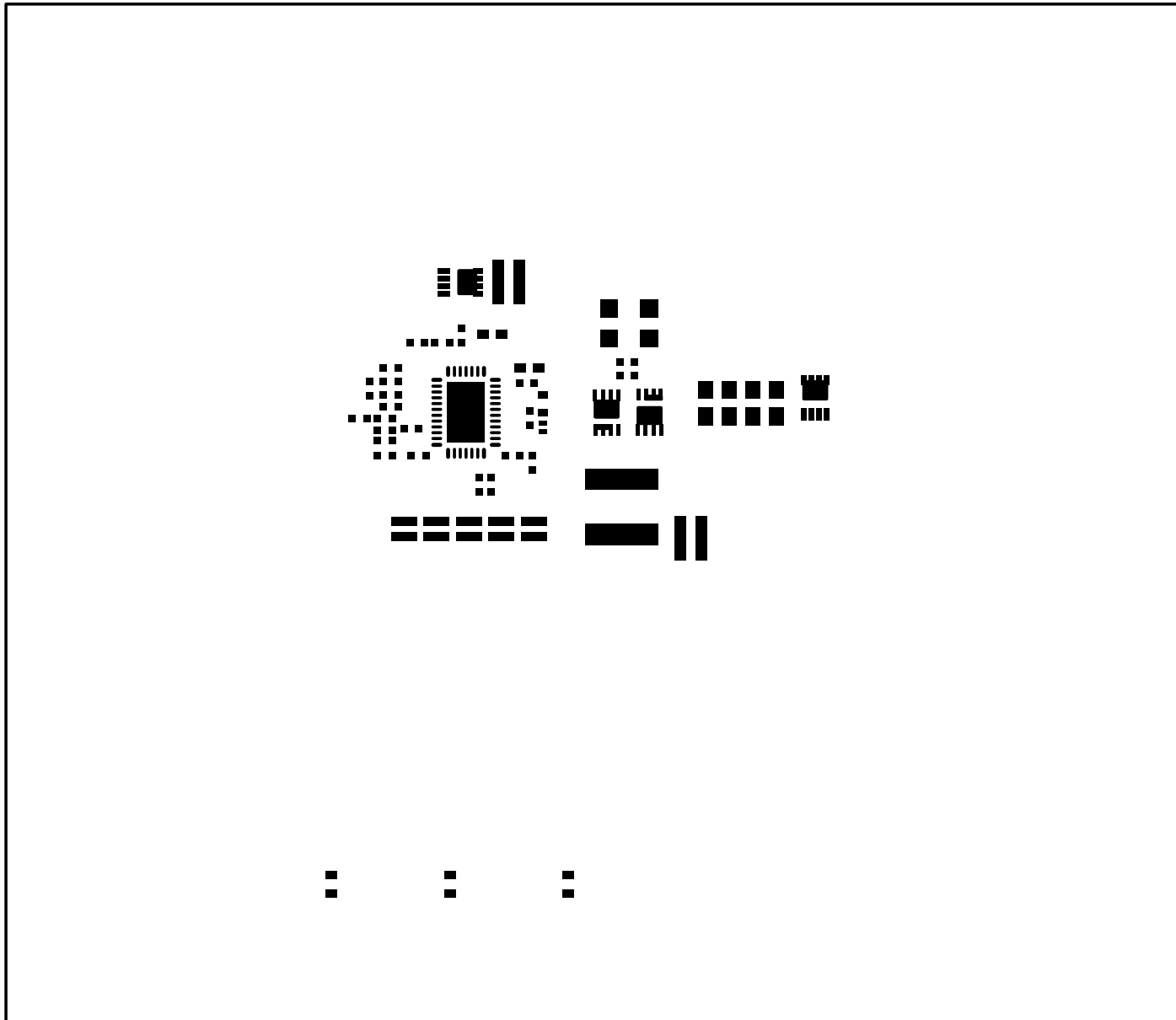
SIZE	QTY	SYM	PLATED	TOL
0.01	117	+	YES	+/-0.003
0.03268	8	⊠	YES	+/-0.003
0.035	17	◇	YES	+/-0.003
0.045	2	⊠	YES	+/-0.003
0.063	6	⊠	YES	+/-0.003
0.07	2	⊠	NO	+/-0.003
0.094	10	⊠	YES	+/-0.003
0.19	4	⊠	YES	+/-0.003

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON ANGLE 1° ± 0.000° = 0.01° 0.000° = 0.005° INTERPRET DIM AND TOL PER ASME Y14.5M-1994	APPROVALS			1830 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 CURRENT SUPERCAPACITOR BACKUP CONTROLLER AND SYSTEM MONITOR			
THIRD ANGLE PROJECTION						
						
DO NOT SCALE DRAWING	SCALE: NONE		SIZE	IC NO.	LTC3350EUHF	REV.
			N/A	DEMO CIRCUIT 1937B		3
			FILENAME: DC1937B-3.PCB			SHT 1 of 1

