EVB-KSZ9477
Gigabit Ethernet Switch Evaluation Board User's Guide

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Signed for and on behalf of Microchip Technology Inc. at Chandler, Arizona, USA.

Derek Carlson
VP Development Tools

11-NOV-16
Date

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Preface

NOTICE TO CUSTOMERS

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Documents are identified with a "DS" number. This number is located on the bottom of each page, in front of the page number. The numbering convention for the DS number is "DSXXXXXA", where "XXXXX" is the document number and "A" is the revision level of the document.

For the most up-to-date information on development tools, see the MPLAB® IDE online help. Select the Help menu, and then Topics to open a list of available online help files.

INTRODUCTION

This chapter contains general information that will be useful to know before using Atlantis. Items discussed in this chapter include:

- Document Layout
- Conventions Used in this Guide
- The Microchip Web Site
- Development Systems Customer Change Notification Service
- Customer Support
- Document Revision History

DOCUMENT LAYOUT

This document describes how to use the EVB-KSZ9477 as a development tool for the Microchip KSZ9477 gigabit Ethernet switch. The manual layout is as follows:

- **Chapter 1. "Overview"** – Shows a brief description of the EVB-KSZ9477.
- **Chapter 2. "Board Details & Configuration"** – Includes details and instructions for using the EVB-KSZ9477.
- **Appendix A. "EVB-KSZ9477 Evaluation Board"** – This appendix shows the EVB-KSZ9477.
- **Appendix B. "KSZ9477 Evaluation Board Schematics"** – This appendix shows the EVB-KSZ9477 schematics.
- **Appendix C. "Bill of Materials (BOM)"** – This appendix includes the EVB-KSZ9477 Bill of Materials (BOM).

CONVENTIONS USED IN THIS GUIDE

This manual uses the following documentation conventions:

DOCUMENTATION CONVENTIONS

Description	Represents	Examples
Arial font:		
Italic characters	Referenced books	*MPLAB® IDE User's Guide*
	Emphasized text	...is the *only* compiler...
Initial caps	A window	the Output window
	A dialog	the Settings dialog
	A menu selection	select Enable Programmer
Quotes	A field name in a window or dialog	"Save project before build"
Underlined, italic text with right angle bracket	A menu path	*File>Save*
Bold characters	A dialog button	Click **OK**
	A tab	Click the **Power** tab
N'Rnnnn	A number in verilog format, where N is the total number of digits, R is the radix and n is a digit.	4'b0010, 2'hF1
Text in angle brackets < >	A key on the keyboard	Press <Enter>, <F1>
Courier New font:		
Plain Courier New	Sample source code	`#define START`
	Filenames	`autoexec.bat`
	File paths	`c:\mcc18\h`
	Keywords	`_asm, _endasm, static`
	Command-line options	`-Opa+, -Opa-`
	Bit values	`0, 1`
	Constants	`0xFF, 'A'`
Italic Courier New	A variable argument	*`file`*`.o`, where *`file`* can be any valid filename
Square brackets [ ]	Optional arguments	`mcc18 [options]` *`file`* `[options]`
Curly brackets and pipe character: { | }	Choice of mutually exclusive arguments; an OR selection	`errorlevel {0|1}`
Ellipses...	Replaces repeated text	`var_name [, var_name...]`
	Represents code supplied by user	`void main (void) { ... }`

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- **Emulators** – The latest information on Microchip in-circuit emulators.This includes the MPLAB REAL ICE and MPLAB ICE 2000 in-circuit emulators.
- **In-Circuit Debuggers** – The latest information on the Microchip in-circuit debuggers. This includes MPLAB ICD 3 in-circuit debuggers and PICkit 3 debug express.
- **MPLAB IDE** – The latest information on Microchip MPLAB IDE, the Windows Integrated Development Environment for development systems tools. This list is focused on the MPLAB IDE, MPLAB IDE Project Manager, MPLAB Editor and MPLAB SIM simulator, as well as general editing and debugging features.
- **Programmers** – The latest information on Microchip programmers. These include production programmers such as MPLAB REAL ICE in-circuit emulator, MPLAB ICD 3 in-circuit debugger and MPLAB PM3 device programmers. Also included are nonproduction development programmers such as PICSTART Plus and PIC-kit 2 and 3.

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- Local Sales Office
- Field Application Engineer (FAE)
- Technical Support

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Technical support is available through the web site at:
http://www.microchip.com/support

DOCUMENT REVISION HISTORY

Revision A (April 2017)

- Initial Release of this Document.

