



Phase 3 Technologies, Inc.

780 Montague Expressway  
Suite 401  
San Jose, CA 95131

## Quote

Date	Quote #
3/23/2016	110332

Name / Address
Linear Technology 1630 Mc Carthy Blvd. Milpitas, CA 95035

Attention To:	Terms	Expiration Date	Prepared by		P3TI Sales Rep		
Nick Carlone	Net 30	4/22/2016	Chris Doyle		Chris Doyle		
Item		Description		Qty	Lead Time	Rate	Total
DC2375A rev3		4L, FR4, 3.0 X 3.0, ENIG 6up array FA - NC		200	10day	6.94	1,388.00
DC2375A rev3		4L, FR4, 3.0 X 3.0, ENIG 6up array FA - NC		12	5-6day	0.00	0.00
DC2375A rev3		4L, FR4, 3.0 X 3.0, ENIG 6up array FA - NC Sales Tax 8.75%		200	5-6day	12.05	2,410.00

Delivery: The shipping schedule and delivery dates are approximate, subject to receipt of all necessary information in a timely manner . Phase 3 will use reasonable efforts to meet these schedules but in no event will authorize any short payment due to late delivery. Postponement of the shipment of any board on this order by more than 14 days beyond original invoice date without Phase 3 agreement is not allowed and Phase 3 reserves the right to invoice you for the price of the boards and reasonable storage and handling charges. Order Cancellation: Phase 3 Technologies, Inc. reserves the right to invoice you for the full amount of the order for boards that are scheduled to be shipped within 8 weeks of order cancellation for individual order and 12weeks of order cancellation for MRP driven blanket orders.

Phone #	Fax #	Web Site
(408) 526-9200	(408) 526-9205	www.p3ti.com



# Eagle Tech Inc

## Quote

**Date:** Thursday, March 24, 2016

**Quote Number** 20773

**Terms** Net 30

### Customer Information

Linear Technology  
1630 McCarthy Blvd  
Milpitas CA 950357417

(408) 432-1900 **Ext:**

**Fax:** (408) 433-0615

**E-Mail:** @linear.com

### PCB Information

**Board Type:** .062 | 4 Layers

**Part Number:** DC2375A-3

**Revision:**

### Electrical Test Information

**Test Type:** Flying Probe

**TestPrice:** \$0.00

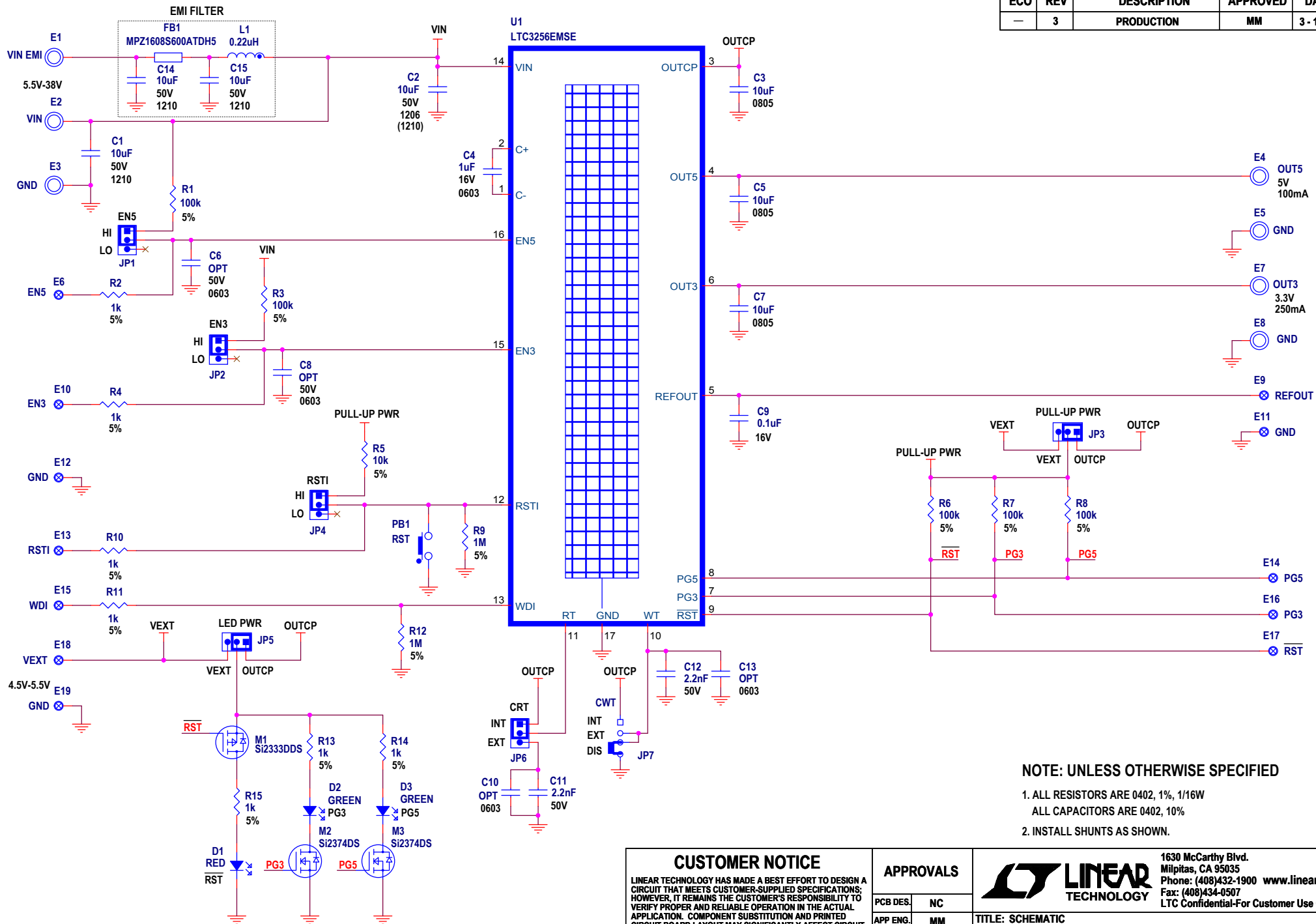
Quantity	Lead Time	Unit Price	Extended Price
200	10 Day	\$7.4092	\$1,481.840

Quote is valid for 30 Days.

**Sales Rep:** Eagle Tech

**Notes:**

REVISION HISTORY				
ECO	REV	DESCRIPTION	APPROVED	DATE
—	3	PRODUCTION	MM	3 - 18 - 16



**NOTE: UNLESS OTHERWISE SPECIFIED**

1. ALL RESISTORS ARE 0402, 1%, 1/16W  
ALL CAPACITORS ARE 0402, 10%
2. INSTALL SHUNTS AS SHOWN.

## 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](http://www.linear.com)  
Fax: (408)434-0507  
LTC Confidential-For Customer Use Only

	<b>TITLE: SCHEMATIC</b>
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## DUAL OUTPUT 350mA STEP DOWN CHARGE PUMP WITH WATCHDOG TIMER

SIZE N/A	IC NO. LTC3256EMSE DEMO CIRCUIT2375A	REV. 3
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DATE: 3 - 18 - 16

**SHEET 1 OF 1**

# Linear Technology Corporation

LTC3256EMSE

ENGR: M. Merchant (011-087)

