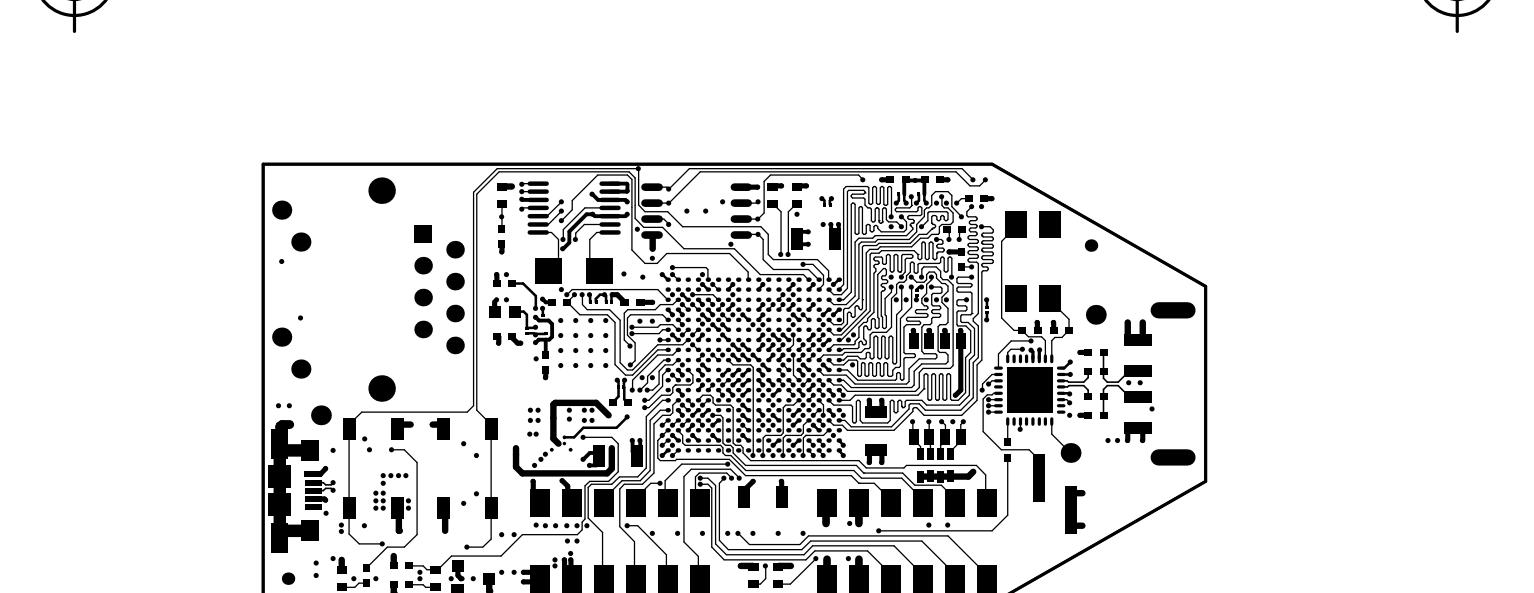


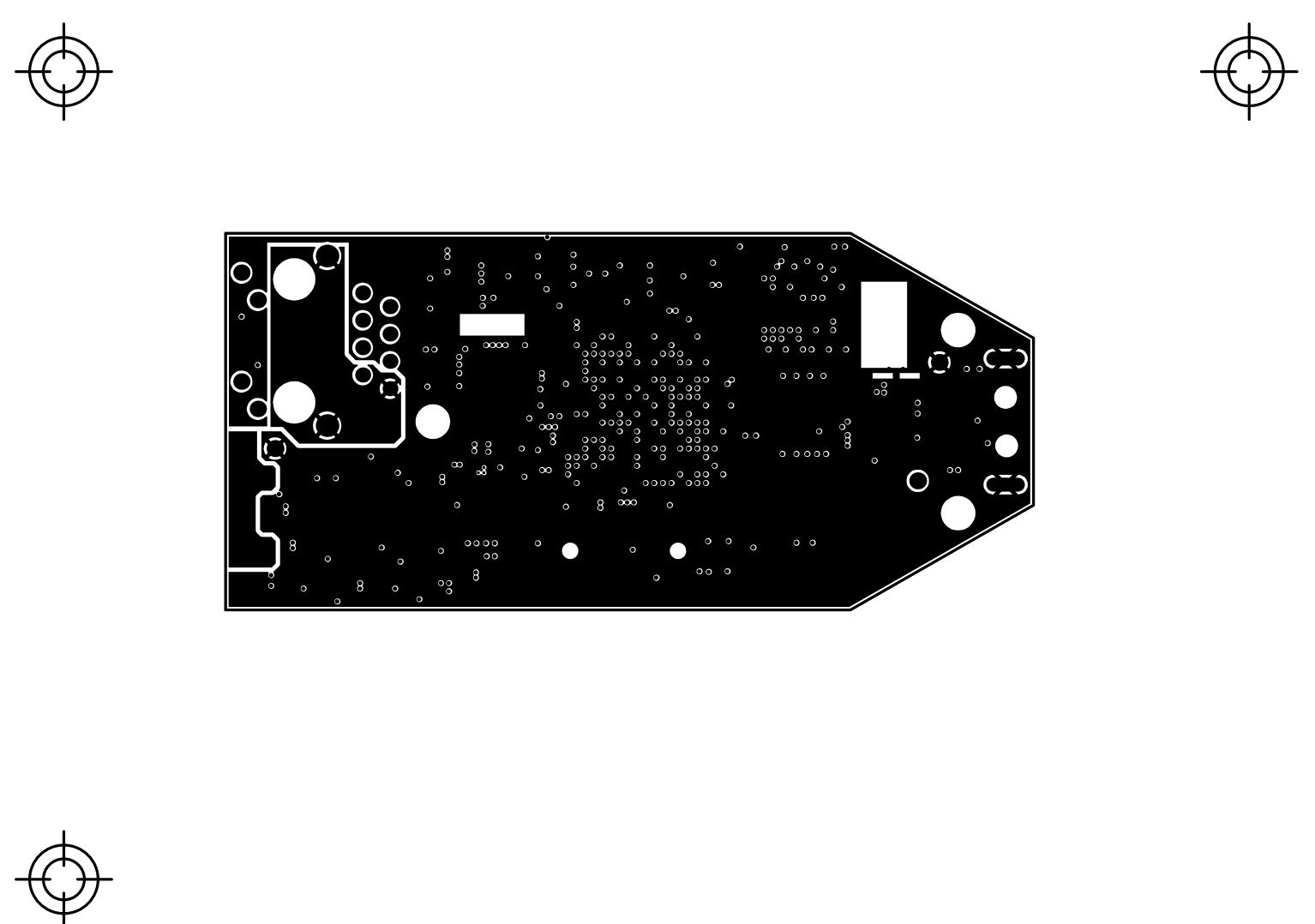
| ZONE | LTR | DESCRIPTION | DATE | APPROVED |
|------|-----|-------------|------|----------|
|      |     |             |      |          |

D  
c  
B  
A

|   |                                      |
|---|--------------------------------------|
| ELECTRICAL ENGINEER   | DATE                                 |
| Bill Hart   | Jan 21/11                            |
| PCB DESIGN ENGINEER   | DATE                                 |
| Glenn Rutherford  | Jan 21/11                            |
| CHECKED   | DATE                                 |
| CHECKED   | DATE                                 |
| RELEASED  | DATE                                 |
| TITLE   |                                      |
| PRIMARY COMPONENT – LAYER 1   |                                      |
| SPARTAN6 LX9 MICROBOARD   |                                      |
| SIZE  | DRAWING NUMBER                       |
| B   | S6-LX9-PCB-B                         |
| REV   | B                                    |
| © 2011 AVNET, INC. PROPRIETARY AND CONFIDENTIAL.<br>ALL RIGHTS RESERVED. NO DUPLICATION, USE OR<br>DISCLOSURE WITHOUT PRIOR WRITTEN APPROVAL. |                                      |
| SCALE: 1:1  | ALTIUM FILENAME: Spartan6_LX9.PCBDOC |



