

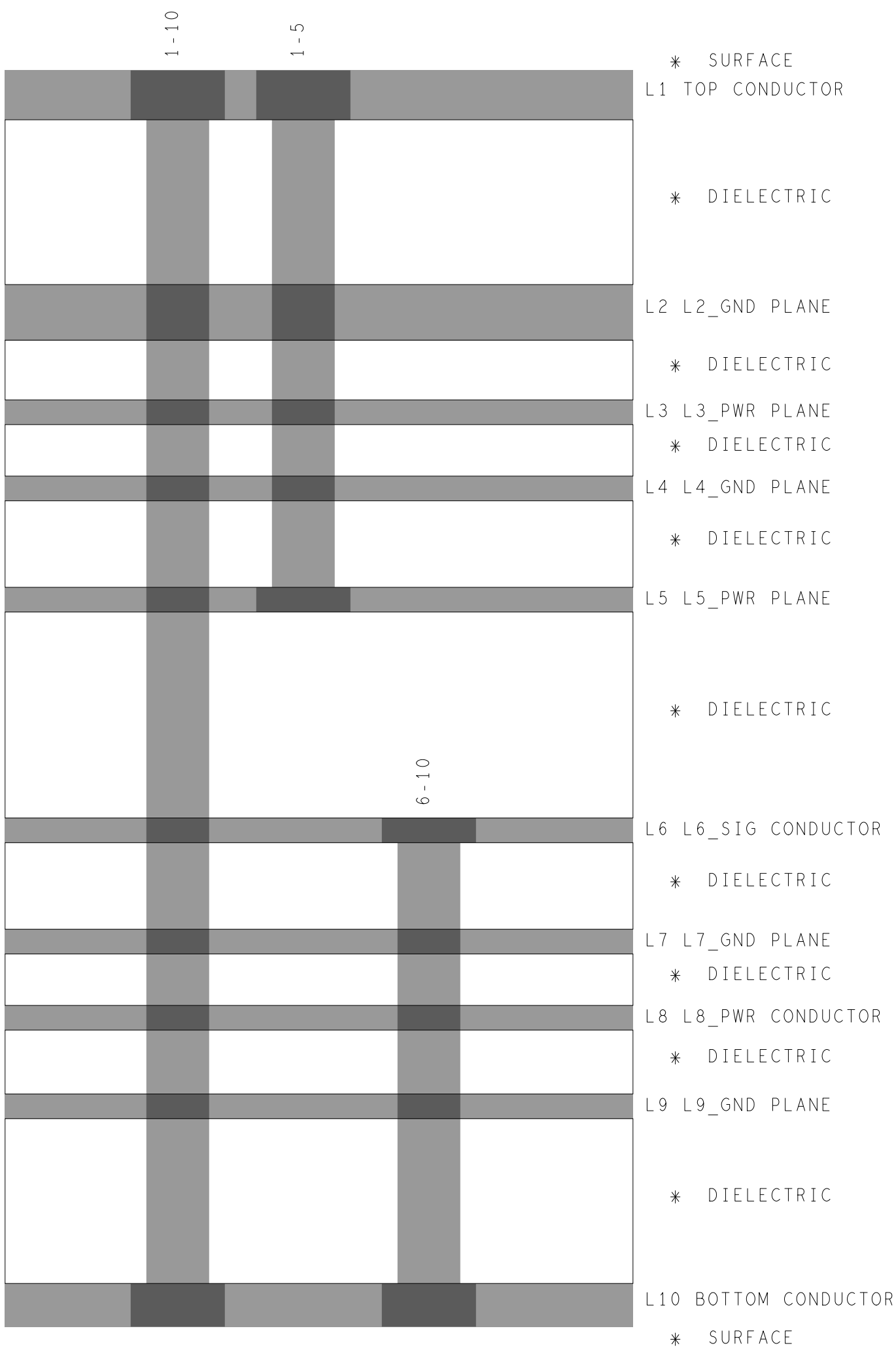
SECONDARY SIDE

**ANALOG
DEVICES**

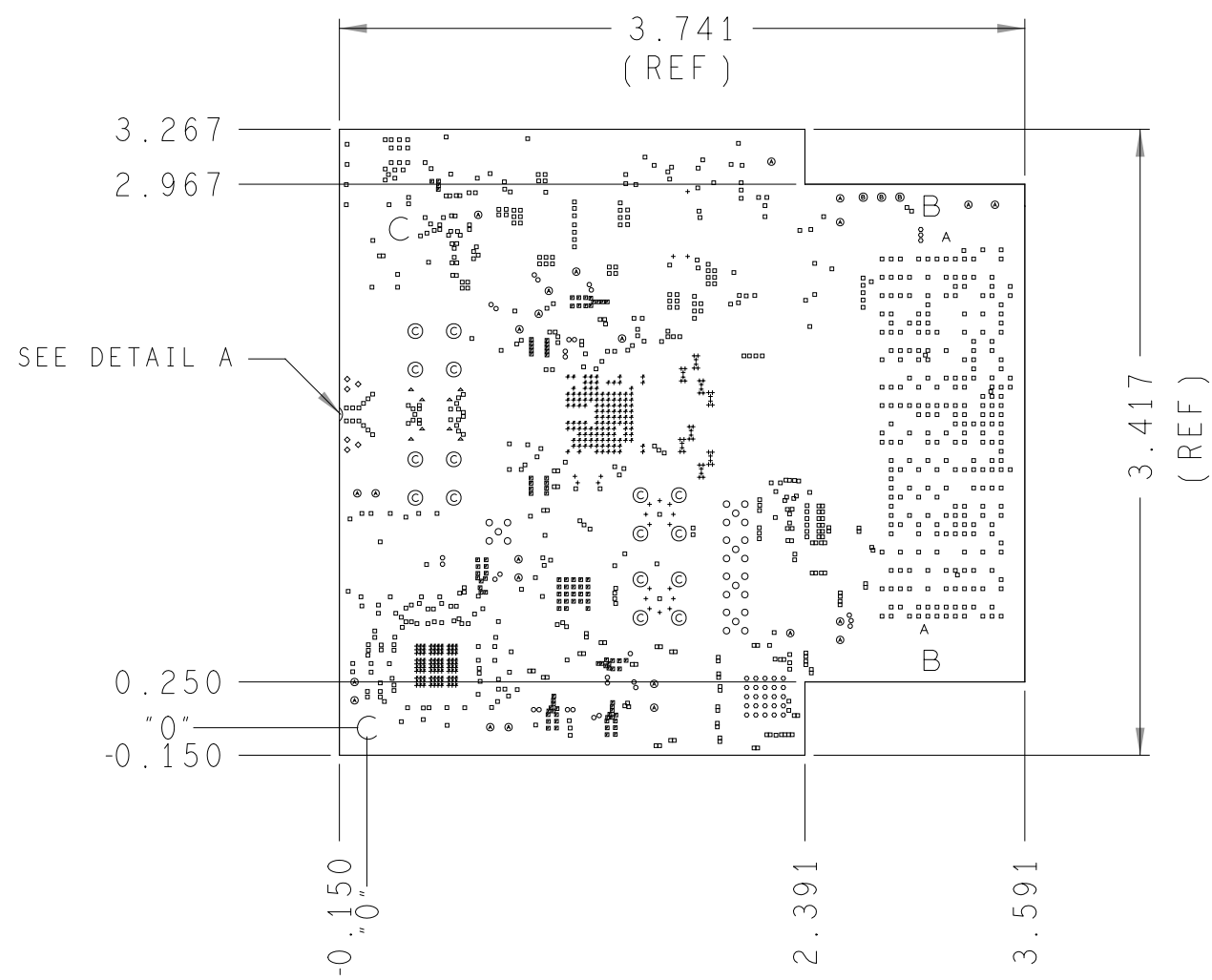
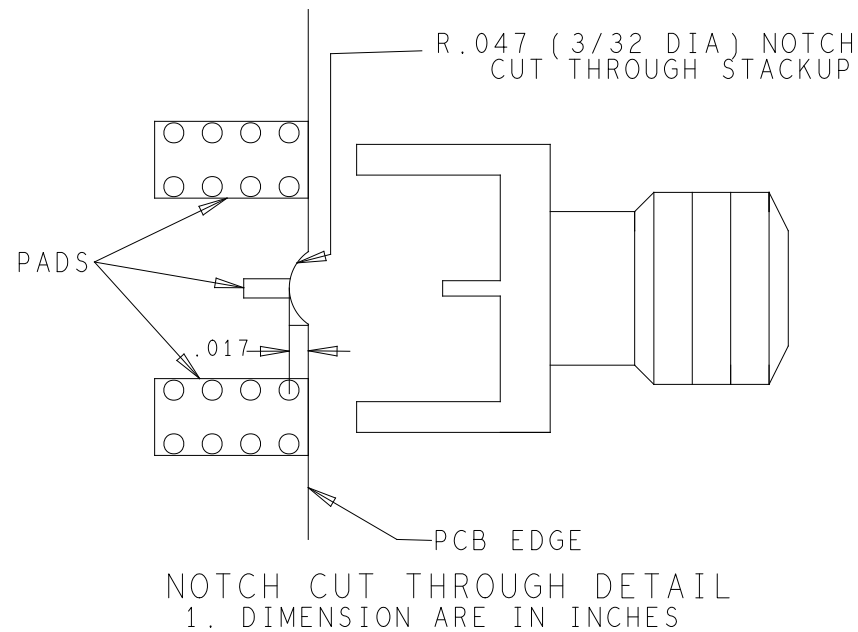
WWM
DIVISION
804 WOBURN STREET
WILMINGTON, MA 01887

| SIZE | FSCM NO | DRAWING NUMBER | REV |
|-----------|---------|----------------|-----|
| D | 24355 | 01-064617 | C |
| SCALE 1/1 | | SHEET 2 OF 2 | |

| REVISIONS | | | |
|-----------|---------------------------|---------|--------------|
| REV | DESCRIPTION | DATE | APPROVED |
| A | INITIAL RELEASE | 08MAY20 | P.PASAUQUIAN |
| A1 | CHANGES AS PER ECR-100755 | 29JAN21 | P.PASAUQUIAN |
| B | CHANGES AS PER ECR-107917 | 12MAY22 | P.JAYAMOCHAN |
| C | CHANGES AS PER ECR-109208 | 24JUN22 | D.ITO |



DESIGN CROSS SECTION CHART
TOTAL THICKNESS 61 MIL



HOLE TOLERANCE

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

| DRILL CHART: TOP to BOTTOM | | | | |
|----------------------------|-------|------------|-----|---------------------|
| ALL UNITS ARE IN MILS | | | | |
| FIGURE | SIZE | PLATED | QTY | TOLERANCE/NOTES |
| • | 8.0 | PLATED | 69 | DIA MAX |
| • | 8.01 | PLATED | 228 | DIA MAX;SEE NOTE 15 |
| • | 10.0 | PLATED | 797 | DIA MAX |
| • | 10.01 | PLATED | 106 | DIA MAX;SEE NOTE 15 |
| • | 12.0 | PLATED | 28 | DIA MAX;SEE NOTE 15 |
| • | 16.0 | PLATED | 28 | DIA MAX |
| • | 20.0 | PLATED | 6 | |
| • | 25.0 | PLATED | 8 | |
| • | 35.0 | PLATED | 25 | |