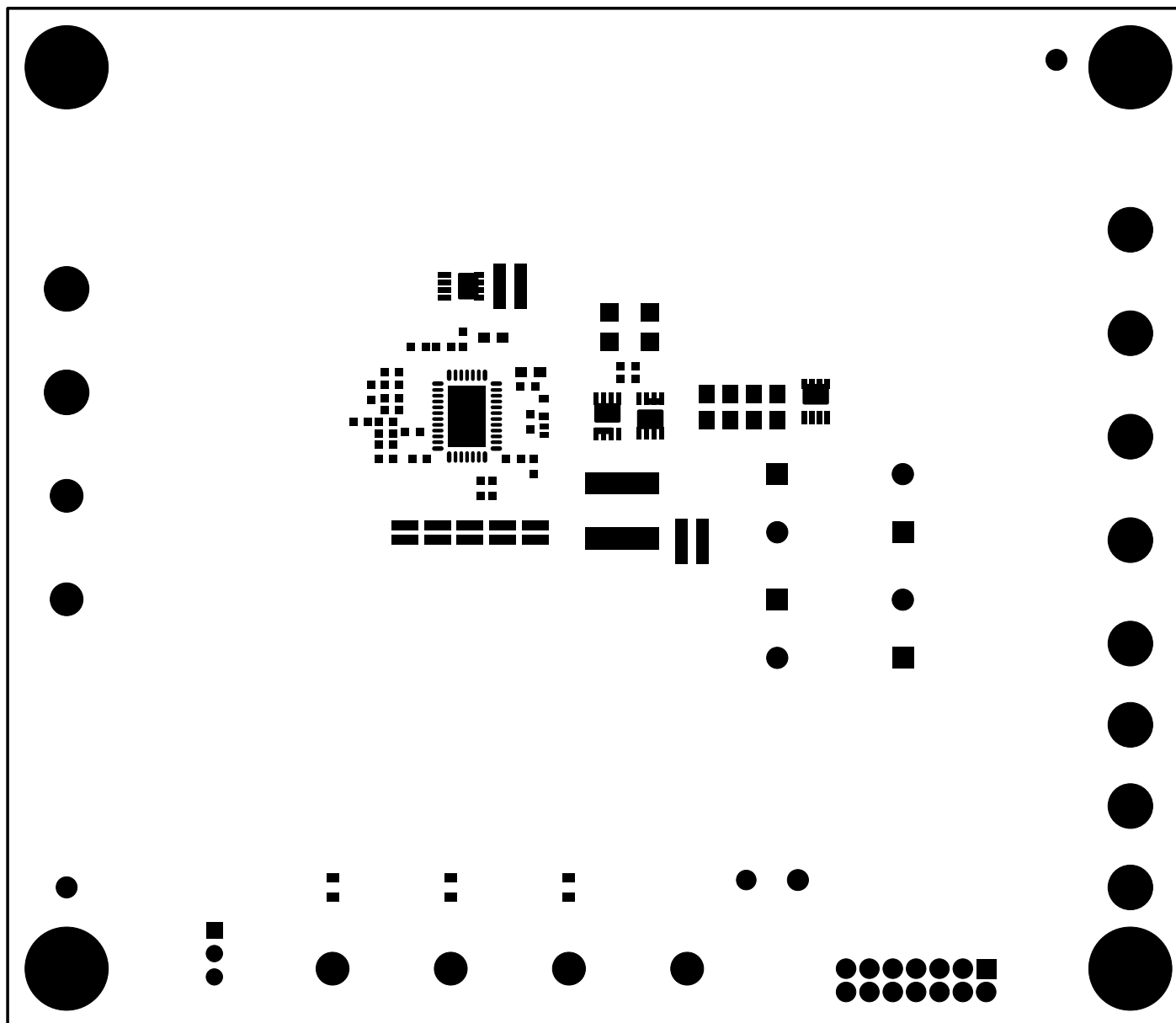
LTC3350
HIGH CURRENT SUPERCAPACITOR
BACKUP CONTROLLER AND SYSTEM MONITOR
DC1937B



TOP SILKSCREEN
 LINEAR TECHNOLOGY
 DEMO CIRCUIT 1937B-3 * LTC3350
 HIGH CURRENT SUPERCAPACITOR BACKUP CONTROLLER AND SYSTEM MONITOR
 05-04-15



TOP SOLDER PASTE
LINEAR TECHNOLOGY
DEMO CIRCUIT 1937B-3 * LTC3350
HIGH CURRENT SUPERCAPACITOR BACKUP CONTROLLER AND SYSTEM MONITOR
05-04-15