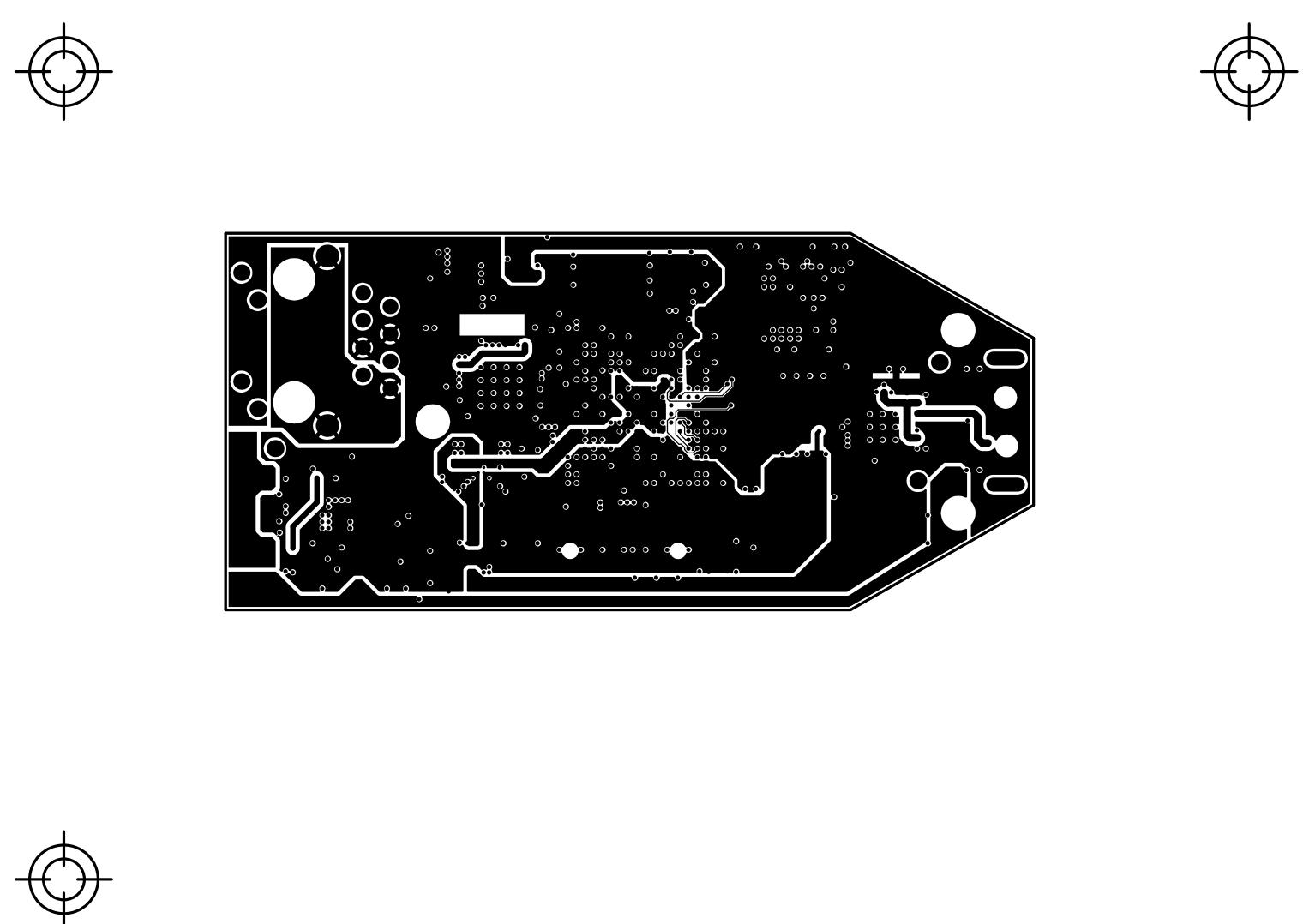
| ZONE | LTR | DESCRIPTION | DATE | APPROVED |
|------|-----|-------------|------|----------|
|      |     |             |      |          |



|  |                |     |
|--|----------------|-----|
| ELECTRICAL ENGINEER  | DATE           |     |
| Bill Hart  | Jan 21/11      |     |
| PCB DESIGN ENGINEER  | DATE           |     |
| Glenn Rutherford   | Jan 21/11      |     |
| CHECKED  | DATE           |     |
| CHECKED  | DATE           |     |
| RELEASED   | DATE           |     |
| TITLE  |                |     |
| GND PLANE – LAYER 2  |                |     |
| SPARTAN6 LX9 MICROBOARD  |                |     |
| SIZE   | DRAWING NUMBER | REV |
| B  | S6-LX9-PCB-B   | B   |
| © 2011 AVNET, INC. PROPRIETARY AND CONFIDENTIAL<br>ALL RIGHTS RESERVED. NO DUPLICATION, USE OR<br>DISCLOSURE WITHOUT PRIOR WRITTEN APPROVAL. |                |     |
| SCALE: 1:1 ALTIUM FILENAME: Spartan6_LX9.PCBDOC  |                |     |

**AVNET** ENGINEERING SERVICES  
60 S. MCKEEY STREET  
CHANDLER, ARIZONA  
WWW.AVNET.COM

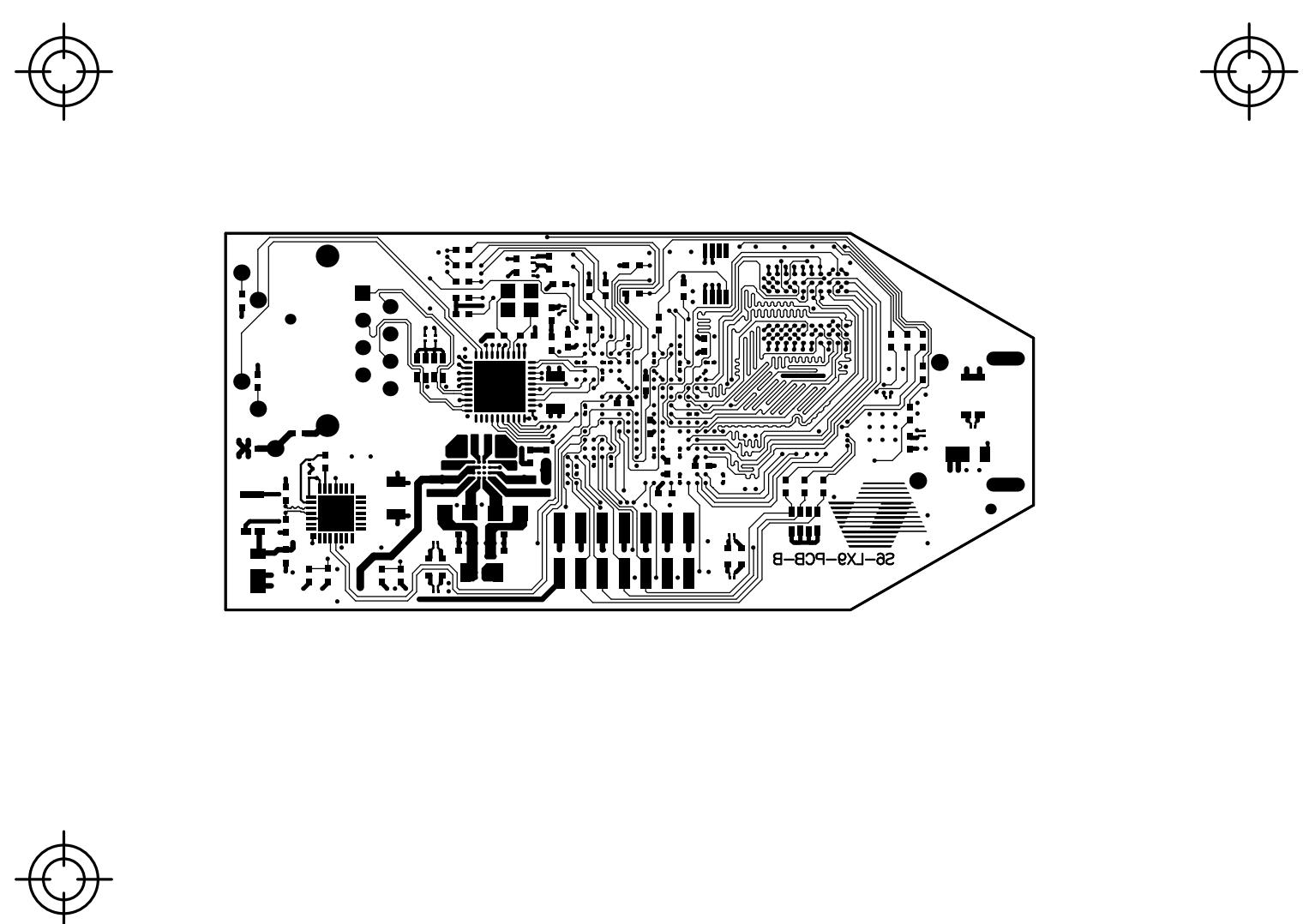
| ZONE | LTR | DESCRIPTION | DATE | APPROVED |
|------|-----|-------------|------|----------|
|      |     |             |      |          |



|  |                |     |
|--|----------------|-----|
| ELECTRICAL ENGINEER  | DATE           |     |
| Bill Hart  | Jan 21/11      |     |
| PCB DESIGN ENGINEER  | DATE           |     |
| Glenn Rutherford   | Jan 21/11      |     |
| CHECKED  | DATE           |     |
| CHECKED  | DATE           |     |
| RELEASED   | DATE           |     |
| TITLE  |                |     |
| POWER PLANE – LAYER 3  |                |     |
| SPARTAN6 LX9 MICROBOARD  |                |     |
| SIZE   | DRAWING NUMBER | REV |
| B  | S6-LX9-PCB-B   | B   |
| © 2011 AVNET, INC. PROPRIETARY AND CONFIDENTIAL<br>ALL RIGHTS RESERVED. NO DUPLICATION, USE OR<br>DISCLOSURE WITHOUT PRIOR WRITTEN APPROVAL. |                |     |
| SCALE: 1:1 ALTIUM FILENAME: Spartan6_LX9.PCBDOC  |                |     |