## BILL OF MATERIALS

DEMO BD. #2375A-3

QTY- 200

6/21/2016

Item	Qty	Reference	Part Description	Manufacturer / Part #
				<b>NUMBER OF BOARDS =</b>
1	3	C1, C14, C15	CAP, CHIP, X7S, 10 $\mu$ F, $\pm$ 10%, 50V, 1210	MURATA, GCM32EC71H106KA03
2	1	C2	CAP, CHIP, X5R, 10 $\mu$ F, $\pm$ 10%, 50V, 1206	TDK, CGA5L3X5R1H106K160AB
3	3	C3, C5, C7	CAP, CHIP, X7R, 10 $\mu$ F, $\pm$ 10%, 6.3V, 0805	TDK, CGA4J1X7R0J106K125AC
4	1	C4	CAP, CHIP, X7R, 1 $\mu$ F, $\pm$ 10%, 16V, 0603	TDK, CGA3E1X7R1C105K080AC
5	0	C6, C8, C10, C13	OPT CAP, CHIP, 0603	
6	1	C9	CAP, CHIP, X7R, 0.1 $\mu$ F, $\pm$ 10%, 16V, 0402	TDK, CGA2B1X7R1C104K050BC
7	2	C11, C12	CAP, CHIP, X7R, 2.2nF, $\pm$ 10%, 50V, 0402	TDK, CGA2B2X7R1H222K050BA
8	1	D1	DIODE, LED, SUPER RED DIFF, 0603 SMD	LUMEX, SML-LX0603SRW-TR
9	2	D2, D3	DIODE, LED, SUPER GREEN DIFF, 0603 SMD	LITE-ON, LTST-C190KGKT
10	1	FB1	FERRITE, CHIP, 60 $\Omega$ @ 100MHz, 3.5A, 0603	TDK, MPZ1608S600ATDH5
11	1	L1	IND, CHIP, 0.22 $\mu$ H, 0.027 $\Omega$ , 2.4A, 1210	TDK, NLCV32T-R22M-ERFD
12	1	M1	MOSFET, P-CHN, 12V, SOT-23	VISHAY, SI2333DDS-T1-GE3
13	2	M2, M3	MOSFET, N-CHN, 20V, SOT-23	VISHAY, SI2374DS-T1-GE3
14	1	PB1	SWITCH, PUSH BUTTON, SMT	C & K, PTS635SL25SMTRLFS
15	6	R1, R3, R5-R8	RES 100K OHM 1/16W 5% 0402 SMD	VISHAY, CRCW0402100KJNED
16	7	R2, R4, R10, R11, R13-R15	RES 1K OHM 1/16W 5% 0402 SMD	VISHAY, CRCW04021K00JNED
17	2	R9, R12	RES 1M OHM 1/16W 5% 0402 SMD	VISHAY, CRCW04021M00JNED
18	5	JP1-JP5	HEADER, 3 PIN 1 ROW .079CC	WURTH ELEKTRONIK, 62000311121
19	2	JP6, JP7	HEADER, 4 PIN 1 ROW .079CC	WURTH ELEKTRONIK, 62000411121
20	7	JP1-JP7	SHUNT, 2mm	WURTH ELEKTRONIK, 60800213421
21	7	E1-E5, E7, E8	TP, TURRET, 0.094", PBF	MILL-MAX, 2501-2-00-80-00-00-07-0
22	12	E6, E9-E19	TURRET, 0.061 DIA	MILL-MAX, 2308-2-00-80-00-00-07-0
23	1	U1	DUAL OUTPUT 350mA STEP DOWN CHARGE PUMP WITH WATCHDOG TIMER	LINEAR TECH., LTC3256EMSE#PBF
24	4	MH1-MH4	STAND-OFF, NYLON 0.375" TALL	KEYSTONE, 8832 (SNAP ON)
25	1		FAB, PRINTED CIRCUIT BOARD	DEMO CIRCUIT DC2375A-3
26	2		STENCILS - TOP & BOTTOM	STENCIL, DC2375A-3

# Linear Technology Corporation

LTC3256EMSE

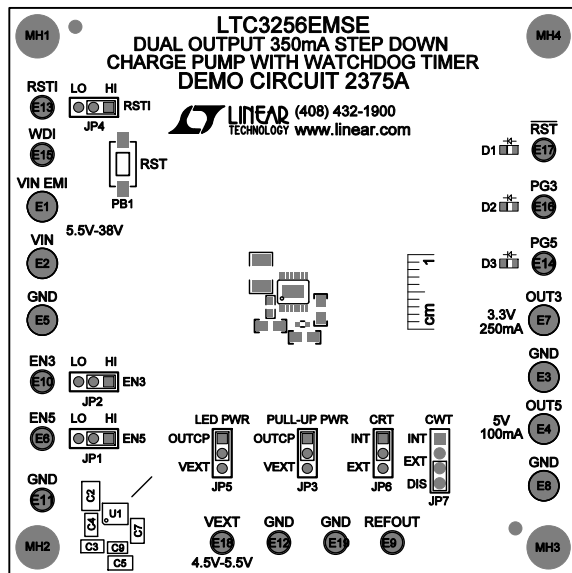
**BILL OF MATERIALS**  
**DEMO BD. #2375A-3-CF**

Item	Qty	Reference	Part Description	Manufacturer / Part #
<b>REQUIRED CIRCUIT COMPONENTS:</b>				
1	1	C2	CAP, CHIP, X5R, 10μF, ±10%, 50V, 1206	TDK, CGA5L3X5R1H106K160AB
	0	C2 (ALTERNATE)	CAP, CHIP, X7S, 10μF, ±10%, 50V, 1210	MURATA, GCM32EC71H106KA03
2	3	C3, C5, C7	CAP, CHIP, X7R, 10μF, ±10%, 6.3V, 0805	TDK, CGA4J1X7R0J106K125AC
3	1	C4	CAP, CHIP, X7R, 1μF, ±10%, 16V, 0603	TDK, CGA3E1X7R1C105K080AC
4	1	C9	CAP, CHIP, X7R, 0.1μF, ±10%, 16V, 0402	TDK, CGA1X7R1C104K050BC
5	1	U1	DUAL OUTPUT 350mA STEP DOWN CHARGE PUMP WITH WATCHDOG TIMER	LINEAR TECH., LTC3256EMSE#PBF
<b>ADDITIONAL DEMO BOARD CIRCUIT COMPONENTS:</b>				
6	3	C1, C14, C15	CAP, CHIP, X7S, 10μF, ±10%, 50V, 1210	MURATA, GCM32EC71H106KA03
7	0	C6, C8, C10, C13	CAP, CHIP, 0603	
8	2	C11, C12	CAP, CHIP, X7R, 2.2nF, ±10%, 50V, 0402	TDK, CGA2BX7R1H222K050BA
9	1	D1	DIODE, LED, SUPER RED DIFF, 0603 SMD	LUMEX, SML-LX0603SRW-TR
10	2	D2, D3	DIODE, LED, SUPER GREEN DIFF, 0603 SMD	LITE-ON, LTST-C190KGKT
11	1	FB1	FERRITE, CHIP, 60Ω @ 100MHz, 3.5A, 0603	TDK, MPZ1608S600ATDH5
12	1	L1	IND, CHIP, 0.22uH, 0.027Ω, 2.4A, 1210	TDK, NLCV32T-R22M-ERFD
13	1	M1	MOSFET, P-CHN, 12V, SOT-23	VISHAY, SI2333DDS-T1-GE3
14	2	M2, M3	MOSFET, N-CHN, 20V, SOT-23	VISHAY, SI2374DS-T1-GE3
15	1	PB1	SWITCH, PUSH BUTTON, SMT	C & K, PTS635SL25SMTRLFS
16	6	R1, R3, R5-R8	RES 100K OHM 1/16W 5% 0402 SMD	VISHAY, CRCW0402100KJNED
17	7	R2, R4, R10, R11, R13-R15	RES 1K OHM 1/16W 5% 0402 SMD	VISHAY, CRCW04021K00JNED
18	2	R9, R12	RES 1M OHM 1/16W 5% 0402 SMD	VISHAY, CRCW04021M00JNED
<b>HARDWARE</b>				
19	5	JP1-JP5	HEADER, 3 PIN 1 ROW .079CC	WURTH ELEKTRONIK, 62000311121
20	2	JP6, JP7	HEADER, 4 PIN 1 ROW .079CC	WURTH ELEKTRONIK, 62000411121
21	7	JP1-JP7	SHUNT, 2mm	WURTH ELEKTRONIK, 60800213421
22	7	E1-E5, E7, E8	TP, TURRET, 0.094", PBF	MILL-MAX, 2501-2-00-80-00-00-07-0
23	12	E6, E9-E9	TURRET, 0.061 DIA	MILL-MAX, 2308-2-00-80-00-00-07-0
24	4	MH1-MH4	STAND-OFF, NYLON 0.375" TALL	KEYSTONE, 8832 (SNAP ON)

