

Getting Started with the AD-DAC-FMC-ADP Adapter Board

INTRODUCTION

The AD-DAC-FMC-ADP adapter board allows any of Analog Devices' DPG2-compatible High-Speed DAC Evaluation Boards to be used on a Xilinx® evaluation board with a FMC connector. The adapter board uses the Low Pin Count (LPC) version of the FMC connector, so it can be used on either LPC or HPC hosts (such as the ML605 or SP605).

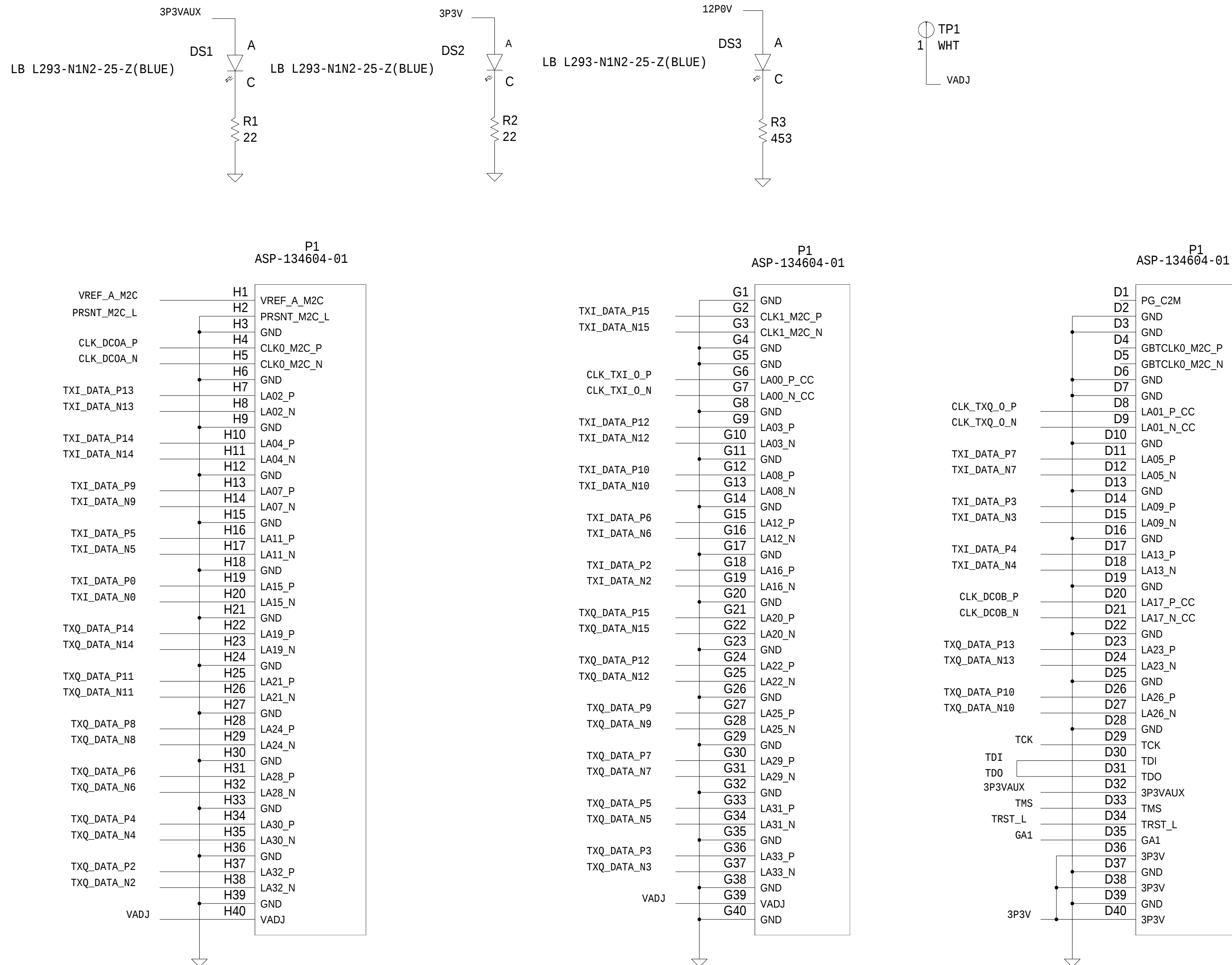
A list of DPG2-compatible evaluation boards can be found at <http://www.analog.com/dpg>

The schematic and layout are included in the following pages of this document. In addition, example UCF files for both the ML605 and SP605 are included as a starting point.

