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11. ELECTRICAL TEST: CONTINUITY SHORT AND OPEN TESTING ON ALL AVAILABLE EXPOSED TERMINAL PADS USING IPC-D-356A NETLIST DATA. CONTINUITY TEST SHALL BE AT 5 OHMS MAX. SHORTS TESTING SHALL BE PERFORMED AT 250V. MINIMUM ISOLATION OF 20M OHMS.

10. BOW AND TWIST: SHALL NOT EXCEED .007 IN PER INCH

9 SILKSCREEN: BOTH SIDES WITH WHITE NON-CONDUCTIVE EPOXY INK. LANDS AND EXPOSED PLATED AREAS TO BE FREE OF INK.

8 SOLDER MASK: PHOTO-IMAGED LIQUID POLYMER, GREEN COLOR, ON BOTH SIDES OF BOARD IN ACCORDANCE WITH IPC-SM-840, TYPE B, CLASS 2, OVER BARE COPPER.

7. FABRICATION TOLERANCES: END PRODUCT TRACE WIDTHS AND LANDS SHALL NOT VARY MORE THAN THE SMALLER OF .002 IN OR 10% OF THE TRACE WIDTH FROM THE GERBER DATA.

6. ALL HOLES SPECIFIED IN THE DRILL CHART ARE FINISHED HOLE DIAMETERES. HOLE TOLERANCE +/- 0.002 IN FOR NON-PLATED HOLES AND +/- 0.003 IN FOR PLATED HOLES.

5. SURFACE FINISH TO BE ELECTROLESS NICKEL/IMMERSION GOLD (ENIG) PLATING PER IPC-6013. ALL PLATED HOLES AND CONDUCTIVE SURFACES SHALL BE PLATED WITH 0.001 IN COPPER MINIMUM. ALL Ni/Au PLATED AREA SHOULD HAVE MINIMUM THICKNESS 0.0001 IN FOR Ni AND 0.000002 IN FOR Au.

4. MATERIAL: .062 IN (+/- 10%) THICK GLASS EPOXY, NATURAL COLOR, LAMINATED NEMA GRADE FR4.

3. FABRICATE AND INSPECT PER IPC-6012.

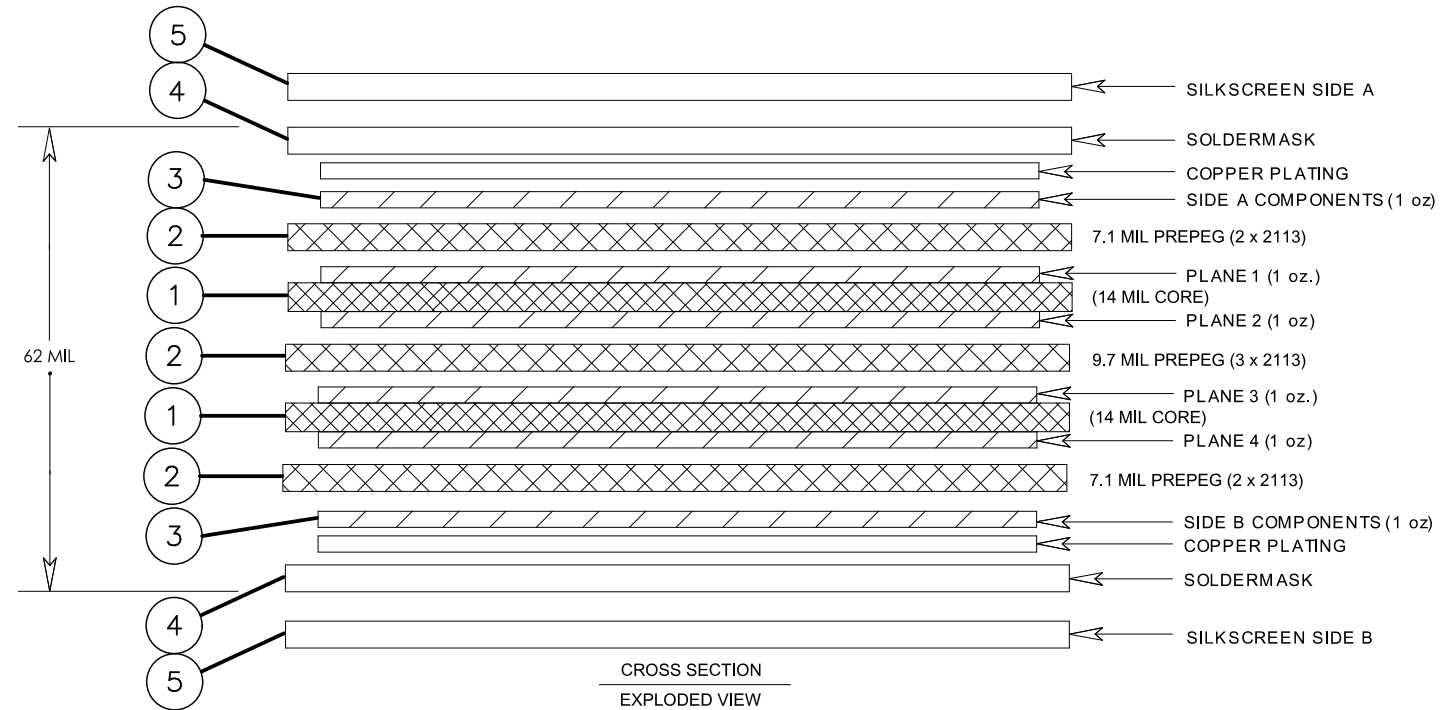
2. THIS DOCUMENT AND RELATED ARTWORK ARE COMPUTER GENERATED. CHANGES ARE TO BE PERFORMED ON THE ORIGINAL DATABASE IN SECTION 383.