| • | 40.0 | PLATED | 24 | |
| • | 45.0 | PLATED | 3 | |
| ⊙ | 60.0 | PLATED | 16 | |
| A | 50.0 | NON-PLATED | 2 | |
| B | 110.0 | NON-PLATED | 2 | |
| C | 125.0 | NON-PLATED | 2 | |

SPECIFICATIONS:

ROHS COMPLIANCE NOTE; HOMOGENOUS MATERIALS IN THIS BOARD SHALL BE COMPLIANT THE EU RoHS DIRECTIVE 2002/95/EC

MATERIALS; ALL LAMINATES AND BONDING MATERIALS SHOULD BE SELECTED FROM IPC-4101 OR IPC-4103, MINIMUM Tg>170degC, Td>300degC, U.L. RATING OF 94 V-0

MATERIAL FAMILY; FR408HR; EPOXY/GLASS, Tg=180C, Td=370C CTE/Z=220, Df=.012

CLADDING; EXTERNAL LAYERS .5 OZ. COPPER, OVERPLATE TO 1.5 OZ. INTERNAL SIGNAL LAYERS .5 OZ. COPPER. INTERNAL PLANE LAYERS 1 OZ. COPPER.

NOTE: IF THE LAYER STACKUP CONFLICTS WITH THE ABOVE CLADDING SPECIFICATIONS THEN THE LAYER STACKUP SHALL TAKE PRECEDENCE.

SOLDER MASK; SHALL BE LIQUID PHOTOIMAGEABLE (LPI) APPLIED ON BOTH SIDES OVER BARE COPPER OR GOLD AND SHALL MEET IPC-SM-840 (LATEST REV.) CLASS 3. COLOR BLUE.

SILK SCREEN; SHALL BE PERMANENT NON-CONDUCTIVE EPOXY INK, COLOR: WHITE SYNTHETIC INKJET PRINTING ALLOWED FOR DENSE BOARDS, COLOR: WHITE

SURFACE FINISH; ENIG (ELECTROLESS NICKEL/IMMERSION GOLD) PER IPC-4552 LATEST REVISION

INTENTIONAL SHORTS; IF SUPPLIED DATA INCLUDES A FILE "READ_ME.2", THEN INTENTIONAL NET SHORTS EXIST. CUSTOMER REVIEW AND APPROVAL IS REQUIRED IF SUPPLIED DATA REPORTS ANY CONDITION THAT DOES NOT MATCH "READ_ME.2" FILE PROVIDED.

