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### PCB LAMINATE STACKUP CHART 4

LAYER DESCRIPTION	TOOLING FILE	COPPER WEIGHT (OZ/FT <sup>2</sup> )	DIELECTRIC THICKNESS (MILS)	LAYER TYPE
SILKSCREEN - PRIMARY SIDE	200085c-01revl_ss_primary.gbr			WHITE
SOLDERMASK - PRIMARY SIDE	200085c-01revl_sm_primary.gbr			LPI
LAYER 1 - PRIMARY SIDE	200085c-01revl_c01.gbr	0.5 (SEE NOTE TI.4)	10.0 (CORE)	ROGERS 4350B
LAYER 2 - INNER LAYER	200085c-01revl_c02.gbr	0.5	10.0 +/- 2	IT-180A/HR370
LAYER 3 - INNER LAYER	200085c-01revl_c03.gbr	1.0		IT-180A/HR370
LAYER 4 - INNER LAYER	200085c-01revl_c04.gbr	1.0		IT-180A/HR370
LAYER 5 - INNER LAYER	200085c-01revl_c05.gbr	0.5	10.0 (CORE)	ROGERS 4350B
LAYER 6 - SECONDARY SIDE	200085c-01revl_c06.gbr	0.5 (SEE NOTE TI.4)		
SOLDERMASK - SECONDARY SIDE	200085c-01revl_sm_secondary.gbr			LPI
SILKSCREEN - SECONDARY SIDE	200085c-01revl_ss_secondary.gbr			WHITE

NOTES:

TI.1 PCB THICKNESS (FINISHED): 0.062 [1.57] ± 10%

TI.2 PCB MATERIAL: SEE LAYER TYPES

TI.3 PCB SURFACE FINISH: ELETROLESS NICKEL IMMERSION GOLD (ENIG)

TI.4 LAYER 1 COPPER FINISH THICKNESS: 1.5 OZ/SQ.FT OR 2.1 MILS

TI.5 DOES NOT REQUIRE UL CERTIFICATION

**9. VENDOR MARKING REQUIREMENTS:**

- NO Q.A. OR OTHER MARKINGS ALLOWED ON COPPER, EXCEPT AS NOTED BELOW, VENDOR MARKS ARE ALLOWED ON SOLDERMASK ONLY.
- SUPPLIER'S IDENTIFICATION SHALL APPEAR ON EACH PCB AND SHALL REMAIN VISIBLE AFTER ASSEMBLY OF BOARD IS COMPLETE. THE IDENTIFICATION MARKING MUST RESIDE WITHIN THE FUNCTIONAL PORTION OF THE PCB. PLACEMENT OF THE SUPPLIER IDENTIFICATION MARKING ON BREAKAWAY TABS IS NOT PERMITTED.
- A 4 DIGIT DATE CODE AND THE VENDOR LOGO ARE TO BE PLACED IN THE AREA SPECIFIED WITHIN THE FUNCTIONAL PORTION OF THE PCB. PLACEMENT OF THE LOGO AND/OR DATE CODE ON BREAKAWAY TABS IS NOT PERMITTED. THE FIRST TWO DIGITS OF THE CODE SHALL REPRESENT THE WEEK OF MANUFACTURE AND THE SECOND TWO DIGITS SHALL REPRESENT THE YEAR OF MANUFACTURE. FOR EXAMPLE, "0110" REPRESENTS "WEEK 1 OF 2010" AND "5210" REPRESENTS "WEEK 52 OF 2010".
- THE SUPPLIER'S UL SIGNATURE (IF APPLICABLE), AS DEFINED IN THE UL RECOGNIZED COMPONENT DIRECTORY, SHALL BE PRESENT ON EACH PCB AND SHALL REMAIN LEGIBLE AFTER ASSEMBLY OF BOARD IS COMPLETE.

