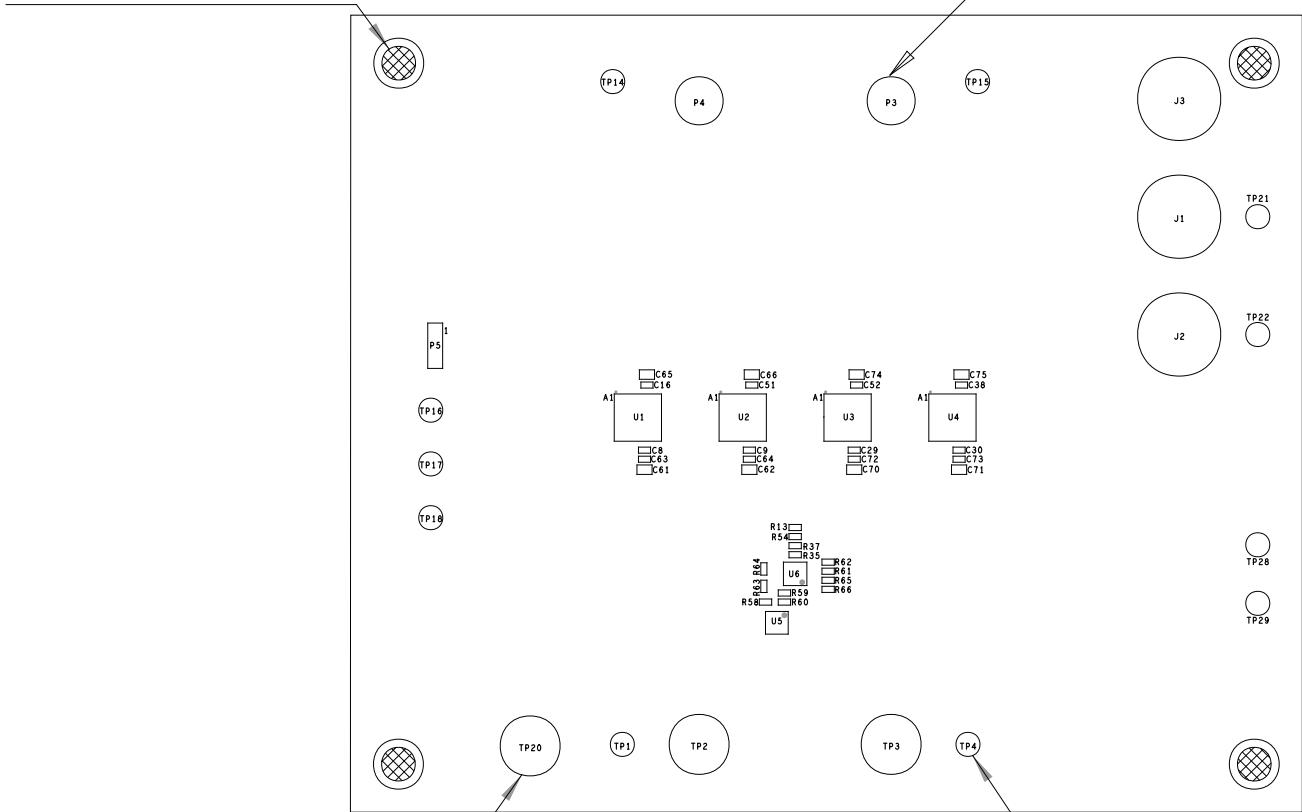


ASSEMBLY NOTES:

1. BOARD ACCEPTABILITY PER ANALOG DEVICES, INC. SPECIFICATION TST00119 (LATEST REVISION).
2. REPAIRS PER IPC-7711/21(LATEST REVISION) ARE ALLOWED.
3. REPAIRS ARE NOT ALLOWED IN SOLDERMASK FREE AREAS ON EITHER SIDE OF THE BOARD.
4. RoHS COMPLIANCE: ASSEMBLY VENDOR SHOULD ASSURE COMPLIANCE WITH LEAD-FREE AND RoHS PCB ASSEMBLY STANDARDS (EU RoHS DIRECTIVE 2002/95/EC).
5. BOARDS TO BE SHIPPED SINGULATED AFTER ASSEMBLY PROCESS. SMOOTHEN EDGES AND FREE FROM BURS AFTER DEPANELIZATION PROCESS.
6. INSTALL JUMPER SHUNT(M033288) ON POSITIONS 1 AND 2 OF P5.
7. INSTALL STANDOFFS(M038858) TO BE MOUNTED ON SECONDARY SIDE.
8. SEE "DETAIL C" TO INSTALL KFH-032-10ET.  
> P3 & P4

SEE NOTE 7  
( 4 PLACES )