1. THE FINISHED PRINTED WIRING BOARD SHALL MEET THE REQUIREMENTS OF IPC-A-600-X (LATEST REVISION).

NOTES: UNLESS OTHERWISE SPECIFIED

REVISION HISTORY

LTR	DESCRIPTION	DWN	CHK	STRUCT	MATL	THRM CONT	ENGR	DSGN SUPV	DATA MGT	RELEASE DATE
A	INITIAL RELEASE	CLASS E	SEE JPL DATA MANAGEMENT SYSTEM FOR APPROVAL SIGNATURES AND DATES							
B	CORRECTED R79 & R97. PREPARED FOR UNLIMITED RELEASE.	CLASS E								

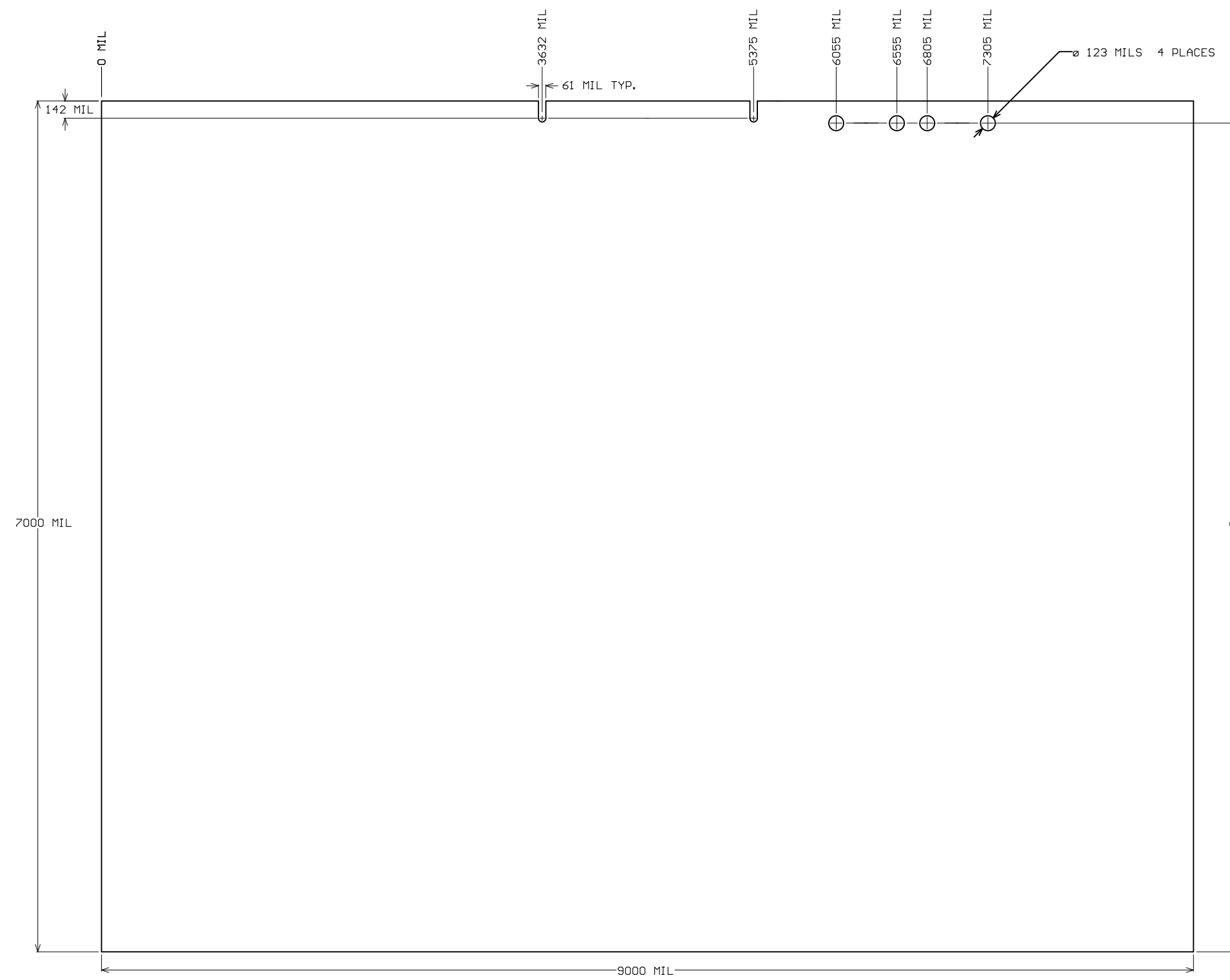


	AR	5			HYSOL SERIES M. CATALYST 20/A	INK, WHITE EPOXY	IPC-4781	<div>9</div>
	AR	4			LPI, SM P41	SOLDERMASK, PROBIMER 52	IPC-SM-840 CL A	<div>8</div>
	AR	3			3 CU E3	COPPER FOIL, 1 OZ.	IPC-4562	
	AR	2			P 26-E2116 TW RE VC	GLASS BASE EPOXY RESIN PREPREG, B-STAGE	IPC-4104/26	
	AR	1			L 26-0400-C1/C1	GLASS BASE EPOXY RESIN CU CLAD 1 OZ / 1 OZ	IPC-4104/26	
		ITEM NO	REF DES	CAGE CODE	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	SPECIFICATION	MATERIAL OR NOTE
QTY REQD								

PARTS LIST

MATERIAL:		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES LINEAR TOLERANCES: .XX ±.03 .XXX ±.010 ANGULAR TOLERANCES: ±0.5° MACHINE FINISH ✓ DO NOT SCALE DRAWING INTERPRET DWG PER ASME Y14.100		CONTRACT NO _____ APPD _____ DATE _____ DWN CHK STRUCT MATL THRM CONT ENGR DSGN SUPV		JET PROPULSION LABORATORY CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA, CA 91109 FABRICATION, THIRTY METER TELESCOPE M1 ACTUATOR DRIVER PWB	
10398535		THIRD ANGLE PROJECTION		SEE JPL DATA MANAGEMENT SYSTEM FOR APPROVAL SIGNATURES AND DATES		SIZE B CAGE CODE 23835 10398534 REV B	