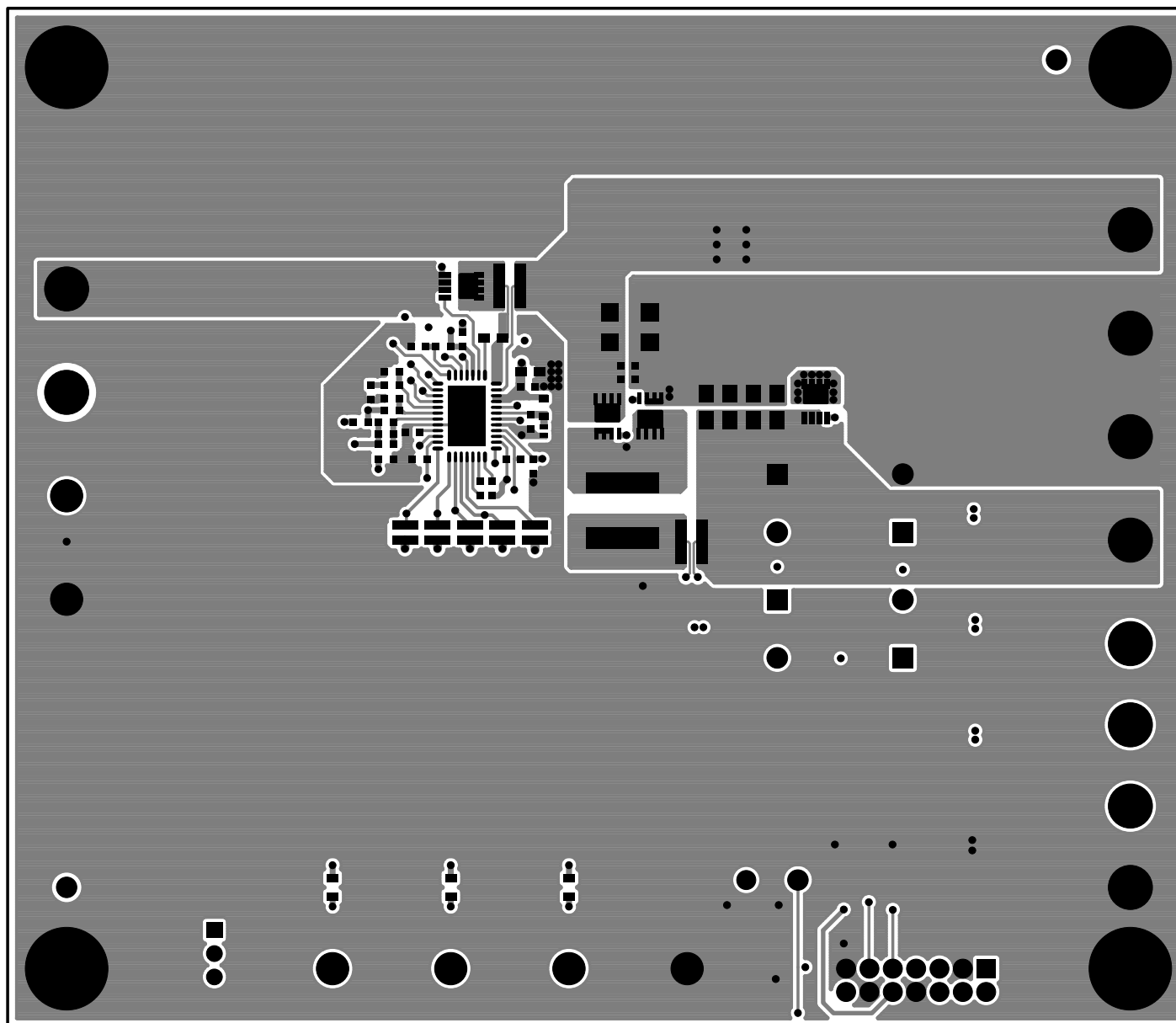
TOP SOLDER MASK

LINEAR TECHNOLOGY

DEMO CIRCUIT 1937B-3 * LTC3350

HIGH CURRENT SUPERCAPACITOR BACKUP CONTROLLER AND SYSTEM MONITOR

05-04-15



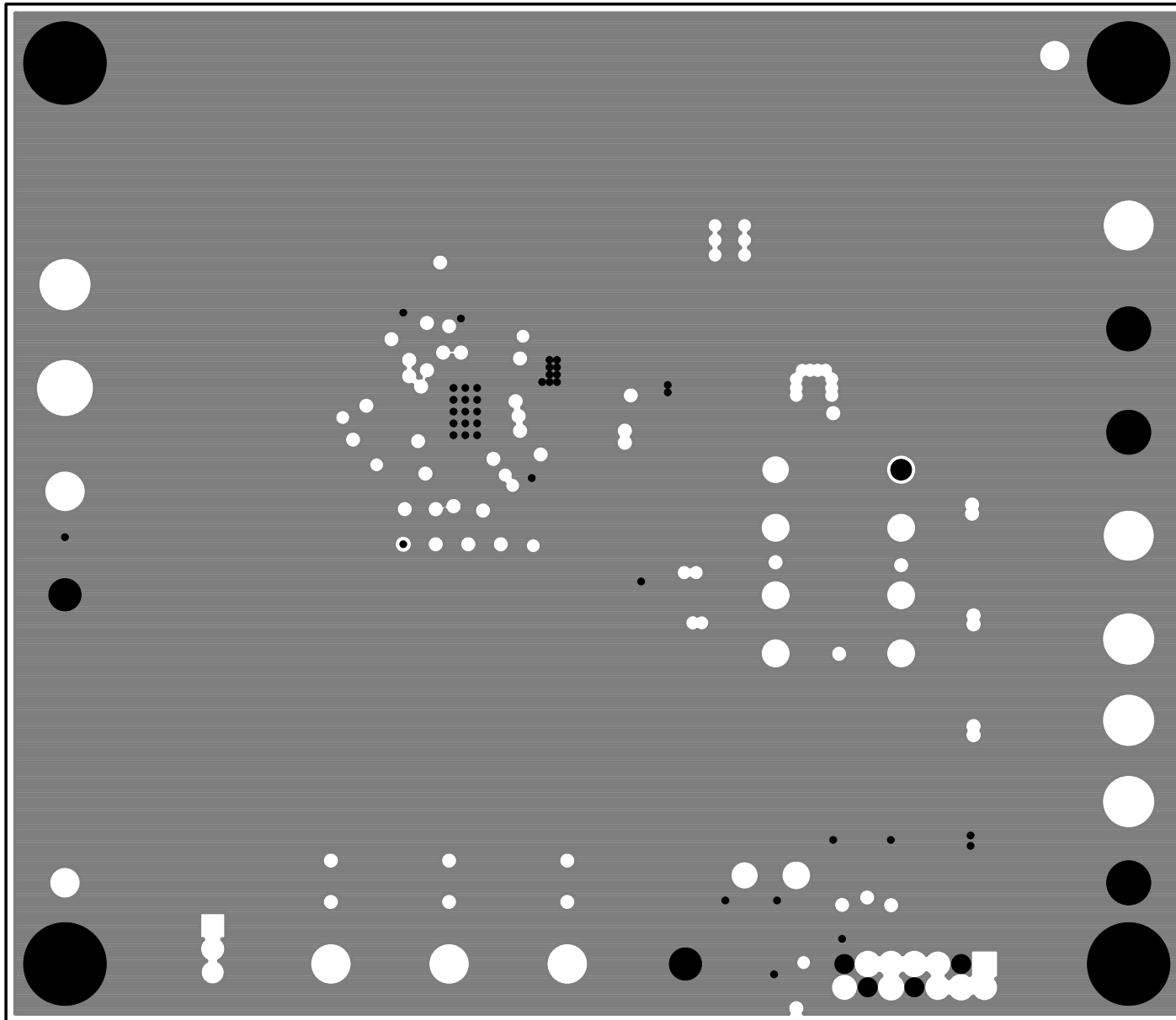
LAYER 1 - TOP SIDE