**8. PCB COPPER AND FINISH REQUIREMENTS:**

- THE MINIMUM INTERNAL AND EXTERNAL ANNULAR RING REQUIREMENTS SHALL BE PER IPC-2221, CLASS 2. BREAKOUT IS NOT ALLOWED.
- VIA HOLES SHALL HAVE A MINIMUM ANNULAR RING OF .001 AND .002 AT THE TRACE EGRESS. BREAKOUT IS NOT ALLOWED. IT IS THE SUPPLIER'S RESPONSIBILITY TO INFORM SIGNALCORE OF ANY POTENTIAL PROBLEMS ASSOCIATED WITH MEETING ANNULAR RING REQUIREMENTS PRIOR TO BOARD FABRICATION.
- STERLING, UYEMURA AND ALPHA STAR ARE ACCEPTABLE IMMERSION SILVER PROCESSES AND ARE QUALIFIED BY SIGNALCORE. OTHER BRANDS REQUIRE NOTIFICATION AND APPROVAL BY SIGNALCORE BEFORE USE.
- PCB SHALL BE SOLDER MASK OVER BARE COPPER. SOLDER MASK IS TO BE A GREEN LIQUID PHOTOIMAGEABLE TYPE AND COMPLY WITH ANSI/IPC-SM-840, CLASS 2. ALL VIAS THAT ARE NOT EMBEDDED IN PADS SHALL BE FULLY COVERED OVER WITH SOLDERMASK.

**7. PCB MATERIAL AND LAMINATE REQUIREMENTS:**

- EXCEPT FOR SPECIAL MATERIALS, LAMINATES SHALL BE REINFORCED EPOXY THAT MEETS OR EXCEEDS NEMA FR-4 GRADE REQUIREMENTS.
- UL RECOGNIZED MATERIALS HAVING A UL DESIGNATED CTI GREATER THAN 175 OR A PERFORMANCE LEVEL CATEGORY (PLC) LESS THAN OR EQUAL TO 3 PER THE UL RECOGNIZED COMPONENT DIRECTORY.
- PCB SHALL HAVE A MINIMUM DIELECTRIC STRENGTH GREATER THAN OR EQUAL TO 750V/MIL (TESTED IN AIR).
- PCB SHALL USE GREATER THAN 170°C T<sub>g</sub> MATERIALS WITH A MAXIMUM CONTINUOUS OPERATING TEMPERATURE GREATER THAN OR EQUAL TO 130°C.

**6. PCB CONSTRUCTION SHALL COMPLY WITH THE FOLLOWING STANDARDS:**

- A UL FLAMMABILITY RATING OF 94V-0 WHERE POSSIBLE. PCB SHALL BEAR THE 94V-0 MARKING WHEN APPLICABLE.
- UL RECOGNIZED UNDER UL CATEGORY ZPMV2 WHEN APPLICABLE AND BEAR THE COMPANY'S TRADEMARK AND TYPE DESIGNATION.
- IPC-A-600 AND IPC-6012C CLASS 2.
- BOW AND TWIST SPECIFICATION FOR SMT ASSEMBLIES PER IPC-6012C AND IPC-2221 SECTION 5.2.4.

5 PLACE VENDOR MARKINGS, IN THIS AREA, ON SECONDARY SIDE ONLY. USE PERMANENT INK OR SILKSCREEN EPOXY ONLY. COPPER ETCHING OF VENDOR MARKINGS IS NOT PERMITTED.