CLOCKING

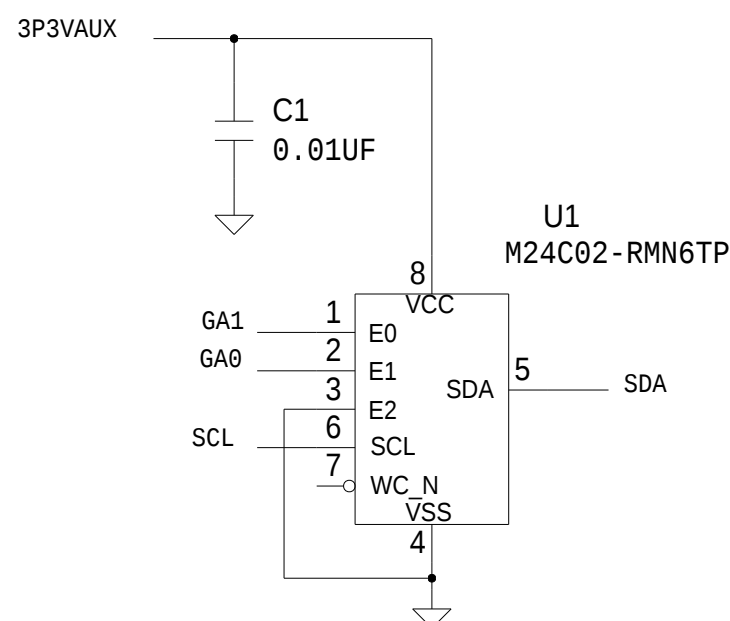
Every DPG2-compatible evaluation board provides two LVDS clocks to the host. These two clocks are always identical in both frequency and phase. On DACs using an LVDS interface, the host is then expected to output two LVDS clocks that are phase aligned to the data. It is very important that these clocks be generated the same way as the data, so that any delays inside the FPGA are matched. Therefore, this clock should be considered another data bit with a fixed "10101" pattern.

DPG2 CONNECTOR



REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	FIRST REVISION (PREVIOUS BOARD WAS HPC VERSION, WHICH THIS REPLACES)	7/2810	
B	TIE TDI AND TDO TOGETHER	3-30-12	J. C.
C	ADDED EEPROM	3-07-13	J. C.

"C" ROW CLOSEST TO BOARD EDGE



SILKSCREEN NOTES:

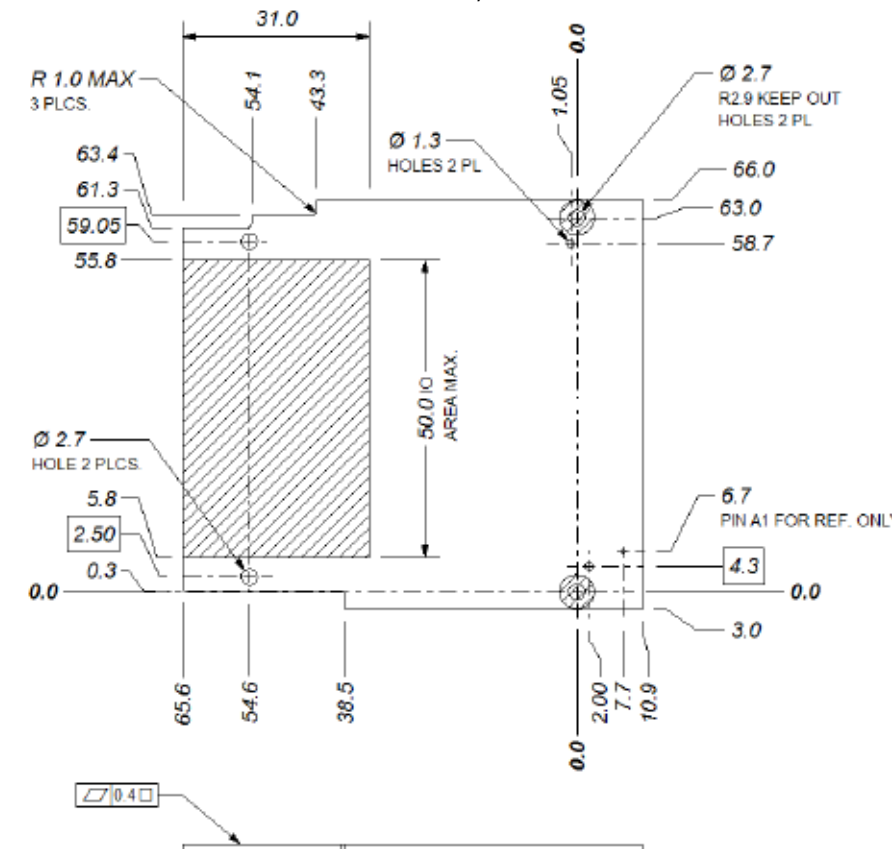
SAP PART NUMBER: AD-DAC-FMC-ADP
PART NUMBER AND PCB REVISION (BELOW) TO BE ON TOP SILKSCREEN