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Chapter 1. Overview

1.1 INTRODUCTION

The EVB-KSZ9477 evaluation board features the KSZ9477 seven-port managed gigabit Ethernet switch. It has five 10BASE-Te/100BASE-TX/1000BASE-T physical layer transceivers (PHYs) and associated MAC units, one SGMII and one RGMII interfaces. Ports 1 through 5, with integrated MAC and PHY are connected to RJ45 Ethernet jacks with integrated magnetics. The SGMII interface is connected to a small form-factor pluggable (SFP) transceiver receptacle whereas, the RGMII interface is connected to the SAMA5D36A embedded microprocessor (MPU).

A user can use the on-board MPU for the customized applications such as IEEE 1588, audio-video bridging (AVB) and ring redundancy (DLR & HSR). The board also provides 2Gb (265MB) DDR2 SDRAM and 2Gb (256MB) of NAND flash memory.

The scope of this document is to describe the EVB-KSZ9477 evaluation board setup and corresponding jumper configurations. A simplified block diagram of the board is shown in Figure 1-1.

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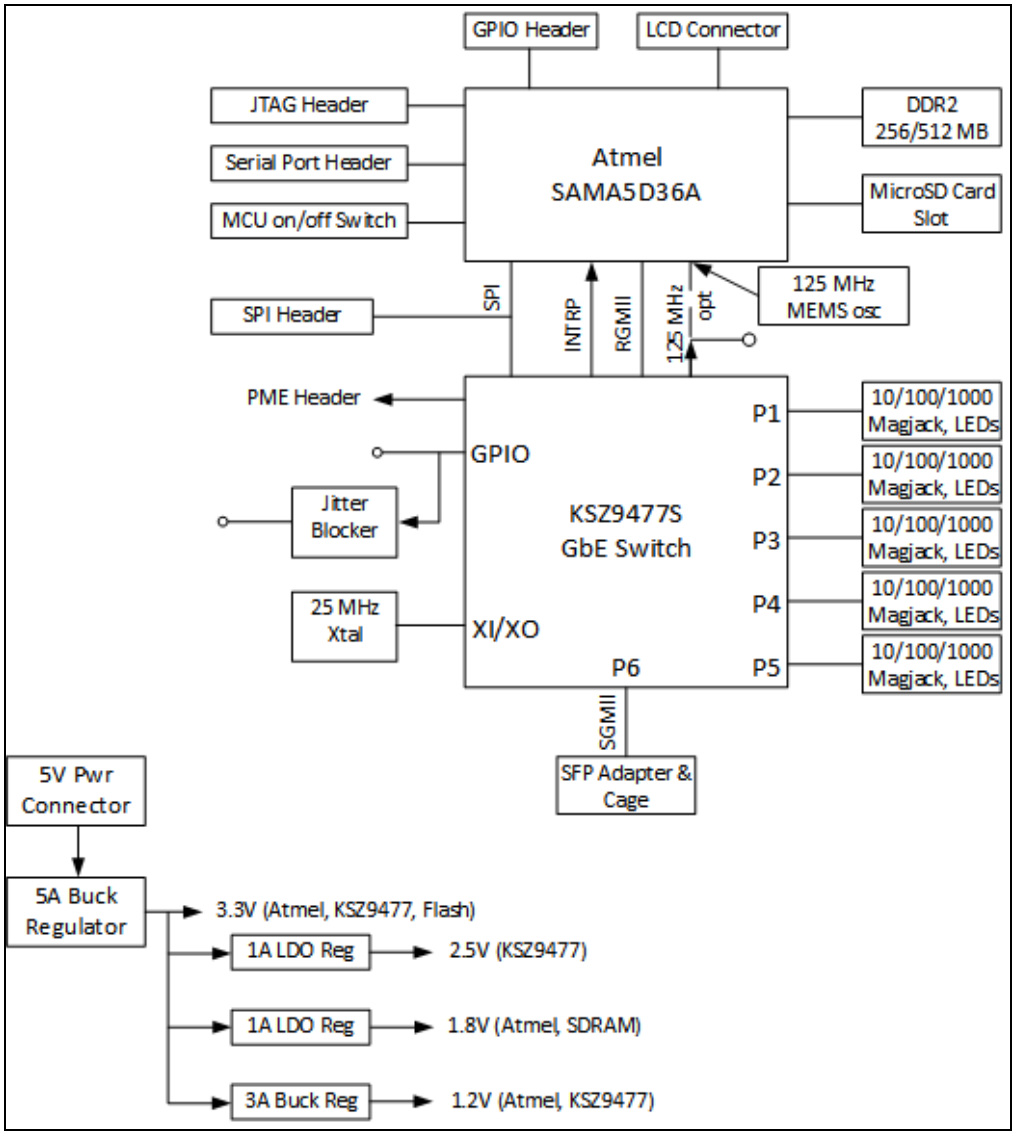
FIGURE 1-1: EVB-KSZ9477 BLOCK DIAGRAM



1.2 REFERENCES

Concepts and material available in the following documents will be helpful when reading this document. Visit www.microchip.com for the latest documentation.

