

REVISION HISTORY				
ECO	REV	DESCRIPTION	APPROVED	DATE
-	2	PRODUCTION FAB	JB	10 - 3 - 14

NOTE: UNLESS OTHERWISE SPECIFIED

1. ALL RESISTORS ARE IN OHMS, 0402
ALL CAPACITORS ARE IN MICROFARADS, 0603.

REMOVE D1 IF VOUT > 5.5 VOLTS

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. JB

SCALE = NONE



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LTC Confidential-For Customer Use Only

TITLE: SCHEMATIC

18V, 2A Buck-Boost DC/DC Converter
with Low-Loss Dual Input PowerPath

SIZE	IC NO.	REV.
N/A	LTC3118EUFD DEMO CIRCUIT 2045A	2
DATE: 10 - 3 - 14		SHEET 1 OF 1

Linear Technology Corporation

LTC3118EUFD

ENGR: J. Bottrill (011-086)

BILL OF MATERIALS**DEMO BD. #2045A-2****QTY-300**

12/11/2014

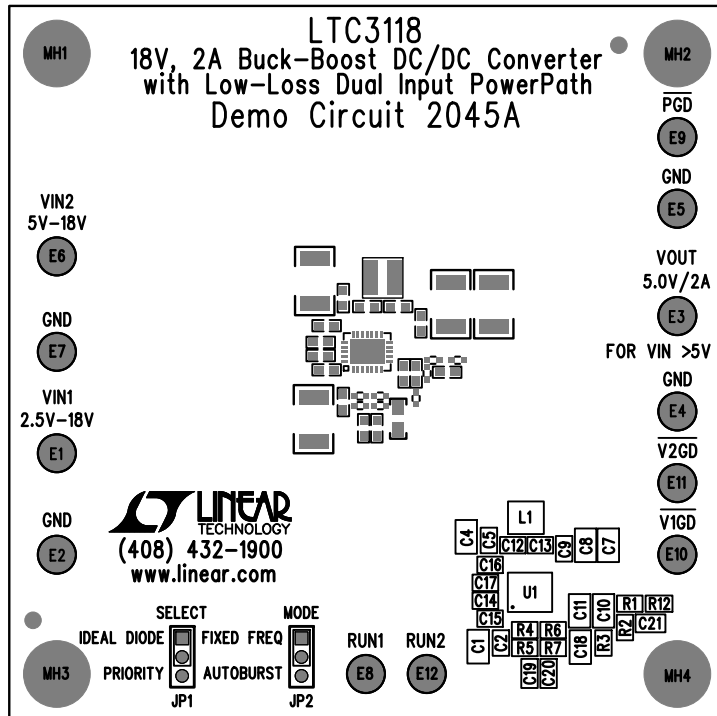
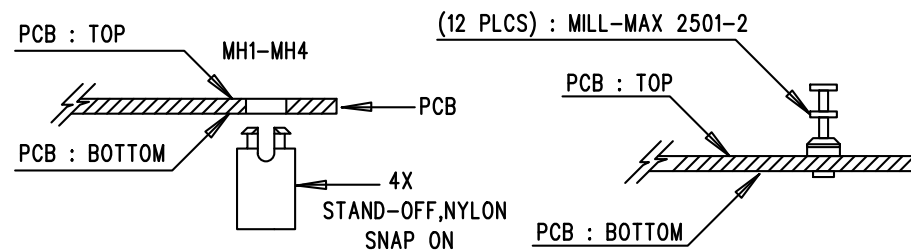
Item	Qty	Part Description	Manufacturer / Part #	Kit Qty	Pkg Qty	Bal.	Parts/Purch.
			NUMBER OF BOARDS =	325			
1	2	C1, C4	CAP., 22uF, X7R, 25V, 20%, 1812	TDK, C4532X7R1E226M250KC			
2	3	C2, C5, C9	CAP., 1uF, X7R, 25V, 10%, 0603	TDK, C1608X7R1E105K080AB			
3	0	C3, C6 (OPT)	CAP., ALUM., RADIAL, 150uF, 50V, 20%	PANASONIC, EEU-FM1H151			
4	2	C7, C8	CAP., 47UF, X5R, 10V, 20% 1812	TDK, C4532X5R1A476M280KA			
5	1	C10	CAP., 1800pF, C0G, 50V, 5%, 0603	TDK, CGJ3E2C0G1H182J080AA			
6	1	C11	CAP., 22PF, NPO, 25V, 10% 0603	KEMET, C0603C220K3GACTU			
7	2	C12, C13	CAP CER 0.1UF 25V 10% X7R 0603	TDK, C1608X7R1E104K			
8	2	C14, C17	CAP CER 0.047UF 50V 10% X7R 0603	TDK, C1608X7R1H473K080AA			
9	2	C15, C16	CAP., 0.01uF, X7R, 25V 10%, 0603	TDK, C1608X7R1E103K080AA			
10	1	C18	CAP., 4.7uF, X5R, 6.3V, 20%, 0603	TDK, C1608X5R0J475M080AB			
11	0	C19, C20, C21 (OPT)	CAP., OPTION, 0603				
12	1	D1	DIODE, SCHOTTKY, 30V, 0.2A, SOD-523F	FAIRCHILD SEMI., BAT54XV2			
13	1	L1	INDUCTOR, PWR., SHIELED, 3.3uH. XAL 40xx Series	COILCRAFT, XAL4030-332MEC			
14	1	R1	RES., 402k, 1/16W, 1%, 0402	VISHAY, CRCW0402402KFKED			
15	1	R2	RES., 100k, 1/16W, 1%, 0402	VISHAY, CRCW0402100KFKED			
16	1	R3	RES., 40.2k, 1/16W, 1%, 0402	VISHAY, CRCW040240K2FKED			
17	5	R4, R6, R8, R9, R10	RES., 1M, 1/16W, 1%, 0402	VISHAY, CRCW04021M00FKED			
18	1	R5	RES., 715k, 1/16W, 1%, 0402	VISHAY, CRCW0402715KFKED			
19	1	R7	RES., 374k, 1/16W, 1%, 0402	VISHAY, CRCW0402374KFKED			
20	1	R11	RES., 49.9 OHMS, 1/16W, 1%, 0402	VISHAY, CRCW040249R9FKED			
21	0	R12	RES., OPTION, 0402				
22	1	U1	I.C., 18V, 2A BUCK-BOOST DC/DC CONVERTER WITH LOW-LOSS DUAL INPUT POWERPATH	LINEAR TECHNOLOGY, LTC3118EUFD*PBF			
23	12	E1-E12	TP, TURRET, 0.094", MTG. HOLE	MILL-MAX, 2501-2-00-80-00-00-07-0			
24	2	JP1, JP2	CONN., HEADER, 1X3, 2mm	SAMTEC, TMM-103-02-L-S			
25	2	XJP1-XJP2	SHUNT, 2mm	SAMTEC, 2SN-BK-G			
26	4	STAND OFF	STANDOFF, NYLON, SNAP-ON, 0.625"	KEYSTONE, 8834 (SNAP ON)			
27	1		PCB, DC2045A	DEMO CIRCUIT 2045A-2			
28	2		STENCILS, DC2045A (TOP & BOTTOM)	STENCILS, DC2045A-2			