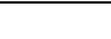
LAYOUT NOTES:

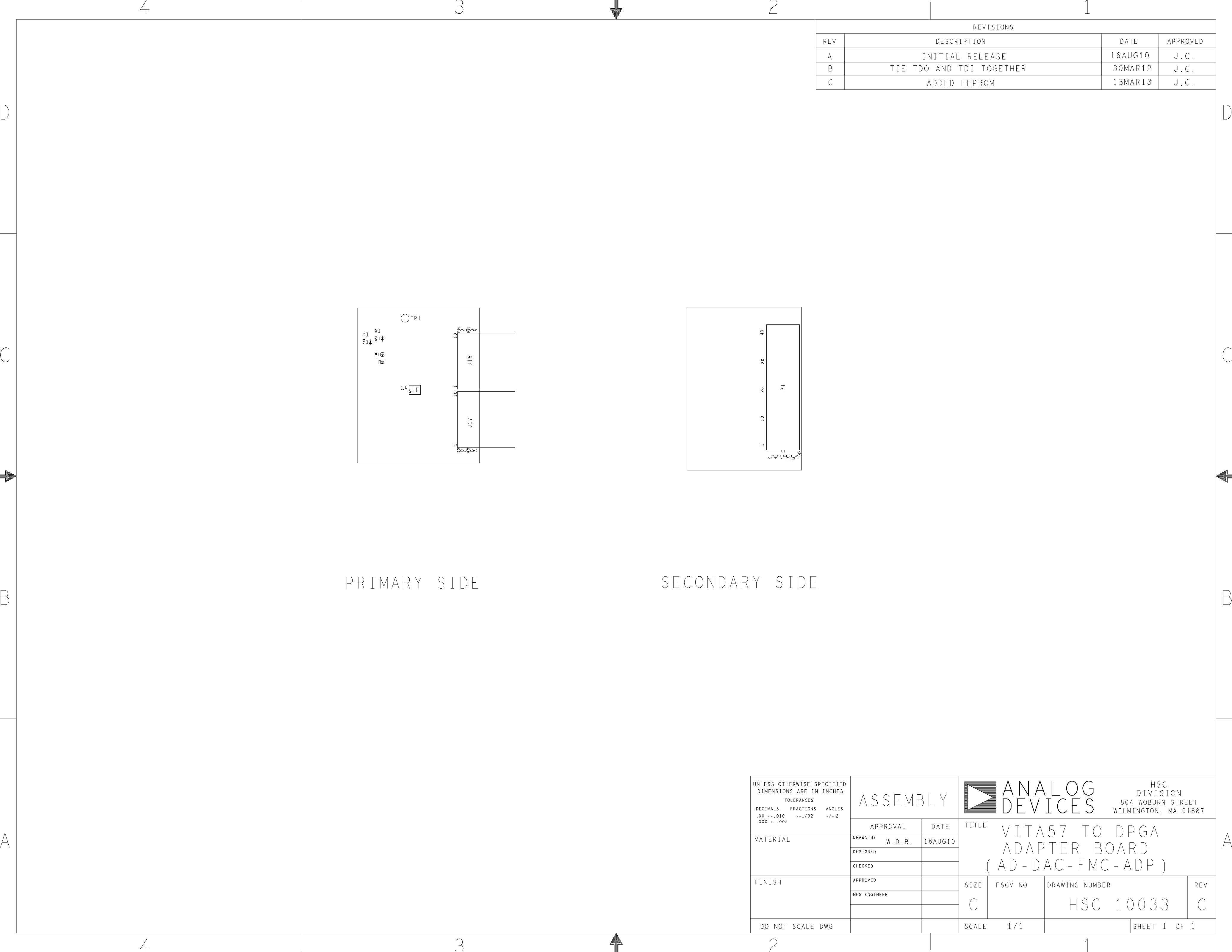
ALL LINES MATCHED LENGTH (MATCHING MORE CRITICAL THAN LINE LENGTH)
PAIRS WITHIN TXI____, TXQ____, CAN BE MOVED TO EASE ROUTING