- *KSZ9477S Data Sheet*
- *SAMA5D3 Data Sheet*
- *EVB-KSZ9477 Schematic*
- *DSC1101 Data Sheet*
- *ATECC508A Data Sheet*
- *PL902 Data Sheet*

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1.3 TERMS AND ABBREVIATIONS

AVB - Audio-Video Bridging

DLR - Device Level Ring

EVB - Evaluation Board

HSR - High Availability Seamless Redundancy

MII - Media Independent Interface

MIIM - Media Independent Interface Management (also known as MDIO/MDC)

RGMII - Reduced Gigabit Media Independent Interface

SPI - Serial Protocol Interface

PHY - Physical Transceiver

SFP - Small Form-factor Pluggable

SGMII - Serial Gigabit Media Independent Interface

NOTES:

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Chapter 2. Board Details & Configuration

This section includes sub-sections on the following EVB-KSZ9477 details:

- Power
- Resets
- Clocks
- Configuration
- Mechanicals

2.1 POWER

2.1.1 +5V Power

A 5V/2A power supply should be connected to J8 on the board. The SW4 switch must be in the ON position to power the board. The F1 fuse is provided on the board for the over voltage protection.

2.2 RESETS

2.2.1 Power-on Reset

There are two push button switches, SW1 and SW3 available on board. The SW1 switch is a master reset which resets both the MPU and the KSZ9477 Ethernet switch. SW3 resets only the KSZ9477.

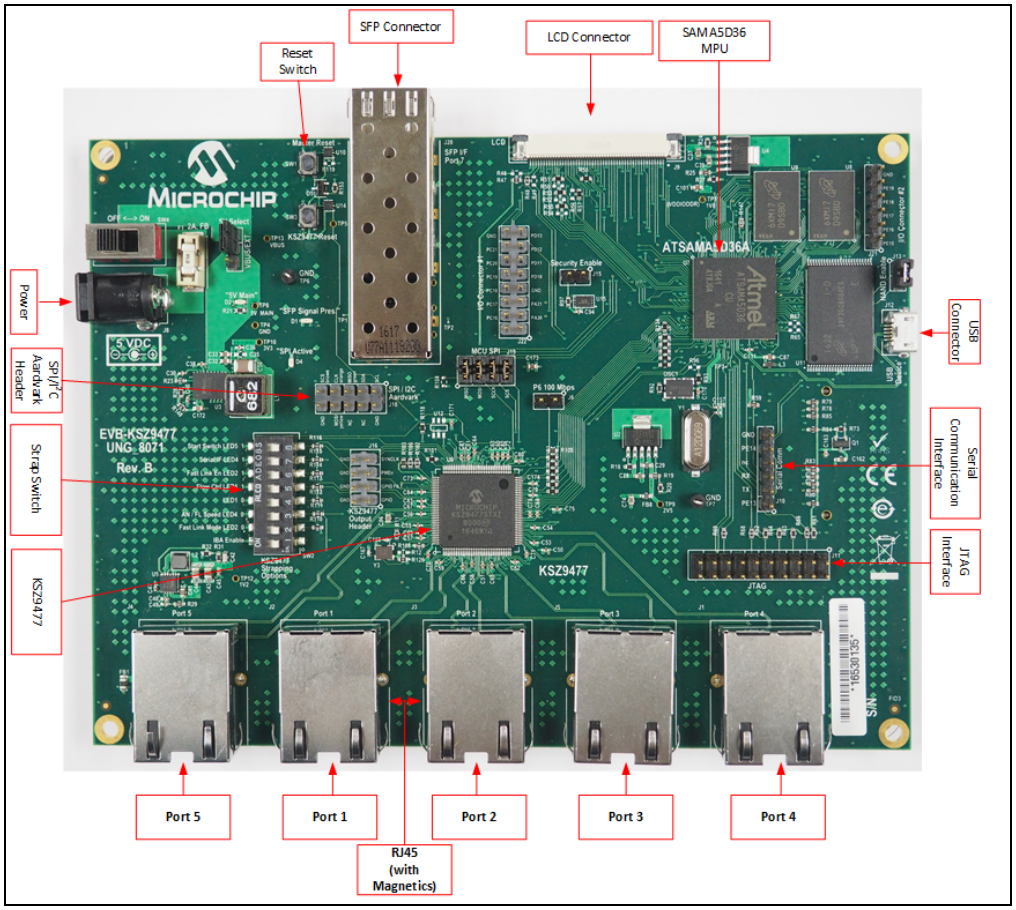
2.3 CLOCKS

The evaluation board utilizes a crystal oscillator that provides 25 MHz clock to the KSZ9477 device. The board also features an external clock, DCS1101, which provides 125 MHz 25 ppm clock to the MCU device in the SGMII mode.