TEST REQUIREMENTS; 100% NETLIST ELECTRICAL VERIFICATION USING CUSTOMER SUPPLIED IPC-D-356 NETLIST FOR OPENS AND SHORTS WHEN "GERBER DATA" IS PROVIDED. THIS VERIFICATION ALSO REQUIRED FOR "ODB++" DATA PER EMBEDDED NETLIST.


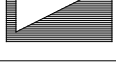
REQUIREMENTS:

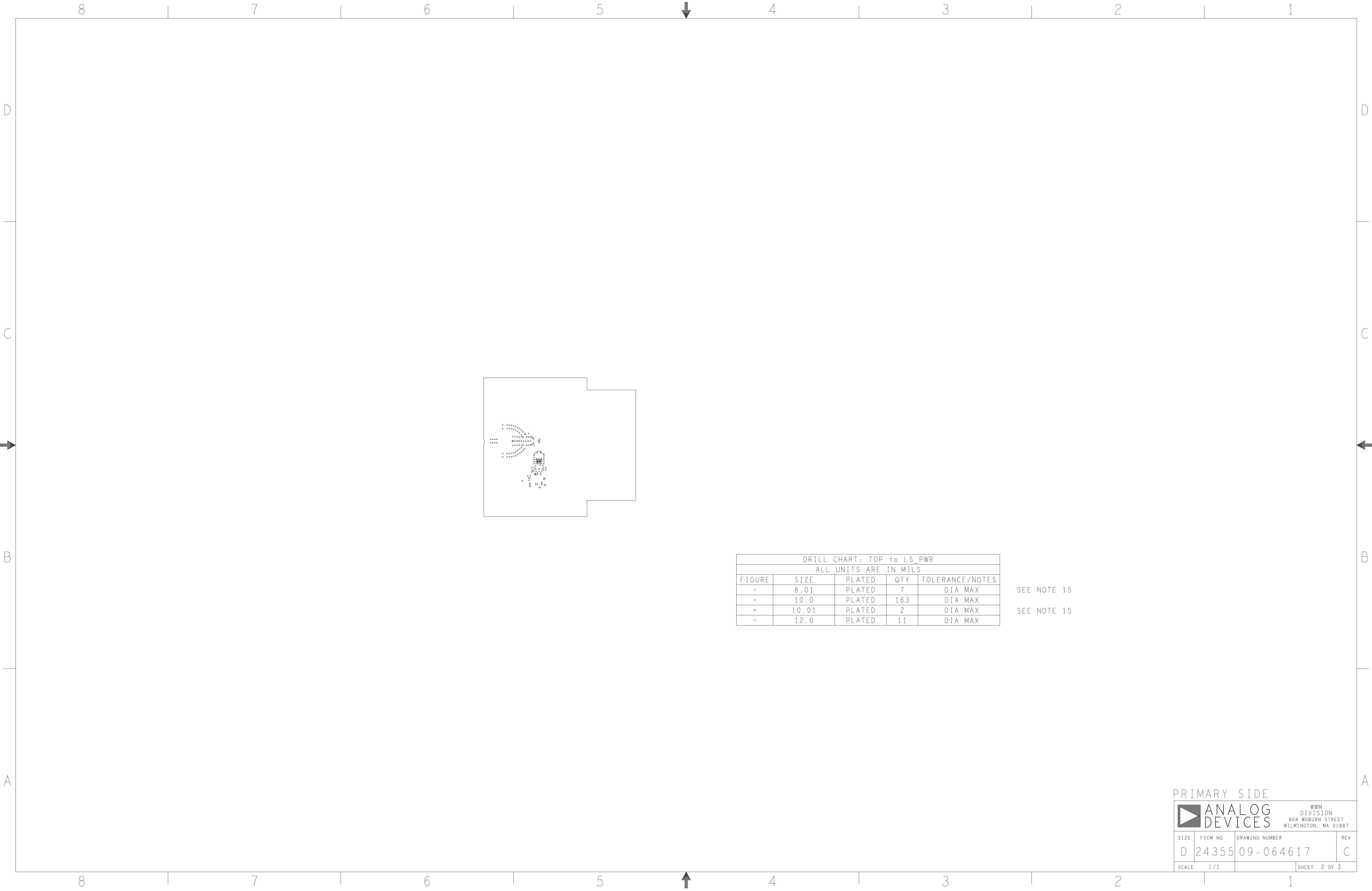
- REFER TO IPC-6010 SERIES (LATEST REV.), CLASS 2 FOR FABRICATION UNLESS OTHERWISE SPECIFIED.
- ACCEPTABILITY PER ANALOG DEVICES, INC. SPECIFICATION TST00115, (LATEST REVISION.)
- MODIFICATIONS TO THE ARTWORK ARE NOT ALLOWED WITHOUT WRITTEN AUTHORIZATION.
- HOLE PATTERN TOLERANCES FOR UNDIMENSIONED HOLES SHALL BE A DIAMETER OF 0.005 INCHES FROM THEIR TRUE POSITION.
- PLATED HOLE WALL THICKNESS SHALL NOT BE LESS THAN 0.001 INCH MINIMUM AVERAGE, WITH NO READING LESS THAN .0008 INCH BY CROSS SECTION.
- HOLE DIAMETERS APPLY AFTER PLATING.
- FINISHED CONDUCTOR WIDTHS SHALL NOT BE REDUCED FROM THE NOMINAL INDICATED ON THE MASTER PATTERN, BY MORE THAN THE CONDUCTOR THICKNESS.
- MINIMUM DESIGN LINE WIDTH IS .005 INCH.
- MINIMUM DESIGN SPACING IS .006 INCH.
- NON-FUNCTIONAL PAD REMOVAL FROM INNER SIGNAL LAYERS MAY BE PERFORMED AFTER CUSTOMER APPROVAL.
- IF PAD SIZES PROVIDED ARE NOT LARGE ENOUGH TO MAINTAIN ANNULAR RING REQUIREMENT, MFGR. MAY REQUEST APPROVAL TO TEAR DROP PADS TO MAINTAIN ANNULAR RING. (AT PAD TO TRACE INTERSECTION ONLY AND ELECTRICAL INTEGRITY MUST BE MAINTAINED.)
- THIEVING MAY BE ADDED TO COMPENSATE FOR LOW COPPER DENSITY AREAS ON THIS DESIGN ONLY AFTER REVIEW AND APPROVAL FROM THE CUSTOMER:
 - THIEVING TO CARD EDGE, FIDUCIALS, NON-PLATED THROUGH HOLES. ALL OTHER FEATURES TO BE 0.200 INCH MINIMUM.
 - THERE SHALL BE NO THIEVING IN ANY AREAS FREE OF SOLDER MASK OR INTERNAL COPPER PLANES.
- MFGR. TO LEGIBLY ETCH OR STAMP/SCREEN WITH PERMANENT NON-CONDUCTIVE INK ON SECONDARY SIDE IN A CLEAR AREA UNLESS OTHERWISE INDICATED;
 - U.L. CODE-FLAMMABILITY RATING
 - DATE CODE (STAMP).
 - LOT NUMBER
 - MFGR LOGO
 - SUCCESSFUL ELECTRICAL TEST.
- REPAIRS PER IPC-7711/21 (LATEST REV.) ARE ALLOWED.
- VIAS FILLED WITH NON-CONDUCTIVE EPOXY AND PLATED OVER. COPLANAR ON BOTH SIDES WITHIN .001 INCH PRIOR TO FINAL PLATING.
- BOARDS TO BE SHIPPED IN ARRAY AND KEEP INTACT
PANEL TO BE SUBJECTED TO CUSTOMER'S APPROVAL.
PANELED SOLDER PASTE STENCIL SHOULD BE SENT TO THE CUSTOMER.

