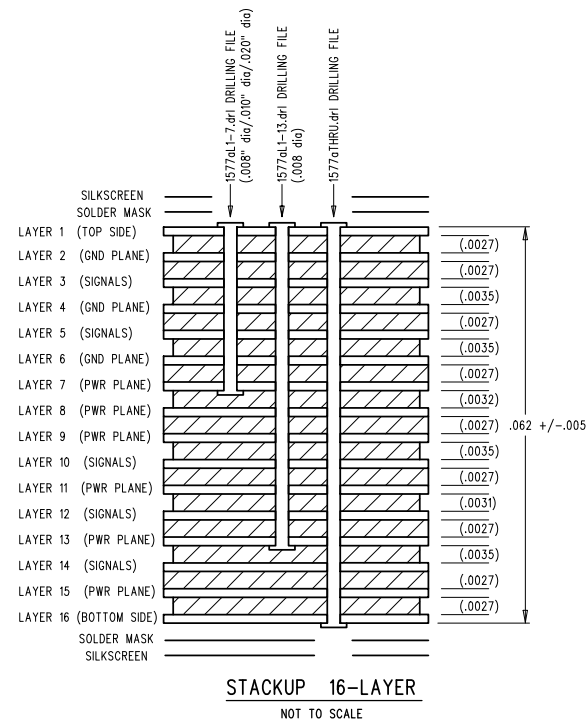
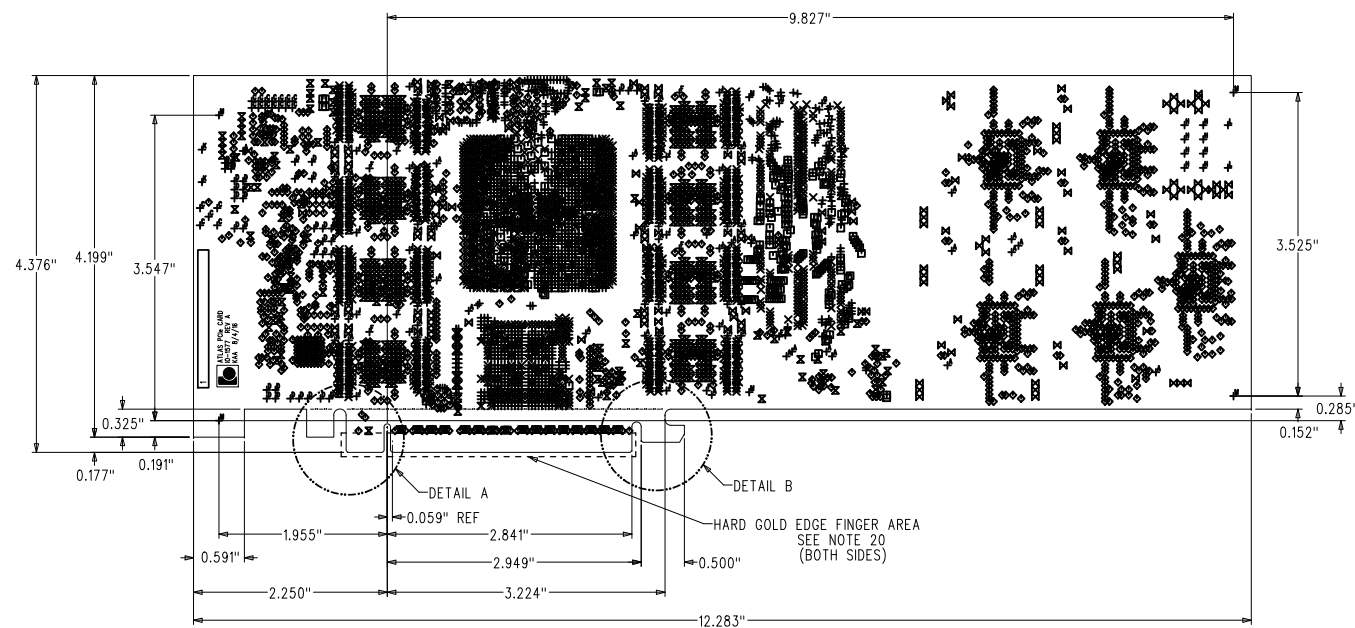
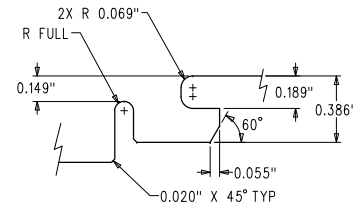
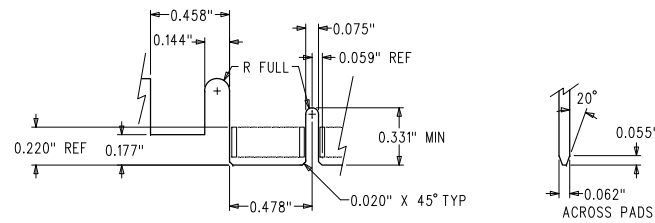