LINEAR TECHNOLOGY

DEMO CIRCUIT 1937B-3 * LTC3350

HIGH CURRENT SUPERCAPACITOR BACKUP CONTROLLER AND SYSTEM MONITOR

05-04-15



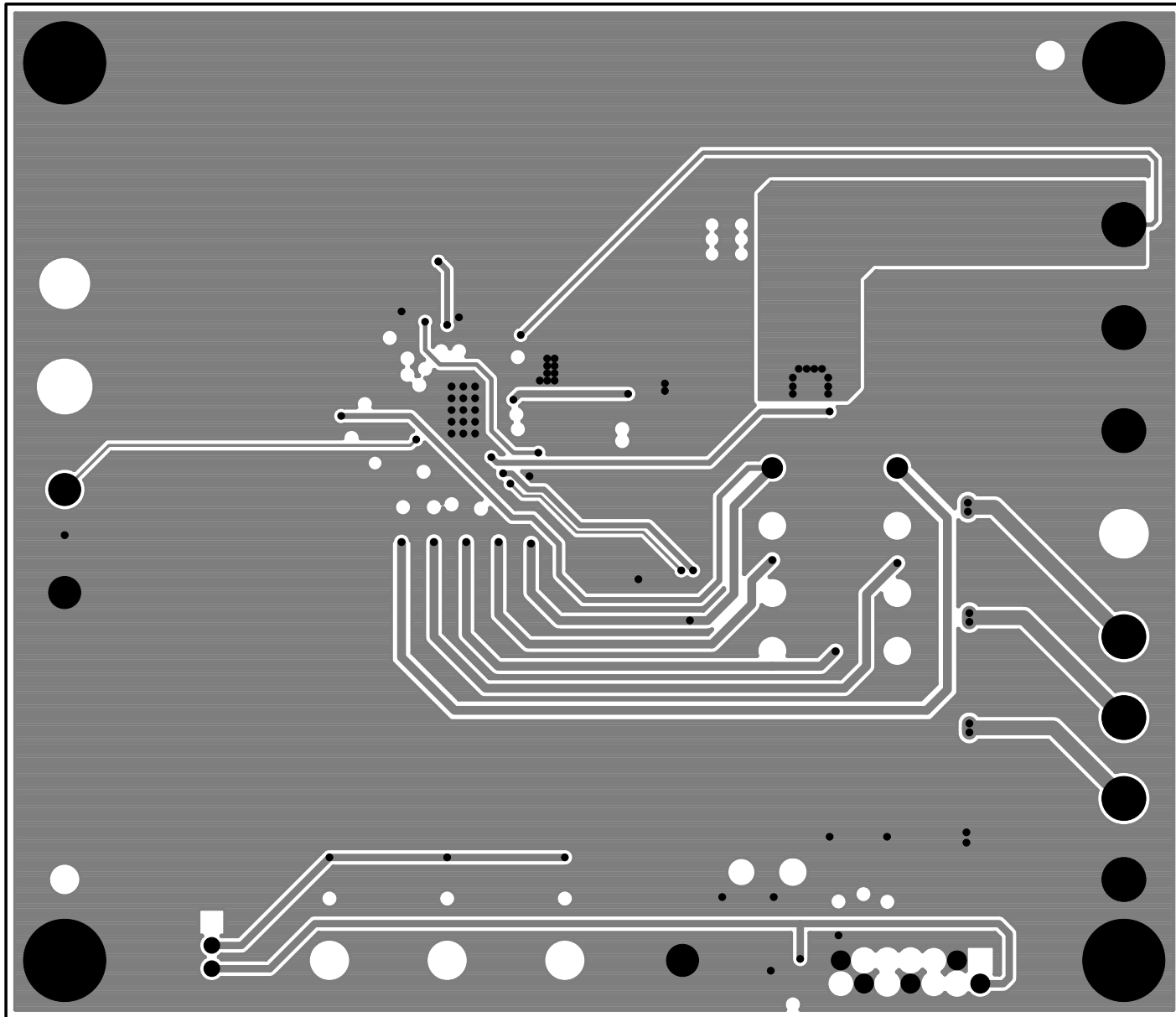
LAYER 2 - GND PLANE

LINEAR TECHNOLOGY

DEMO CIRCUIT 1937B-3 * LTC3350