IMPEDANCE TABLE

NOTE: ALL IMPEDANCE TOLERANCE +/-10%
SE = SINGLE ENDED, DP = DIFFERENTIAL PAIR

| LAYER | IMPEDANCE | REFERENCE | LINE WIDTH | SPACE |
|-------|-------------|-----------|------------|----------|
| L1 | 50 OHMS SE | L2 | 14.5 MILS | N/A |
| L1 | 100 OHMS DP | L2 | 5 MILS | 6 MILS |
| L1 | 100 OHMS DP | L2 | 5.6 MILS | 5.4 MILS |
| L1 | 100 OHMS DP | L2 | 9 MILS | 11 MILS |
| L1 | 50 OHMS DP | L2 | 38 MILS | 62 MILS |
| L1 | 25 OHMS SE | L2 | 38 MILS | N/A |
| L6 | 100 OHMS DP | L7 | 5.6 MILS | 5.4 MILS |
| L10 | 100 OHMS DP | L9 | 5.6 MILS | 5.4 MILS |
| L10 | 100 OHMS DP | L9 | 9 MILS | 11 MILS |

| | | | | | | | | | | | | | |
|--|--|--|--------------------------------|--|---------|--|---|---------|--|-----|-------|--------|--|
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | | | APPROVAL | | DATE | |  ANALOG DEVICES | | HSX DIVISION 804 WOBUEN STREET WILMINGTON, MA 01887 | | | | |
| TOLERANCES | | | TEMPLATE ENGINEER N/A | | | |  | | | | | | |
| DECIMALS FRACTIONS ANGLES | | | HARDWARE SERVICES M. VALE | | 08MAY20 | | | | | | | | |
| .XX .010 .1/32 .1 .2 | | | HARDWARE SYSTEMS N/A | | | | | | | | | | |
| .XXX .005 .XXXX .0050 | | | | | | | | | | | | | |
| MATERIAL | | | TEST ENGINEER N/A | | | | TITLE FABRICATION AD9213 CUSTOMER EVAL Z | | | | | | |
| | | | COMPONENT ENGINEER M. YAN | | 08MAY20 | | | | | | | | |
| | | | TEST PROCESS N/A | | | | | | | | | | |
| | | | HARDWARE RELEASE K. JABATAN | | 08MAY20 | | | | | | | | |
| FINISH | | | DESIGNER J. PACAMARRA | | 08MAY20 | | SIZE | FSCM NO | DRAWING NUMBER | REV | | | |
| | | | PTD ENGINEER P. PASAQUIAN | | 08MAY20 | | D | 24355 | 09-064617 | C | | | |
| | | | CHECKER N/A | | | | | | | | | | |
| DO NOT SCALE DWG | | | | | | | SCALE | | 1/1 | | SHEET | 1 OF 3 | |

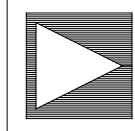


| DRILL CHART: TOP to L5_PWR | | | | |
|----------------------------|-------|--------|-----|-----------------|
| ALL UNITS ARE IN MILS | | | | |
| FIGURE | SIZE | PLATED | QTY | TOLERANCE/NOTES |
| • | 8.01 | PLATED | 7 | DIA MAX |
| • | 10.0 | PLATED | 163 | DIA MAX |
| • | 10.01 | PLATED | 2 | DIA MAX |
| • | 12.0 | PLATED | 11 | DIA MAX |