**AVNET** ENGINEERING SERVICES  
electronics marketing  
60 S. MCKEEY STREET  
CHANDLER, ARIZONA  
WWW.AVNET.COM

| ZONE | LTR | DESCRIPTION | DATE | APPROVED |
|------|-----|-------------|------|----------|
|      |     |             |      |          |



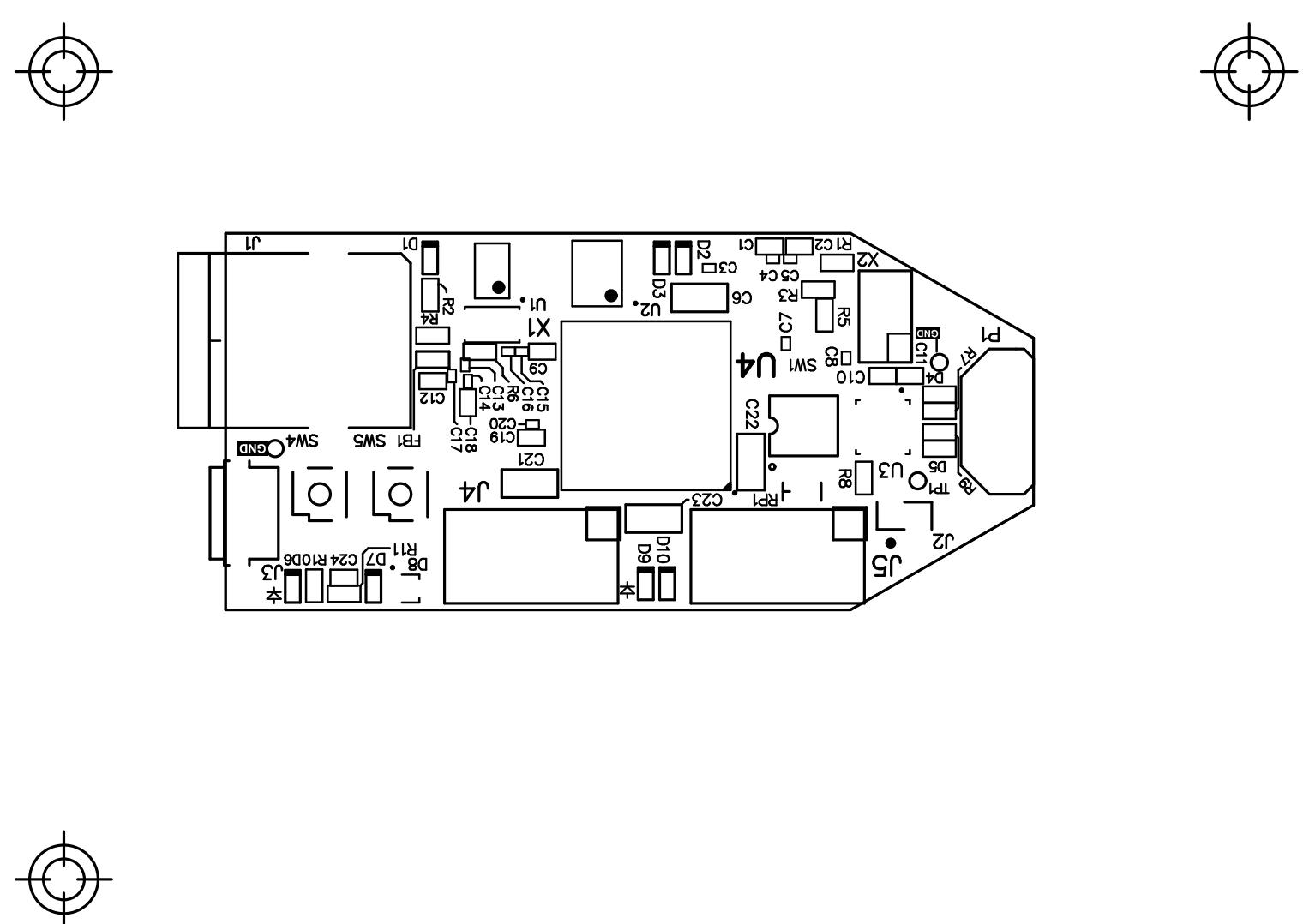
|                     |                                      |
|---------------------|--------------------------------------|
| ELECTRICAL ENGINEER | DATE                                 |
| Bill Hart           | Jan 21/11                            |
| PCB DESIGN ENGINEER | DATE                                 |
| Glenn Rutherford    | Jan 21/11                            |
| CHECKED             | DATE                                 |
| CHECKED             | DATE                                 |
| RELEASED            | DATE                                 |
| SIZE                | DRAWING NUMBER                       |
| B                   | S6-LX9-PCB-B                         |
| SCALE: 1:1          | ALTIUM FILENAME: Spartan6_LX9.PCBDOC |

**AVNET** ENGINEERING SERVICES  
60 S. MCKEEY STREET  
CHANDLER, ARIZONA  
WWW.AUNET.COM

TITLE: SECONDARY COMPONENT - LAYER 4  
SPARTAN6 LX9 MICROBOARD

REV: B

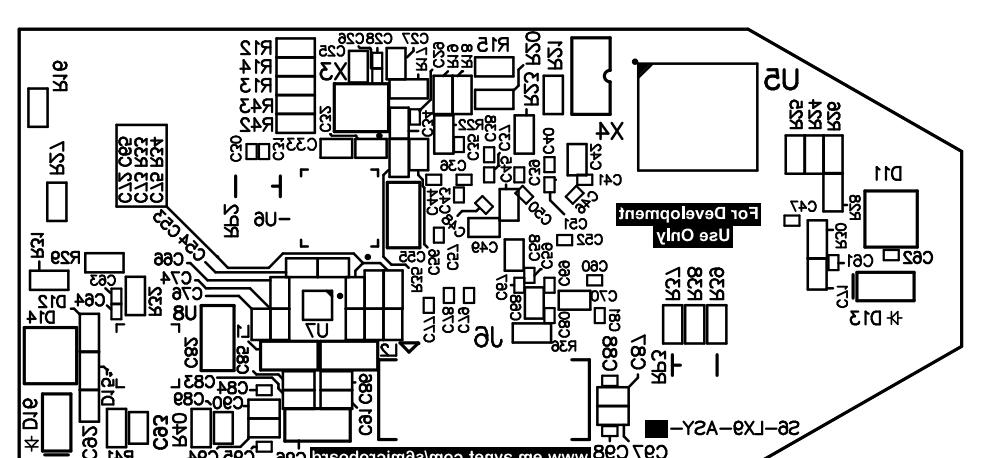
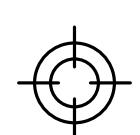
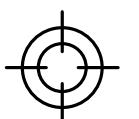
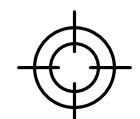
| ZONE | LTR | DESCRIPTION | DATE | APPROVED |
|------|-----|-------------|------|----------|
|      |     |             |      |          |



|  |                |     |
|--|----------------|-----|
| ELECTRICAL ENGINEER  | DATE           |     |
| Bill Hart  | Jan 21/11      |     |
| PCB DESIGN ENGINEER  | DATE           |     |
| Glenn Rutherford   | Jan 21/11      |     |
| CHECKED  | DATE           |     |
| CHECKED  | DATE           |     |
| RELEASED   | DATE           |     |
| TITLE  |                |     |
| PRIMARY SILKSCREEN   |                |     |
| SPARTAN6 LX9 MICROBOARD  |                |     |
| SIZE   | DRAWING NUMBER | REV |
| B  | S6-LX9-PCB-B   | B   |
| © 2011 AVNET, INC. PROPRIETARY AND CONFIDENTIAL<br>ALL RIGHTS RESERVED. NO DUPLICATION, USE OR<br>DISCLOSURE WITHOUT PRIOR WRITTEN APPROVAL. |                |     |
| SCALE: 1:1 ALTIUM FILENAME: Spartan6_LX9.PCBDOC  |                |     |