Item	Qty	Reference	Part Description	Manufacturer / Part #
		REQUIRED CIRCUIT COMPONENTS:		
1	2	C1, C4	CAP CER 22UF 25V 20% X7R 1812	TDK, C4532X7R1E226M
2	3	C2, C5, C9	CAP CER 1UF 25V 10% X7R 0603	Tdk, C1608X7R1E105K
3	2	C7, C8	CAP., 47UF, X5R, 10V, 20% 1812	TDK, C4532X5R1A476M280KA
4	1	C10	CAP CER 1800PF 50V 5% C0G 0603	TDK, CGJ3E2C0G1H182J080AA
5	1	C11	CAP., 22PF, NPO, 25V, 10% 0603	KEMET, C0603C220K3GACTU
6	2	C12, C13,	CAP CER 0.1UF 25V 10% X7R 0603	TDK, C1608X7R1E104K
7	2	C14, C17	CAP CER 0.047UF 50V 10% X7R 0603	TDK, C1608X7R1E473K
8	2	C15, C16	CAP CER 10000PF 25V 10% X7R 0603	TDK, C1608X7R1E103K080AA
9	1	C18	CAP CER 4.7uF 6.3V X5R 20% 0603	TDK, C1608X5R0J475M
10	1	D1	DIODE SCHOTTKY 30V 0.2A SOD523F	FAIRCHILD SEMI., BAT54XV2
11	1	L1	INDUCTOR, PWR., SHIELED, 3.3uH. XAL 40xx Series	COILCRAFT, XAL4030-332ME
12	1	R1	RES 402K OHM 1/16W 1% 0402 SMD	VISHAY, CRCW0402402KFKED
13	1	R2	RES 100K OHM 1/16W 1% 0402 SMD	VISHAY, CRCW0402100KFKED
14	1	R3	RES RES 40.2K OHM 1/16W 1% 0402 SMD	VISHAY, CRCW040240K2FKED
15	5	R4, R6, R8, R9, R10	RES, 1.00M OHM 1/16W 1% 0402 SMD	VISHAY, CRCW04021M00FKED
16	1	R5	RES 715K OHM 1/16W 1% 0402 SMD	VISHAY, CRCW0402715KFKED
17	1	R7	RES 374K OHM 1/16W 1% 0402 SMD	VISHAY, CRCW0402374KFKED
18	1	R11	RES 49.9 OHM 1/16W 1% 0402 SMD	VISHAY, CRCW040249R9FKED
19	1	U1	18V, 2A BUCK-BOOST DC/DC CONVERTER WITH LOW-LOSS DUAL INPUT POWERPATH	LINEAR TECHNOLOGY, LTC3118EUFD
		ADDITIONAL DEMO BOARD CIRCUIT COMPONENTS:		
1	0	C3, C6	CAP ALUM 150uF 50V 20% RADIAL (OPT)	PANASONIC, EEU-FM1H151
2	0	C19, C20,C21	CAP CER 25V 10% X7R 0603 (OPT)	
3	0	R12	RES 0402 (OPT)	
		HARDWARE-FOR DEMO BOARD ONLY:		
1	12	E1-E12	TP, TURRET, 0.094", MTG. HOLE	MILL-MAX, 2501-2-00-80-00-00-07-0
2	2	JP1, JP2	JMP, 3PIN 1 ROW .079CC	SAMTEC, TMM-103-02-L-S
3	2	XJP1,XJP2	SHUNT, 2mm	SAMTEC, 2SN-BK-G
4	4	STAND OFF	STAND-OFF, NYLON 0.625" TALL	KEYSTONE, 8834 (SNAP ON)


REVISION HISTORY				
ECO	REV	DESCRIPTION	APPR	DATE
-	2	PRODUCTION FAB	JB	10-3-14

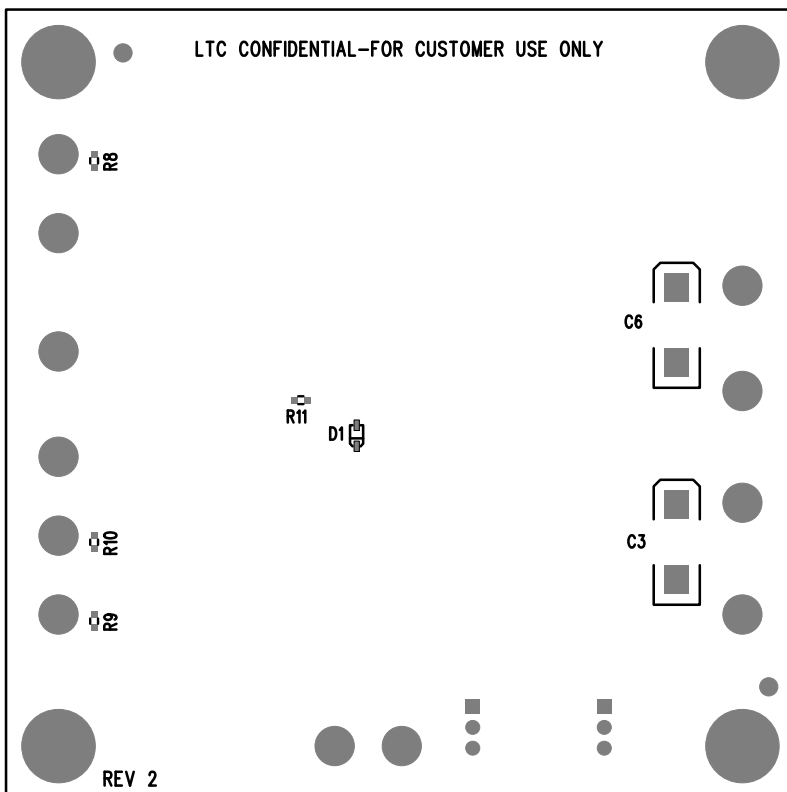
NOTES: UNLESS OTHERWISE SPECIFIED

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. DO NOT APPLY ANY KIND OF ASSEMBLY STAMP OR QA STAMP TO ANY BOARD.
7. INSTALL TURRETS AND 4 STANDOFFS AT LOCATIONS SHOWN BELOW:



APPROVALS

PCB DES.	NC	 LINEAR TECHNOLOGY 1630 MCCARTHY BLVD MILPITAS, CA 95035 PH: (408)432-1900 www.Linear.com LTC CONFIDENTIAL- FOR CUSTOMER USE ONLY		
APP ENG.	JB			
		TITLE: TOP ASSEMBLY DRAWING: 18V, 2A Buck-Boost DC/DC Converter with Low-Loss Dual Input PowerPath		
		SIZE	IC NO. LTC3118	REV.
		N/A	DEMO CIRCUIT 2045A	2
SCALE = NONE		FILENAME: DC2045A-2.PCB		SHT 1 of 2