REVISION HISTORY				
ECO	REV	DESCRIPTION	APPR	DATE
-	3	PRODUCTION	MM	3-18-16

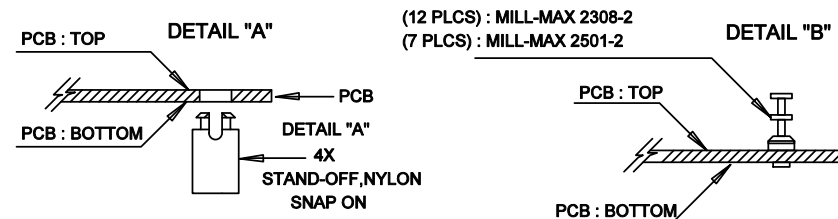
## NOTES: UNLESS OTHERWISE SPECIFIED


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. APPLY ASSEMBLY STAMP OR QA STAMP TO BOTTOM OF BOARD (UNSHOWY AREA).
7. INSTALL TURRETS, STAND-OFFS AND BANANA JACKS AS SHOWN BELOW:

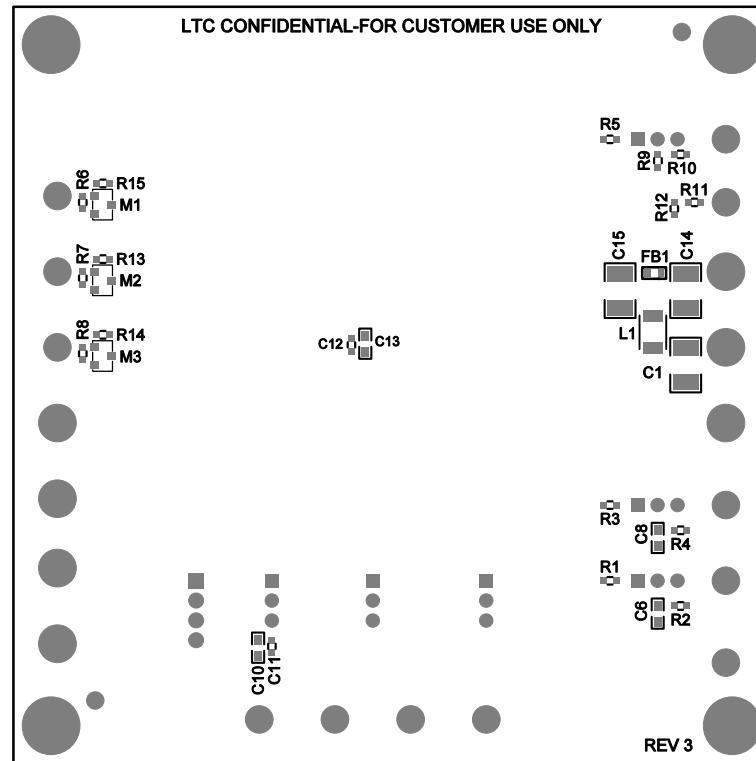



DETAIL "A"

DETAIL "B"



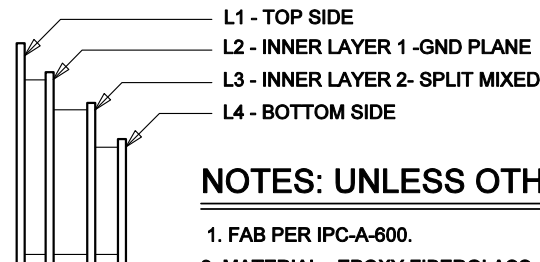
APPROVALS		 <div> 1630 MCCARTHY BLVD  MILPITAS, CA 95035  PH: (408)432-1900  www.Linear.com  NOT FOR CUSTOMER USE ONLY </div>		
PCB DES.	NC	<b>TITLE: TOP ASSEMBLY DRAWING:</b> <b>DUAL OUTPUT 350mA STEP DOWN CHARGE PUMP WITH WATCHDOG TIMER</b>		
APP ENG.	MM			
		SIZE	IC NO. LTC3256EMSE	REV.
		N/A	DEMO CIRCUIT 2375A	3
SCALE = NONE		SHT 1 of 2		



APPROVALS		 <div> 1630 MCCARTHY BLVD  MILPITAS, CA 95035  PH: (408)432-1900  <a href="http://www.Linear.com">www.Linear.com</a>  LTC CONFIDENTIAL-  FOR CUSTOMER USE ONLY </div>	
PCB DES.	NC		
APP ENG.	MM	<b>TITLE: BOTTOM ASSEMBLY DRAWING:</b> <b>DUAL OUTPUT 350mA STEP DOWN</b> <b>CHARGE PUMP WITH WATCHDOG TIMER</b>	
SCALE = NONE		SIZE N/A	IC NO. LTC3256EMSE DEMO CIRCUIT 2375A
		REV. 3	
		SHT 2 of 2	

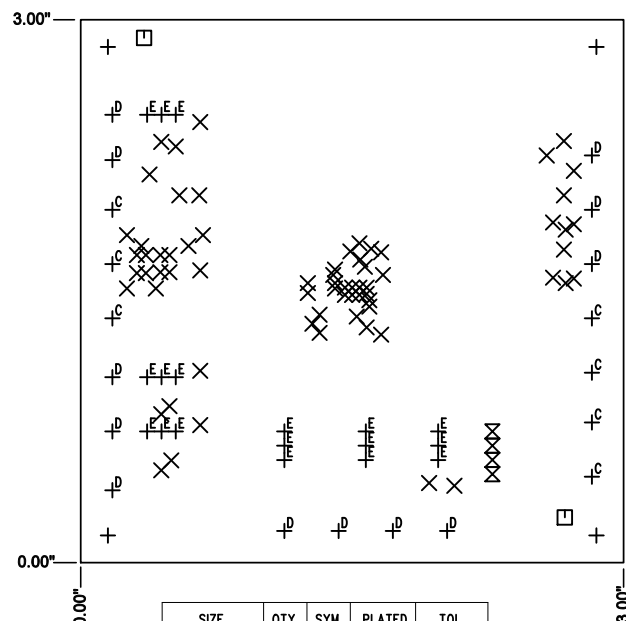
REVISION HISTORY				
ECO	REV	DESCRIPTION	APPR	DATE
-	3	PRODUCTION	MM	3-18-16

## LAYER STRUCTURE

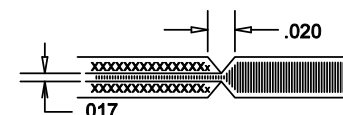



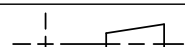
## NOTES: UNLESS OTHERWISE SPECIFIED

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-O 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 DO NOT ALTER SOLDER MASK MAINTAIN .003" OVERSIZE  
ON SMT PADS. A .005" WEBBING IS REQUIRED BETWEEN SMD PADS.
9. SCORING FOR PANELIZED PCB: "PRODUCTION FAB ONLY"



SIZE	QTY	SYM	PLATED	TOL
0.01	69	X	YES	+/-0.003
0.037	4	X	YES	+/-0.003
0.07	2	□	NO	+/-0.003
0.094	7	+C	YES	+/-0.003
0.19	4	+	YES	+/-0.003
0.063	12	+D	YES	+/-0.003
0.032	18	+E	YES	+/-0.003