**AVNET** ENGINEERING SERVICES  
electronics marketing  
60 S. MCKEEY STREET  
CHANDLER, ARIZONA  
WWW.AVNET.COM

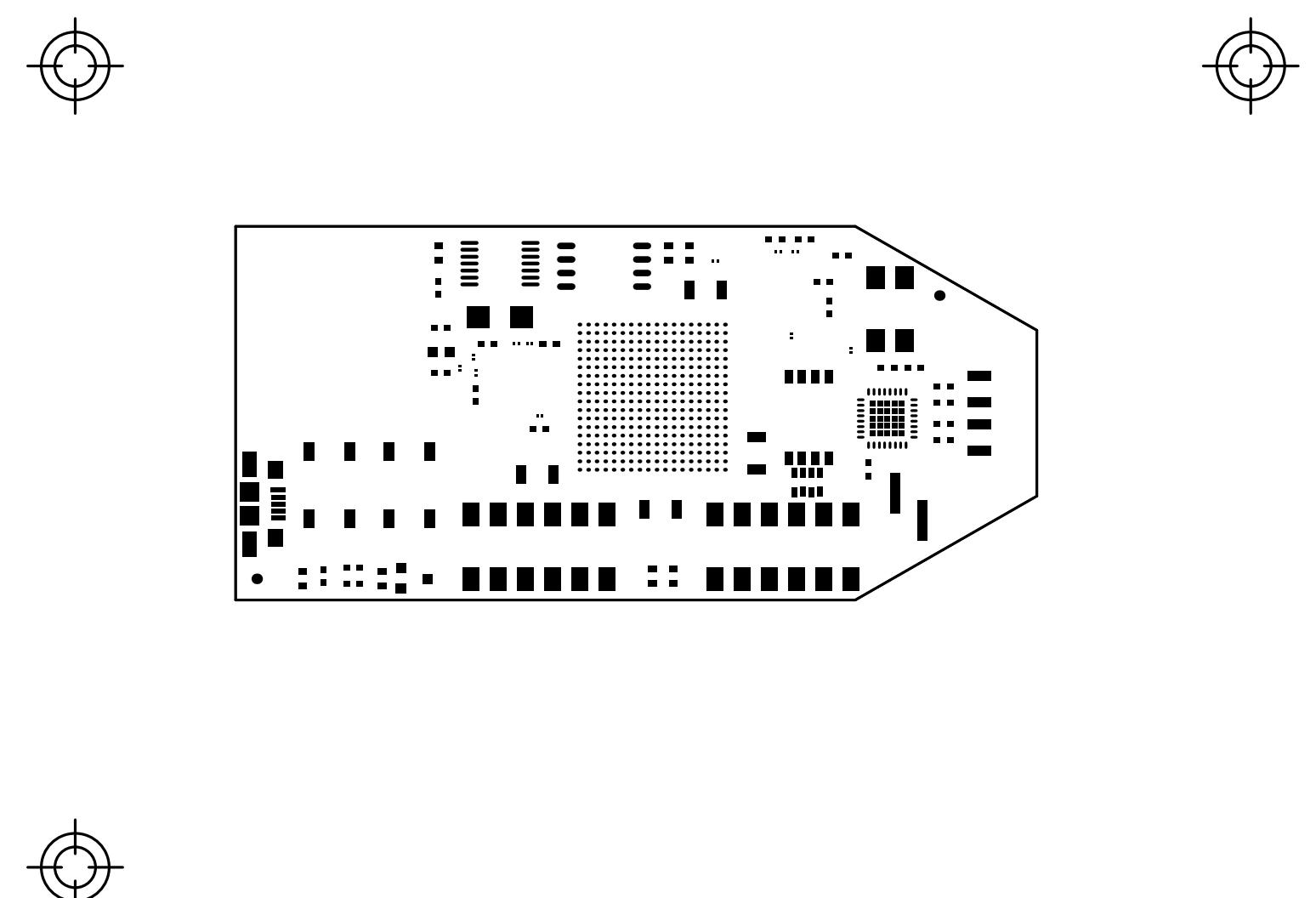
| ZONE | LTR | DESCRIPTION | DATE | APPROVED |
|------|-----|-------------|------|----------|
|      |     |             |      |          |



|                     |                         |                                      |
|---------------------|-------------------------|--------------------------------------|
| ELECTRICAL ENGINEER | DATE                    |                                      |
| Bill Hart           | Jan 21/11               |                                      |
| PCB DESIGN ENGINEER | DATE                    |                                      |
| Glenn Rutherford    | Jan 21/11               |                                      |
| CHECKED             | DATE                    |                                      |
| CHECKED             | DATE                    |                                      |
| RELEASED            | DATE                    |                                      |
| TITLE               | SECONDARY SILKSCREEN    |                                      |
|                     | SPARTAN6 LX9 MICROBOARD |                                      |
| SIZE                | DRAWING NUMBER          | REV                                  |
| B                   | S6-LX9-PCB-B            | B                                    |
| SCALE:              | 1:1                     | ALTIUM FILENAME: Spartan6_LX9.PCBDOC |

 **AVNET** ENGINEERING SERVICES  
60 S. MCKEEY STREET  
CHANDLER, ARIZONA  
[WWW.AVNET.COM](http://WWW.AVNET.COM)

| ZONE | LTR | DESCRIPTION | DATE | APPROVED |
|------|-----|-------------|------|----------|
|      |     |             |      |          |

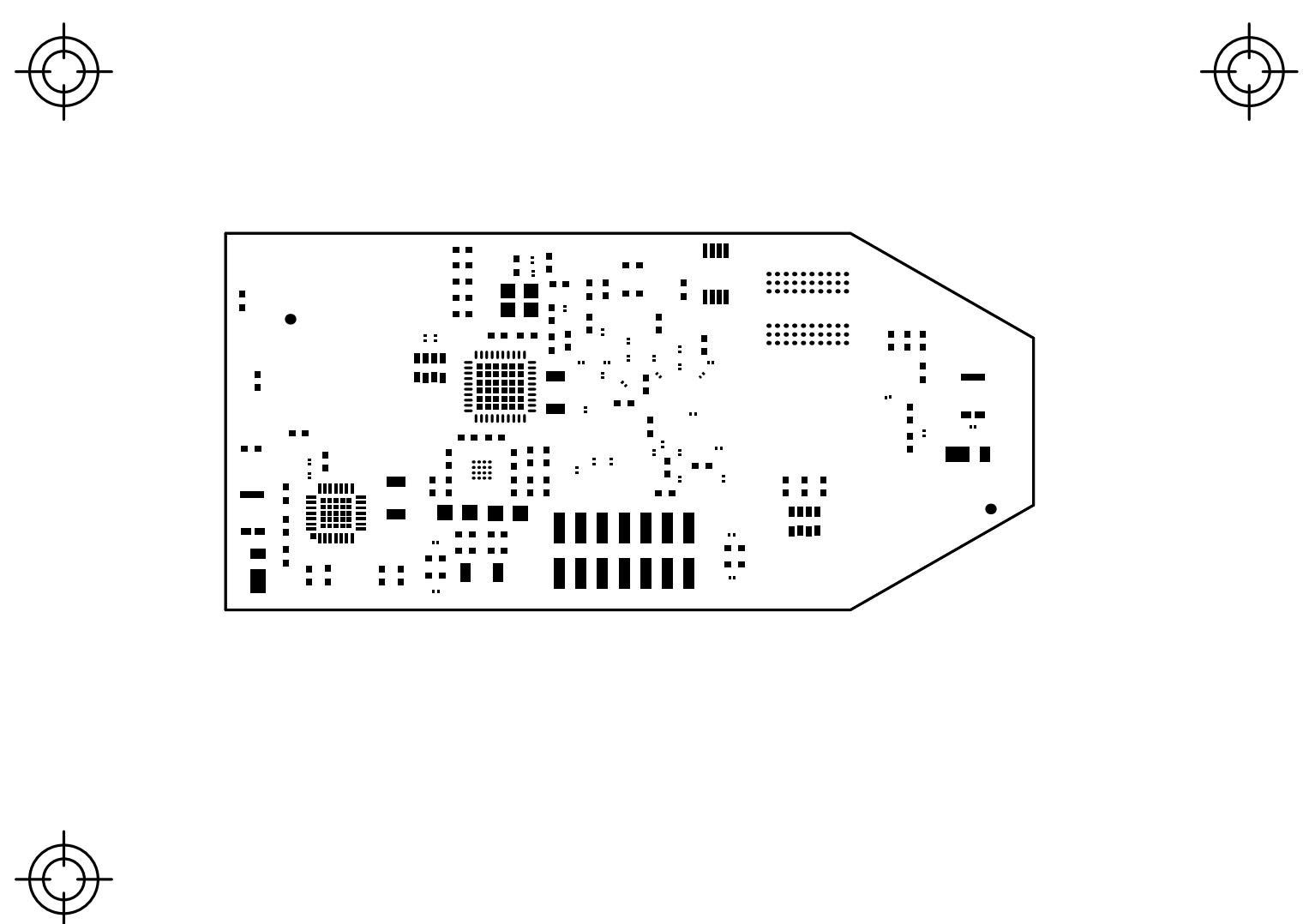


|   |                |     |
|---|----------------|-----|
| ELECTRICAL ENGINEER                             | DATE           |     |
| Bill Hart                                       | Jan 21/11      |     |
| PCB DESIGN ENGINEER                             | DATE           |     |
| Glenn Rutherford                                | Jan 21/11      |     |
| CHECKED   | DATE           |     |
| CHECKED   | DATE           |     |
| RELEASED  | DATE           |     |
| TITLE   |                |     |
| PRIMARY SOLDER PASTE                            |                |     |
| SPARTAN6 LX9 MICROBOARD                         |                |     |
| SIZE  | DRAWING NUMBER | REV |
| B   | S6-LX9-PCB-B   | B   |
| SCALE: 1:1 ALTIUM FILENAME: Spartan6_LX9.PCBDOC |                |     |

© 2011 AVNET, INC. PROPRIETARY AND CONFIDENTIAL  
ALL RIGHTS RESERVED. NO DUPLICATION, USE OR  
DISCLOSURE WITHOUT PRIOR WRITTEN APPROVAL.