PCB NOTES:

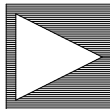
PCB DIMENSIONS AS FOLLOWS, PER VITA-57 SPEC:



 ANALOG DEVICES	SCHEMATIC				
	DPG2 LPC ADAPTER BRD AD-DAC-FMC-ADP -				
THIS DRAWING IS THE PROPERTY OF ANALOG DEVICES INC. IT IS NOT TO BE REPRODUCED OR COPIED, IN WHOLE OR IN PART, OR USED IN FRAUDULENT MANNER TO INFRINGE, OR FOR ANY OTHER PURPOSE HARMFUL TO THE INTERESTS OF ANALOG DEVICES. THE EQUIPMENT ORIGIN DESIGN MAY BE PROTECTED BY PATENTS OWNED OR CONTROLLED BY ANALOG DEVICES.	DESIGN VIEW *	DRAWING NO. HSC 10033	REV C		
	PTD ENGINEER J COUTERMARSH	SIZE D	SCALE -	SHEET 2 OF 2	



REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	16AUG10	J.C.
B	TIE TDO AND TDI TOGETHER	30MAR12	J.C.
C	ADDED EEPROM	13MAR13	J.C.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES					HSC DIVISION		
TOLERANCES					804 WOBURN STREET WILMINGTON, MA 01887		
DECIMALS	FRACTIONS	ANGLES	TITLE VITA57 TO DPGA ADAPTER BOARD (AD-DAC-FMC-ADP)				
XX +/- .010	+/- 1/32	+/- 2					
.XXX +/- .005							
MATERIAL	APPROVAL	DATE					
	DRAWN BY W.D.B.	16AUG10					
	DESIGNED						
FINISH	CHECKED						
	APPROVED		SIZE	FSCM NO	DRAWING NUMBER		REV
	MFG ENGINEER		C		HSC 10033		C
DO NOT SCALE DWG			SCALE 1 / 1		SHEET 1 OF 1		

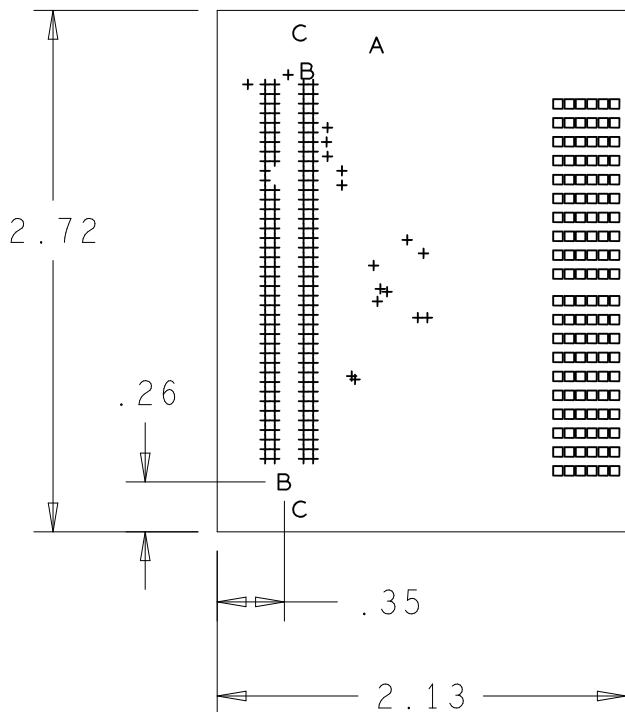
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NOTES:

- MATERIALS; FR-4, IN ACCORDANCE WITH IPC-L-130 (LATEST REV.). GLASS FABRIC BASE, EPOXY RESIN, FIRE RESISTANT.
- BONDING AGENT; PREIMPREGNATED B STAGE EPOXY GLASS CLOTH IN ACCORDANCE WITH IPC-L-109 (LATEST REV.).
- CLADDING; EXTERNAL LAYERS 1/4 OZ. COPPER, OVERPLATE TO 1 OZ. INTERNAL PLANE LAYERS 2 OZ. COPPER.
- SOLDER MASK; SHALL BE BLUE LIQUID PHOTOIMAGABLE (LPI) APPLIED ON BOTH SIDES OVER BARE COPPER AND SHALL MEET IPC-SM-840 (LATEST REV.) CLASS 3.
- SILK SCREEN; SHALL BE PERMANENT NON-CONDUCTIVE EPOXY INK, COLOR WHITE.
- U.L. RATING; 94VO MINIMUM.

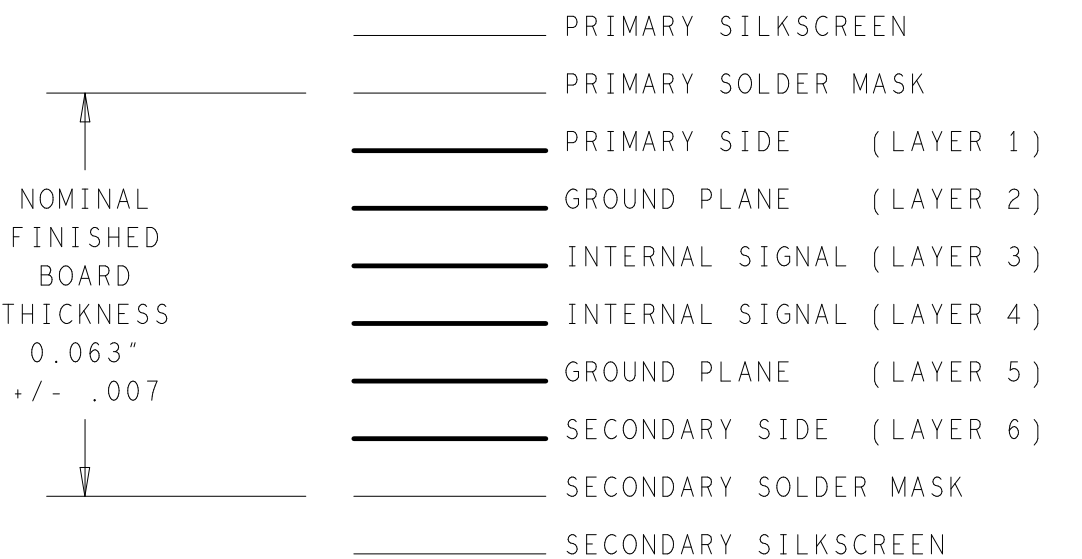
FABRICATION:

- REFER TO IPC-6010 SERIES (LATEST REV.), CLASS 2 FOR FABRICATION UNLESS OTHERWISE SPECIFIED.
- UNDIMENSIONED HOLES TO BE LOCATED WITHIN +/- .005 OF THEIR TRUE POSITION WITH RESPECT TO ARTWORK.
- PLATED HOLE WALL THICKNESS SHALL NOT BE LESS THAN .001 INCH MINIMUM AVERAGE, WITH NO READING LESS THAN .0008 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 .008 INCH.
- MINIMUM DESIGN SPACING IS .005 INCH.
- BOARD/PANEL MUST MEET IPC-A-600 (LATEST REV.) CLASS 2 FOR FLATNESS.
- MFGR. TO LEGIBLY ETCH OR STAMP/SCREEN WITH PERMANENT NON-CONDUCTIVE INK ON SECONDARY SIDE IN A CLEAR AREA UNLESS OTHERWISE INDICATED;
A. U.L. CODE D. MFGR. LOGO
B. DATE CODE (STAMP) E. SUCCESSFUL ELECTRICAL BOARD TEST.
C. FLAMMABILITY RATING
- NON-FUNCTIONAL PADS MAY BE REMOVED FROM INNER SIGNAL LAYERS AT MFGR. DISCRETION.
- IF PAD SIZES PROVIDED ARE NOT LARGE ENOUGH TO MAINTAIN ANNULAR RING REQUIREMENT, MFGR. MAY TEAR DROP PADS TO MAINTAIN ANNULAR RING AT PAD TO CIRCUIT INTERFACE ONLY AND MUST INSURE ELECTRICAL INTEGRITY.
- REPAIRS PER IPC-R-700 ARE ALLOWED.
- MODIFICATIONS TO THE ARTWORK, OTHER THAN THOSE DESCRIBED ON THE FABRICATION DRAWING, ARE NOT ALLOWED WITHOUT WRITTEN AUTHORIZATION.
- FINISH: SURFACES SHALL HAVE ENIG FINISH PLATED WITH 2-6 MICROINCHES OF IMMERSION GOLD OVER 100-200 MICROINCHES OF ELECTROLESS NICKEL.