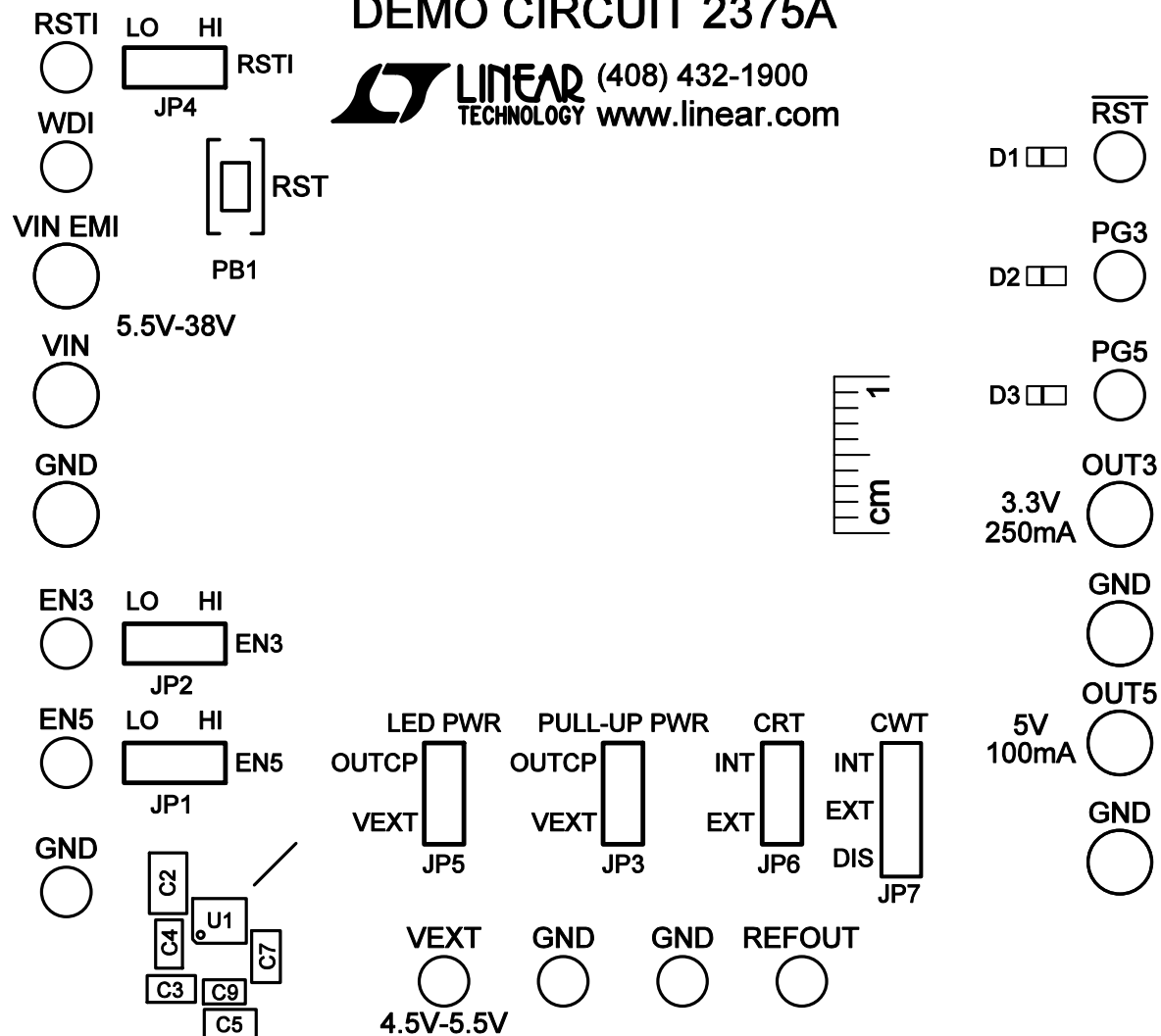


UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON ANGLE 1 : 0.004" = 0.01" 0.0004" = 0.005" INTERPRET DIM AND TOL PER ASME Y14.5M-1994	APPROVALS			1630 MCCARTHY BLVD MILPITAS, CA 95035 PH: (408)432-1900 www.Linear.com LTC CONFIDENTIAL- FOR CUSTOMER USE ONLY		
	PCB DES.	NC				
	APP ENG.	MM				
THIRD ANGLE PROJECTION				TITLE: FABRICATION DRAWING:		
				DUAL OUTPUT 350mA STEP DOWN CHARGE PUMP WITH WATCHDOG TIMER		
				SIZE	IC NO. LTC3256EMSE	REV.
				N/A	DEMO CIRCUIT 2375A	3
DO NOT SCALE DRAWING	SCALE: NONE					SHT 1 of 1



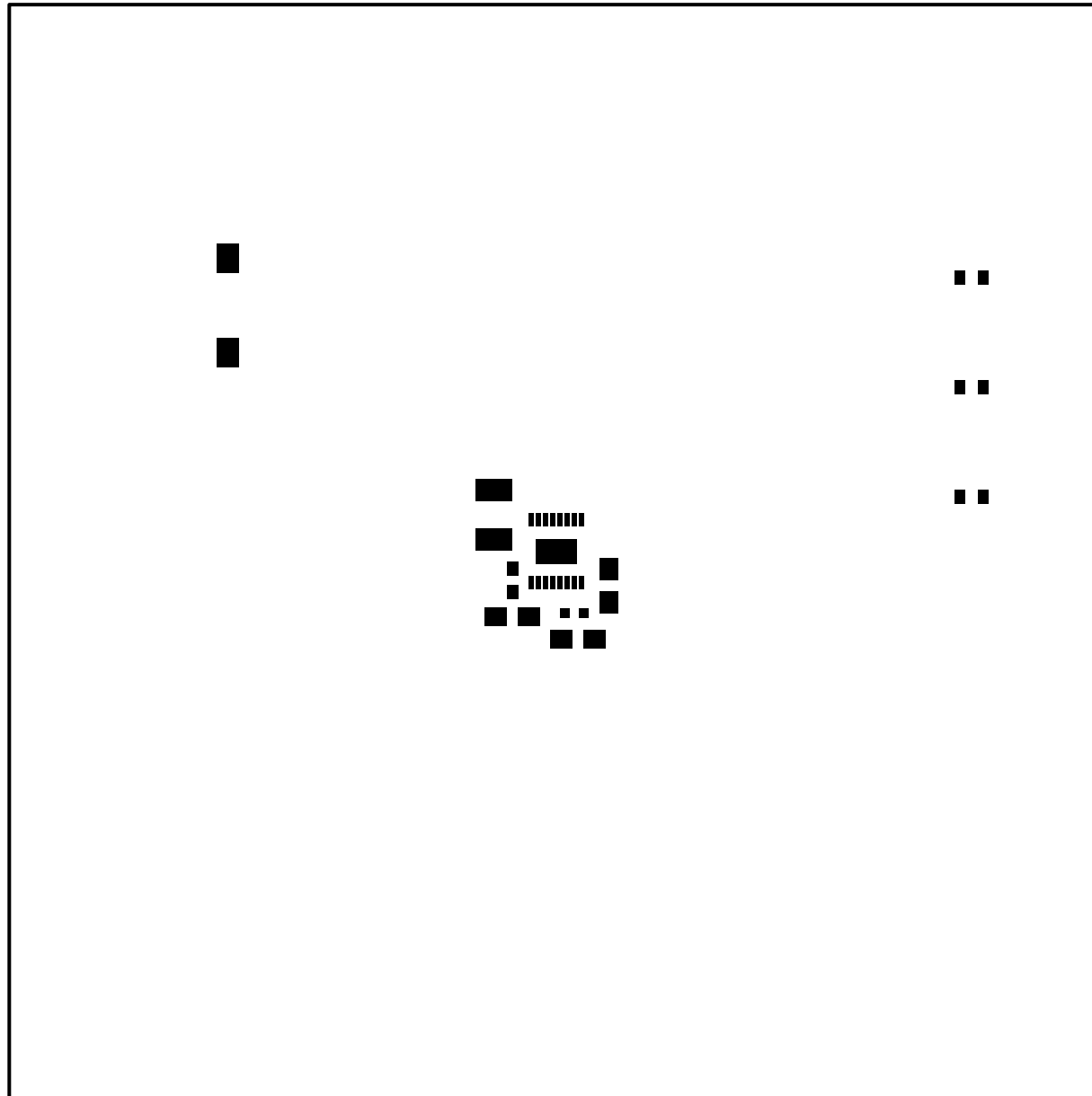
**LTC3256EMSE**  
**DUAL OUTPUT 350mA STEP DOWN**  
**CHARGE PUMP WITH WATCHDOG TIMER**  
**DEMO CIRCUIT 2375A**