NEXT ASSEMBLY		USED ON		SCALE: 1/1 UNCLASSIFIED SHEET 1 OF 16		REV 01/2013 DBASE NAME: ANSI_B-SH1/A5	
APPLICATION							

4 3 2 1



DIMENSIONS

7000 MIL

6818 MIL

9000 MIL

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SIZE	CAGE CODE	REV
B	23835	10398534
SCALE: 1/1	UNCLASSIFIED	SHEET 2 OF 16

4 3 2 1
DBASE NAME: ANSI_B-SH2/A5
REV 02/2013

TABLE A / ARTWORK FILE DESIGNATION

SN NO.	FILE:	LOGICAL LAYER	PHYSICAL LAYER	DESCRIPTION
4	10364583.GTP	-	OUTER LAYER 1	PASTE MASK SIDE A
5	10364583.GTO	-	OUTER LAYER 2	OVERLAY SIDE A
6	10364583.GTS	-	OUTER LAYER 3	SOLDER MASK SIDE A
7	10364583.GTL	COPPER SIDE A	OUTER LAYER COPPER	COMPONENTS SIDE A
8	10364583.GP1	COPPER LAYER 2	INNER LAYER	PLANE - GND
9	10364583.GP2	COPPER LAYER 3	INNER LAYER	PLANE - +5V SPLIT
10	10364583.GP3	COPPER LAYER 4	INNER LAYER	PLANE - REF_4V096
11	10364583.GP4	COPPER LAYER 5	INNER LAYER	PLANE - VS / 3V3 SPLIT
12	10364583.GBL	COPPER SIDE B	OUTER LAYER COPPER	COMPONENTS SIDE B
13	10364583.GBS	-	OUTER LAYER 4	SOLDER MASK SIDE B
14	10364583.GBO	-	OUTER LAYER 5	OVERLAY SIDE B
15	10364583.GBP	-	OUTER LAYER 6	PASTE MASK SIDE B
16	10364583.GD1	-	DRILL LOCATIONS	DRILL DRAWING

TABLE B / APERTURE SIZES

SH NO.	FILE:	APERTURE TYPE	EMBEDDED CODE
4	10364583.GTP	RS274-X STANDARD	YES
5	10364583.GTO		YES
6	10364583.GTS		YES
7	10364583.GTL		YES
8	10364583.GP1		YES
9	10364583.GP2		YES
10	10364583.GP3		YES
11	10364583.GP4		YES
12	10364583.GBL		YES
13	10364583.GBS		YES
14	10364583.GBO		YES
15	10364583.GBP		YES
16	10364583.GD1		YES