SEE NOTE 15

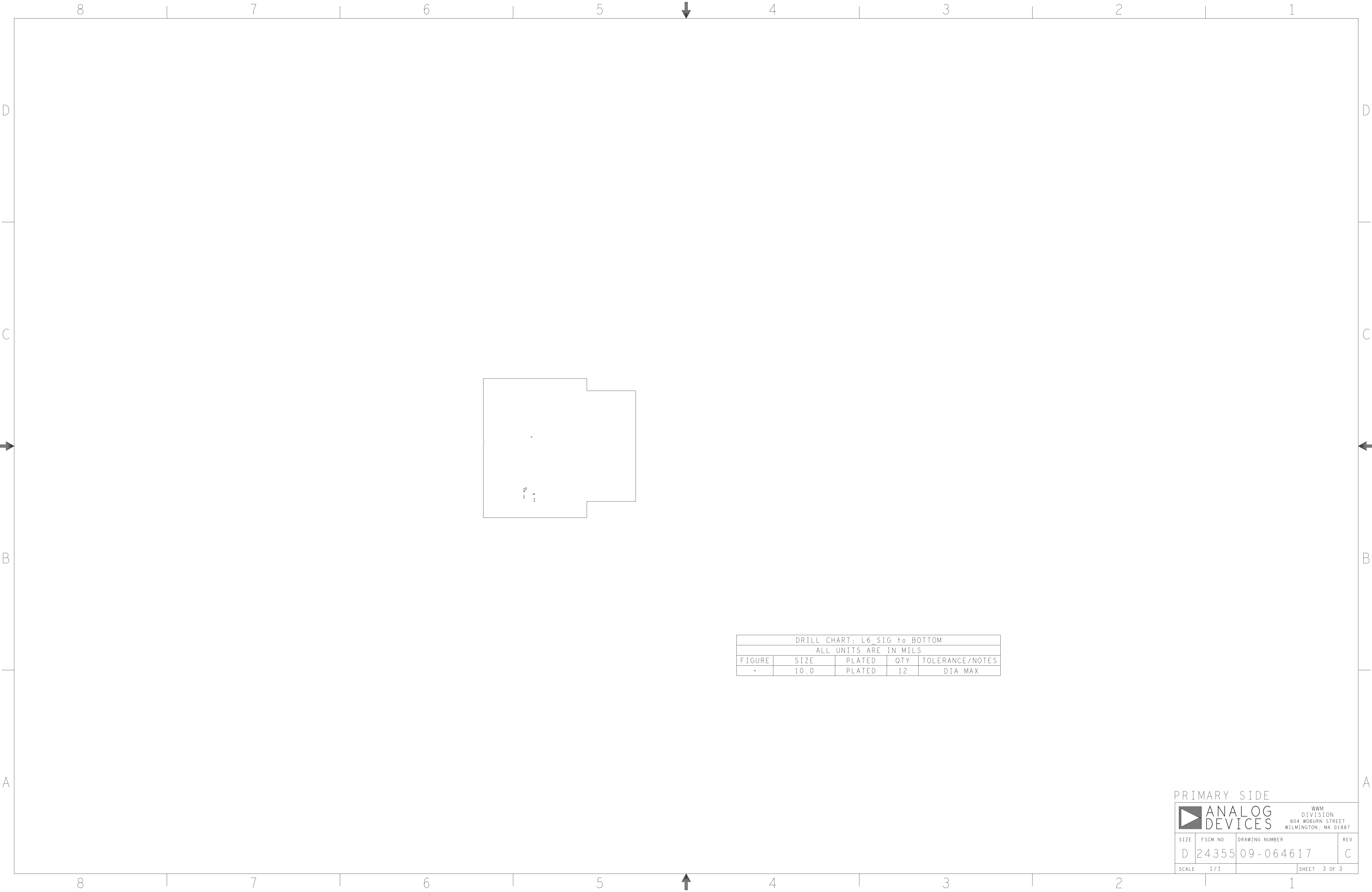
SEE NOTE 15

PRIMARY SIDE

**ANALOG
DEVICES**

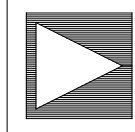
WWM
DIVISION
804 WOBURN STREET
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| | | | |
|-------|---------|----------------|--------|
| SIZE | FSCM NO | DRAWING NUMBER | REV |
| D | 24355 | 09-064617 | C |
| SCALE | 1/1 | SHEET | 2 OF 3 |



| DRILL CHART: L6_SIG to BOTTOM | | | | |
|-------------------------------|------|--------|-----|-----------------|
| ALL UNITS ARE IN MILS | | | | |
| FIGURE | SIZE | PLATED | QTY | TOLERANCE/NOTES |
| . | 10.0 | PLATED | 12 | DIA MAX |

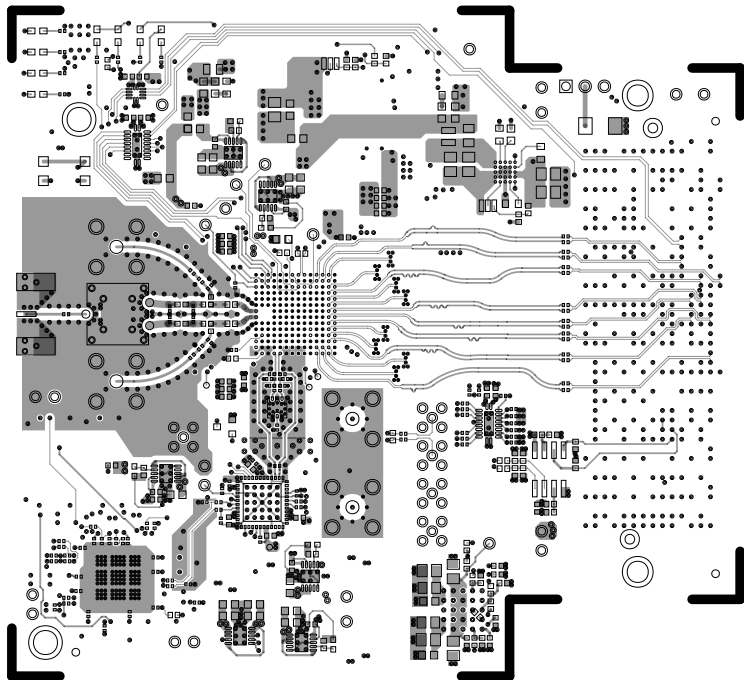
PRIMARY SIDE

**ANALOG
DEVICES**

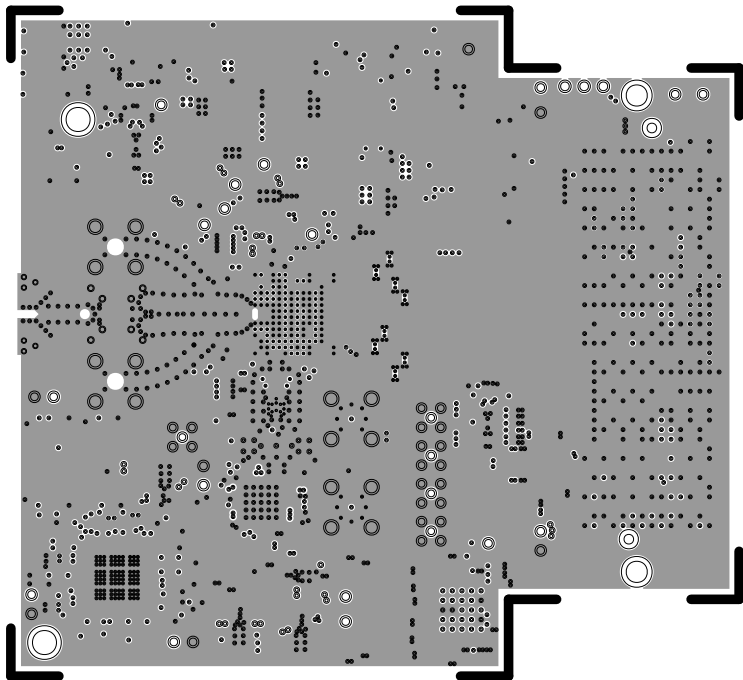
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DIVISION
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WILMINGTON, MA 01887

| | | | |
|-------|---------|----------------|--------|
| SIZE | FSCM NO | DRAWING NUMBER | REV |
| D | 24355 | 09-064617 | C |
| SCALE | 1/1 | SHEET | 3 OF 3 |