 **LINEAR** (408) 432-1900  
 TECHNOLOGY [www.linear.com](http://www.linear.com)



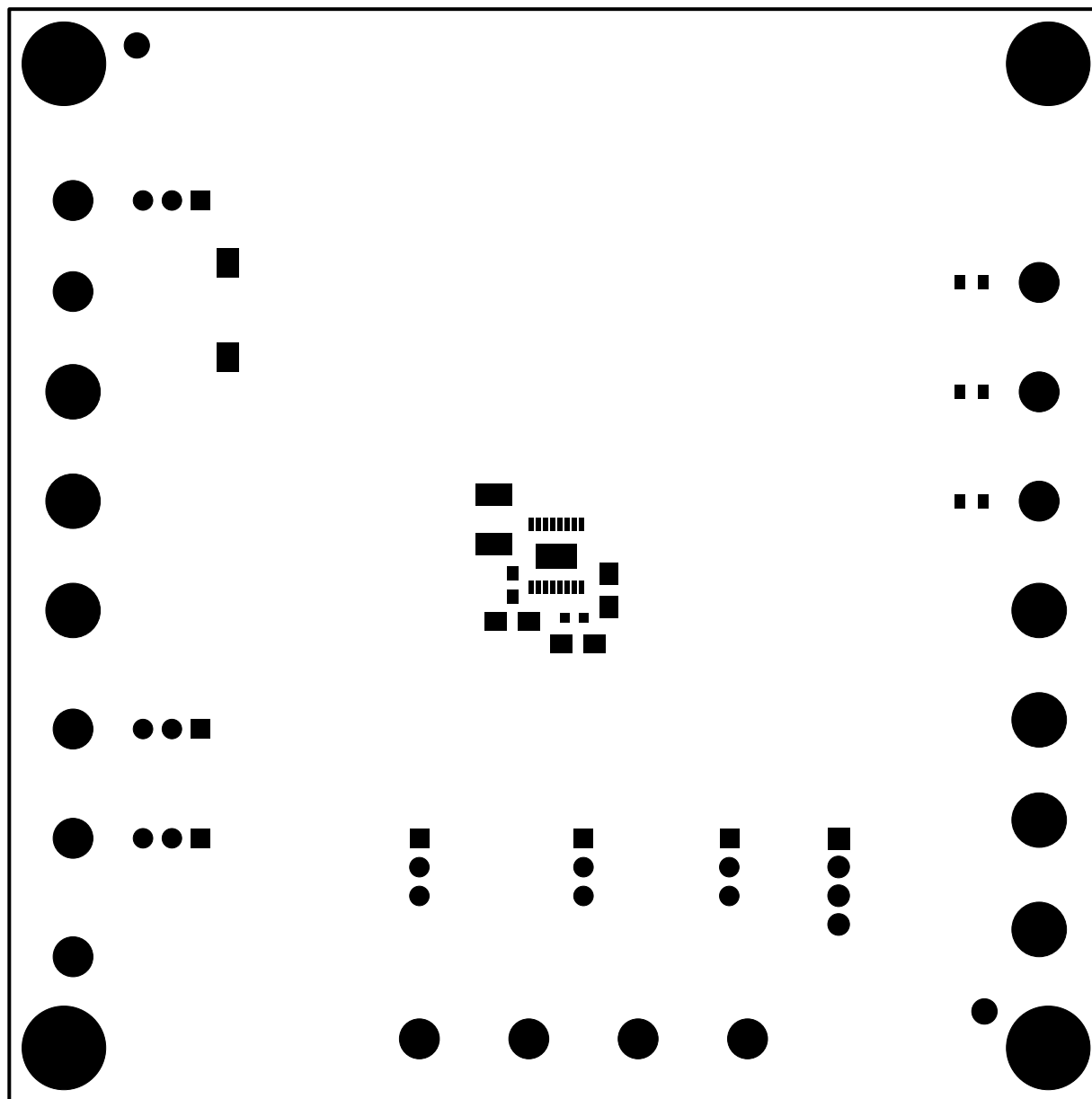
**SILKSCREEN TOP**

**LINEAR TECH CORP.**  
**DEMO CIRCUIT 2375A-3 \* LTC3256EMSE**  
**DUAL OUTPUT 350mA STEP DOWN**  
**CHARGE PUMP WITH WATCHDOG TIMER**  
**DATE: 3-21-16**



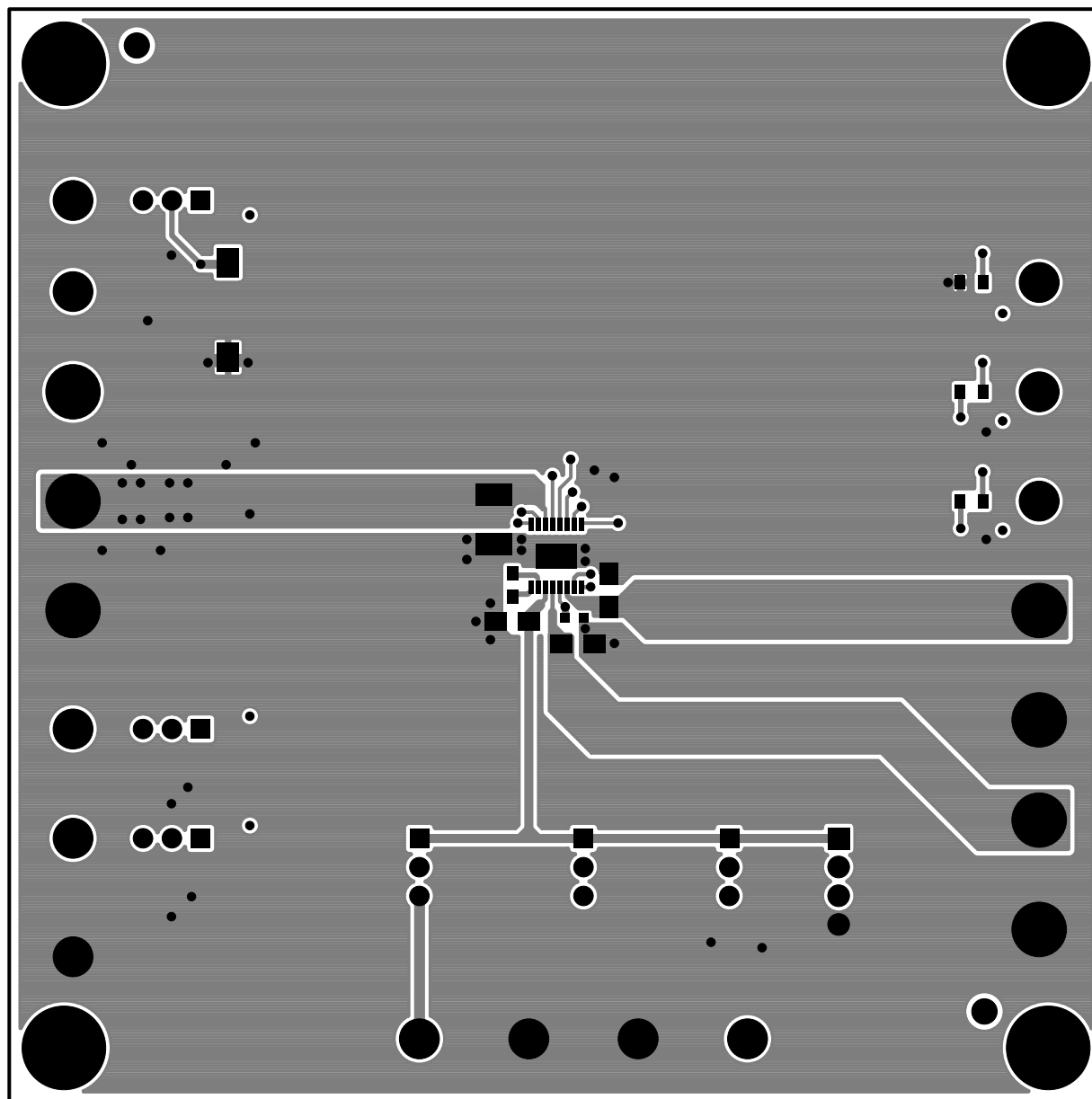
PASTEMASK TOP

LINEAR TECH CORP.  
DEMO CIRCUIT 2375A-3 \* LTC3256EMSE  
DUAL OUTPUT 350mA STEP DOWN  
CHARGE PUMP WITH WATCHDOG TIMER  
DATE: 3-21-16