SIZE	CAGE CODE	REV
B	23835	10398534
SCALE: 1/1	UNCLASSIFIED	SHEET 3 OF 16

4

3

2

1

B

B

PASTEMASK – SIDE A

A

A

SIZE	CAGE CODE	REV
B	23835	10398534
SCALE: 1/1	UNCLASSIFIED	SHEET 4 OF 16

4

3

2

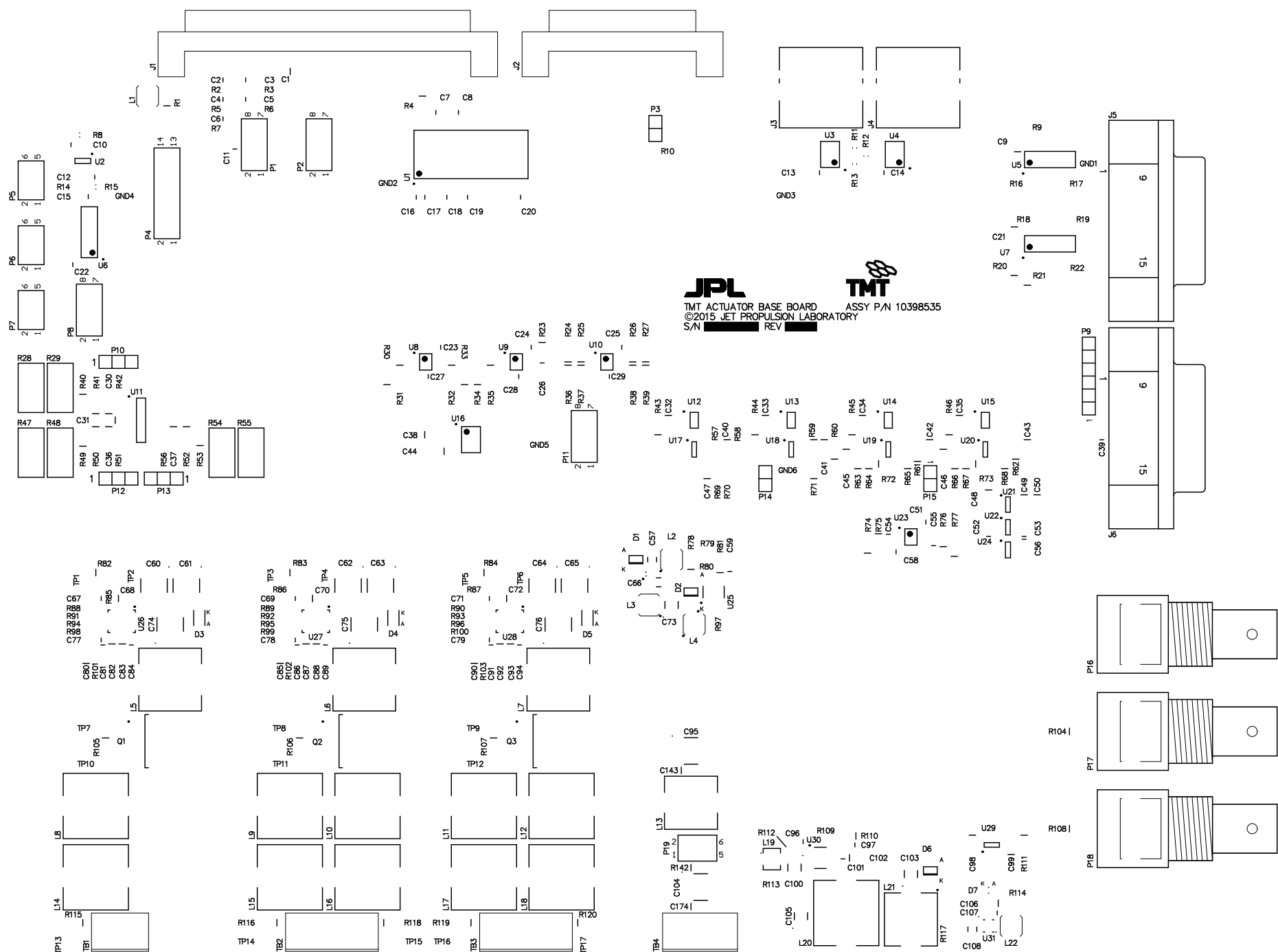
1

B

B

A

A



SILKSCREEN – SIDE A

SIZE	CAGE CODE	REV
B	23835	10398534
SCALE: 1/1	UNCLASSIFIED	SHEET 5 OF 16

4

3

2

1

B

B

SOLDERMASK – SIDE A

A

A

SIZE	CAGE CODE	REV
B	23835	10398534
SCALE: 1/1	UNCLASSIFIED	SHEET 6 OF 16

4

3

2

4

3

2

1

B

B

COPPER LAYER 1 — SIDE A

A

A

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SIZE	CAGE CODE	REV
B	23835	10398534
SCALE: 1/1	UNCLASSIFIED	SHEET 7 OF 16