 **AVNET** ENGINEERING SERVICES  
60 S. MCKEEY STREET  
CHANDLER, ARIZONA  
WWW.AVNET.COM

| ZONE | LTR | DESCRIPTION | DATE | APPROVED |
|------|-----|-------------|------|----------|
|      |     |             |      |          |

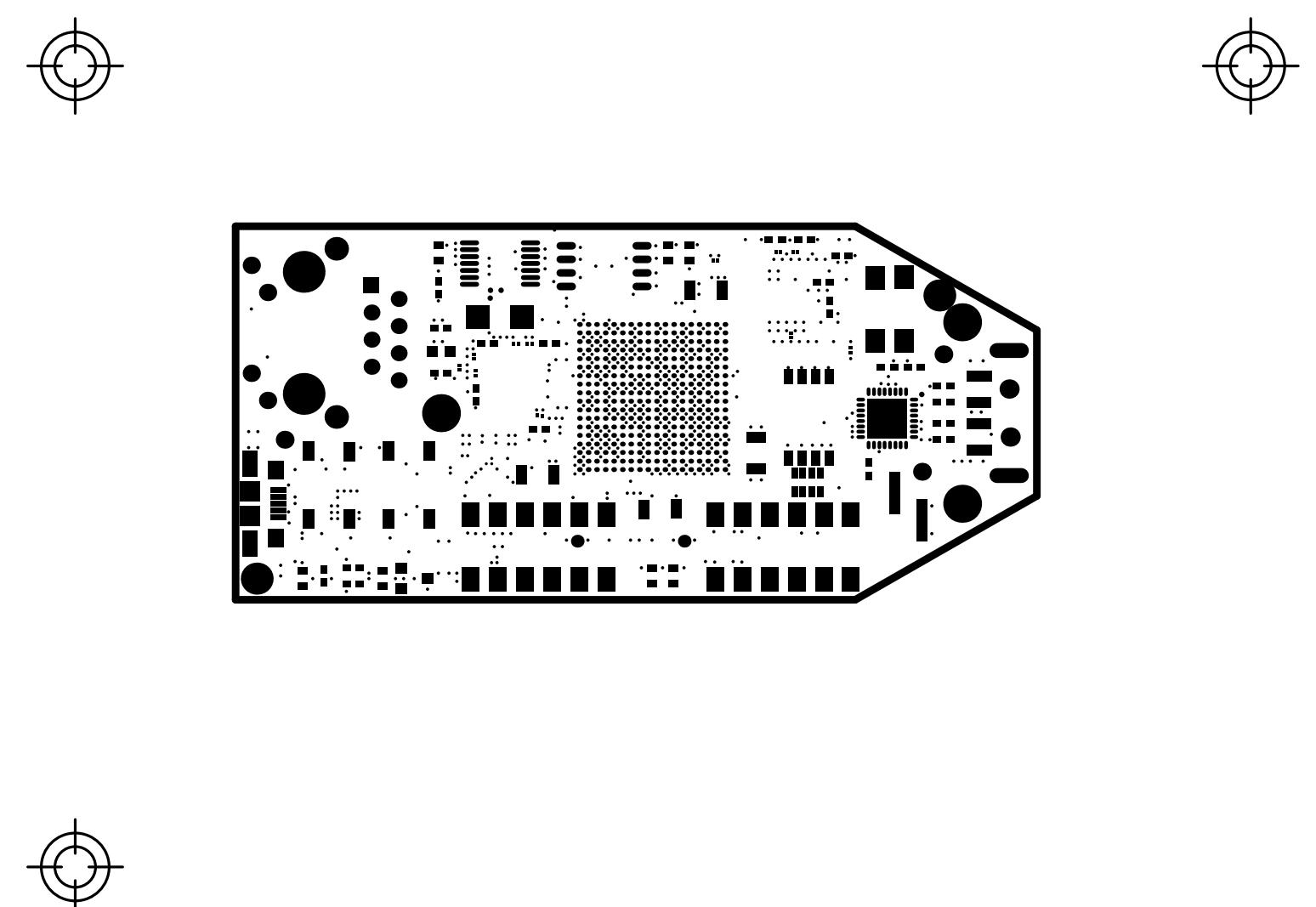


|   |                |     |
|---|----------------|-----|
| ELECTRICAL ENGINEER                             | DATE           |     |
| Bill Hart                                       | Jan 21/11      |     |
| PCB DESIGN ENGINEER                             | DATE           |     |
| Glenn Rutherford                                | Jan 21/11      |     |
| CHECKED   | DATE           |     |
| CHECKED   | DATE           |     |
| RELEASED  | DATE           |     |
| TITLE   |                |     |
| SECONDARY SOLDER PASTE                          |                |     |
| SPARTAN6 LX9 MICROBOARD                         |                |     |
| SIZE  | DRAWING NUMBER | REV |
| B   | S6-LX9-PCB-B   | B   |
| SCALE: 1:1 ALTIUM FILENAME: Spartan6_LX9.PCBDOC |                |     |

© 2011 AVNET, INC. PROPRIETARY AND CONFIDENTIAL  
ALL RIGHTS RESERVED. NO DUPLICATION, USE OR  
DISCLOSURE WITHOUT PRIOR WRITTEN APPROVAL.

 **AVNET** ENGINEERING SERVICES  
60 S. MCKEEY STREET  
CHANDLER, ARIZONA  
WWW.AVNET.COM

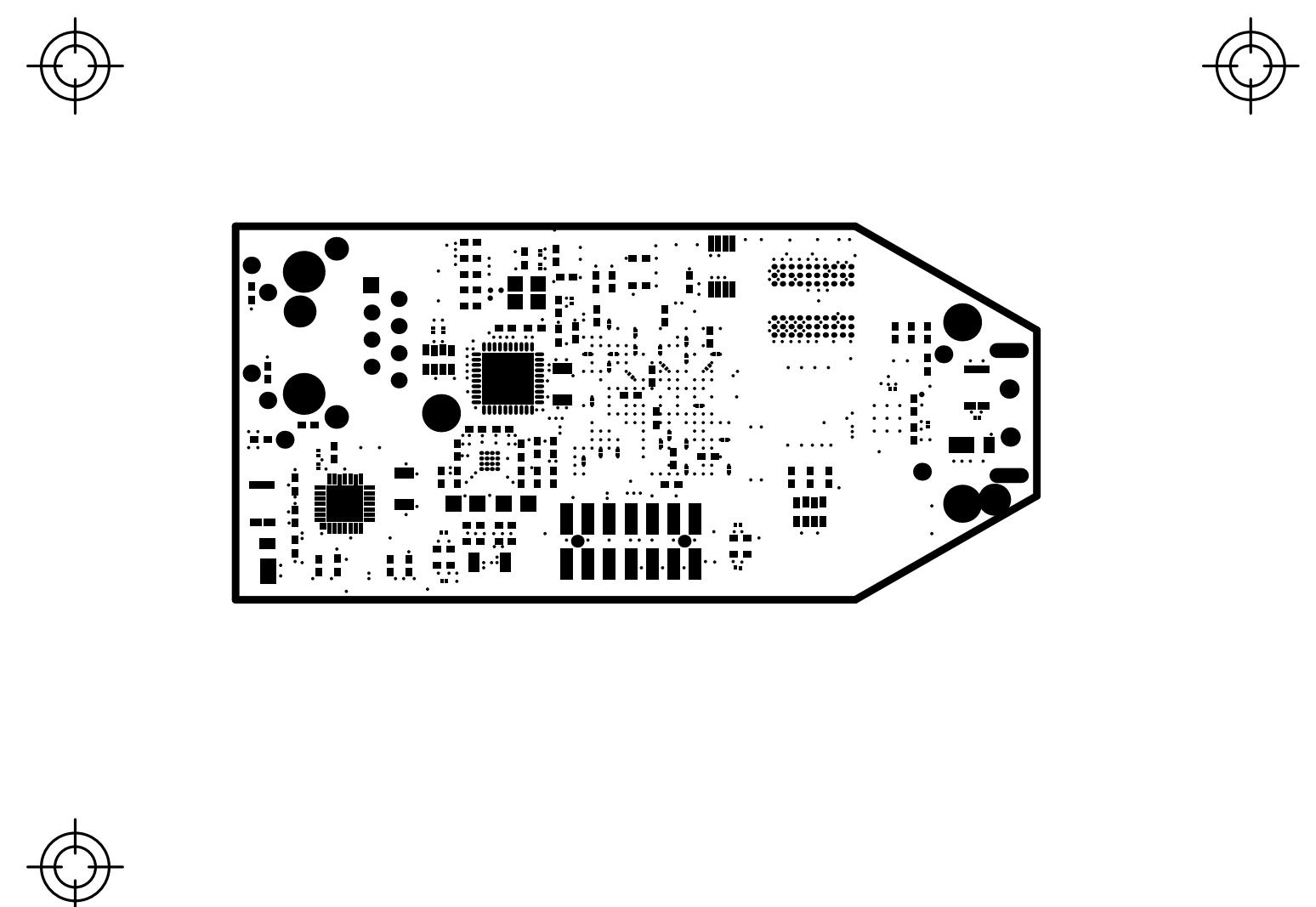
| ZONE | LTR | DESCRIPTION | DATE | APPROVED |
|------|-----|-------------|------|----------|
|      |     |             |      |          |