FSCM	DWG NO.	SH	REV
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REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

HOLE SIZE CHART				
SYM	SIZE (AFTER PLATING)	QTY	PLATED	
+	.008 +.001 -.008	1097	YES	
×	.008 ^{+.001} _{-.008} LAYERS 1-7	1396	YES	
□	.008 ^{+.001} _{-.008} LAYERS 1-13	644	YES	
◇	.010 +.001 -.010	1589	YES	
⊠	.010 ^{+.001} _{-.010} LAYERS 1-7	1028	YES	
⊞	.020 +.001 -.020	174	YES	
A	.020 ^{+.001} _{-.020} LAYERS 1-7	59	YES	
B	.032 +.003 -.003	4	YES	
C	.035 +.003 -.003	19	YES	
D	.040 +.003 -.003	32	YES	
E	.044 +.002 -.002	2	NO	
F	.059 +.002 -.002	8	NO	
G	.063 +.002 -.002	2	NO	
H	.071 +.003 -.003	8	YES	
J	.079 +.003 -.003	16	YES	
K	.104 +.003 -.003	2	YES	
L	.118 +.002 -.002	2	NO	
M	.125 +.003 -.003	6	YES	

BLIND VIAS DRILLED LAYERS 1-7
BLIND VIAS DRILLED LAYERS 1-13
BLIND VIAS DRILLED LAYERS 1-7
BLIND VIAS DRILLED LAYERS 1-7



- FABRICATION NOTES (REV 10)
- 1) UNLESS NOTED OTHERWISE, FINISHED TRACE LINE WIDTHS SHOULD MATCH SUPPLIED GERBER FILES.
- 2) MATERIAL :
☐ FR4 (OF PER ML-P-13940) ☐ GPT (OI PER ML-P-13949) ☒ MEGTRON 6
- 3) COPPER WEIGHT:
OUTER LAYERS : ☐ 1/4 oz. ☒ 1/2 oz. ☐ 1 oz. ☐ 2 oz.
LAYERS 7, 8, 13 : ☐ 1/4 oz. ☒ 1/2 oz. ☐ 1 oz. ☐ 2 oz.
REMAINING INNER LAYERS : ☐ 1/4 oz. ☒ 1/2 oz. ☐ 1 oz. ☐ 2 oz.
- 4) SOLDER MASK : MATTE FINISH (BOTH SIDES)
☒ LIQUID PHOTOMAKEABLE ☐ DRY FILM ☐ NONE
☒ OVER BARE COPPER ☐ OVER TIN LEAD ☐ OVER FULL BODY GOLD
☒ GREEN ☐ RED ☐ BLUE
- 5) OVERALL BOARD THICKNESS:
☒ 0.062" ☐ 0.090" ☐ 0.125" ☐ OTHER - SEE STACKUP
☒ +/- 0.005" ☐ +/- 0.007" ☐ +/- 0.010" ☐ OTHER
- 6) BARE BOARD ELECTRICAL TEST:
☒ TESTED TO NETLIST DATA ☐ NO TEST REQUIRED
- 7) HOLE DIAMETER TOLERANCES ARE: (UNLESS OTHERWISE NOTED IN HOLE CHART)
PLATED HOLES : +/- 0.003". NON PLATED HOLES : +/- 0.002".
- 8) SILK SCREEN USING EPOXY BASED INK.
☒ BOTH SIDES ☐ PRIMARY SIDE ☐ SECONDARY SIDE ☐ NONE
☒ WHITE ☐ YELLOW ☐ BLACK
- 9) MINIMUM ANNULAR RING:
☒ .003" FOR EXTERNAL LAYERS
☒ .002" FOR INTERNAL LAYERS
- 10) PLANE REGISTRATION:
+/- .005" TO TOP PLANE FOR ALL PLANES
- 11) MINIMUM PLATING THROUGH ALL HOLES IS:
.001" THICK COPPER
- 12) WARP AND TWIST:
NOT TO EXCEED .007" PER INCH ACROSS THE DIAGONAL
- 13) ACCEPTABILITY: (PER LATEST REVISION)
☒ IPC-A-600 ☐ IPC-BB-276 ☐ ML-P-5510
- 14) MANUFACTURER TO ADD MFR'S LOGO, DATE CODE, UL CODE AND ET STAMP.