4

3

2

1

REV 02/2013
DBASE NAME: ANSI_B-SH2/A5

4

3

2

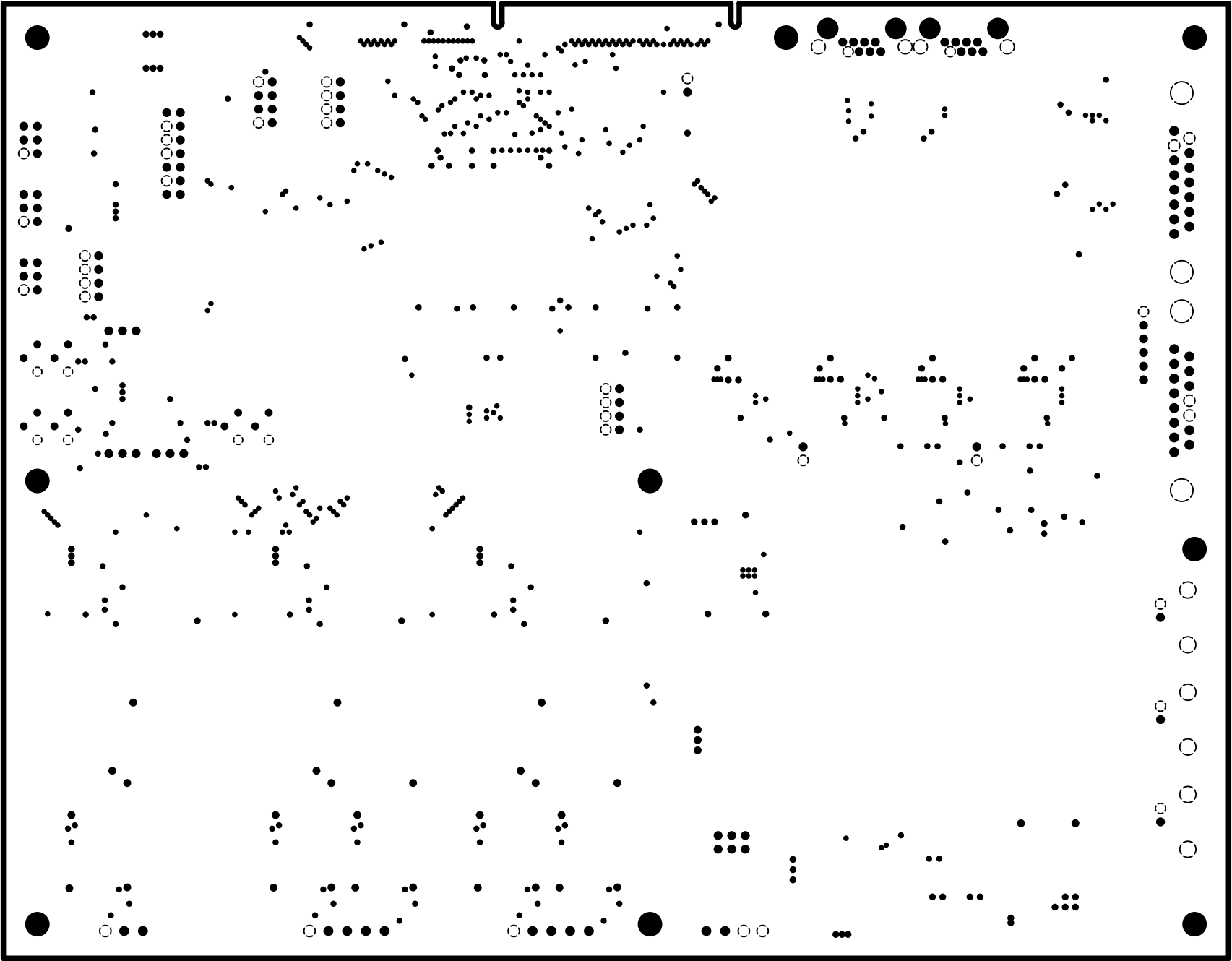
1

B

B

A

A



PLANE 1 - GND

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SIZE	CAGE CODE	REV
B	23835	10398534
SCALE: 1/1	UNCLASSIFIED	SHEET 8 OF 16