|                         |                |                                      |
|-------------------------|----------------|--------------------------------------|
| ELECTRICAL ENGINEER     | DATE           |                                      |
| Bill Hart               | Jan 21/11      |                                      |
| PCB DESIGN ENGINEER     | DATE           |                                      |
| Glenn Rutherford        | Jan 21/11      |                                      |
| CHECKED                 | DATE           |                                      |
| CHECKED                 | DATE           |                                      |
| RELEASED                | DATE           |                                      |
| TITLE                   |                |                                      |
| PRIMARY SOLDER MASK     |                |                                      |
| SPARTAN6 LX9 MICROBOARD |                |                                      |
| SIZE                    | DRAWING NUMBER | REV                                  |
| B                       | S6-LX9-PCB-B   | B                                    |
| SCALE:                  | 1:1            | ALTIUM FILENAME: Spartan6_LX9.PCBDOC |

 **AVNET** ENGINEERING SERVICES  
electronics marketing  
60 S. MCKEEY STREET  
CHANDLER, ARIZONA  
WWW.AVNET.COM

| ZONE | LTR | DESCRIPTION | DATE | APPROVED |
|------|-----|-------------|------|----------|
|      |     |             |      |          |



|                         |                |                                      |
|-------------------------|----------------|--------------------------------------|
| ELECTRICAL ENGINEER     | DATE           |                                      |
| Bill Hart               | Jan 21/11      |                                      |
| PCB DESIGN ENGINEER     | DATE           |                                      |
| Glenn Rutherford        | Jan 21/11      |                                      |
| CHECKED                 | DATE           |                                      |
| CHECKED                 | DATE           |                                      |
| RELEASED                | DATE           |                                      |
| TITLE                   |                |                                      |
| SECONDARY SOLDER MASK   |                |                                      |
| SPARTAN6 LX9 MICROBOARD |                |                                      |
| SIZE                    | DRAWING NUMBER | REV                                  |
| B                       | S6-LX9-PCB-B   | B                                    |
| SCALE:                  | 1:1            | ALTIUM FILENAME: Spartan6_LX9.PCBDOC |

 **AVNET** ENGINEERING SERVICES  
60 S. MCKEEY STREET  
CHANDLER, ARIZONA  
WWW.AVNET.COM

NOTES: UNLESS OTHERWISE SPECIFIED

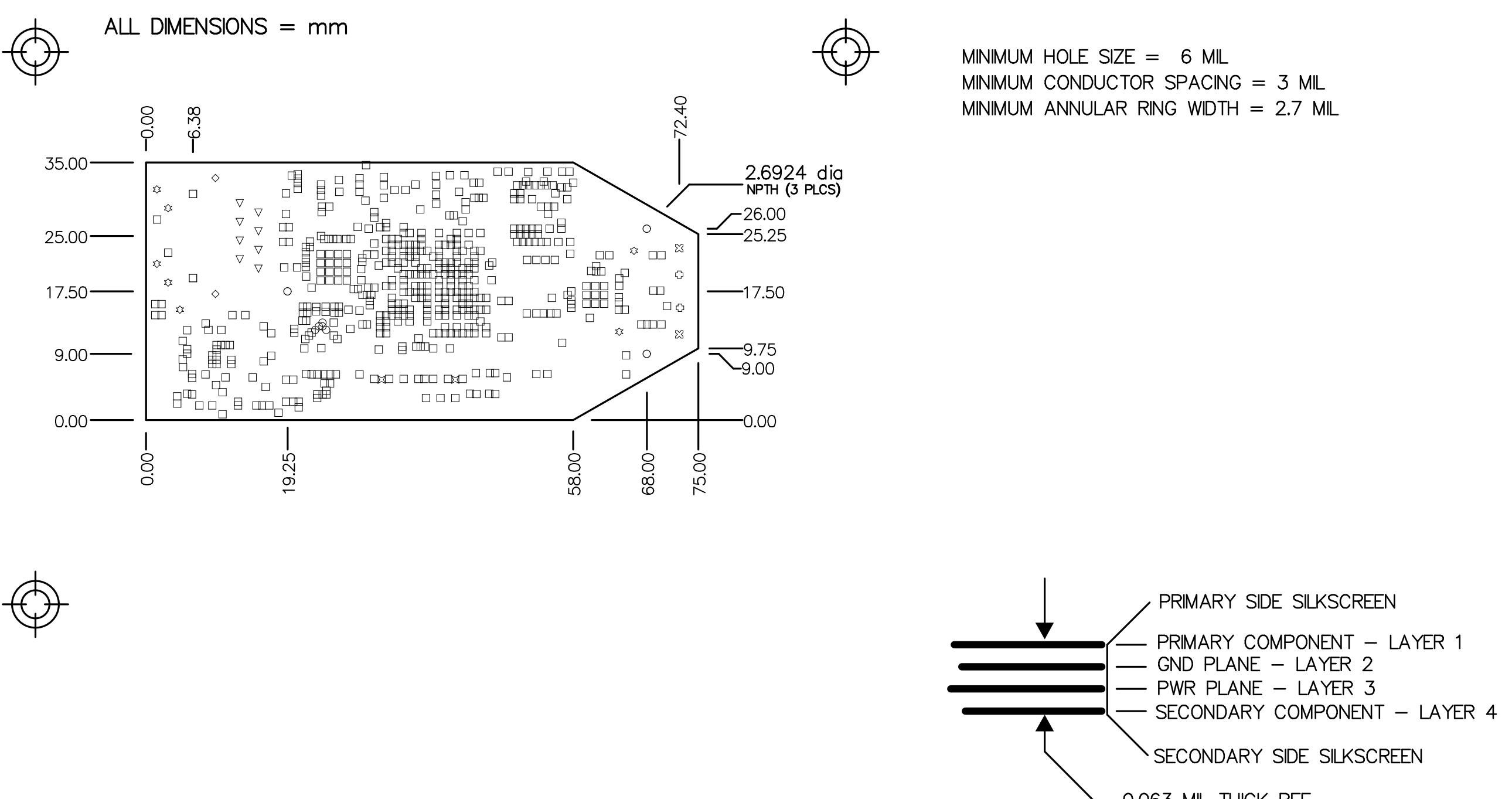
1. BOARD SHALL BE FABRICATED - PERFORMANCE CLASS II AS PER IPC-6011 AND IPC-6012
2. VENDOR IDENTIFICATION AND DATE CODE OF MANUFACTURING SHALL BE ETCHED ON THE SOLDER SIDE OF BOARD
3. FABRICATE USING FILM "FAB/DRILL IDENT" FOR REFERENCE
4. PERMANENTLY MARK BARE BOARD WITH TEST STAMP USING NON-CONDUCTIVE, RoHS COMPLIANT INK
5. SILKSCREEN BOTH SIDES WITH NON-CONDUCTIVE, RoHS COMPLIANT INK, NOT ALLOWED ON COMPONENT PADS, COMPONENT MOUNTING HOLES, OR VIAS (COLOR = WHITE)
6. MATERIAL: PER IPC-4101A/24/26/29/99, COPPER CLAD, HIGH TEMPERATURE FR4 CLASS EPOXY GLASS RATED UL94V-0, 0.5 OZ COPPER FOR EXTERNAL LAYERS AND 0.5 OZ COPPER FOR INTERNAL LAYERS. MUST BE RoHS COMPLIANT AND SURVIVE A LEAD-FREE ASSEMBLY MAX REFLOW OF 260 DEG C (6 PASSES)
  - Td RATING > 340 DEG C
  - Z AXIS CTE < 3.5%
  - Tg > 170 DEG C (MIN)
7. SOLDER MASK: SMOBC PER IPC-SM-840C, CLASS T, MUST BE RoHS COMPLIANT, TYPE LPI, 0.0002" MIN TO 0.0008" MAX MEASURED OVER COPPER PLATING, MUST CLEAR ALL LANDS AS INDICATED ON GERBER SOLDER MASK LAYERS, (COLOR = RED)
8. FINISH: ELECTRO-LESS NICKEL IMMERSION GOLD (ENIG), 2-8 MICRO INCHES GOLD OVER 150-250 MICRO INCHES NICKEL
9. SOLDERABILITY TEST: CATEGORY 2 OF J-STD-003
10. ALL TEST POINTS SHALL BE FREE OF SOLDERMASK AND SILKSCREEN
11. ALL HOLE SIZES ARE AFTER PLATING
12. VENDOR MAY USE TEAR DROPS TO IMPROVE ANNULAR RINGS AS LONG AS DRC RULES ARE FOLLOWED
13. FINISHED BOARDS SHALL NOT HAVE NICKS, SCRATCHES, VOIDS, EXPOSED COPPER, POOR PLATING OR MISDRILLED HOLES
14. TIE-BARS ON THERMAL PADS SHOULD BE 15 MILS MINIMUM WIDTH
15. MAKE ALL VIA CONNECTIONS TO POWER AND GROUND PLANES SOLID (IE: THERMALS WITH 25 MIL O.D. OR 45 MIL O.D. SHOULD BE REMOVED FROM INNER PLANE LAYERS)
16. VENDOR MAY ADD COPPER THIEVING AS NEEDED TO IMPROVE MANUFACTURABILITY, THIEVING TO BE 0.030" ROUND PADS AT 0.050" SPACING, THIEVING WILL HAVE A MINIMUM OF 0.100" CLEARANCE FROM EXISTING COPPER AND SHOULD NOT BE PLACED UNDER SURFACE MOUNT DEVICES
17. ALL UNCONNECTED PADS ON INNER SIGNAL LAYERS MUST BE REMOVED
18. ALL FINISHED BOARDS TO BE 100% ELECTRICALLY TESTED
19. UNLESS OTHERWISE INDICATED, ALL LINEAR TOLERANCES SHALL BE XX +/- .010 AND XXX +/- .005