APPROVALS

PCB DES.	NC
APP ENG.	JB



1630 MCCARTHY BLVD
MILPITAS, CA 95035
PH: (408)432-1900
www.Linear.com
LTC CONFIDENTIAL—
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TITLE: BOTTOM ASSEMBLY DRAWING:

18V, 2A Buck-Boost DC/DC Converter
with Low-Loss Dual Input PowerPath

SIZE	IC NO.	LTC3118	REV.
N/A		DEMO CIRCUIT 2045A	2

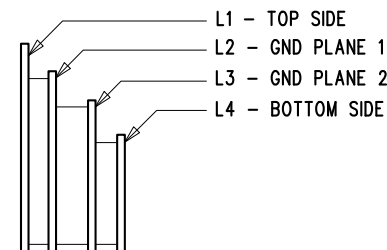
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FILENAME: DC2045A-2.PCB

SHT 2 of 2

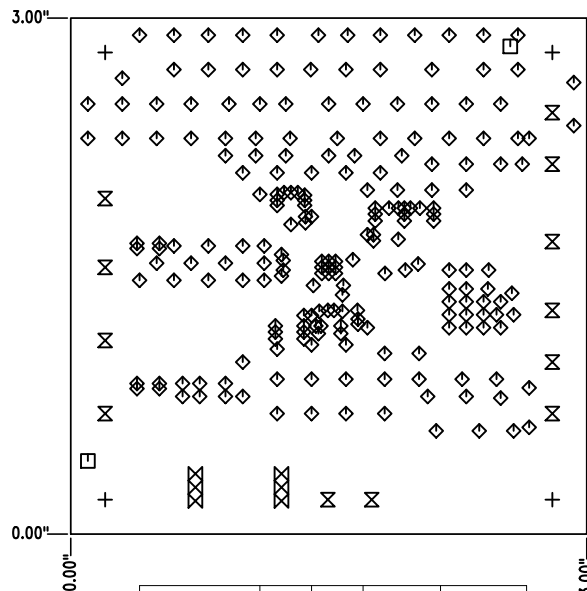
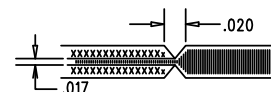
REVISION HISTORY				
ECO	REV	DESCRIPTION	APPR	DATE
-	2	PRODUCTION FAB	JB	10-3-14

LAYER STRUCTURE



NOTES: UNLESS OTHERWISE SPECIFIED

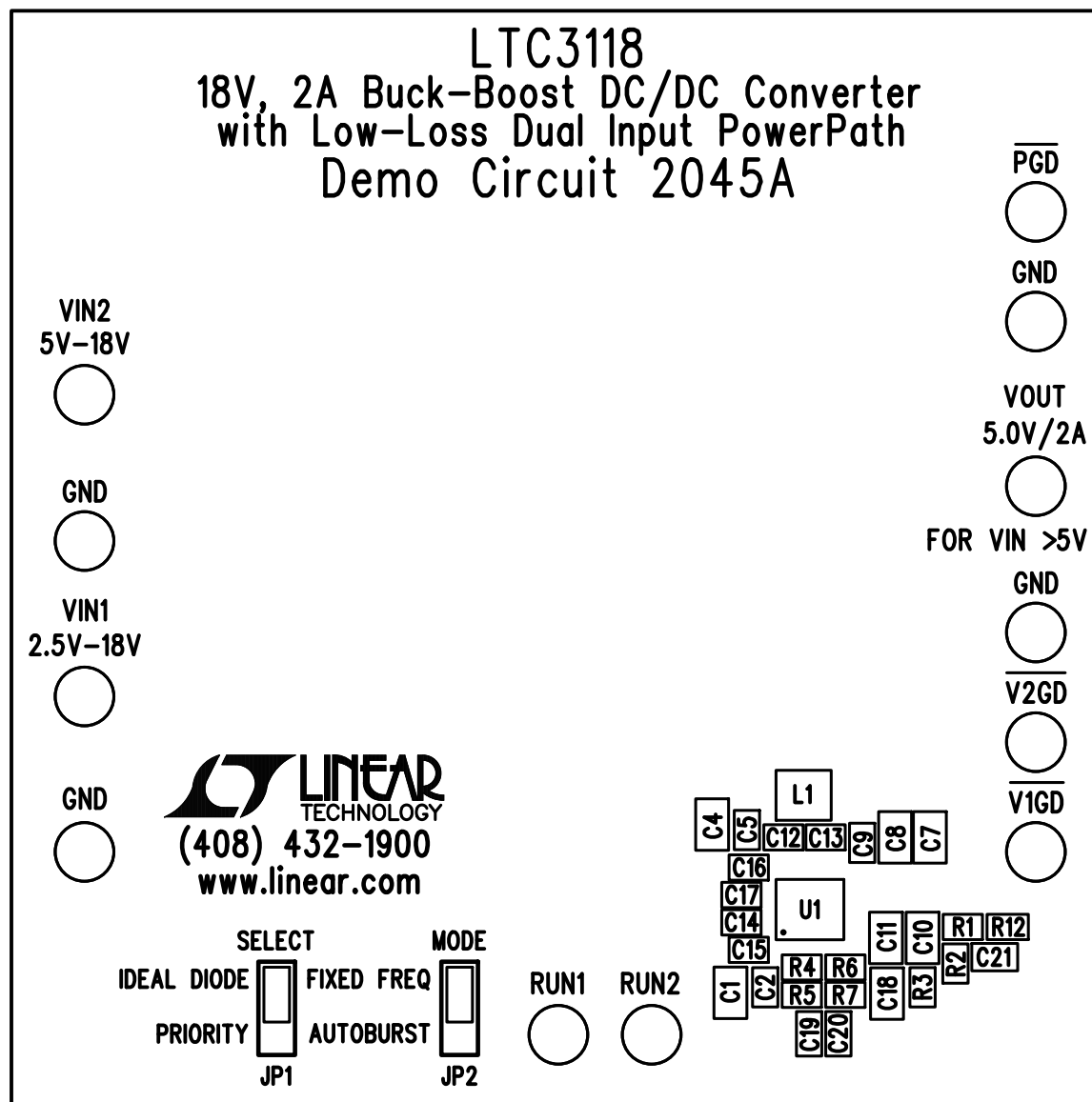
- FAB PER IPC-A-600.
- MATERIAL: -LEAD FREE ASSEMBLY COMPLIANT, ISOLA FR-370HR OR EQUIVALENT.
-FINISHED THICKNESS TO BE 0.062" +/- .005"
-TOTAL OF 4 LAYERS WITH 2 OZ. CU ON THE OUTER LAYERS AND 1 OZ. CU ON THE INNER LAYERS.
-FLAMMABILITY RATING: 94 V-0 MINIMUM.
- SIZE: CUT TO DIMENSIONS AND TOLERANCES 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.
- SCORING FOR PANELIZED PCB: "PRODUCTION FAB ONLY"