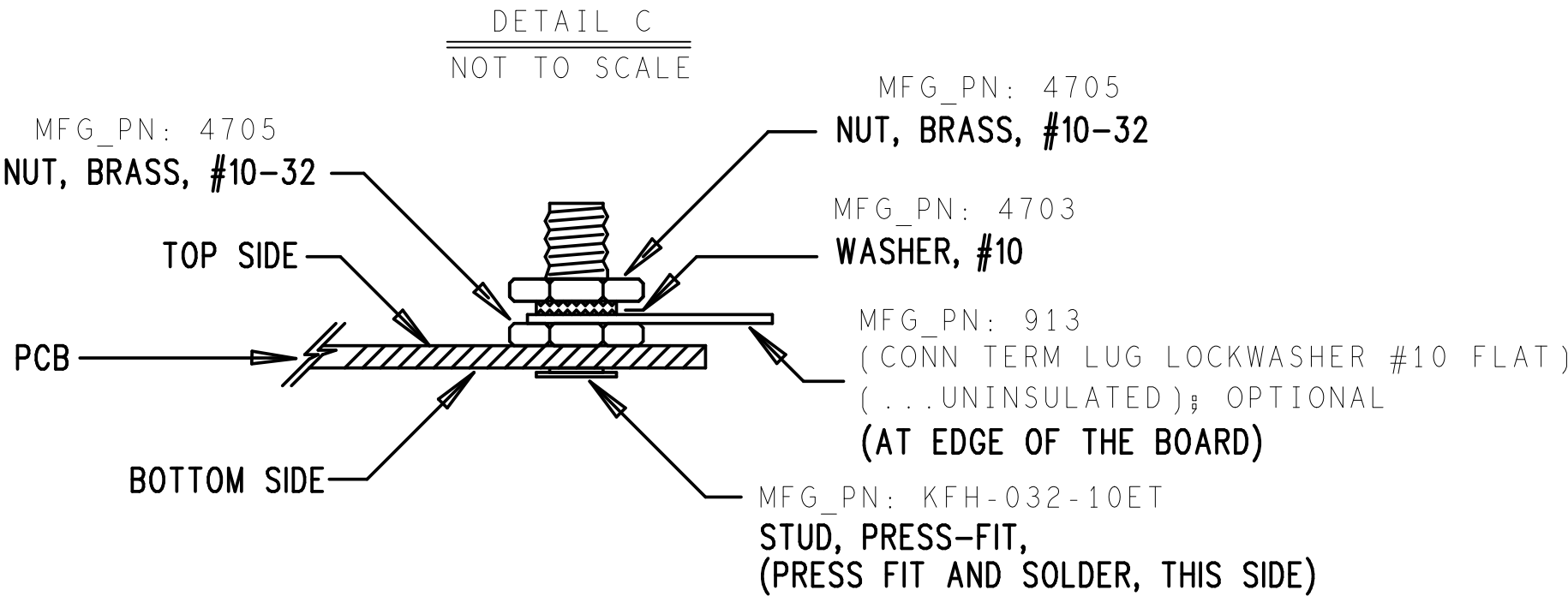
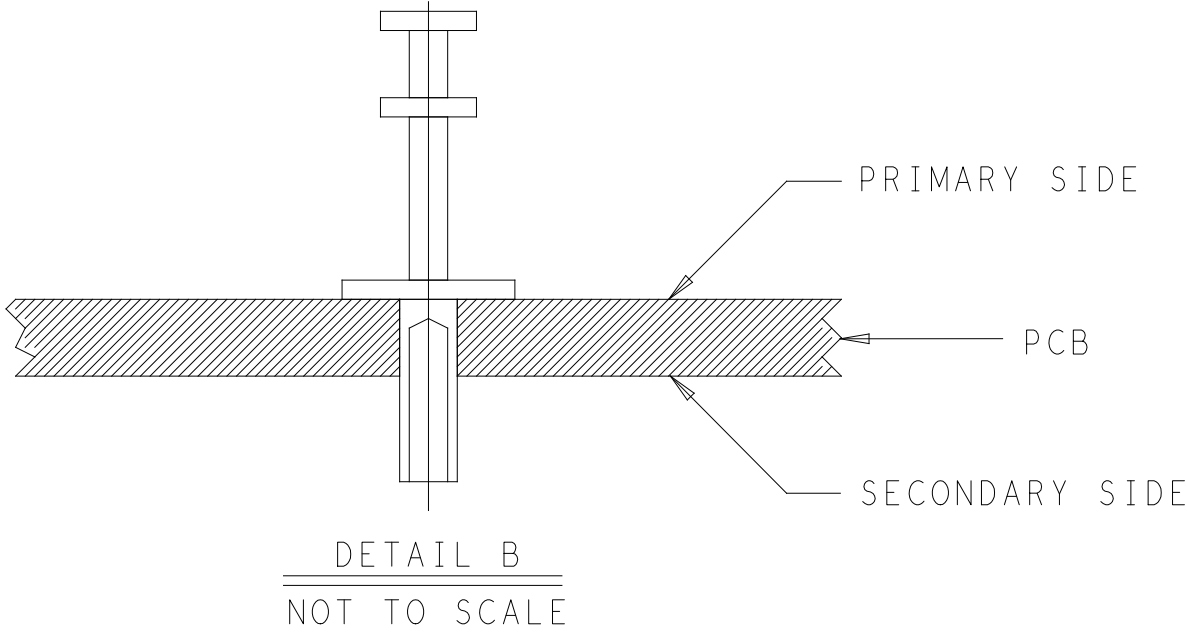
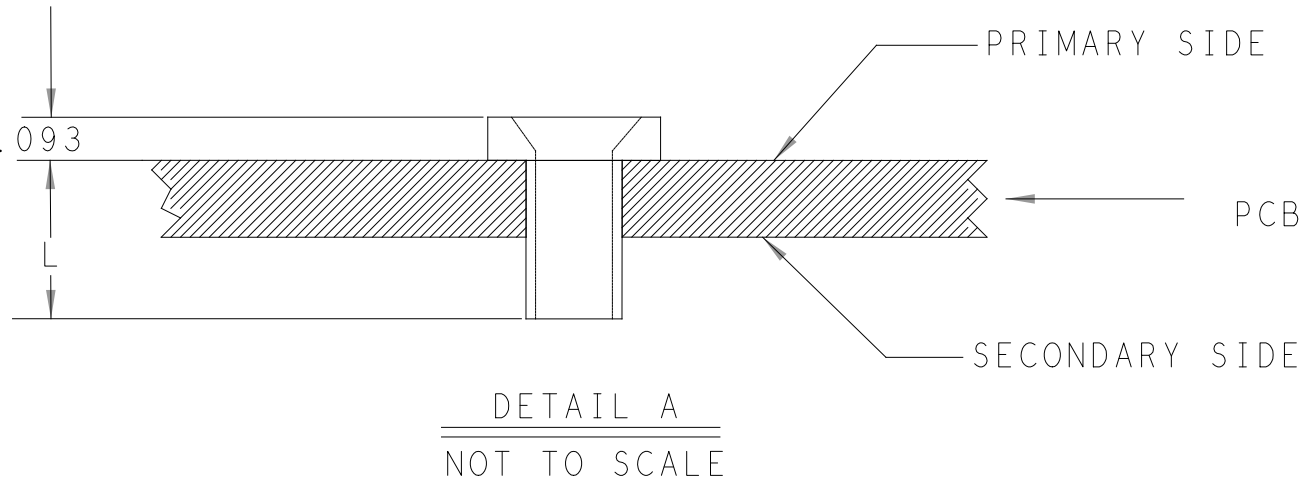
SEE NOTE 8  
( 2 PLACES )



SEE DETAIL A  
( 3 PLACES )