PRIMARY SIDE

6 LAYER STACKUP

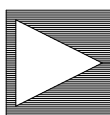


DIFFERENTIAL IMPEDANCE = 100 OHMS +/- 10%
ARTWORK LINE WIDTH FOR
IMPEDANCE CONTROLLED LINES = 0.005"

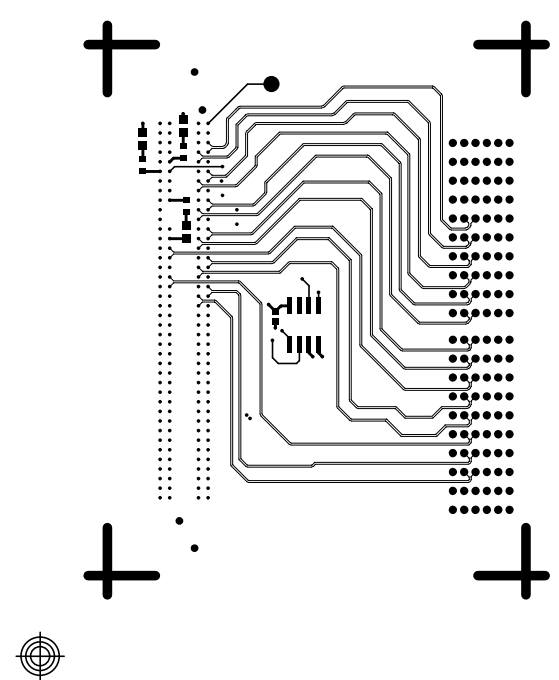
HOLE TOLERANCE

UNLESS SPECIFIED
PLATED: +/- .003
NON PLATED: +/- .001

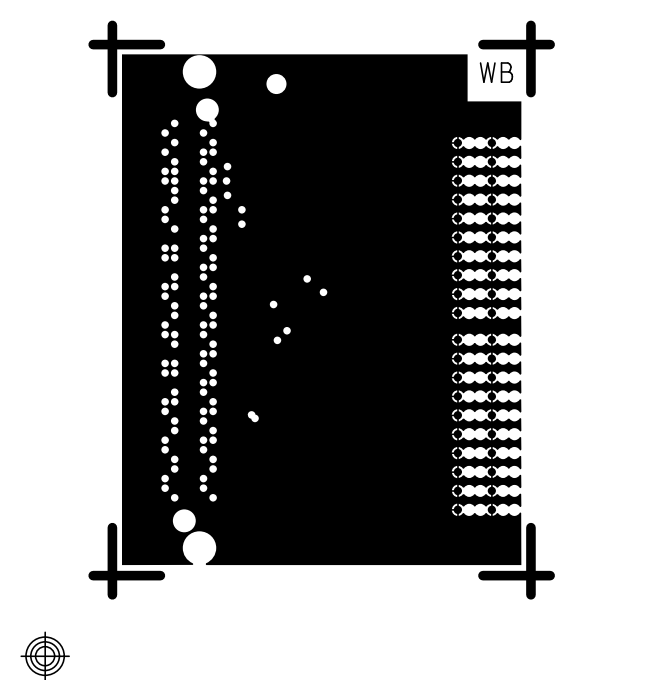
FINISHED HOLES IN MILS				
ALL UNITS ARE IN MILS				
FIGURE	SIZE	PLATED	QTY	TOLERANCE/NOTES
+	10.0	PLATED	175	
□	24.0	PLATED	120	
A	63.0	PLATED	1	
B	50.0	NON-PLATED	2	
C	105.0	NON-PLATED	2	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES			NCDRILL		 ANALOG DEVICES		HSC DIVISION	
TOLERANCES							804 WOBURN STREET WILMINGTON, MA 01887	
DECIMALS FRACTIONS ANGLES .XX +/- .010 +/- 1/32 +/- 2 .XXX +/- .005			APPROVAL		DATE		TITLE VITA57 TO DPGA ADAPTER BOARD (AD-DAC-FMC-ADP)	
MATERIAL			DRAWN BY W.D.B.		16AUG10			
			DESIGNED					
			CHECKED					
FINISH			APPROVED				SIZE	
			MFG ENGINEER				FSCM NO	
							DRAWING NUMBER	
							HSC 10033	
DO NOT SCALE DWG							SHEET 1 OF 1	