- 15) FABRICATE IN ACCORDANCE WITH IPC-6011/6012, CLASS 3 (LATEST REVISIONS).
- 16) VENDOR TO SUPPLY CROSS SECTIONS AND TEST COUPONS PER LOT
- 17) SURFACE MOUNT PADS:
TOP LAYER: 6388
BOTTOM LAYER: 1514
TOTAL: 7902
- 18) IMMERSION GOLD PLATING 2-4 MICRO-INCHES FOR SOLDERING OVER 120-240 MICRO-INCHES NICKEL.
- 19) MATERIAL STACKUP AND TRACE WIDTHS MAY BE MODIFIED.
FINAL IMPEDANCE VALUES MUST BE ACHIEVED FOR THE FOLLOWING LAYERS:
LAYERS 1 AND 16
390ohm +/-10% SINGLE-ENDED IMPEDANCE FOR 8 MIL TRACES. (LAYER 1 ONLY)
50ohm +/-10% SINGLE-ENDED IMPEDANCE FOR 5 MIL TRACES.
66ohm +/-10% DIFFERENTIAL IMPEDANCE FOR 7.75 MIL TRACE PAIRS. (LAYER 1 ONLY)
86ohm +/-10% DIFFERENTIAL IMPEDANCE PAIRS. (NOT USED)
100ohm +/-10% DIFFERENTIAL IMPEDANCE FOR 3.25 MIL TRACE PAIRS.
LAYERS 3 AND 5
50ohm +/-10% SINGLE-ENDED IMPEDANCE FOR 5 MIL TRACES.
100ohm +/-10% DIFFERENTIAL IMPEDANCE FOR 3 MIL TRACE PAIRS.
LAYERS 10, 12 AND 14
34ohm +/-10% SINGLE-ENDED IMPEDANCE FOR 5.5 MIL TRACES. (LAYER 12 ONLY)
39ohm +/-10% SINGLE-ENDED IMPEDANCE FOR 5 MIL TRACES.
50ohm +/-10% SINGLE-ENDED IMPEDANCE FOR 3.25 MIL TRACES.
66ohm +/-10% DIFFERENTIAL IMPEDANCE FOR 6 MIL TRACE PAIRS.
86ohm +/-10% DIFFERENTIAL IMPEDANCE FOR 3.8 MIL TRACE PAIRS.
100ohm +/-10% DIFFERENTIAL IMPEDANCE FOR 3 MIL TRACE PAIRS.
- 20) ELECTROPLATE CARD EDGE FINGERS MINIMUM 50 MICRONCHES HARD GOLD OVER A NICKEL BASE.
- 21) CONDUCTIVE EPOXY FILL/LEVEL ALL VIA HOLE SIZES 20-MIL AND LESS IN FINAL DRILL STAGE.
- 22) BOARDS TO REMAIN AS 1-UP ARRAY ON PANELS WITH .500" RAILS, SCORE LINES, AND ROUTE SLOTS.
SEE 1577_ARRAY.pdf FILE.
- 23) TEST LOCATED OUTSIDE OF BOARD OUTLINE SHOULD REMAIN ON FINISHED PANEL.

QTY		FSCM		PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION				MATERIAL SPECIFICATION			
PARTS LIST													
UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES + .XX = .01 + - .XXX = .005 - MATERIAL FINISH						CONTRACT NO.		CUSTOMER					
						APPROVALS		DATE		BROOKHAVEN NATIONAL LABORATORY INSTRUMENTATION DIVISION UPTON, NY 1973 ATLAS PCIe CARD FABRICATION DRAWING			
						DRAWN		K. ACKLEY 8/4/16					
						CHECKED		K. CHEN 8/4/16					
						ENGINEER		H. CHEN 8/4/16					
TITLE		SIZE		FSCM NO.		DWG NO.		REV.					
NEXT ASSY		USED ON		DO NOT SCALE DRAWING		D		T-2016-25		10-1577		A	
APPLICATION						SCALE		1/1		SHEET		1 OF 1	