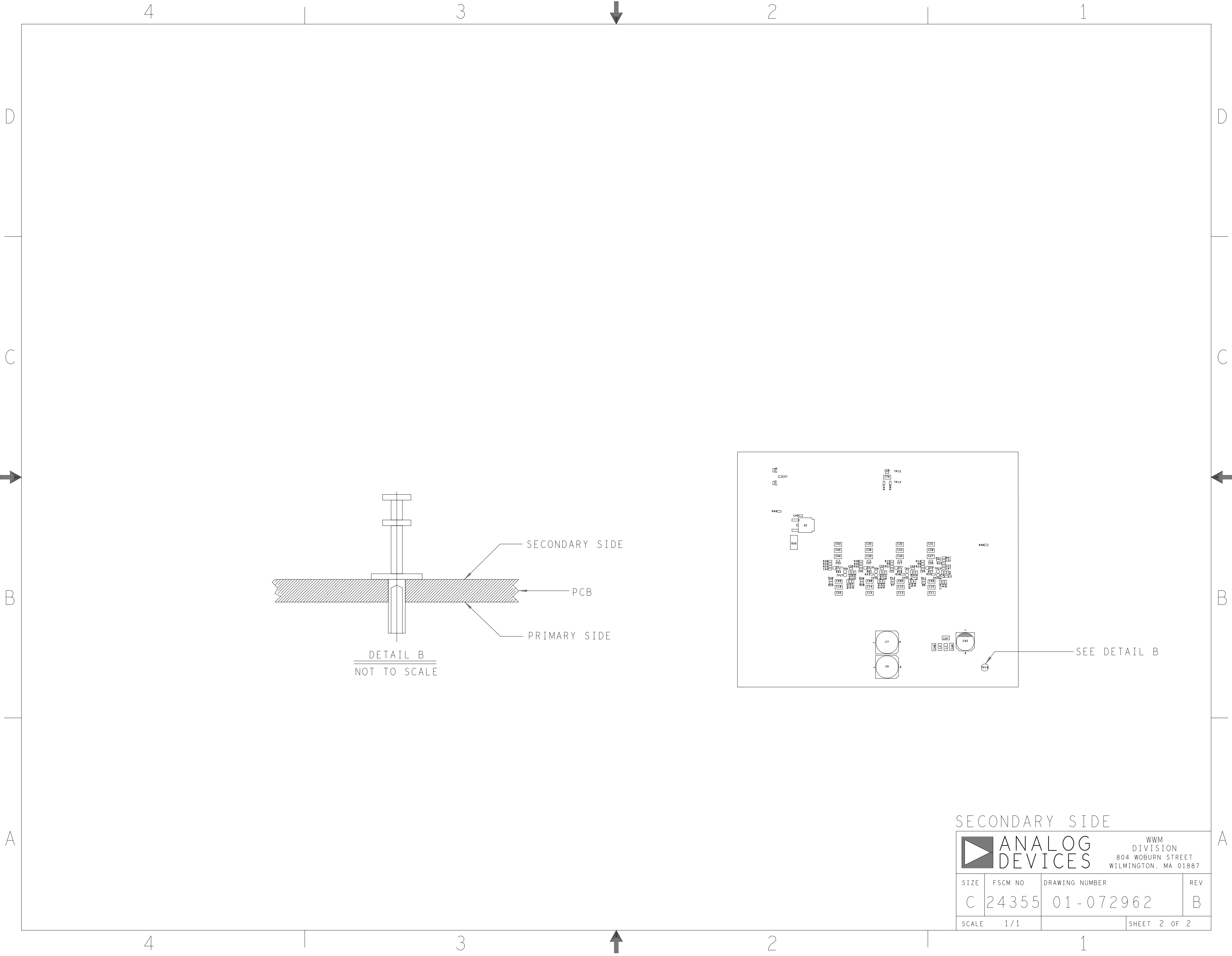
SEE DETAIL B  
( 11 PLACES )

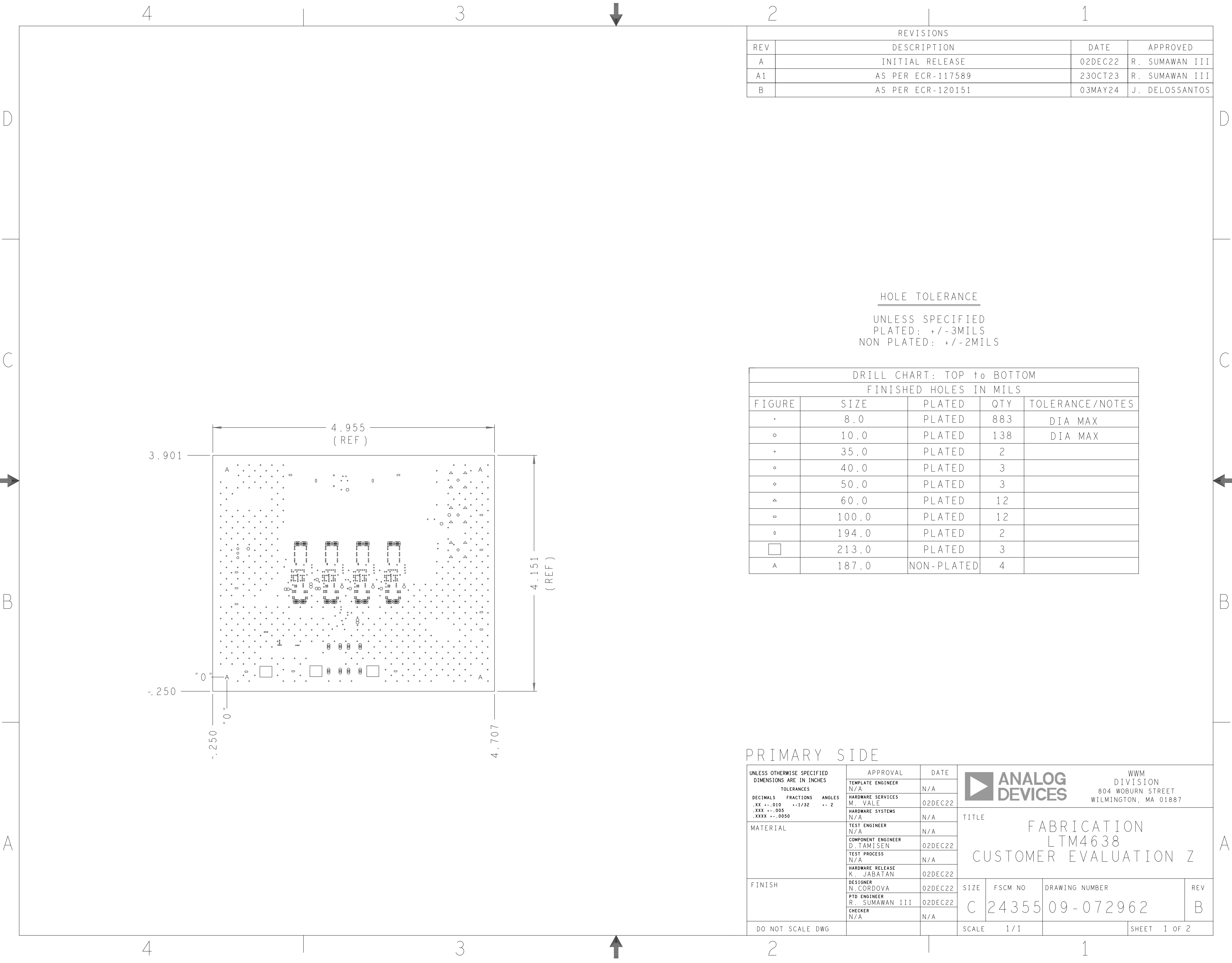
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	02DEC22	R. SUMAWAN III
A1	AS PER ECR-117589	23OCT23	R. SUMAWAN III
B	AS PER ECR-120151	03MAY24	J. DELOSSANTOS