HIGH CURRENT SUPERCAPACITOR BACKUP CONTROLLER AND SYSTEM MONITOR

05-04-15



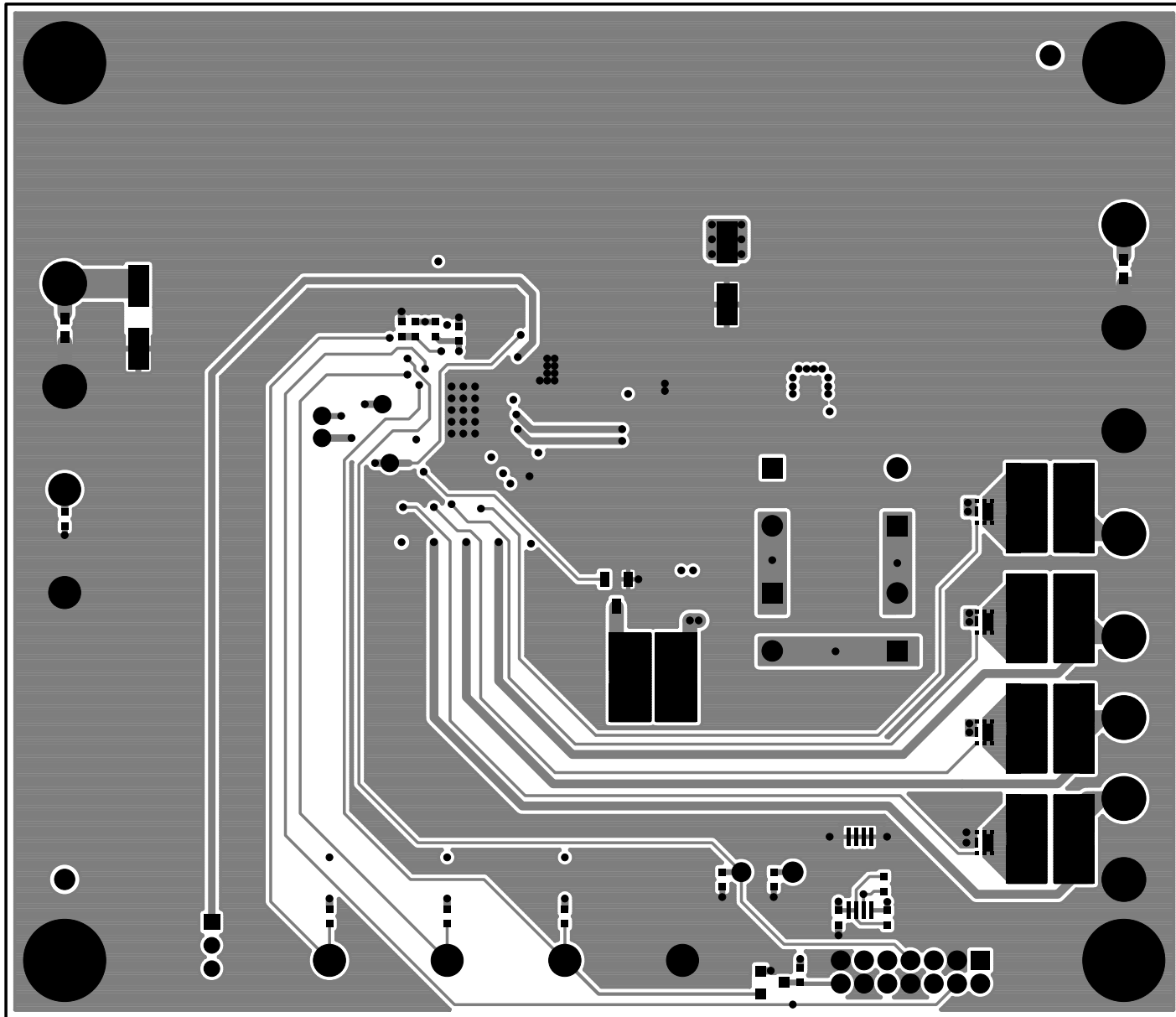
LAYER 3 - SIGNAL/PLANE

LINEAR TECHNOLOGY

DEMO CIRCUIT 1937B-3 * LTC3350

HIGH CURRENT SUPERCAPACITOR BACKUP CONTROLLER AND SYSTEM MONITOR

05-04-15