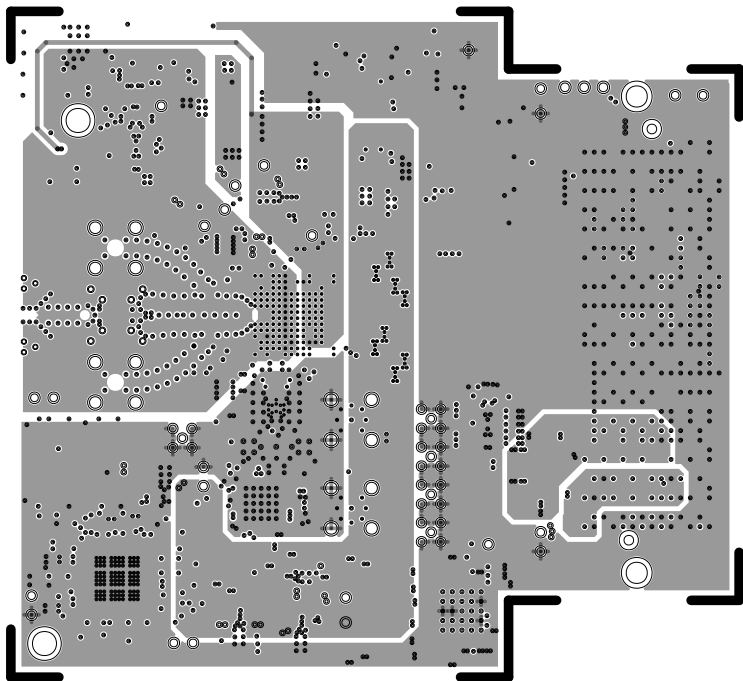
L1 PRIMARY
08-064617-01
REV C



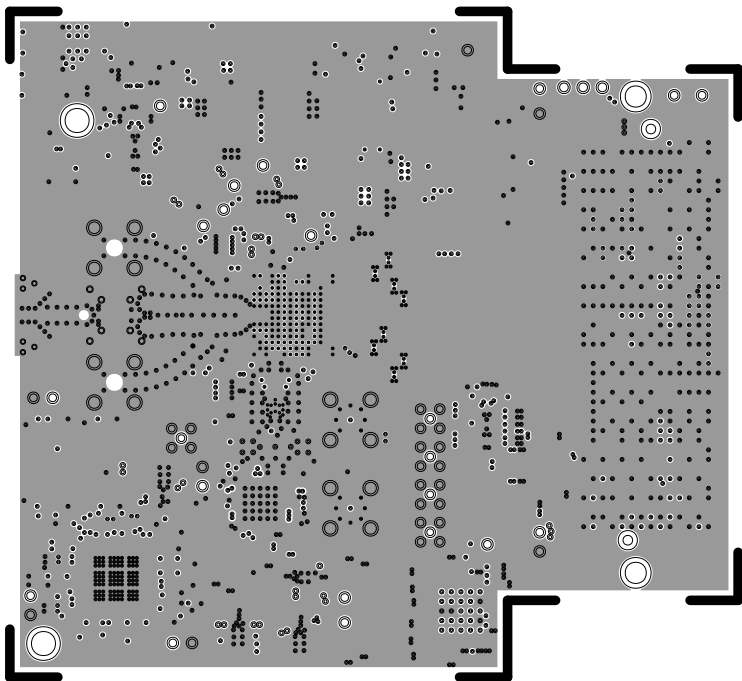
L2 GROUND
08-064617-07
REV C



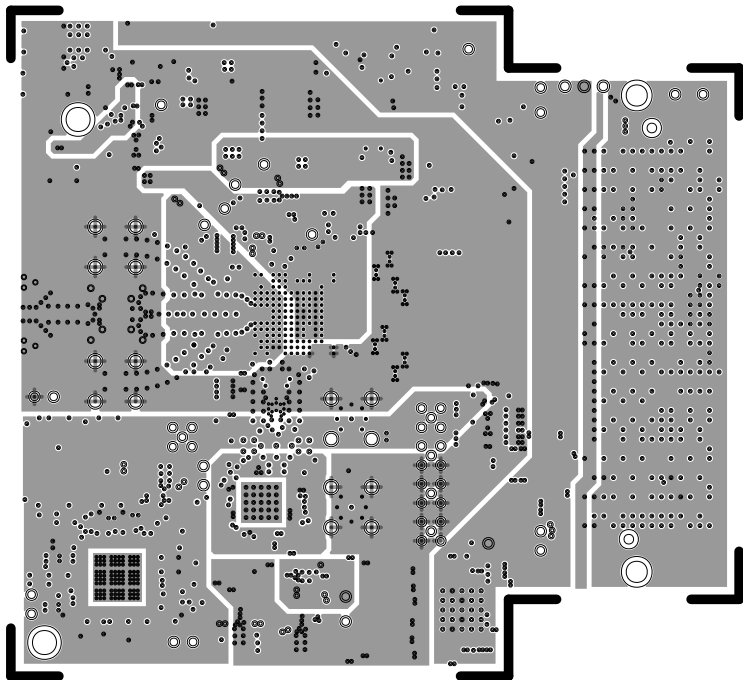
L3 POWER
08-064617-08
REV C



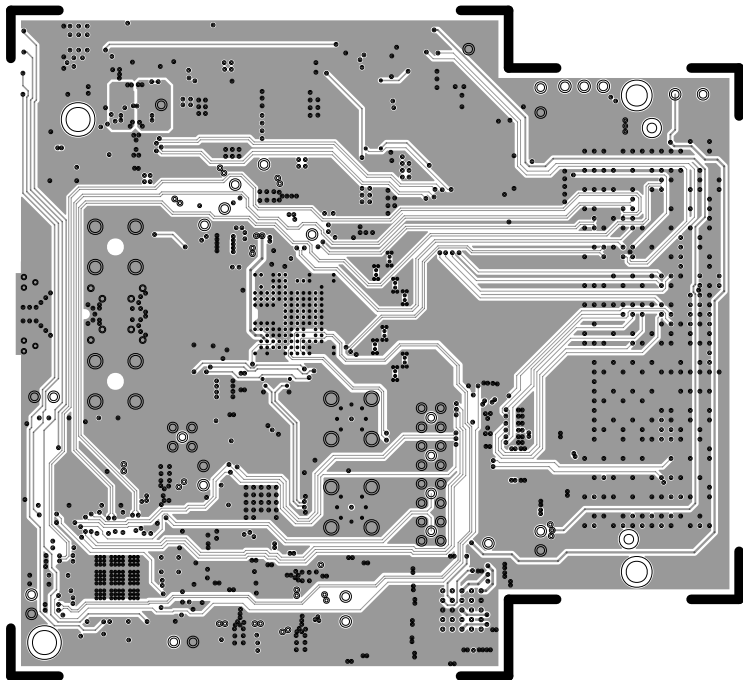
L4 GROUND
08-064617-09
REV C



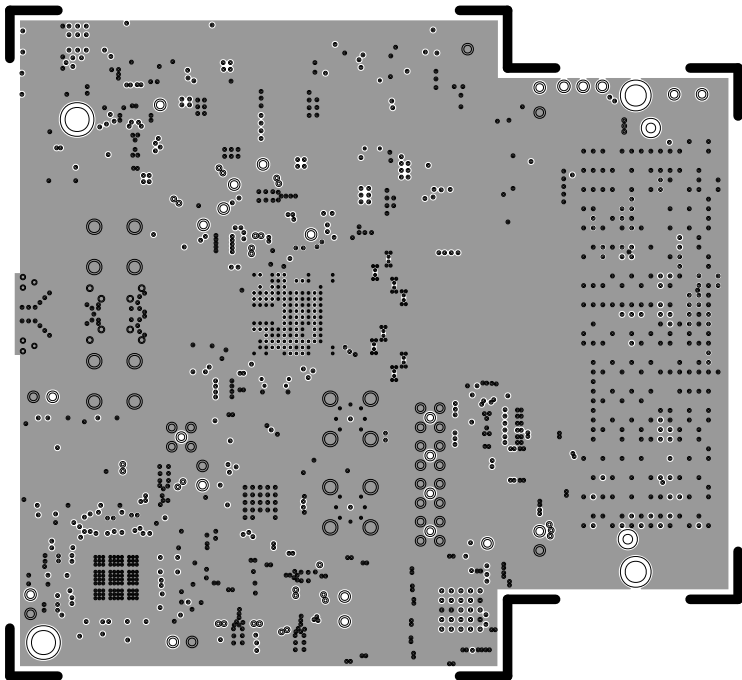
L5 POWER