PRIMARY SIDE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES DECIMALS FRACTIONS ANGLES .XX -.010 --1/32 -- 2 .XXX -.005 .XXXX -.0050	APPROVAL		DATE	<div><div></div><div>ANALOG DEVICES</div></div> <div>WWM DIVISION 804 WOBURN STREET WILMINGTON, MA 01887</div> <div>TITLE ASSEMBLY LTM4638 CUSTOMER EVALUATION Z</div>			
	TEMPLATE ENGINEER N/A		N/A				
	HARDWARE SERVICES M. VALE		02DEC22				
	HARDWARE SYSTEMS N/A		N/A				
MATERIAL	TEST ENGINEER N/A		N/A	SIZE FSCM NO DRAWING NUMBER REV C 24355 01-072962 B			
	COMPONENT ENGINEER D. TAMISEN		02DEC22				
	TEST PROCESS N/A		N/A				
	HARDWARE RELEASE K. JABATAN		02DEC22				
FINISH	DESIGNER N. CORDOVA		02DEC22	SCALE 1/1 SHEET 1 OF 2			
	PTD ENGINEER R. SUMAWAN III		02DEC22				
	CHECKER N/A		N/A				
	DO NOT SCALE DWG						





REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	02DEC22	R. SUMAWAN III
A1	AS PER ECR-117589	23OCT23	R. SUMAWAN III
B	AS PER ECR-120151	03MAY24	J. DELOSSANTOS

HOLE TOLERANCE  
UNLESS SPECIFIED  
PLATED: +/-3MILS  
NON PLATED: +/-2MILS

DRILL CHART: TOP to BOTTOM				
FINISHED HOLES IN MILS				
FIGURE	SIZE	PLATED	QTY	TOLERANCE/NOTES
*	8.0	PLATED	883	DIA MAX
o	10.0	PLATED	138	DIA MAX
•	35.0	PLATED	2	
◦	40.0	PLATED	3	
◊	50.0	PLATED	3	
△	60.0	PLATED	12	
◌	100.0	PLATED	12	
◊	194.0	PLATED	2	
◻	213.0	PLATED	3	
A	187.0	NON-PLATED	4	

PRIMARY SIDE			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES DECIMALS   FRACTIONS   ANGLES .XX   -.010   --1/32   -- 2 .XXX   -.005 .XXXX   -.0050	APPROVAL		DATE
	TEMPLATE ENGINEER N/A		N/A
	HARDWARE SERVICES M. VALE		02DEC22
	HARDWARE SYSTEMS N/A		N/A
MATERIAL	TEST ENGINEER N/A		N/A
	COMPONENT ENGINEER D. TAMIEN		02DEC22
	TEST PROCESS N/A		N/A
	HARDWARE RELEASE K. JABATAN		02DEC22
FINISH	DESIGNER N. CORDOVA		02DEC22
	PTD ENGINEER R. SUMAWAN III		02DEC22
	CHECKER N/A		N/A
	DO NOT SCALE DWG		
SCALE		1/1	
SHEET		1 OF 2	
TITLE			
FABRICATION LTM4638 CUSTOMER EVALUATION Z			
SIZE	FSCM NO	DRAWING NUMBER	REV
C	24355	09-072962	B

NOTES : UNLESS OTHERWISE SPECIFIED

1. DIMENSIONS ARE IN INCHES (EXCEPT WHERE NOTED).  
ALL DOCUMENTS & SPECIFICATIONS REFERRED TO BELOW SHOULD BE THE LATEST REVISIONS.  
HOMOGENOUS MATERIALS IN THIS BOARD SHALL BE COMPLAINT WITH THE EU DIRECTIVE 2002/95/EC

MATERIAL :

2. BOARD MATERIAL:(USE CHECKED ITEMS)
- (X) ISOLA370HR OR S1000-2 OR IT180 OR EQUIVALENT  
( ) ISOLA-FR408HR OR EQUIVALENT  
( ) ISOLA IS410  
( ) MEGTRON 6  
( ) NELCO-4000-13  
( ) ROGERS 4350B  
( ) ROGERS 3003  
( ) ARLON 65N  
( ) EM370D  
( ) OTHER \_\_\_\_\_
3. ALL LAMINATES & BONDING MATERIALS SHOULD BE SELECTED FROM IPC-4101 OR IPC-4103,(TG>170 DEGC TD>300 DEGC)  
UL FLAMMABILITY RATING 94V-0. BOARD MATERIAL & CONSTRUCTION SHALL MEET THE REQUIREMENTS OF UL796/UL796F.  
4. REFER TO IPC-6010 SERIES, CLASS 2 FOR FABRICATION. WORKMANSHIP SHALL CONFORM TO IPC-A-600, CLASS 2.  
5. REFER TO LAMINATION DIAGRAM FOR OVERALL BOARD THICKNESS, TOLERANCE APPLIES AFTER ALL LAMINATION AND PLATING PROCESSES. FINISHED THICKNESS MEASURED FROM TOP COPPER TO BOTTOM COPPER.  
6. BOW & TWIST NOT TO EXCEED 0.0075 INCHES (0.75%) PER LINEAR INCH AND SHOULD BE MEASURED PER IPC-TM-650, METHOD 2.4.22.  
7. ACCEPTABILITY PER ADI SPECIFICATION TST00115.

TOOLING :

8. IMPEDANCE REQUIREMENTS: IF NO STACKUP IS DEFINED, THE VENDOR IS ALLOWED TO ADJUST THE DIELECTRIC THICKNESS & TRACE WIDTHS TO MEET THE IMPEDANCE REQUIREMENT. IF SPECIFIED, THE VENDOR MUST MEET THE REQUIREMENTS LISTED IN THE IMPEDANCE TABLE. ANY ADJUSTMENT MADE TO THE DEFINED STACKUP, TRACE WIDTH & SPACING THAT IMPACT THE REQUIREMENTS MUST HAVE WRITTEN APPROVAL FROM ADI.
9. FILLET OPTIONS TO ENHANCE RELIABILITY AT PAD JUNCTIONS WHERE SPACING PERMITS.  
( ) FILLETS ALLOWED  
(X) FILLETS NOT ALLOWED
10. THIEVING:  
( ) VENDOR MAY ADD THIEVING TO COMPENSATE FOR LOW COPPER DENSITY AREAS MAINTAINING A MINIMUM 0.100 INCH CLEARANCE FROM ALL COPPER FEATURES.  
(X) VENDOR MAY NOT ADD THIEVING TO COMPENSATE FOR LOW COPPER DENSITY AREAS.
11. LAYER TO LAYER REGISTRATION SHALL BE WITHIN 0.003 INCHES.