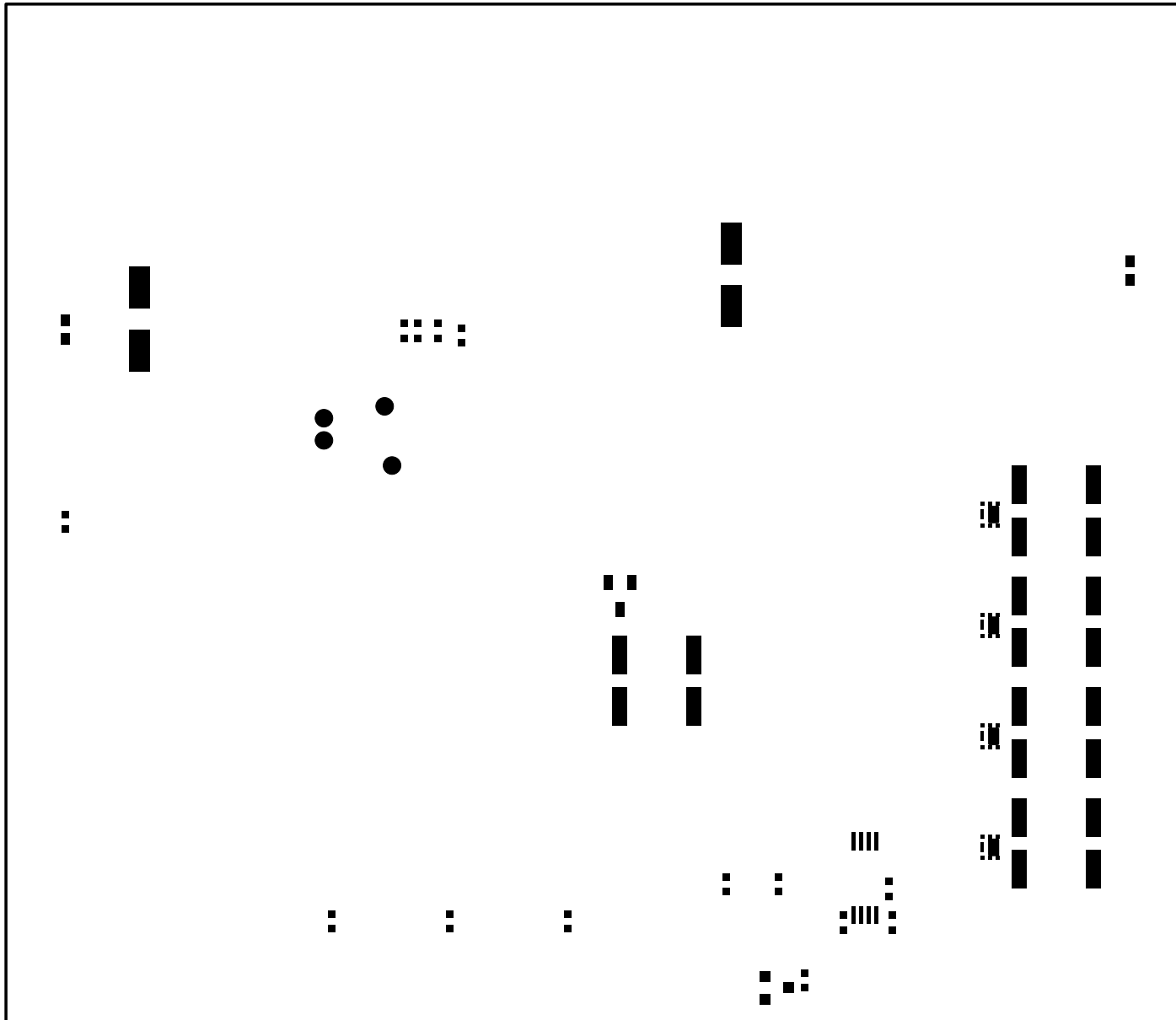
LAYER 4 - BOTTOM SIDE

LINEAR TECHNOLOGY

DEMO CIRCUIT 1937B-3 * LTC3350

HIGH CURRENT SUPERCAPACITOR BACKUP CONTROLLER AND SYSTEM MONITOR

05-04-15



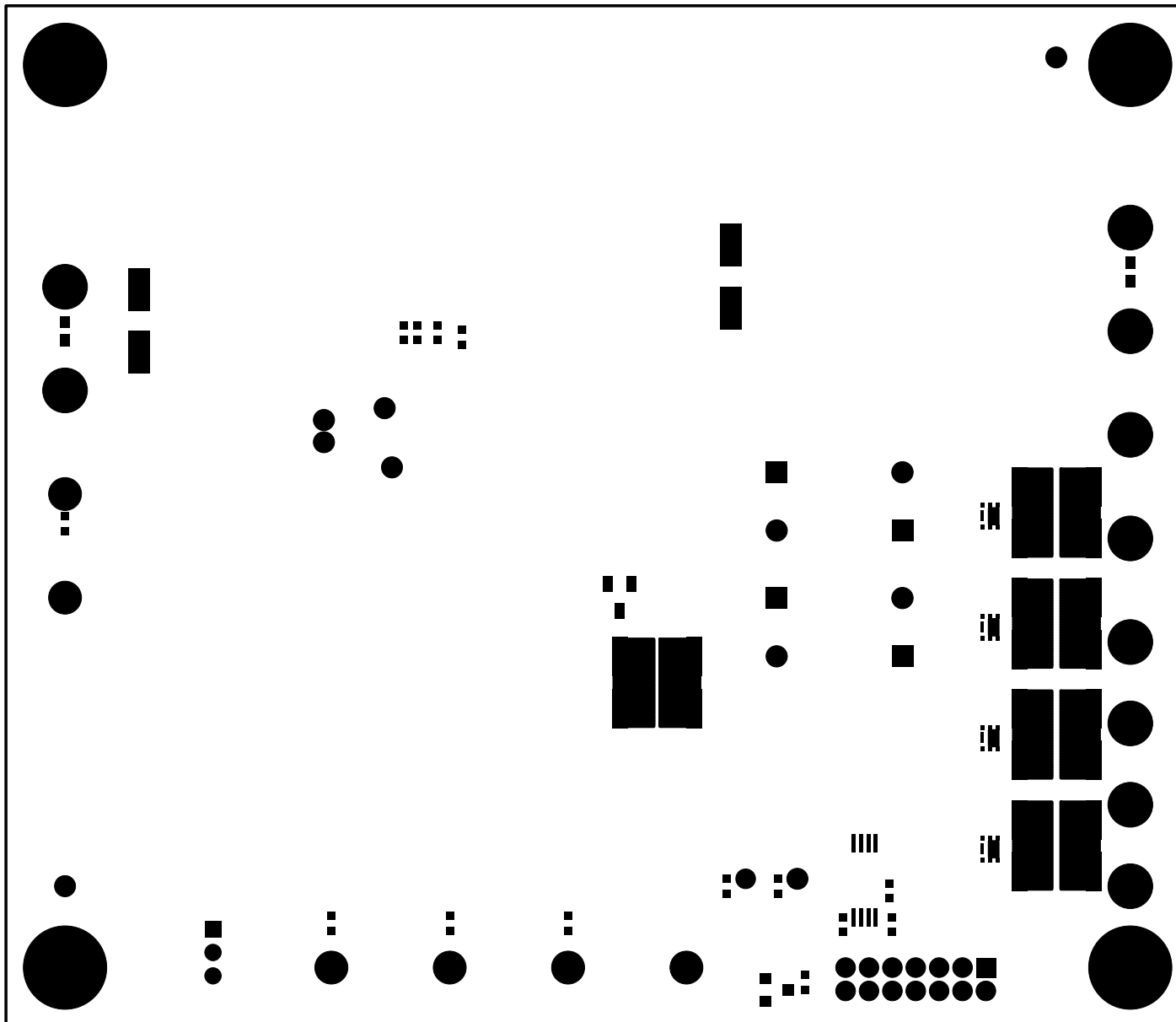
BOTTOM SOLDER PASTE