08-064617-10
REV C



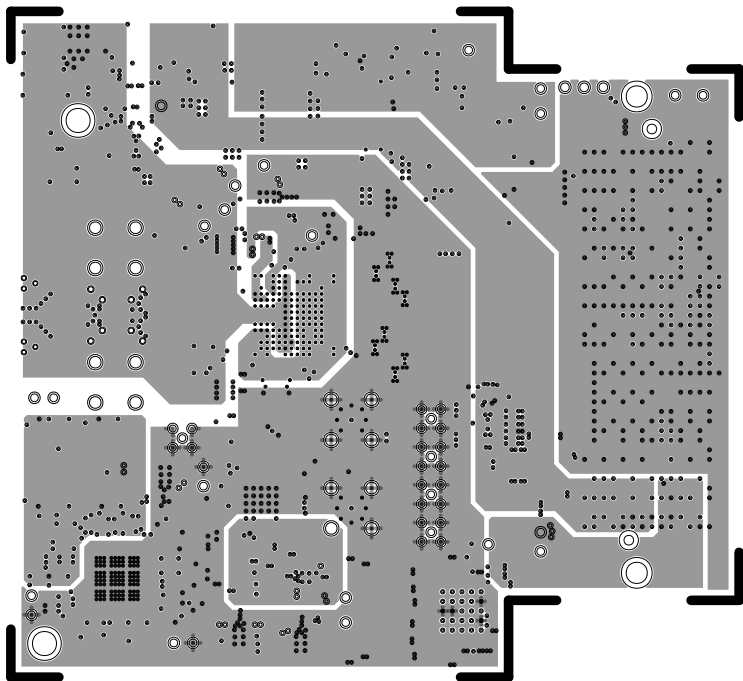
L6 SIGNAL
08-064617-11
REV C



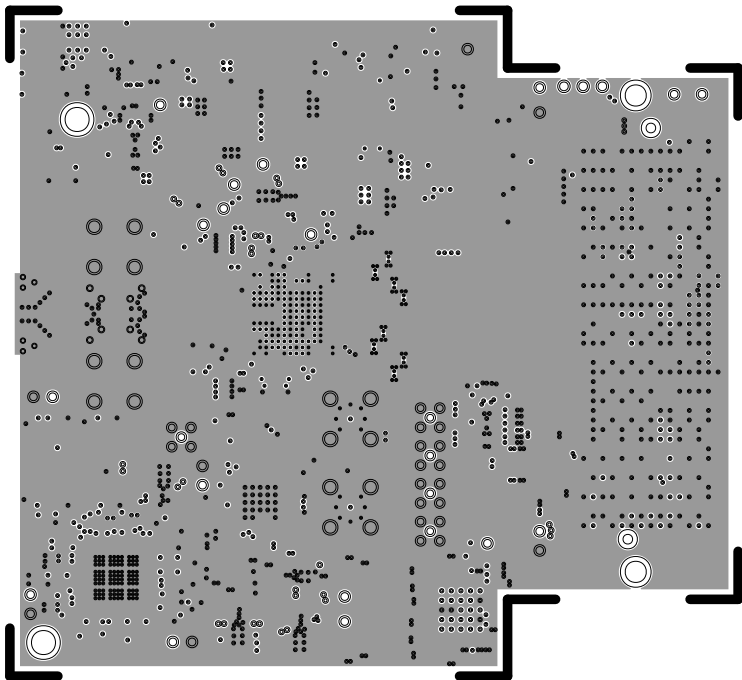
L7 GROUND
08-064617-12
REV C



L8 POWER
08-064617-13
REV C



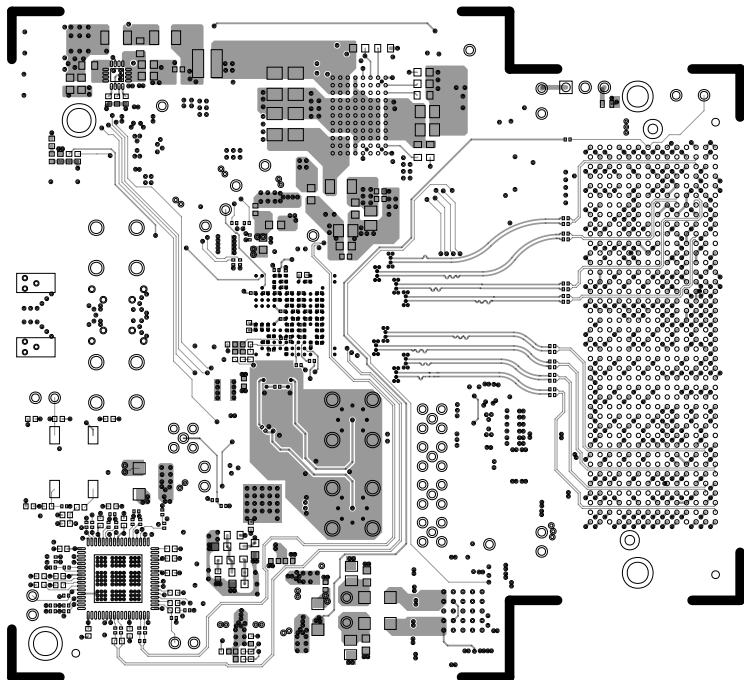
L9 GROUND
08-064617-14
REV C



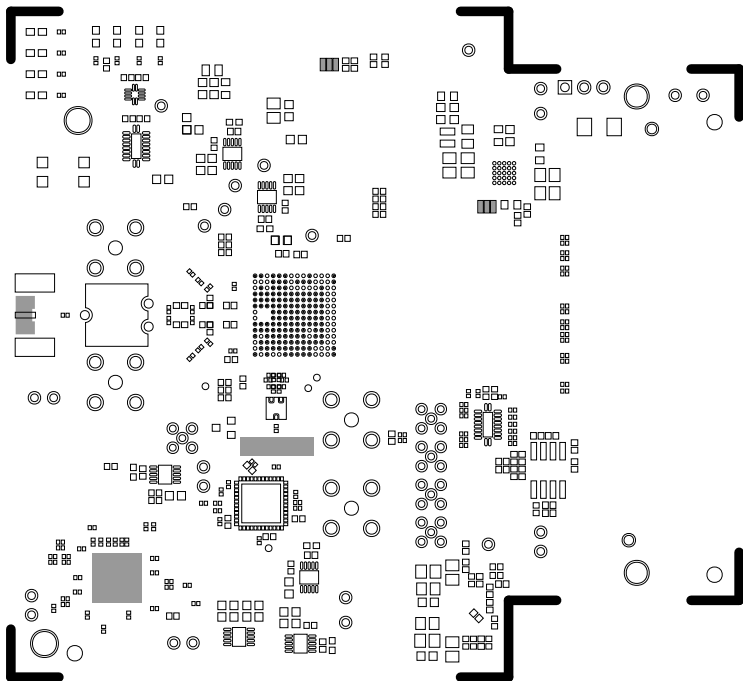
L10 SECONDARY

08-064617-02

REV C