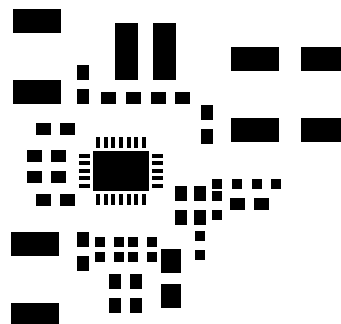
SIZE	QTY	SYM	PLATED	TOL
190	4	+	YES	+/-0.003
70	2	□	NO	+/-0.003
10	216	◇	YES	+/-0.003
94	12	⊗	YES	+/-0.003
35	6	⊗	YES	+/-0.003

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		TECHNOLOGY	
	PCB DES.	NC		
THIRD ANGLE PROJECTION	APP ENG.	JB	TITLE: FABRICATION DRAWING: 18V, 2A Buck-Boost DC/DC Converter with Low-Loss Dual Input PowerPath	
DO NOT SCALE DRAWING	SCALE: NONE		SIZE N/A	IC NO. LTC3118 DEMO CIRCUIT 2045A
			REV. 2	
		FILENAME: DC2045A-2.PCB	SHT 1 of 1	

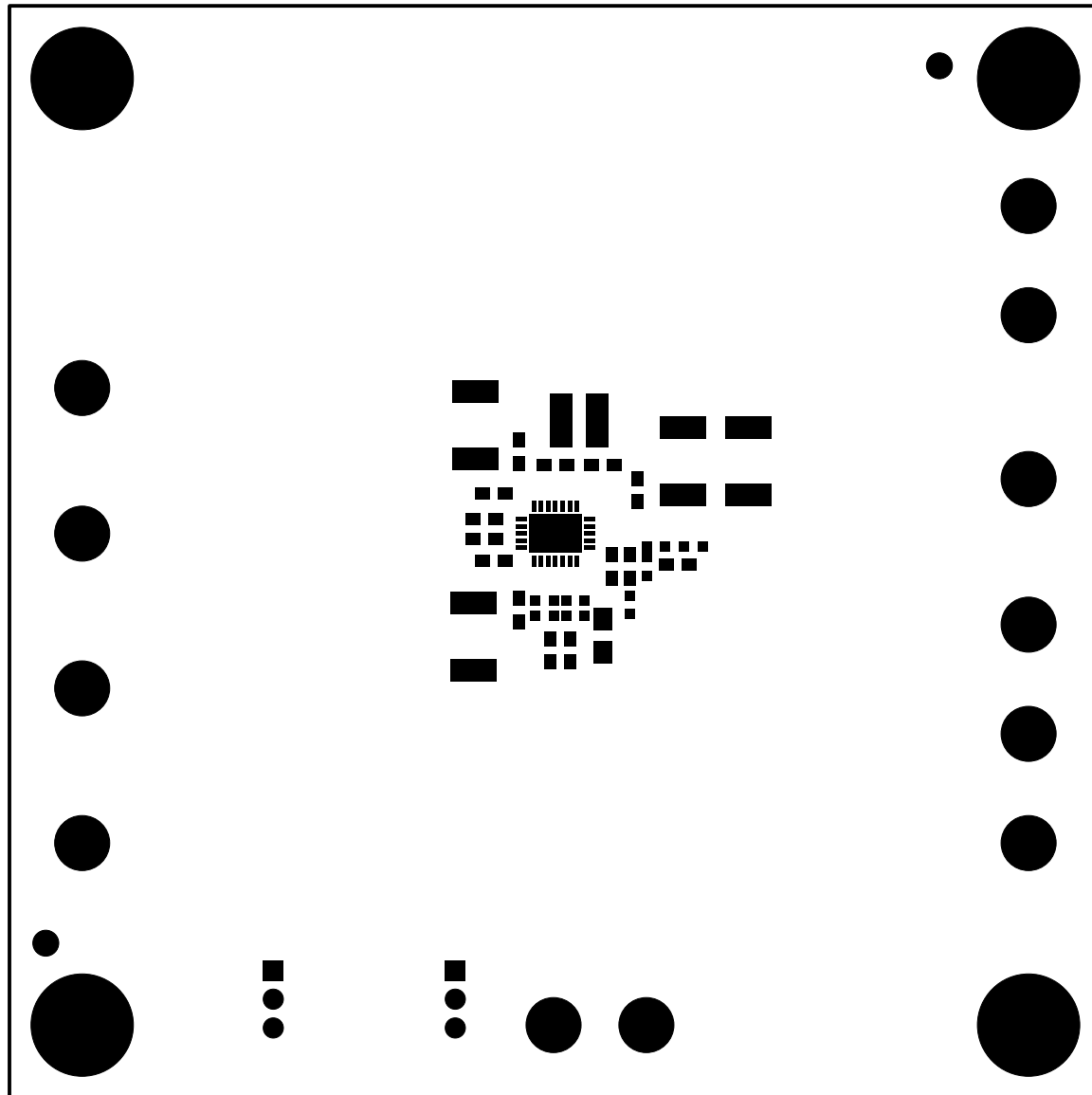
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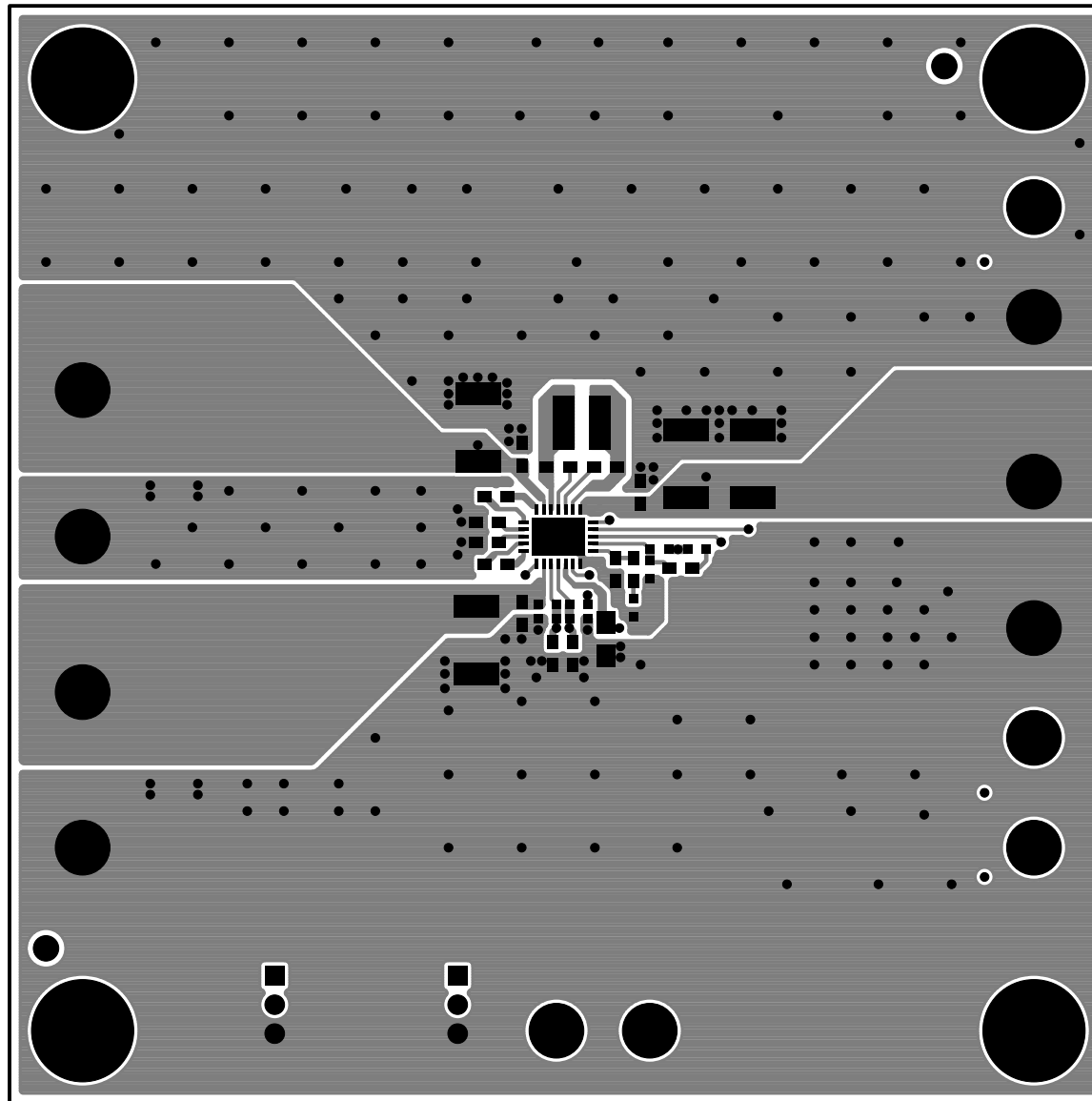
TOP SILKSCREEN
 LINEAR TECH CORP.
 DEMO CIRCUIT 2045A-2 * LTC3118
 18V, 2A Buck-Boost DC/DC Converter
 with Low-Loss Dual Input PowerPath
 DATE: 10-3-14