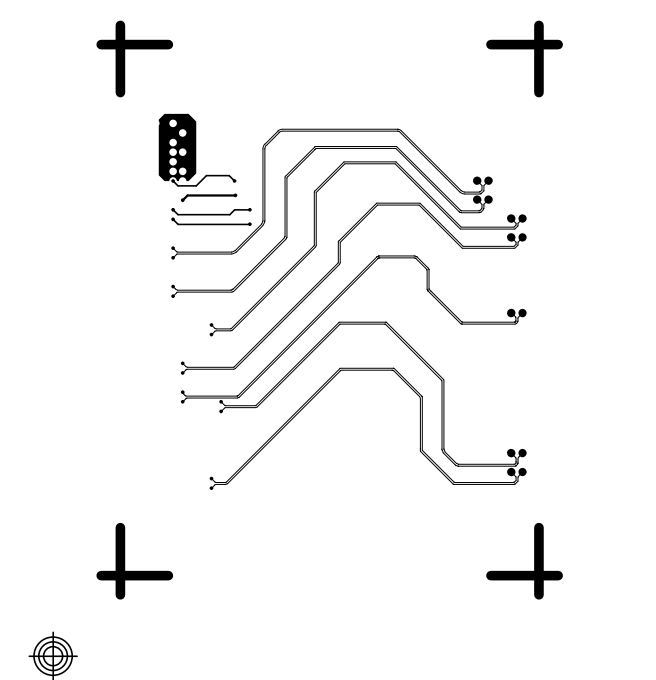
L1 PRIMARY
VITA57-DPG2 ADAPTER BRD
HSC 10033
REV C



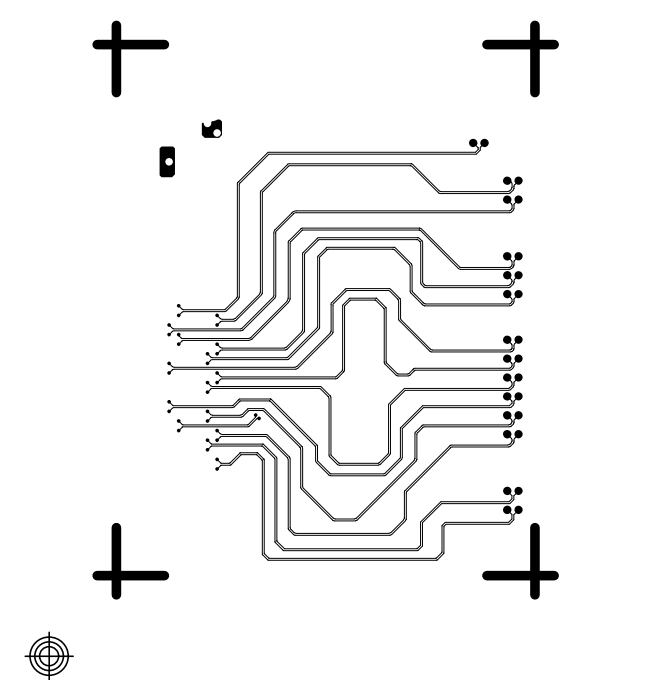
L2_GROUND
VITA57-DPG2 ADAPTER BRD
HSC 10033
REV C