REV 02/2013

DBASE NAME: ANSI_B-SH2/A5

4

3

2

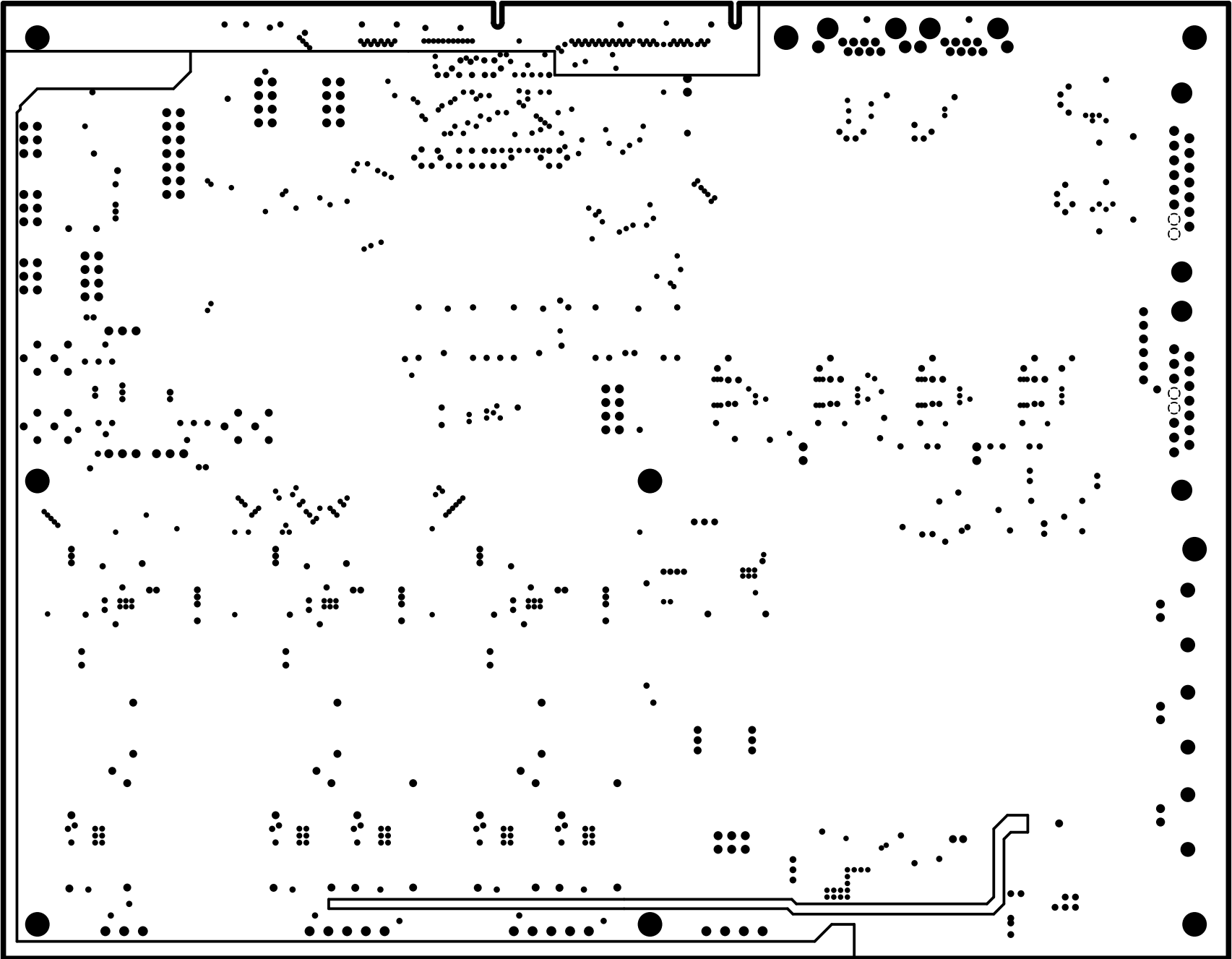
1

B

B

A

A



PLANE 2 - +5V SPLIT

SIZE	CAGE CODE	REV
B	23835	10398534
SCALE: 1/1	UNCLASSIFIED	SHEET 9 OF 16

4

3

2

1

4

3

2

1

B

B

PLANE 3 – REF_4V096

A

A

SIZE	CAGE CODE	REV
B	23835	10398534
SCALE: 1/1	UNCLASSIFIED	SHEET 10 OF 16

4

3

2

1

4

3

2

1

B

B

A

A



PLANE 4 - VS/3V3 SPLIT

SIZE	CAGE CODE	REV
B	23835	10398534
SCALE: 1/1	UNCLASSIFIED	SHEET 11 OF 16

4

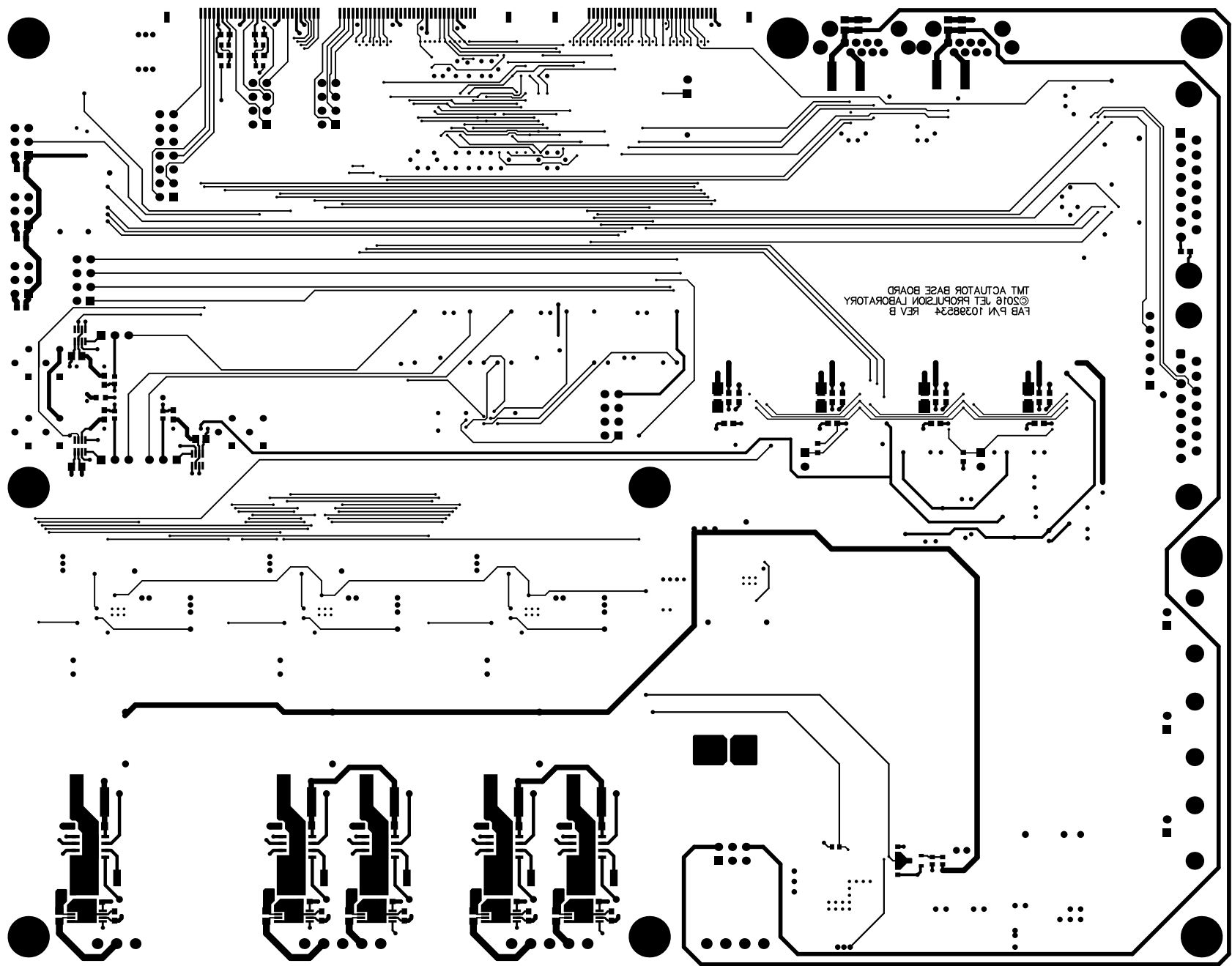
3

2

1

B

B



COPPER LAYER 2 – SIDE B

A

A

SIZE	CAGE CODE	REV
B	23835	10398534
SCALE: 1/1	UNCLASSIFIED	SHEET 12 OF 16

4

3

2

1

4

3

2

1

B

B

A

A

SOLDERMASK – SIDE B

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SIZE	CAGE CODE	REV
B	23835	10398534
SCALE: 1/1	UNCLASSIFIED	SHEET 13 OF 16

REV 02/2013

DBASE NAME: ANSI_B-SH2/A5

4

3

2

1

B

B

A

A

SILKSCREEN — SIDE B

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SIZE B	CAGE CODE 23835	10398534	REV B
SCALE: 1/1	UNCLASSIFIED	SHEET 14 OF 16	