FINISH :

12. DRILL SIZES ARE FINISHED HOLE SIZES. ALL HOLES SHALL BE LOCATED WITHIN 0.005 INCHES DTP,UNLESS SPECIFIED.  
MINIMUM BARREL PLATING OF 0.001 INCHES. PLATED HOLES SHALL NOT BE ROUGH OR IRREGULAR SO AS TO HINDER PROPER SOLDER WICKING. BARREL RELIEF ON SOLDERMASK ALLOWED IN UNFILLED VIA IN PAD HOLES.
13. PLATING SPECIFICATION:  
(X) REFER TO LAMINATION DIAGRAM FOR FINISHED COPPER WEIGHT/THICKNESS REQUIRMENTS  
THE STARTING COPPER WEIGHT/THICKNESS CAN VARY AS LONG AS THE FINISHED COPPER WEIGHT/THICKNESS IS NOT LESS THAN THE SPECIFIED VALUE.
14. SURFACE FINISH:  
(X) IMMERSION GOLD (ENIG) 1.58-3.94 MICRO INCHES OVER 118-236 MICRO INCHES MIN. OF ELECTROLESS NICKEL PER IPC-4552  
( ) OSP (ORGANIC SOLDERABILITY PRESERVATIVE)  
( ) IMMERSION SILVER  
( ) SOFT WIRE BONDABLE GOLD 30-50 MICRO INCHES OF SOFT WIRE  
BONDABLE GOLD OVER 100-150 MICRO INCHES OF NICKEL  
( ) EDGE CONNECTOR FINGERS ARE TO BE PLATED WITH 100 MICRO-INCHES(.0001") OF LOW STRESS NICKEL UNDER 30 MICRO-INCHES (.0003") OF GOLD  
( ) OTHER \_\_\_\_\_
15. SOLDERMASK:  
SOLDERMASK OVER BARE COPPER OR BARE GOLD (BOTH SIDES) TO MEET IPC-SM-840.  
IF PRESENT,DO NOT MODIFY SOLDERMASK DEFINED PADS (MASK OPENINGS LESS THAN COPPER PAD) WITHOUT APPROVAL.  
(X) LPI  
( ) OTHER \_\_\_\_\_  
  
COLOR  
(X) GREEN  
( ) OTHER \_\_\_\_\_
16. APPLY SILKSCREEN TO BOTH SIDES USING A NON-CONDUCTIVE, EPOXY BASED INK PER ARTWORK.  
(X) WHITE  
( ) OTHER

TESTING:

17. FINAL ELECTRICAL TEST TO BE PERFORMED USING PROVIDED IPC-D-356A NETLIST OR ODB++ FORMAT FILE.  
THE PCB SHALL HAVE A VERIFICATION STAMP.
18. A TIME DOMAIN REFLECTOMETER REPORT (TDR) FOR EACH IMPEDANCE CONTROLLED LAYER & A CERTIFICATE OF COMPLIANCE SHALL BE PROVIDED BY VENDOR AT TIME OF SHIPMENT. INSTANCES WHERE TDR TESTING CAN'T BE PERFORMED BECAUSE THE TRACE LENGTH IS TOO SHORT ON THE OUTER LAYERS AT THE PIN ESCAPES IS ACCEPTABLE, ALL OTHER INSTANCES MUST BE REPORTED.

MISCELLANEOUS :

19. IF PRESENT, ALL BLIND/BURIED VIAS WITH AN ASPECT RATIO <1:1 TO BE PLATED SHUT WITH COPPER WHEN USED AS VIA-IN-PAD OR AS A STACKED VIA. BLIND/BURIED VIAS WITH AN ASPECT RATIO >1:1 TO BE FILLED WITH NON-CONDUCTIVE EPOXY.
20. FOR VIA FILL INFORMATION REFER TO DRILL CHART:  
( ) NON-CONDUCTIVE EPOXY FILL ALL DRILLED VIAS  
( ) COPPER FILL ALL DRILLED VIAS
21. INTENTIONAL SHORTS:  
IF AN INTENTIONAL SHORT REPORT IS SUPPLIED AND DOES NOT MATCH THE FAB DATA THEN ADI APPROVAL IS REQUIRED.
22. PEMNUTS:  
( ) PEMNUTS TO BE INSTALLED BY FABRICATOR  
( ) PEMNUTS NOT TO BE INSTALLED BY FABRICATOR  
(X) NOT APPLICABLE
23. MANUFACTURER TO ETCH/STAMP WITH PERMANENT NON-CONDUCTIVE INK  
ON SECONDARY SIDE UNLESS OTHERWISE SPECIFIED:  
A. UL CODE-FLAMMABILITY RATING FOR THOSE APPROVED MATERIALS(IF APPLICABLE)  
B. DATE CODE  
C. LOT NUMBER  
D. MANUFACTURER LOGO
25. PANELIZATION:  
BOARDS TO BE SHIPPED IN ARRAY AND KEPT INTACT  
PANEL TO BE SUBJECTED TO CUSTOMERS APPROVAL  
PANEL SOLDER PASTE STENCIL GERBER TO BE PROVIDED TO ANALOG
27. MINIMUM DESIGN LINE WIDTH IS .005 INCH.
28. MINIMUM DESIGN LINE SPACING IS .005 INCH.
- FAB NOTES REVISION: 2ND NOVEMBER 2022

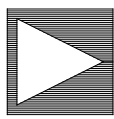
6-LAYER STACKUP LAMINATION DIAGRAM

LAYER NUMBER	LAYER NAME	COPPER THICKNESS (OZ, INCH)	DIELECTRIC THICKNESS ( INCH)	MATERIALS
--------------	------------	-----------------------------	------------------------------	-----------

1	TOP	1.5 OZ		FINAL CU (THICKNESS AFTER PLATING)
			0.003937	ISOLA 370HR/EQUIVALENT
2	L2_GND	1 OZ		CU CLAD
			0.003937	ISOLA 370HR/EQUIVALENT
3	L3_SIG	1 OZ		CU CLAD
			0.039432	ISOLA 370HR/EQUIVALENT
4	L4_SIG	1 OZ		CU CLAD
			0.003937	ISOLA 370HR/EQUIVALENT
5	L5_PWR	1 OZ		CU CLAD
			0.003937	ISOLA 370HR/EQUIVALENT
6	BOTTOM	1.5 OZ		FINAL CU (THICKNESS AFTER PLATING)