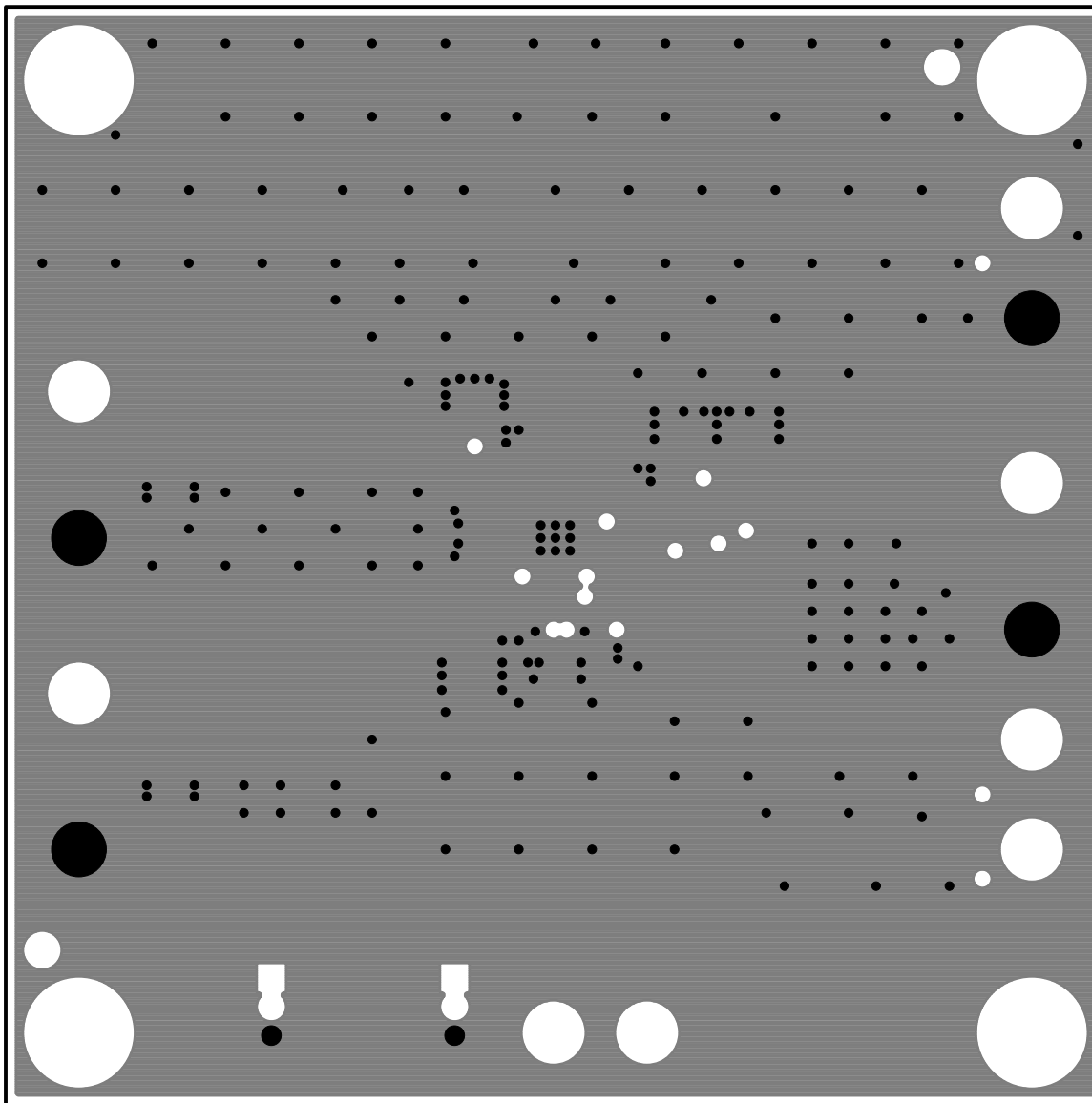
TOP SOLDER PASTE
LINEAR TECH CORP.
DEMO CIRCUIT 2045A-2 * LTC3118
18V, 2A Buck-Boost DC/DC Converter
with Low-Loss Dual Input PowerPath
DATE: 10-3-14