REV 02/2013

1
DBASE NAME: ANSI_B-SH2/A5

4

3

2

1

B

B

A

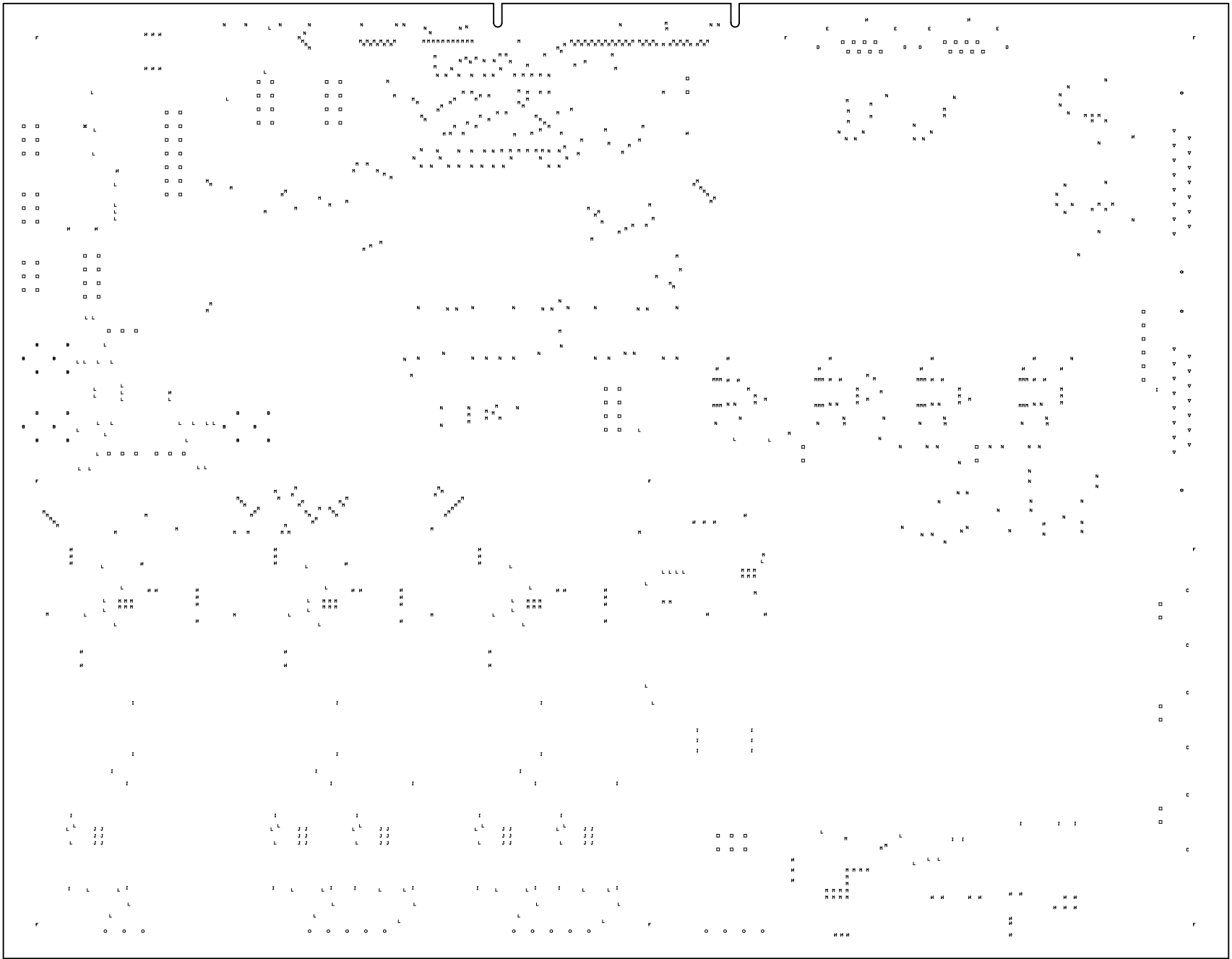
A

PASTEMASK – SIDE B

SIZE	CAGE CODE	REV
B	23835	10398534
SCALE: 1/1	UNCLASSIFIED	SHEET 15 OF 16

B

B



DRILL DRAWING

Symbol	Hit Count	Finished Hole Size	Plated	Hole Type
X	1	12.00mil (0.305mm)	PTH	Round
D	4	62.99mil (1.600mm)	PTH	Round
☆	4	125.00mil (3.175mm)	PTH	Round
E	4	127.95mil (3.250mm)	NPTH	Round
C	6	78.74mil (2.000mm)	PTH	Round
F	9	150.00mil (3.810mm)	PTH	Round
O	17	43.31mil (1.100mm)	PTH	Round
B	18	27.56mil (0.700mm)	PTH	Round
J	30	12.99mil (0.330mm)	PTH	Round
V	30	42.91mil (1.090mm)	PTH	Round
I	41	28.00mil (0.711mm)	PTH	Round
H	93	20.00mil (0.508mm)	PTH	Round
L	106	15.00mil (0.381mm)	PTH	Round
□	113	35.43mil (0.900mm)	PTH	Round
N	157	16.00mil (0.406mm)	PTH	Round
M	354	10.00mil (0.254mm)	PTH	Round
987 Total				

A

A