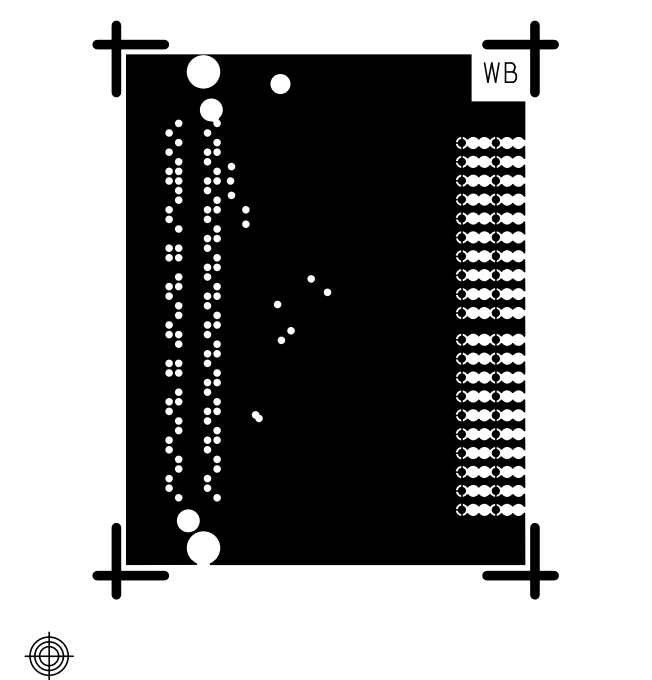
L3_SIGNAL
VITA57-DPG2 ADAPTER BRD
HSC 10033
REV C



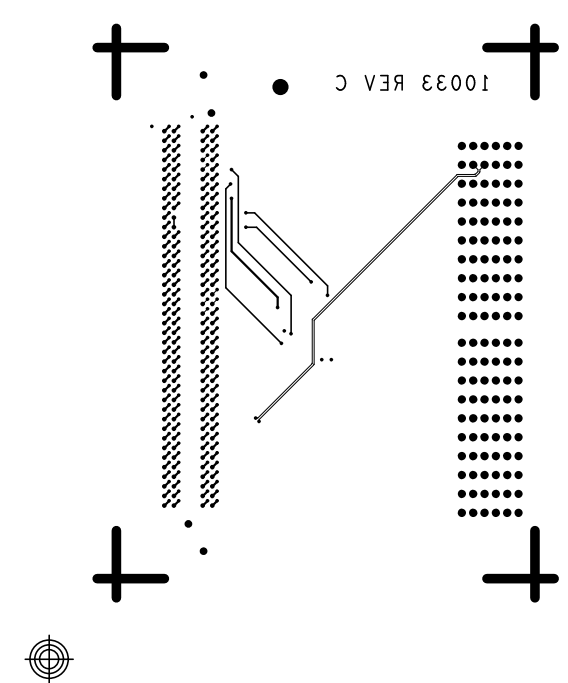
L4_SIGNAL
VITA57-DPG2 ADAPTER BRD
HSC 10033
REV C



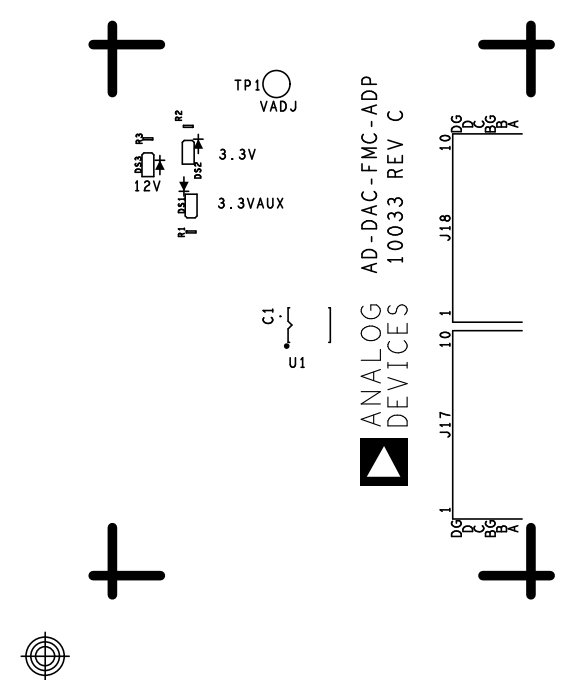
L5_GROUND
VITA57-DPG2 ADAPTER BRD
HSC 10033
REV C



L6 SECONDARY
VITA57-DPG2 ADAPTER BRD
HSC 10033
REV C



SILKSCREEN PRIMARY
VITA57-DPG2 ADAPTER BRD
HSC 10033
REV C



SILKSCREEN SECONDARY
VITA57-DPG2 ADAPTER BRD
HSC 10033
REV C