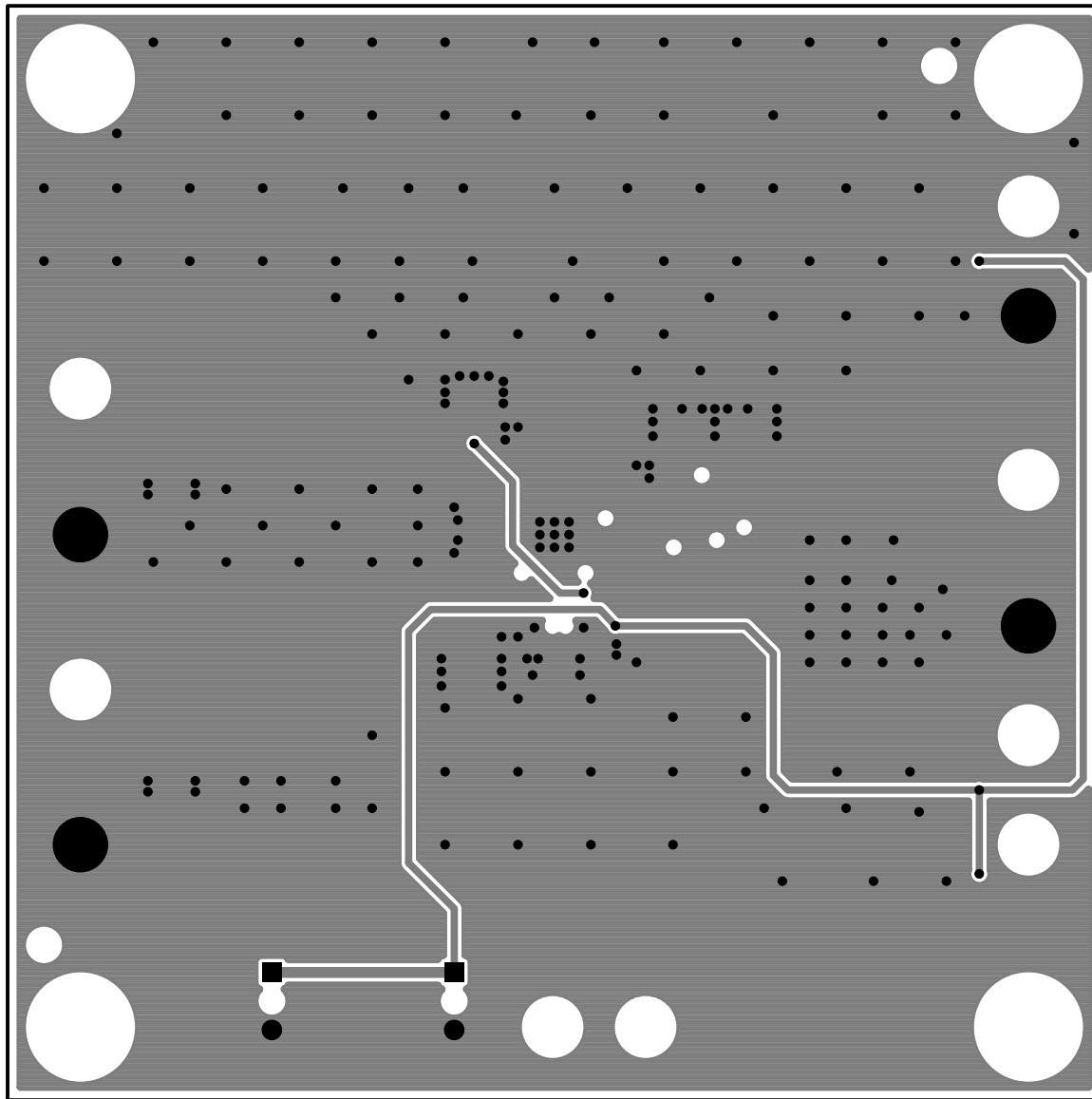
TOP SOLDER MASK
LINEAR TECH CORP.
DEMO CIRCUIT 2045A-2 * LTC3118
18V, 2A Buck-Boost DC/DC Converter
with Low-Loss Dual Input PowerPath
DATE: 10-3-14



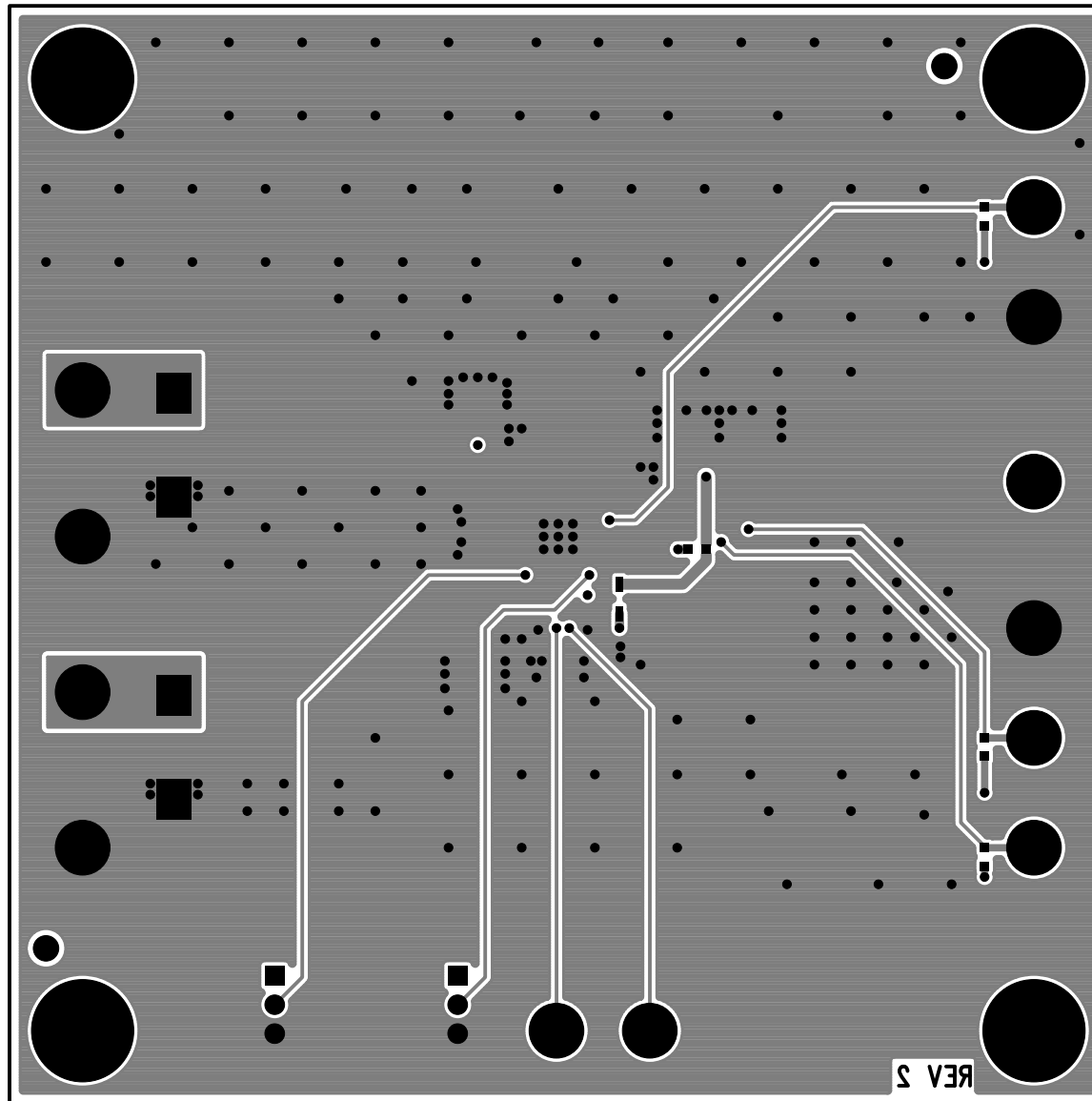
LAYER 1 : TOP LAYER
LINEAR TECH CORP.
DEMO CIRCUIT 2045A-2 * LTC3118
18V, 2A Buck-Boost DC/DC Converter
with Low-Loss Dual Input PowerPath
DATE: 10-3-14