#### ADDITIONAL NOTES:

21. FINISHED BOARD THICKNESS = 0.063" (+/- 0.007")
22. CONTROL DIFFERENTIAL IMPEDANCE TO 100 OHMS +/- 10% ON ALL EXTERNAL SIGNALS OF WIDTH 4 MILS
23. CONTROL SINGLE-ENDED IMPEDANCE TO 50 OHMS +/- 10% ON ALL INTERNAL AND EXTERNAL SIGNALS OF WIDTH 4 MILS
24. ALL VIAS ON PRIMARY COMPONENT SIDE (LAYER 1) ARE TO BE TENTED WITH APPROPRIATE, RoHS COMPLIANT, SOLDER MASK (SECONDARY OPERATION)
25. VIA-IN-PAD TO BE PLUGGED WITH SOLDER ON SECONDARY COMPONENT SIDE FINISHED DRILL SIZE = 6 MIL, 5 PLACES
26. TO IMPROVE SILKSCREEN LEGIBILITY, USE #300 MESH
27. NO PARTS CONTAINING LEAD, OR ANY OTHER NON-RoHS COMPLIANT MATERIAL MAY BE INSTALLED ON THE ASSEMBLY WITHOUT PRIOR WRITTEN APPROVAL FROM AVNET ENGINEERING
28. ALL SOLDERING AND CLEANING PROCESSES FOR THIS ASSEMBLY MUST BE LEAD-FREE AND RoHS COMPLIANT
29. ALL ASSEMBLY AND RE-WORK MUST USE LEAD-FREE SOLDER AND FOLLOW RoHS PROCEDURES
30. THIS ASSEMBLY SHALL BE RoHS COMPLIANT. VENDOR SHALL DELIVER ASSEMBLY WITH ACCOMPANYING CERTIFICATE OF COMPLIANCE

| Symbol    | Hit Count | Tool Size          | Physical Length   | Rout Path Length  | Plated | Hole Type |
|-----------|-----------|--------------------|-------------------|-------------------|--------|-----------|
| ○         | 5         | 0.1524mm (6mil)    |                   |                   | PTH    | Round     |
| □         | 520       | 0.2032mm (8mil)    |                   |                   | PTH    | Round     |
| ▽         | 8         | 0.889mm (35mil)    |                   |                   | PTH    | Round     |
| ✖         | 2         | 1.016mm (40mil)    |                   |                   | NPTH   | Round     |
| ✳         | 7         | 1.016mm (40mil)    |                   |                   | PTH    | Round     |
| ○         | 2         | 1.6mm (62.992mil)  |                   |                   | NPTH   | Round     |
| ◇         | 2         | 1.6002mm (63mil)   |                   |                   | PTH    | Round     |
| ○         | 3         | 2.6924mm (106mil)  |                   |                   | NPTH   | Round     |
| □         | 2         | 3.4mm (133.858mil) | 2.3mm (90.551mil) | 1.6mm (62.992mil) | NPTH   | Round     |
| ✖         | 2         | 0.7mm (27.559mil)  |                   |                   | PTH    | Slot      |
| 553 Total |           |                    |                   |                   |        |           |

Slot definitions : Rout Path Length = Calculated from tool start centre position to tool end centre position.  
Physical Length = Rout Path Length + Tool Size = Slot length as defined in the PCB layout

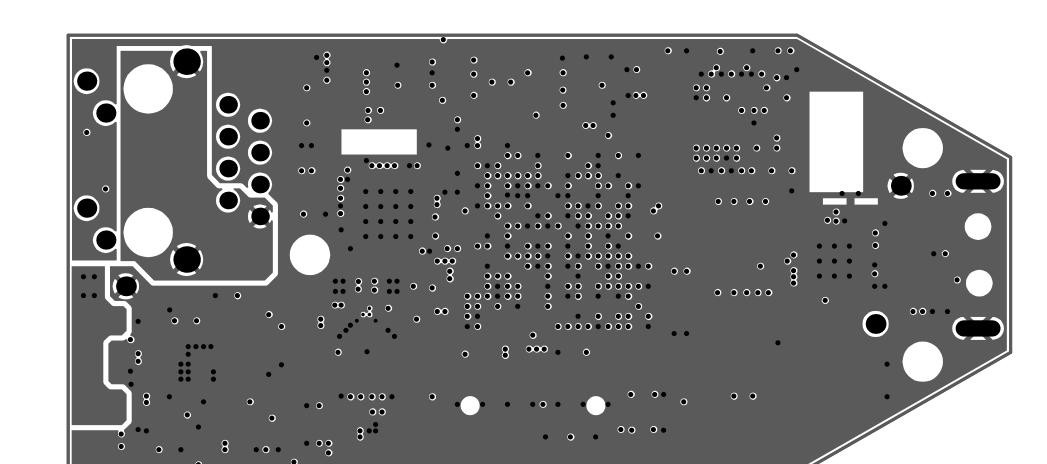


|                                      |                |
|--------------------------------------|----------------|
| ELECTRICAL ENGINEER                  | DATE           |
| Bill Hart                            | Jan 21/11      |
| PCB DESIGN ENGINEER                  | DATE           |
| Glenn Rutherford                     | Jan 21/11      |
| CHECKED                              | DATE           |
| CHECKED                              | DATE           |
| RELEASED                             | DATE           |
| TITLE                                |                |
| FAB / DRILL ID                       |                |
| SPARTAN6 LX9 MICROBOARD              |                |
| SIZE                                 | DRAWING NUMBER |
| B                                    | S6-LX9-PCB-B   |
| SCALE:                               | 1:1            |
| ALTIUM FILENAME: Spartan6_LX9.PCBDOC |                |



ENGINEERING SERVICES  
60 S. MCKEY STREET  
CHANDLER, ARIZONA  
WWW.AVNET.COM

| ZONE | LTR | DESCRIPTION | DATE | APPROVED |
|------|-----|-------------|------|----------|
|      |     |             |      |          |