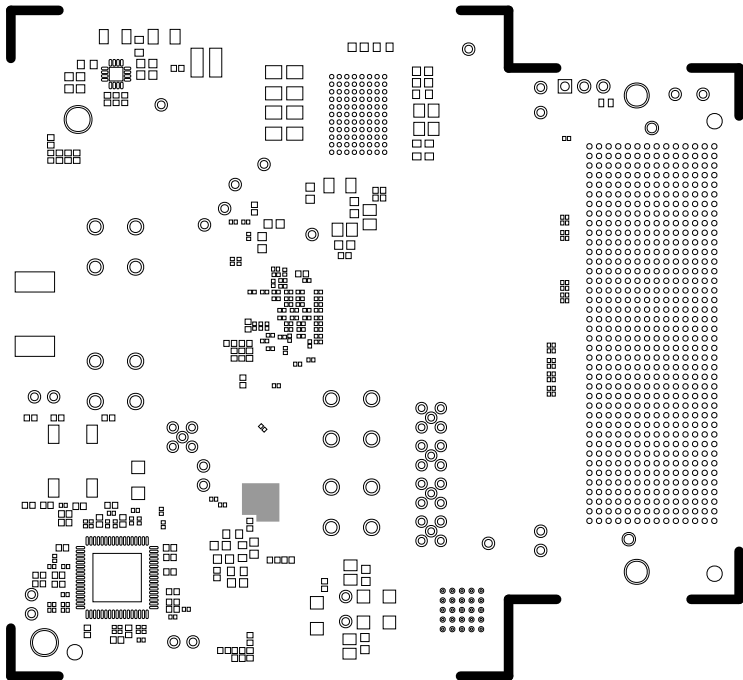
SOLDERMASK PRIMARY
08-064617-04
REV C



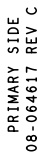
SOLDERMASK SECONDARY

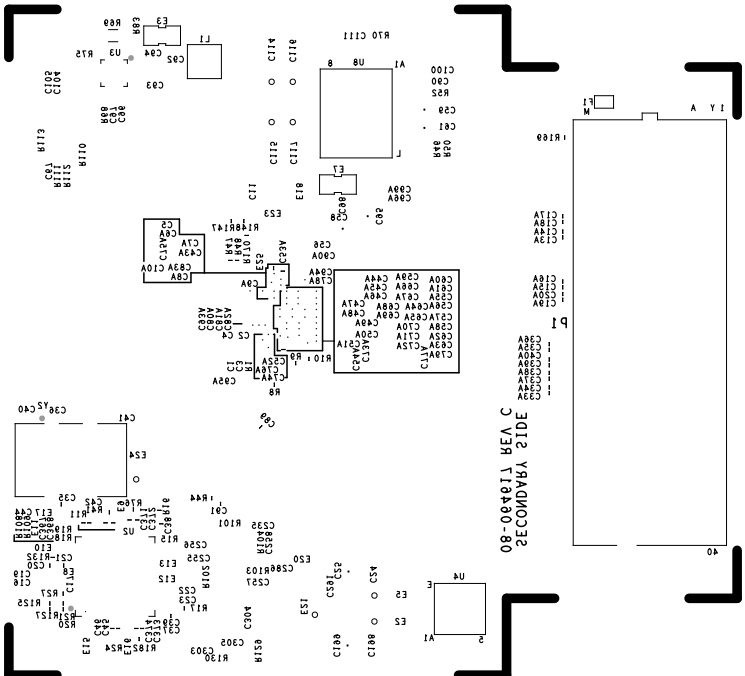
08-064617-06

REV C

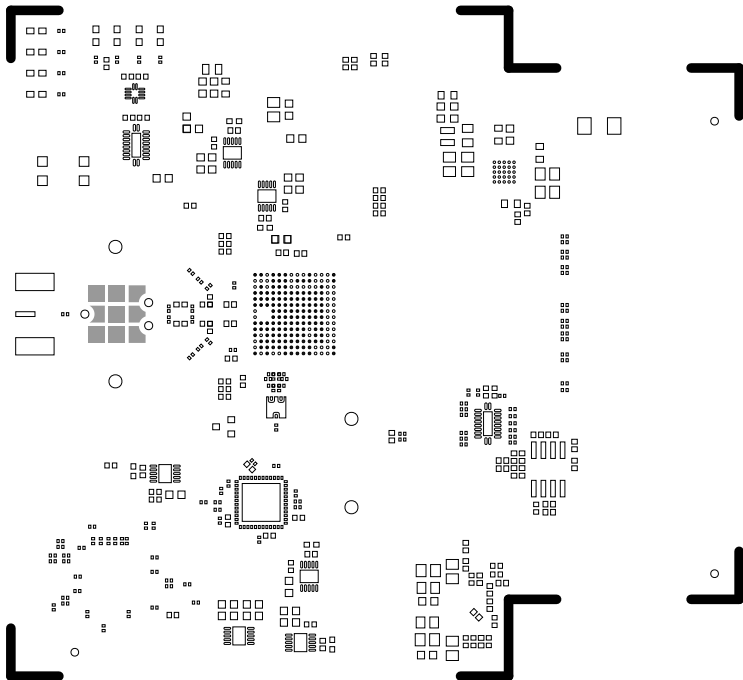


REV C





PASTEMASK PRIMARY
08-064617-15
REV C



PASTEMASK SECONDARY
08-064617-16
REV C