THE FINISHED PCB THICKNESS TO BE: 0.062" +/-10%

PRIMARY SIDE

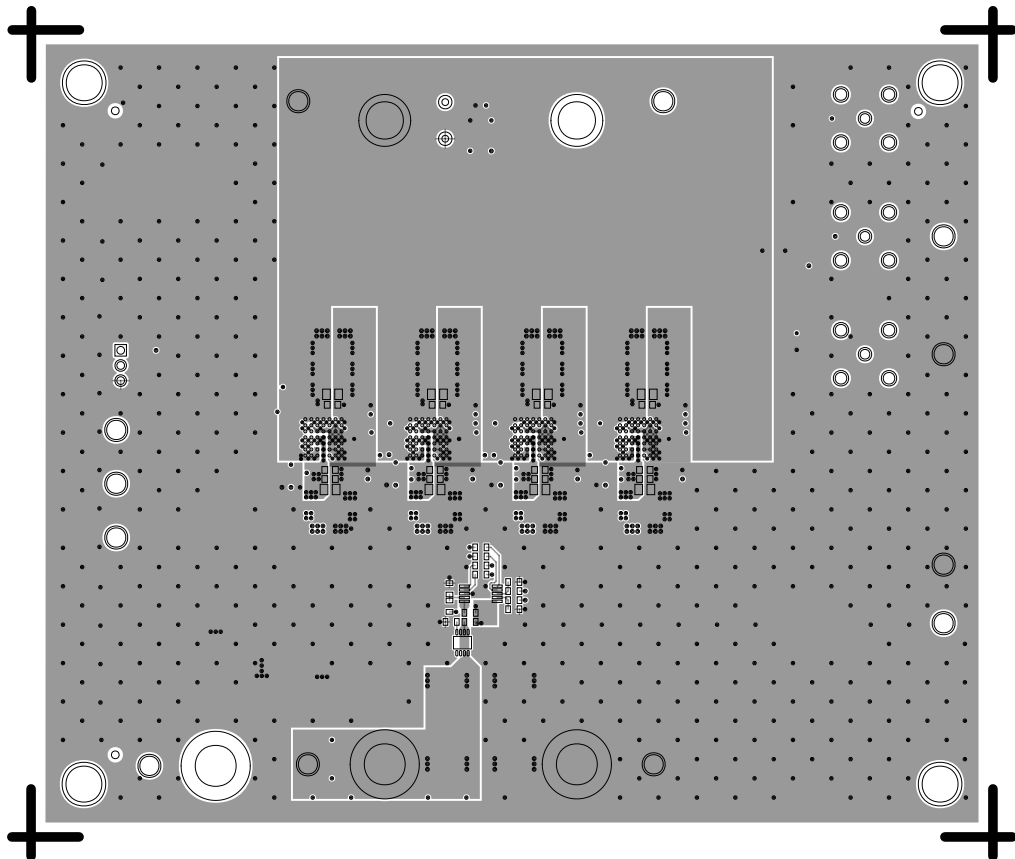


ANALOG  
DEVICES

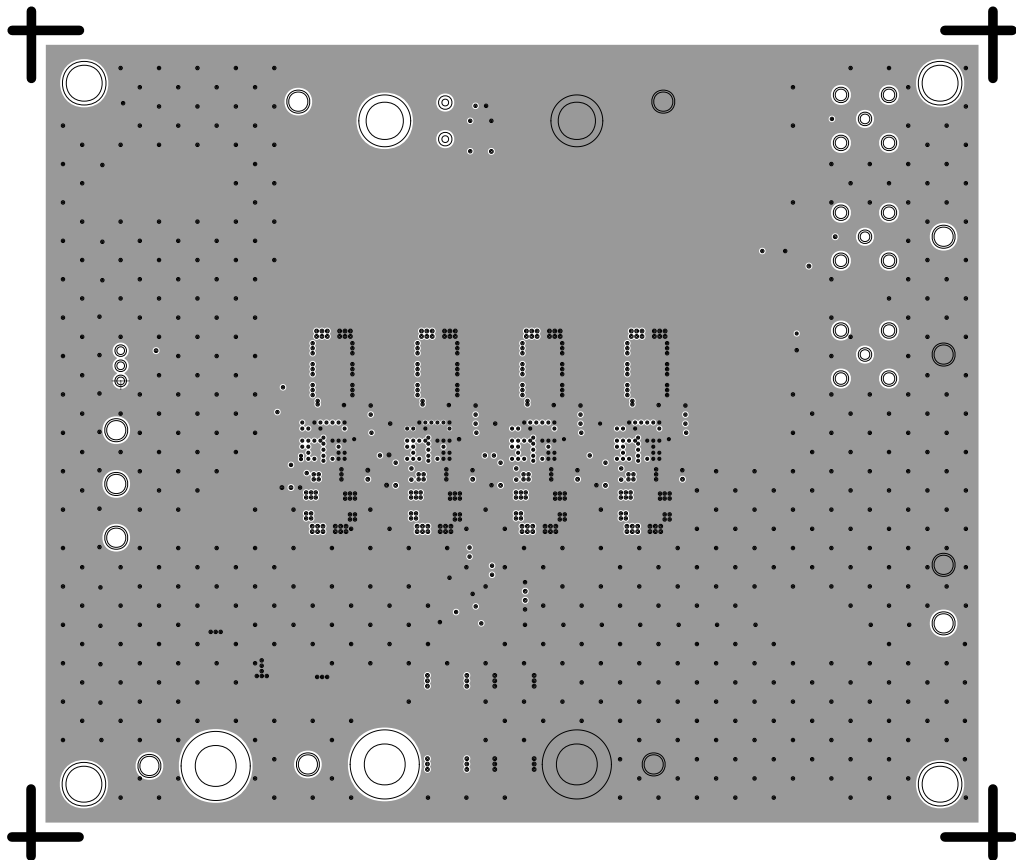
WWM  
DIVISION  
804 WOBURN STREET  
WILMINGTON, MA 01887