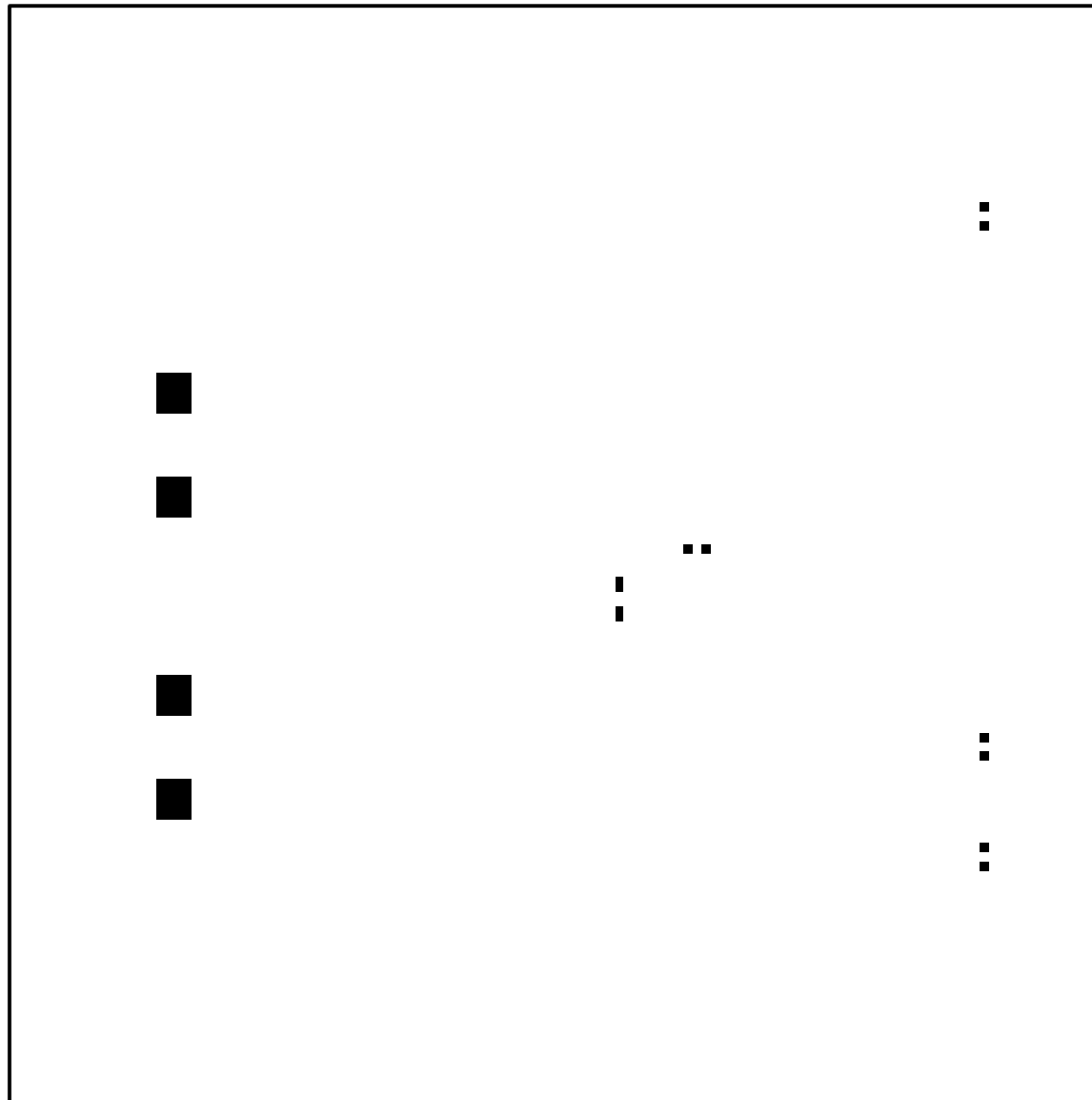
LAYER 2 : - GND 1
LINEAR TECH CORP.
DEMO CIRCUIT 2045A-2 * LTC3118
18V, 2A Buck-Boost DC/DC Converter
with Low-Loss Dual Input PowerPath
DATE: 10-3-14