LINEAR TECHNOLOGY

DEMO CIRCUIT 1937B-3 * LTC3350

HIGH CURRENT SUPERCAPACITOR BACKUP CONTROLLER AND SYSTEM MONITOR

05-04-15



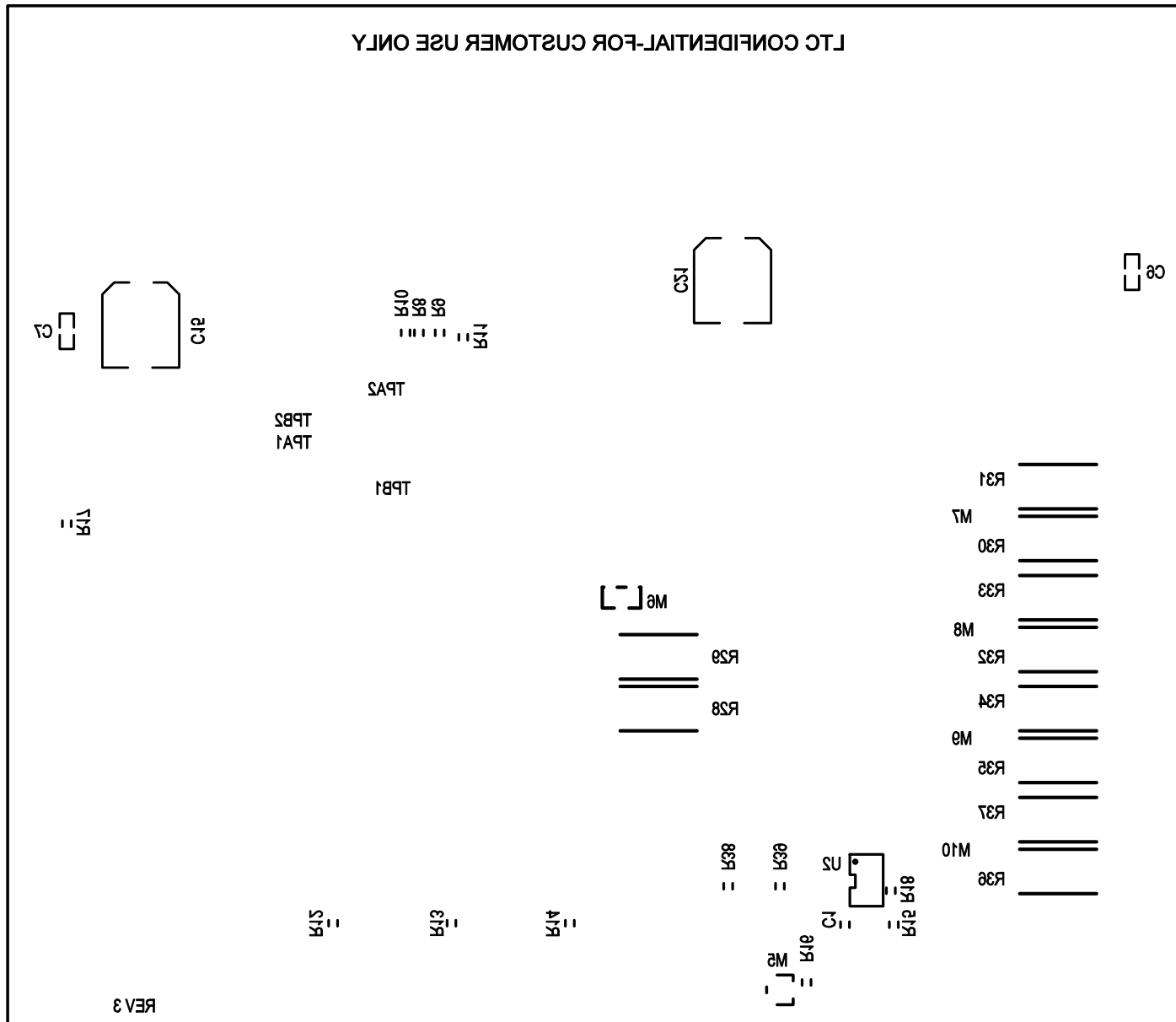
BOTTOM SOLDER MASK

LINEAR TECHNOLOGY

DEMO CIRCUIT 1937B-3 * LTC3350

HIGH CURRENT SUPERCAPACITOR BACKUP CONTROLLER AND SYSTEM MONITOR

05-04-15



BOTTOM SILKSCREEN
 LINEAR TECHNOLOGY
 DEMO CIRCUIT 1937B-3 * LTC3350
 HIGH CURRENT SUPERCAPACITOR BACKUP CONTROLLER AND SYSTEM MONITOR
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