SIZE	FSCM NO	DRAWING NUMBER	REV
C	24355	09-072962	B
SCALE	1 / 1		SHEET 2 OF 2

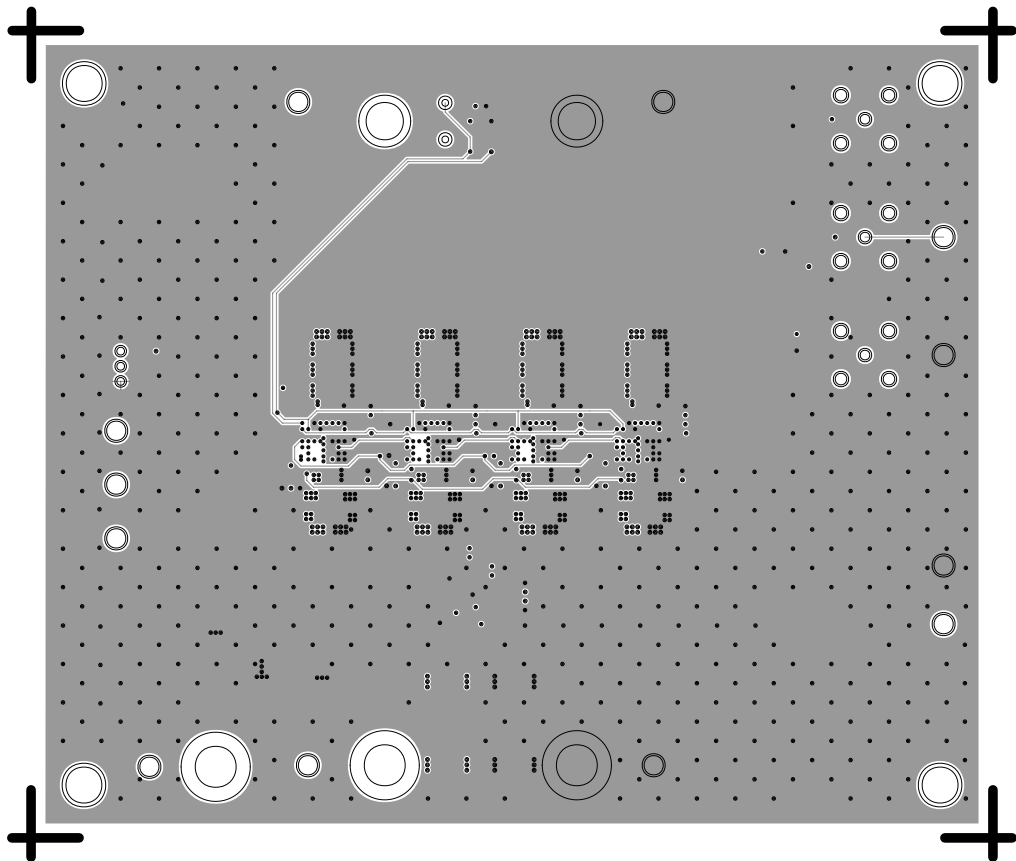
L1 PRIMARY  
08-072962-01  
REV B



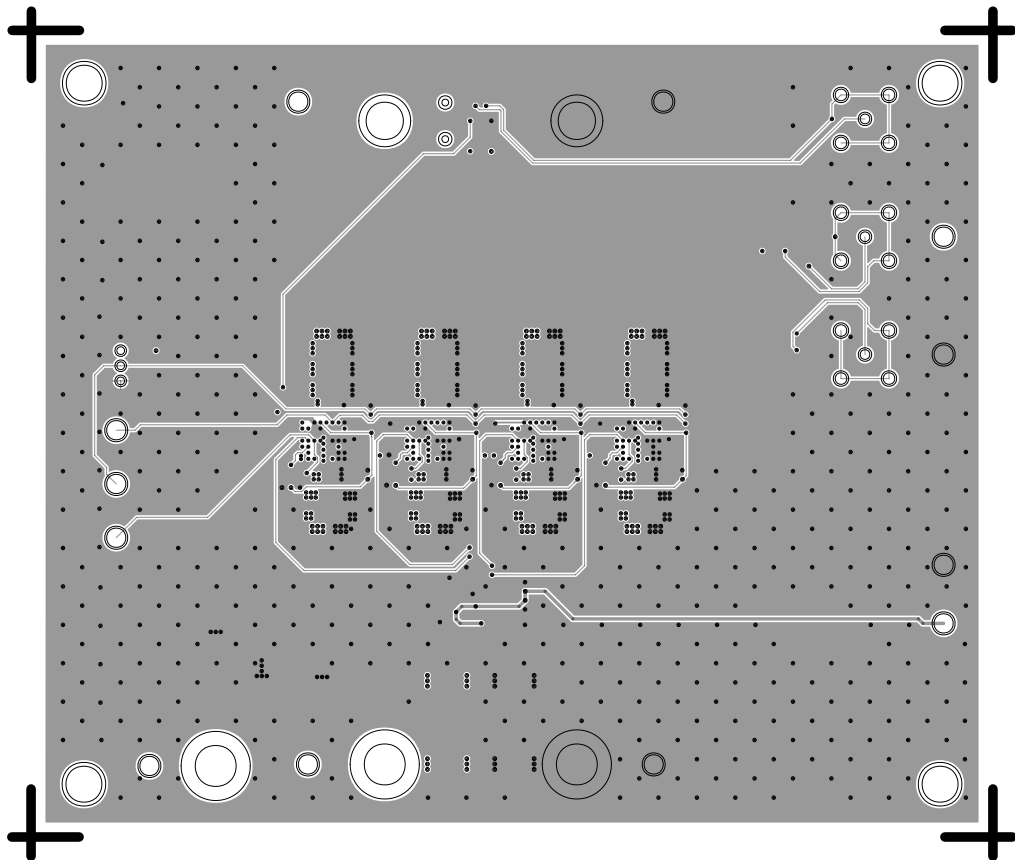
L2 GND  
08-072962-07  
REV B



L3 SIG  
08-072962-08  
REV B

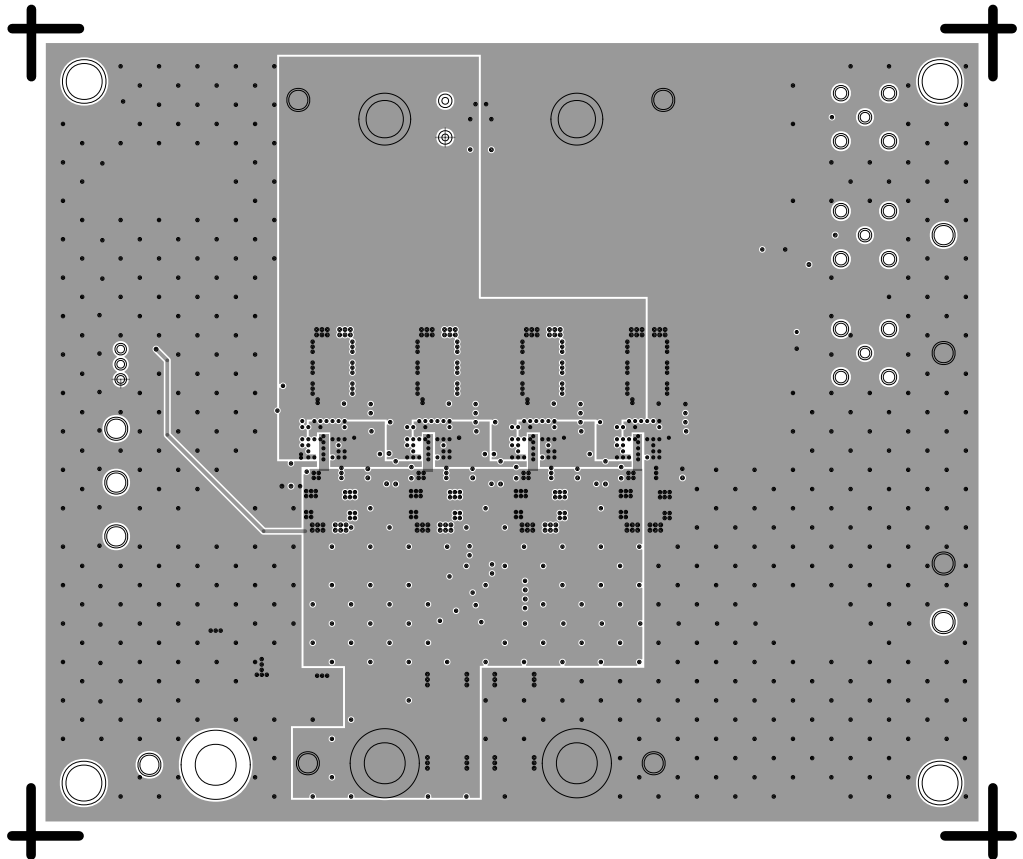


L4 SIG  
08-072962-09  
REV B





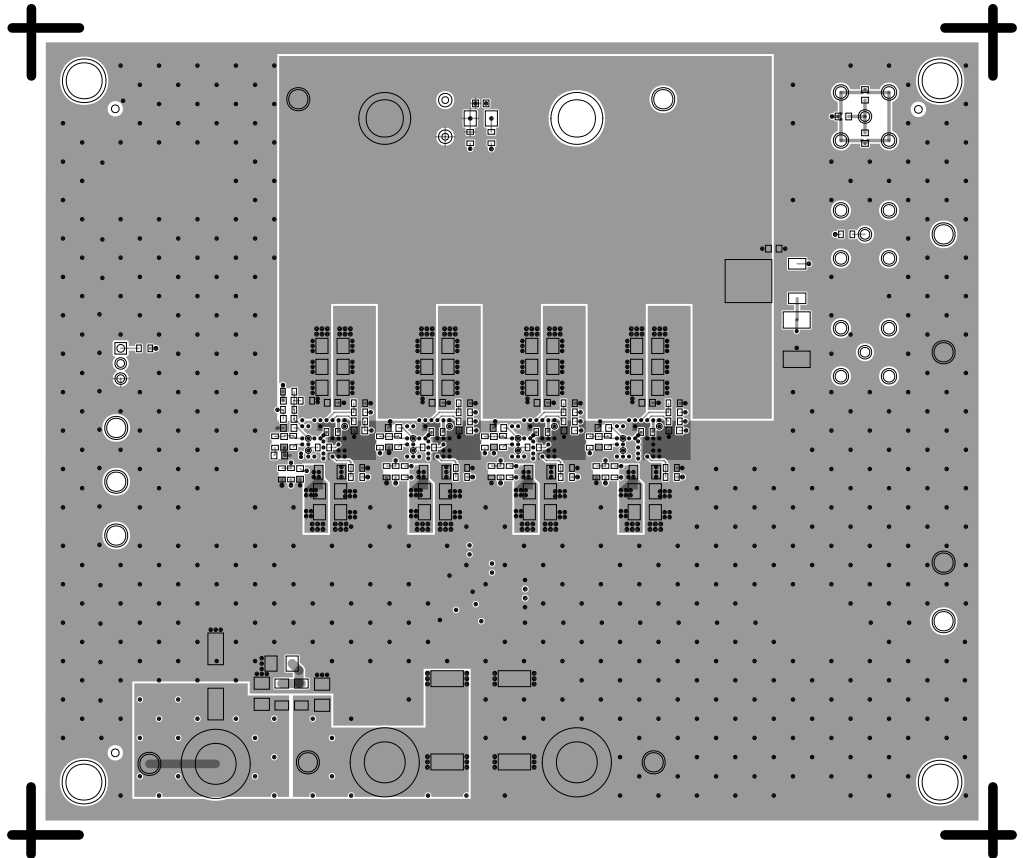
L5 PWR  
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REV B



L6 SECONDARY

08-072962-02

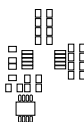
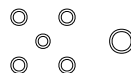
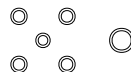
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SOLDERMASK PRIMARY

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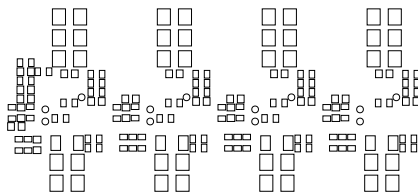
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SOLDERMASK SECONDARY