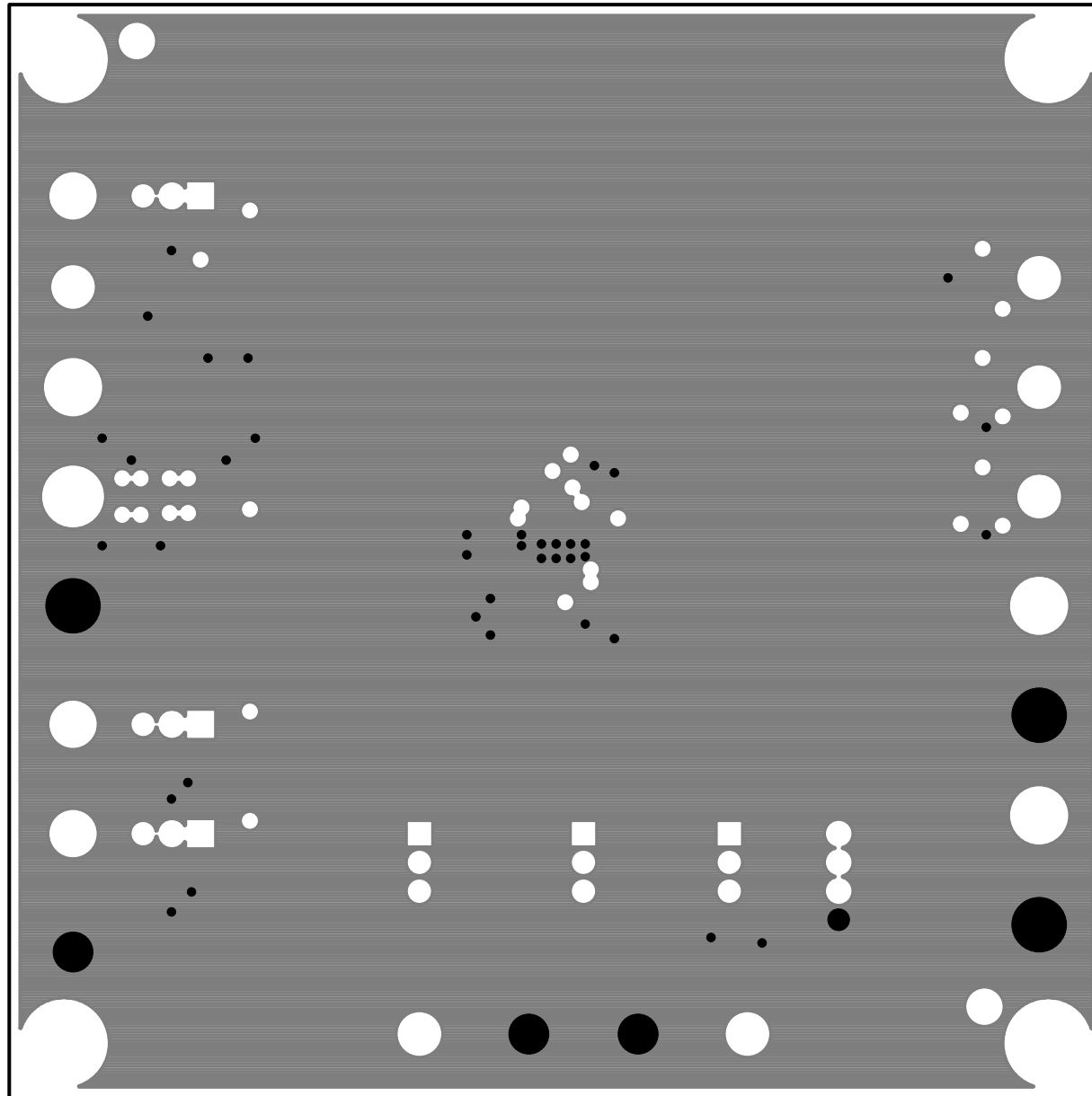
SOLDERMASK TOP

LINEAR TECH CORP.  
 DEMO CIRCUIT 2375A-3 \* LTC3256EMSE  
 DUAL OUTPUT 350mA STEP DOWN  
 CHARGE PUMP WITH WATCHDOG TIMER  
 DATE: 3-21-16



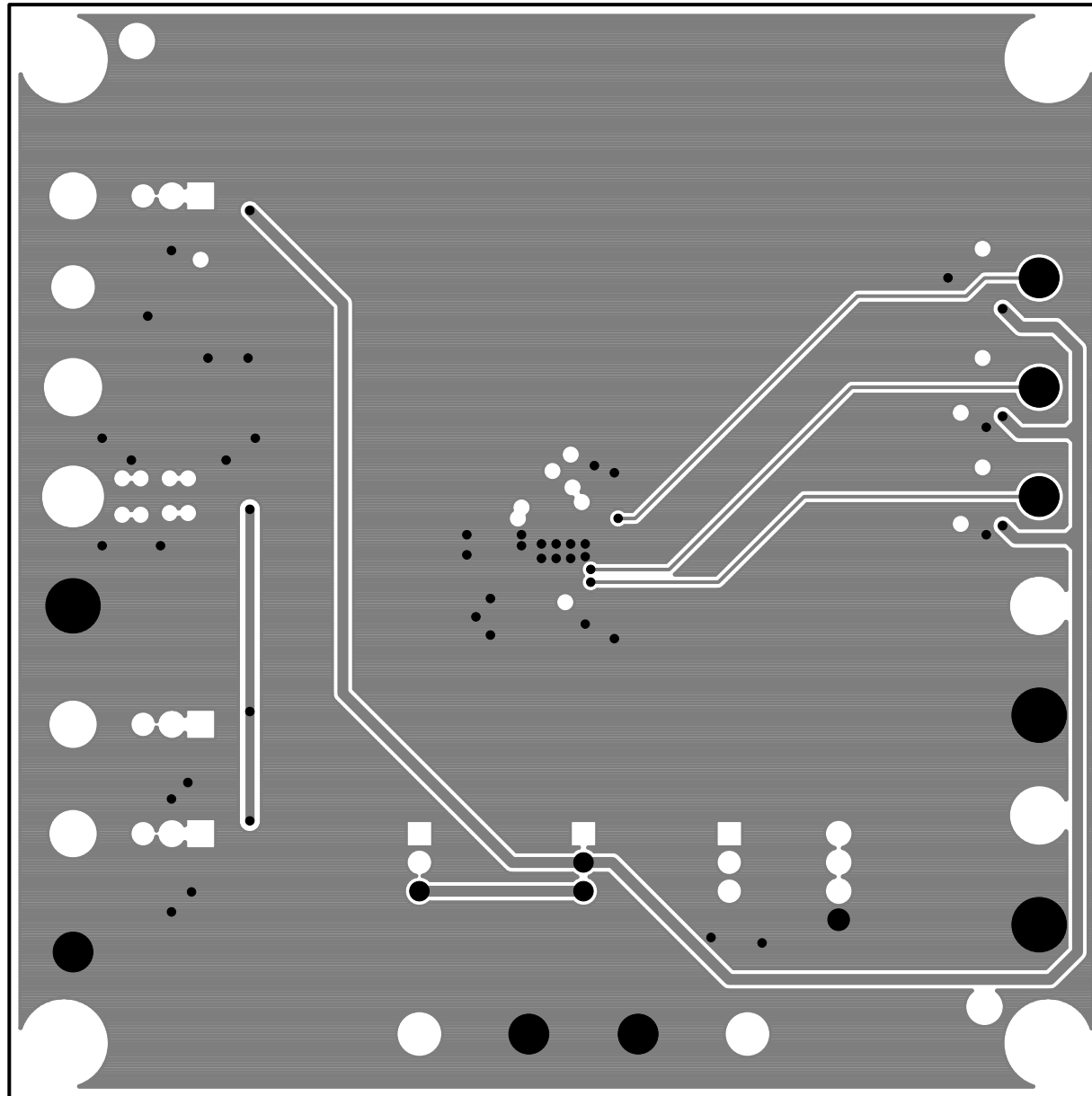
TOP LAYER

LINEAR TECH CORP.  
DEMO CIRCUIT 2375A-3 \* LTC3256EMSE  
DUAL OUTPUT 350mA STEP DOWN  
CHARGE PUMP WITH WATCHDOG TIMER  
DATE: 3-21-16