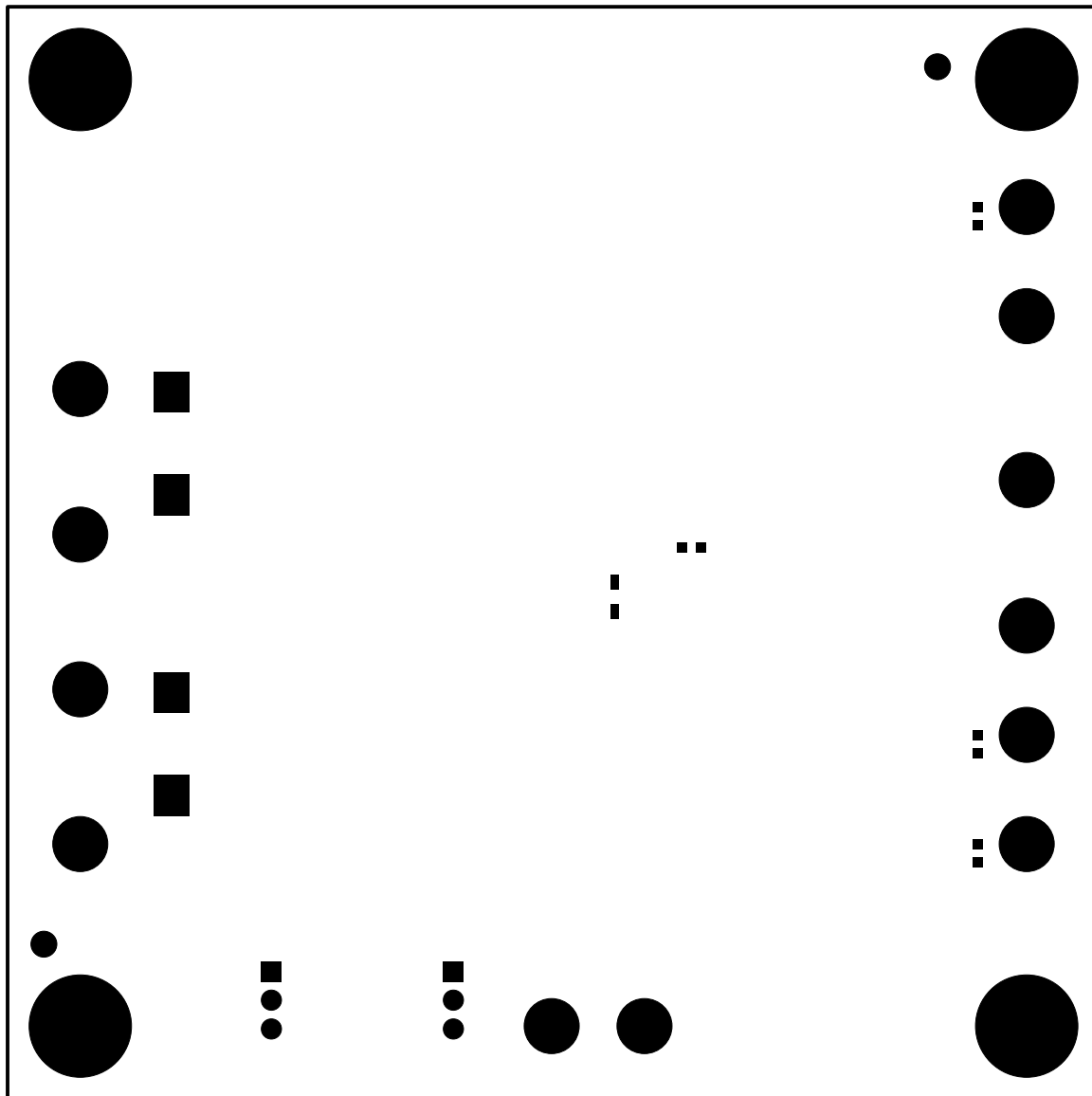
LAYER 3 : - GND 2
LINEAR TECH CORP.
DEMO CIRCUIT 2045A-2 * LTC3118
18V, 2A Buck-Boost DC/DC Converter
with Low-Loss Dual Input PowerPath
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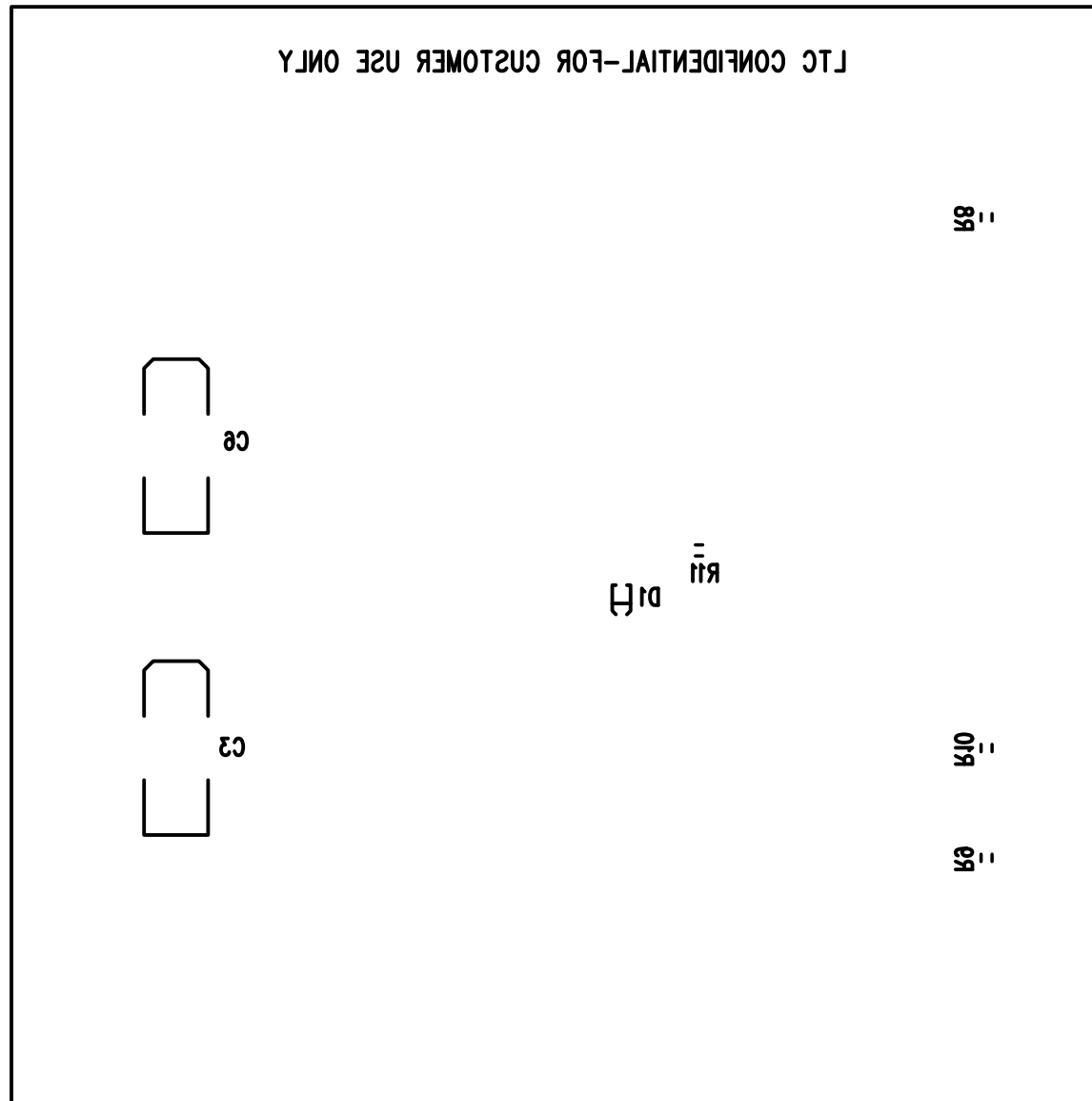
LAYER 4 : BOTTOM LAYER
LINEAR TECH CORP.
DEMO CIRCUIT 2045A-2 * LTC3118
18V, 2A Buck-Boost DC/DC Converter
with Low-Loss Dual Input PowerPath
DATE: 10-3-14



BOTTOM SOLDER PASTE
LINEAR TECH CORP.
DEMO CIRCUIT 2045A-2 * LTC3118
18V, 2A Buck-Boost DC/DC Converter
with Low-Loss Dual Input PowerPath
DATE: 10-3-14



BOTTOM SOLDER MASK
LINEAR TECH CORP.
DEMO CIRCUIT 2045A-2 * LTC3118
18V, 2A Buck-Boost DC/DC Converter
with Low-Loss Dual Input PowerPath
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BOTTOM SILKSCREEN
LINEAR TECH CORP.
DEMO CIRCUIT 2045A-2 * LTC3118
18V, 2A Buck-Boost DC/DC Converter
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