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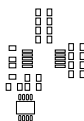
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PASTEMASK PRIMARY

08-072962-11

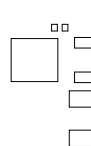
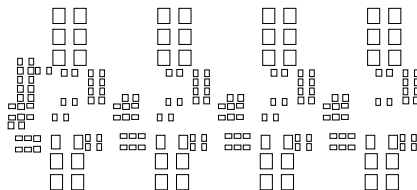
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PASTEMASK SECONDARY

08-072962-12

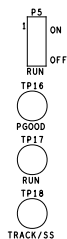
REV B



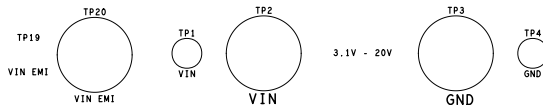
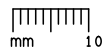
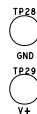
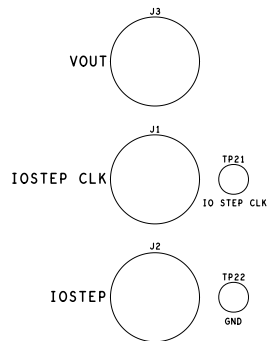
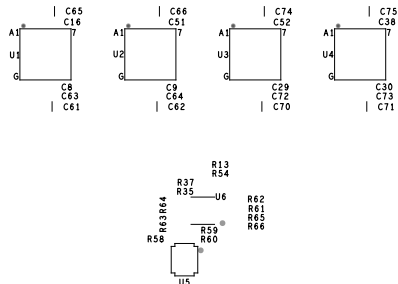
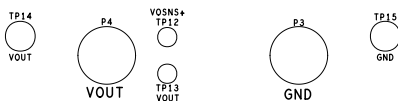
REV B



LTM4638EV  
HIGH DENSITY POLYPHASE  
STEP-DOWN POWER  $\mu$ MODULE REGULATOR



PRIMARY SIDE  
08-072962 REV B  
EVAL-LTM4638-AZ



FOR CUSTOMER USE ONLY