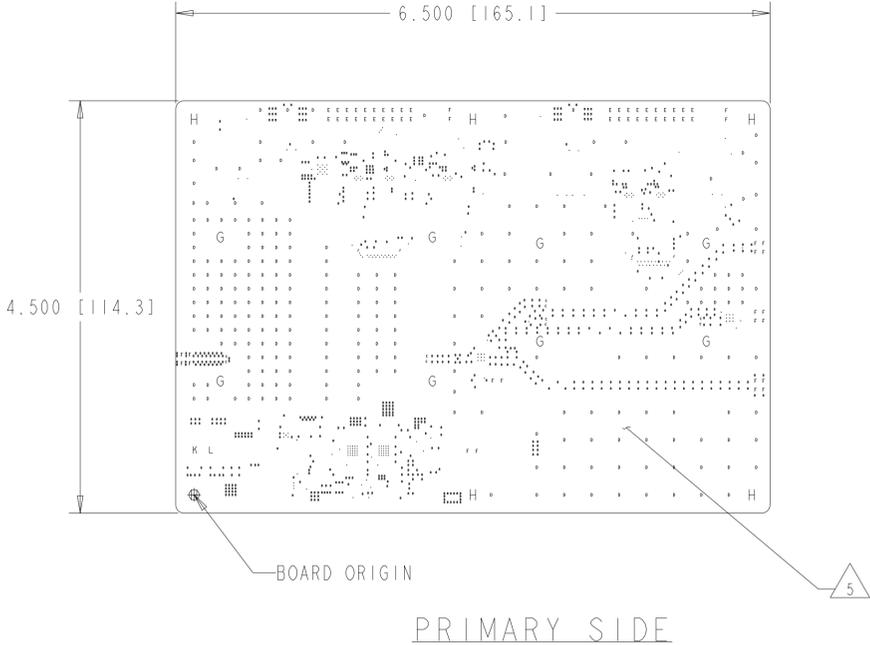
4 PCB SHALL BE FABRICATED PER LAYER STACK-UP AS SHOWN.

3. ALL MATERIALS USED IN THE CONSTRUCTION OF THIS PCB MUST MEET THE REQUIREMENTS OF EU DIRECTIVE 2002/95/EC, RESTRICTION OF HAZARDOUS SUBSTANCES ("RoHS").

2. "PCB" IS USED THROUGHOUT THESE NOTES AND IS AN ABBREVIATION FOR "PRINTED CIRCUIT BOARD".

1. DIMENSIONS IN ( ) ARE FOR REFERENCE ONLY.

NOTES: (UNLESS OTHERWISE SPECIFIED)



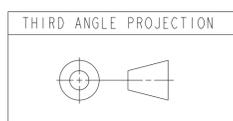
#### HOLE CHART

ALL DRILLS (UNLESS OTHERWISE SPECIFIED) +/- 0.003 [0.08]

SYMBOL	DIAMETER	TOLERANCE	PLATED	QTY	HOLE INFORMATION
A	0.008	+0.000 / -0.008	YES	225	RND 8
B	0.010	+0.000/-0.010	YES	750	RND 10
C	0.023		YES	10	RND 23
D	0.031		YES	250	RND 31
E	0.038		YES	40	RND 38
F	0.040	+0.003 / -0.003	YES	24	RND 40
G	0.110		YES	8	RND 110
H	0.125		YES	6	RND 125
J	0.024		NO	4	RND 24
K	0.063	+0.004 / -0.000	NO	1	RND 63
L	0.072		NO	1	RND 72

NOTES:

PLATED AND NON-PLATED HOLES ARE TO BE DRILLED DURING THE SAME SETUP TO ELIMINATE REGISTRATION ERRORS.



UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES AND [MILLIMETERS] TOLERANCES ARE: .XX [0.X]±.01 [0.25] ANGLES: .XXX [0.XX]±.005 [0.13] ±2° DO NOT SCALE DRAWING	DESIGN TEAM	SignalCore Inc. ROUND ROCK, TEXAS
	DRAWN BY: A. MATTHEW MM/DD/YY 04-26-22	
MATERIAL	CHECKED	NANOSYNTH EDK2 HUMMINGBIRD2
FINISH	DESIGN ENGINEER: H. YEE	
SIZE CODE IDENT NO. DRAWING NO.		REV
D 6CG47 200085C-01		I
SCALE: 1/1		SHEET 1 OF 1