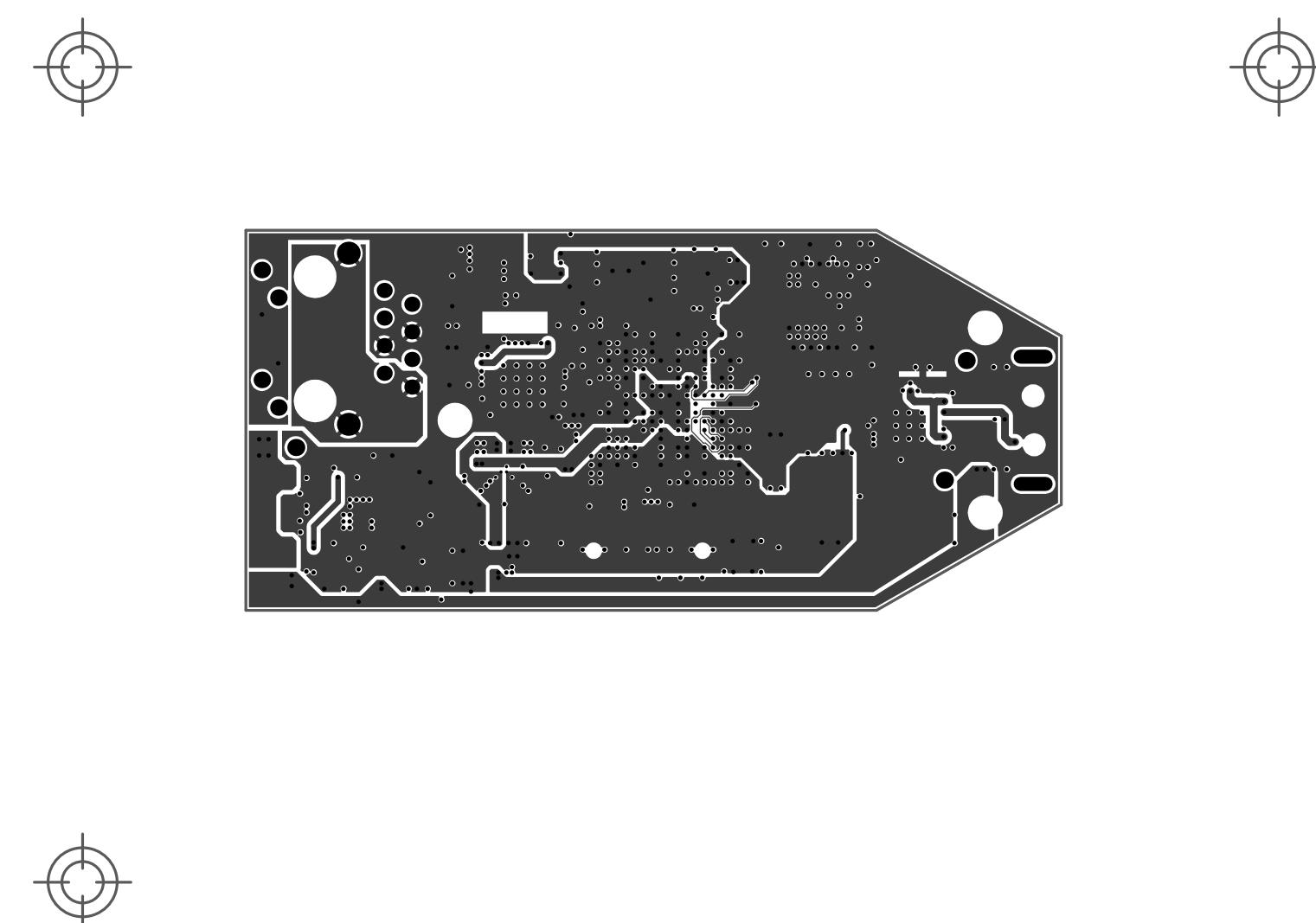
|                     |                     |
|---------------------|---------------------|
| ELECTRICAL ENGINEER | DATE                |
| Bill Hart           | Jan 21/11           |
| PCB DESIGN ENGINEER | DATE                |
| Glenn Rutherford    | Jan 21/11           |
| CHECKED             | DATE                |
| CHECKED             | DATE                |
| RELEASED            | DATE                |
| SIZE                | DRAWING NUMBER      |
| B                   | S6-LX9-PCB-B        |
| SCALE:              | 1:1                 |
| ALTIUM FILENAME:    | Spartan6_LX9.PCBDOC |

**AVNET** ENGINEERING SERVICES  
60 S. MCKEEY STREET  
CHANDLER, ARIZONA  
WWW.AUNET.COM

TITLE: GND PLANE – LAYER 2  
SPARTAN6 LX9 MICROBOARD

© 2011 AVNET, INC. PROPRIETARY AND CONFIDENTIAL.  
ALL RIGHTS RESERVED. NO DUPLICATION, USE OR  
DISCLOSURE WITHOUT PRIOR WRITTEN APPROVAL.

| ZONE | LTR | DESCRIPTION | DATE | APPROVED |
|------|-----|-------------|------|----------|
|      |     |             |      |          |

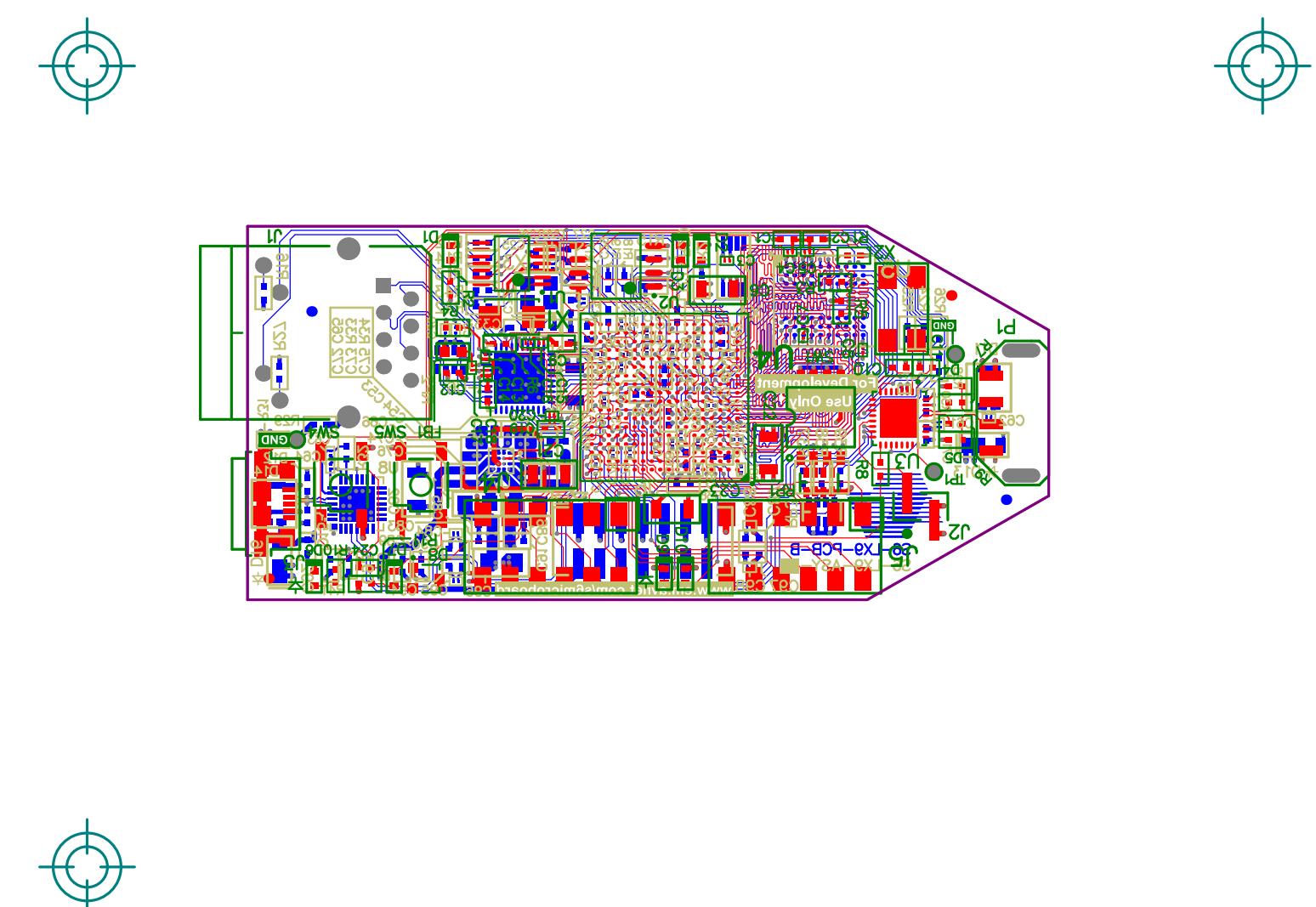


|                     |                                      |     |
|---------------------|--------------------------------------|-----|
| ELECTRICAL ENGINEER | DATE                                 |     |
| Bill Hart           | Jan 21/11                            |     |
| PCB DESIGN ENGINEER | DATE                                 |     |
| Glenn Rutherford    | Jan 21/11                            |     |
| CHECKED             | DATE                                 |     |
| CHECKED             | DATE                                 |     |
| RELEASED            | DATE                                 |     |
| SIZE                | DRAWING NUMBER                       | REV |
| B                   | S6-LX9-PCB-B                         | B   |
| SCALE: 1:1          | ALTIUM FILENAME: Spartan6_LX9.PCBDOC |     |

 **AVNET** ENGINEERING SERVICES  
electronics marketing  
60 S. MCKEEY STREET  
CHANDLER, ARIZONA  
WWW.AVNET.COM

TITLE  
POWER PLANE – LAYER 3  
SPARTAN6 LX9 MICROBOARD

| ZONE | LTR | DESCRIPTION | DATE | APPROVED |
|------|-----|-------------|------|----------|
|      |     |             |      |          |



|                                      |                |
|--------------------------------------|----------------|
| ELECTRICAL ENGINEER                  | DATE           |
| Bill Hart                            | Jan 21/11      |
| PCB DESIGN ENGINEER                  | DATE           |
| Glenn Rutherford                     | Jan 21/11      |
| CHECKED                              | DATE           |
| CHECKED                              | DATE           |
| RELEASED                             | DATE           |
| TITLE                                |                |
| PRIMARY SIDE SCREEN LAYER 4          |                |
| SPARTAN6 LX9 MICROBOARD              |                |
| SIZE                                 | DRAWING NUMBER |
| B                                    | S6-LX9-PCB-B   |
| SCALE:                               | 1:1            |
| ALTIUM FILENAME: Spartan6_LX9.PCBDOC |                |

 **AVNET** ENGINEERING SERVICES  
60 S. MCKEEY STREET  
CHANDLER, ARIZONA  
WWW.AVNET.COM