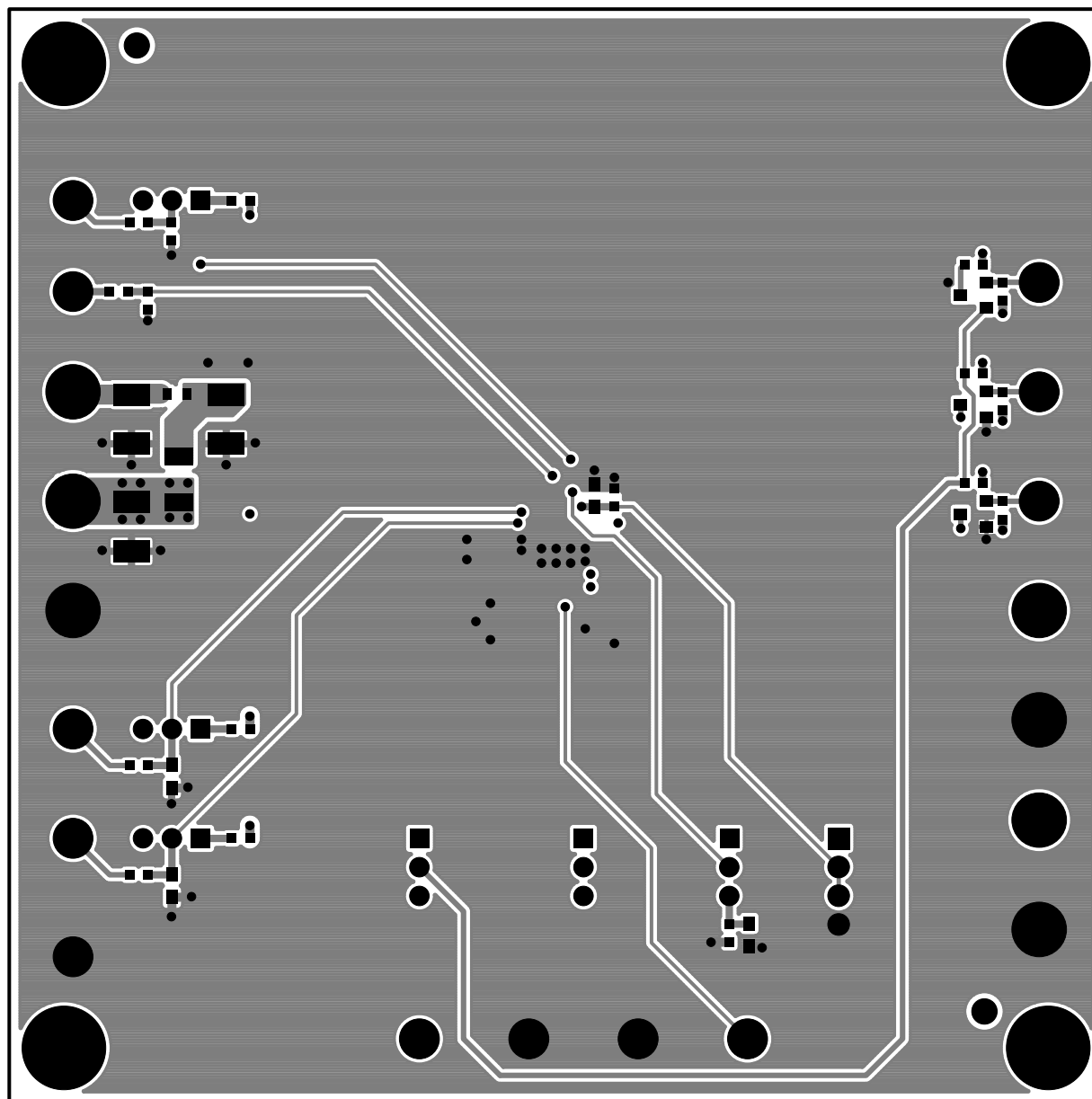
LAYER 2 GND PLANE

LINEAR TECH CORP.  
DEMO CIRCUIT 2375A-3 \* LTC3256EMSE  
DUAL OUTPUT 350mA STEP DOWN  
CHARGE PUMP WITH WATCHDOG TIMER  
DATE: 3-21-16



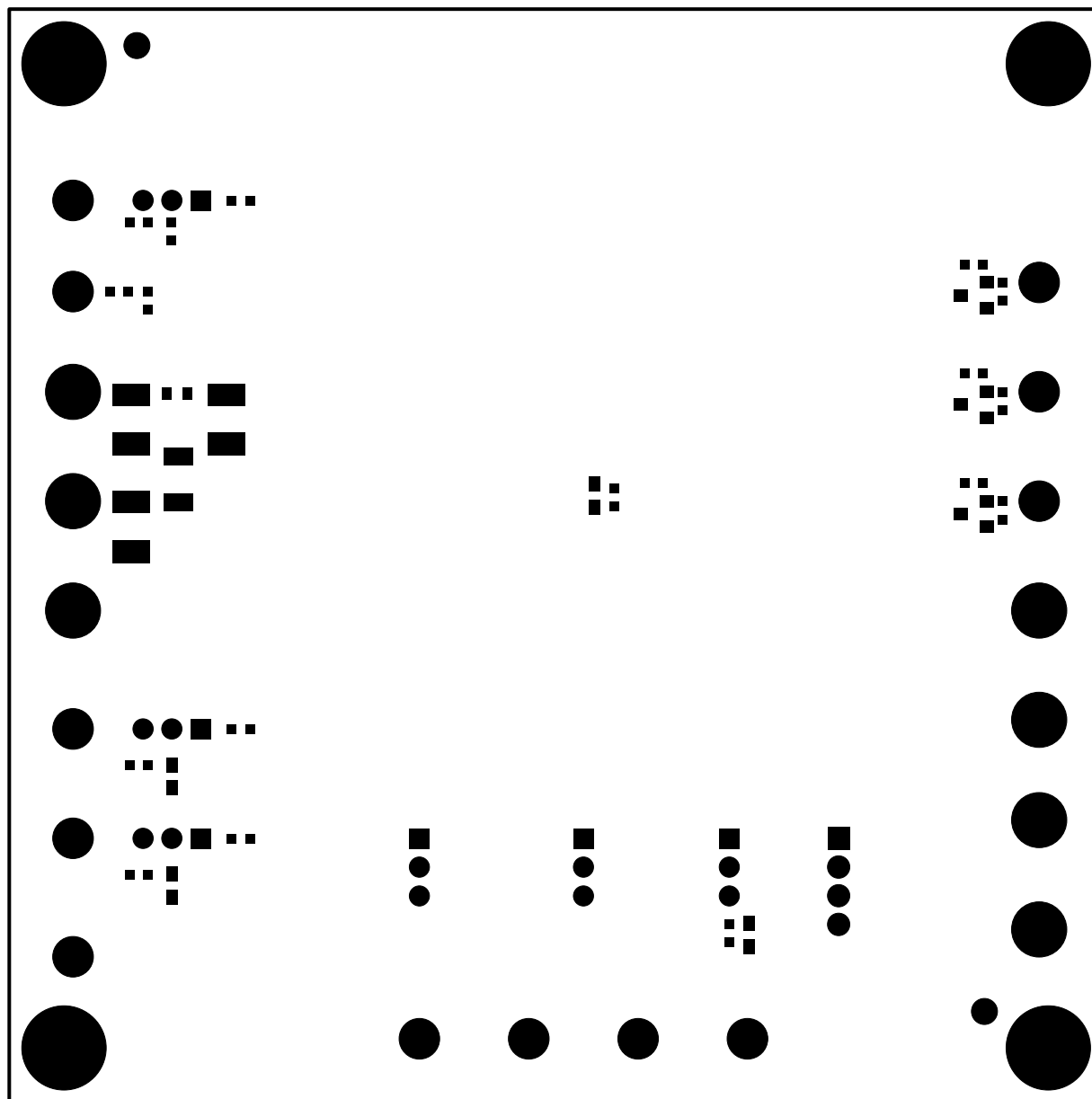
LAYER 3 GND PLANE

LINEAR TECH CORP.  
DEMO CIRCUIT 2375A-3 \* LTC3256EMSE  
DUAL OUTPUT 350mA STEP DOWN  
CHARGE PUMP WITH WATCHDOG TIMER  
DATE: 3-21-16



**BOTTOM SIDE**

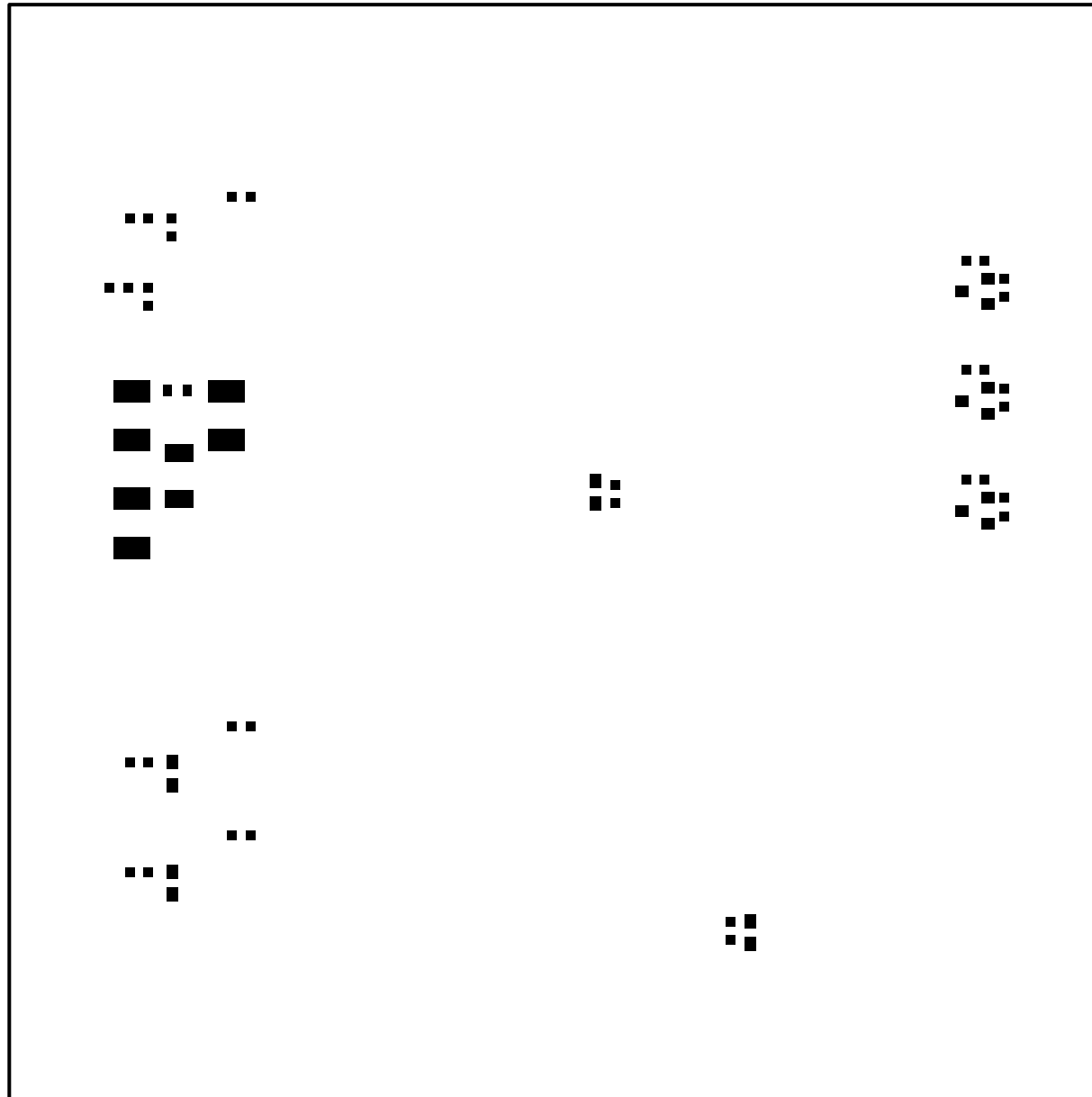
**LINEAR TECH CORP.  
DEMO CIRCUIT 2375A-3 \* LTC3256EMSE  
DUAL OUTPUT 350mA STEP DOWN  
CHARGE PUMP WITH WATCHDOG TIMER  
DATE: 3-21-16**



SOLDERMASK BOTTOM

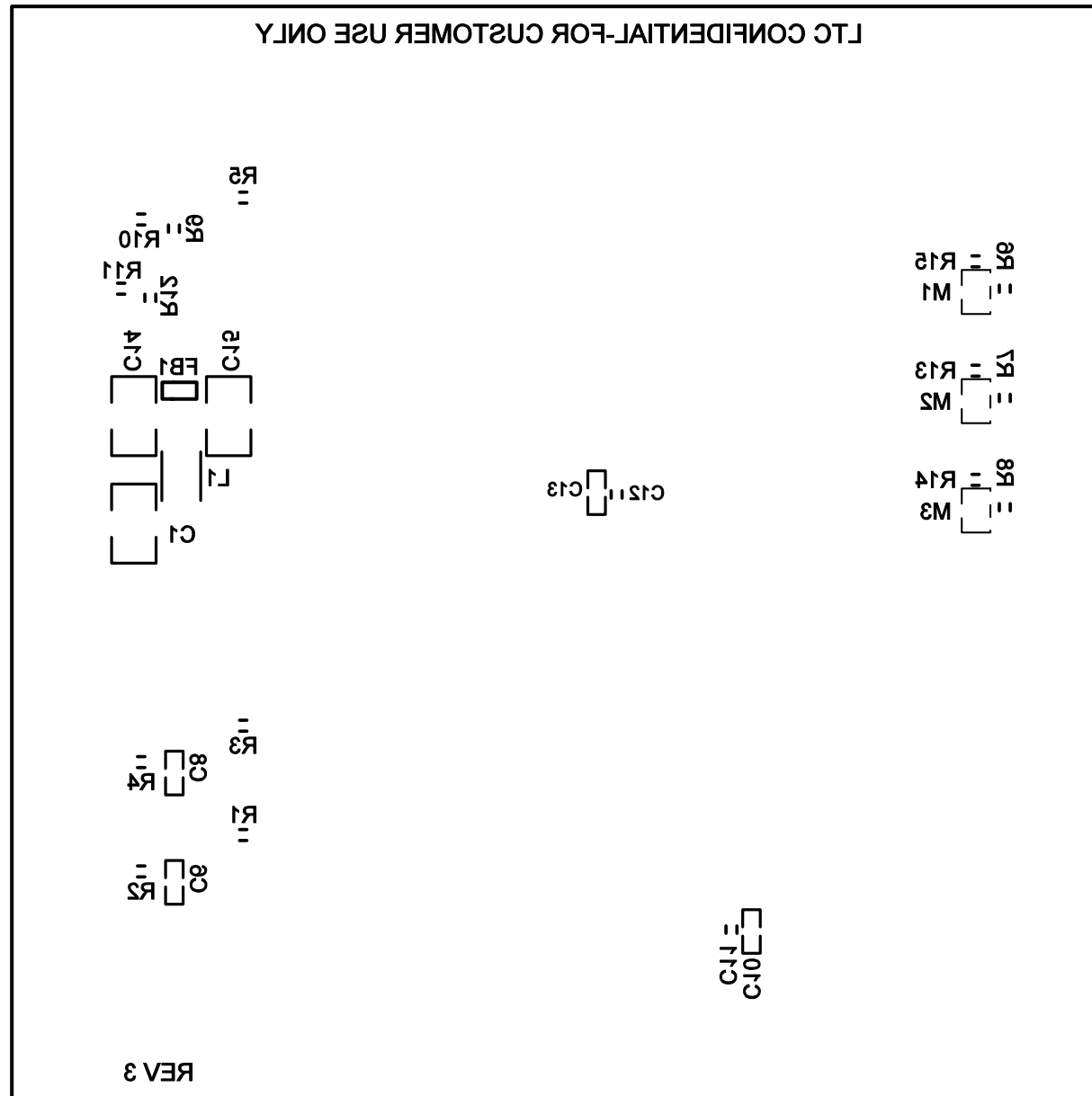
LINEAR TECH CORP.  
DEMO CIRCUIT 2375A-3 \* LTC3256EMSE  
DUAL OUTPUT 350mA STEP DOWN  
CHARGE PUMP WITH WATCHDOG TIMER  
DATE: 3-21-16





PASTEMASK BOTTOM

LINEAR TECH CORP.  
DEMO CIRCUIT 2375A-3 \* LTC3256EMSE  
DUAL OUTPUT 350mA STEP DOWN  
CHARGE PUMP WITH WATCHDOG TIMER  
DATE: 3-21-16



SILKSCREEN BOTTOM

LINEAR TECH CORP.  
 DEMO CIRCUIT 2375A-3 \* LTC3256EMSE  
 DUAL OUTPUT 350mA STEP DOWN  
 CHARGE PUMP WITH WATCHDOG TIMER  
 DATE: 3-21-16