2.4 CONFIGURATION

The following sub-sections describe the various board features and configuration settings. A top view of the EVB-KSZ9477 is shown in Figure 2-1.

FIGURE 2-1: EVB-KSZ9477 TOP VIEW WITH CALLOUTS



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2.4.1 Switch Settings

SW2 is an eight-position switch which controls many of the KSZ9477 configuration strap options. The KSZ9477 samples these signals at the rising edge of RESET_N to determine some internal settings. Following reset, the configuration of these switches is irrelevant. For initial bring-up, leave most switches in the OFF/OPEN position.

2.4.2 Jumper Settings

Table 2-1, Table 2-2 and Table 2-3 describe jumper settings. The preferred configuration is shown in bold text.

TABLE 2-1: TWO-PIN JUMPERS

Jumper	Label	Description	Open	Closed
J6	P6 100 Mbps	KSZ9477 Port 6 configured for RGMII. This interface is connected to the SAMA5D36 MPU. KSZ9477 Port 6 RGMII speed configuration strap setting. The setting of this jumper takes effect only after reset. This setting must match the speed of the SAMA5D36 RGMII interface.	1000 Mbps	100 Mbps
J15	Security Enable	Enables security chip, ATECC508A to be used with the SAMA5D36 MPU if a user requires to do so.	**Disabled (Default)**	Enabled
J13	NAND Enable	Enables the NAND flash memory.	**Disabled (Default)**	Enabled

TABLE 2-2: THREE-PIN JUMPERS

Jumper	Label	Description	Jumper 1-2	Jumper 2-3
J7	5 VDC	Board power source: 5V barrel connector or USB	Power from barrel jack	USB powered. Not recommended due to high current requirement.

TABLE 2-3: MULTI-PIN HEADERS

Jumper	Label	Description	Configuration
J16	KSZ9477 Output Header	KSZ9477 output probe points, 4x2 header	Do not install jumpers. Pin 1: GPIO Pin 3: GPIO output filtered by PL902 JitterBlocker. Pin 5: PME_N output Pin 7: SYNCLK - 25MHz or 125MHz output reference clock
J21	I/O Connector #2	I/O connector for the MPU, 6X1 header	No jumpers.
J10	Serial Communication	Header used for the MPU serial communication, 8x1 header	No jumpers. It is recommended to use the TTL-232R-3V3 cable from FTDI.
J18	SPI/I^2C Aardvark	KSZ9477 SPI/I^2C header for external access 5x2 header	An Aardvark SPI/I^2C adapter can be attached.

TABLE 2-3: MULTI-PIN HEADERS

Jumper	Label	Description	Configuration
J11	JTAG	JTAG interface to program and debug the MPU, 10X2 header	No jumpers
J22	I/O Connector #1	GPIO for the MPU	No jumpers
J9	LCD connector	LCD connector for the MPU	No jumpers. Refer to *SAMA5D3 Xplained User Guide* for details.

2.4.3 SPI and I²C

The MPU can control the KSZ9477 via the SPI interface or an external device such as, Totalphase Aardvark. The Table 2-4 below explains the jumper settings.

TABLE 2-4: SPI/I²C HEADER

Mode	J18 (5X2 header)	J19 (4X2 header)
SPI from Atmel MCU	All open	Install all jumpers
SPI from Aardvark or Cheetah cable	Connect Aardvark or Cheetah cable	All open
SPI from Aardvark I²C/SPI host adapter or Cheetah SPI host adapter	Connect Aardvark	All open

Note: Both the adapters are available on MicrochipDirect.com web site to purchase. SPI from Aardvark I2C/SPI (part number TTP100005) or Cheetah SPI host adapter (part number TTP100004).

2.4.4 LED Status

The table Table 2-5 shows the LED status indication.

TABLE 2-5: STATUS LEDS

Item	LED Diode	Comments
1.	D1 (Green)	SFP Signal present
2.	D2 (Green)	3.3V Power indication
3.	D4 (Blue)	SPI Active

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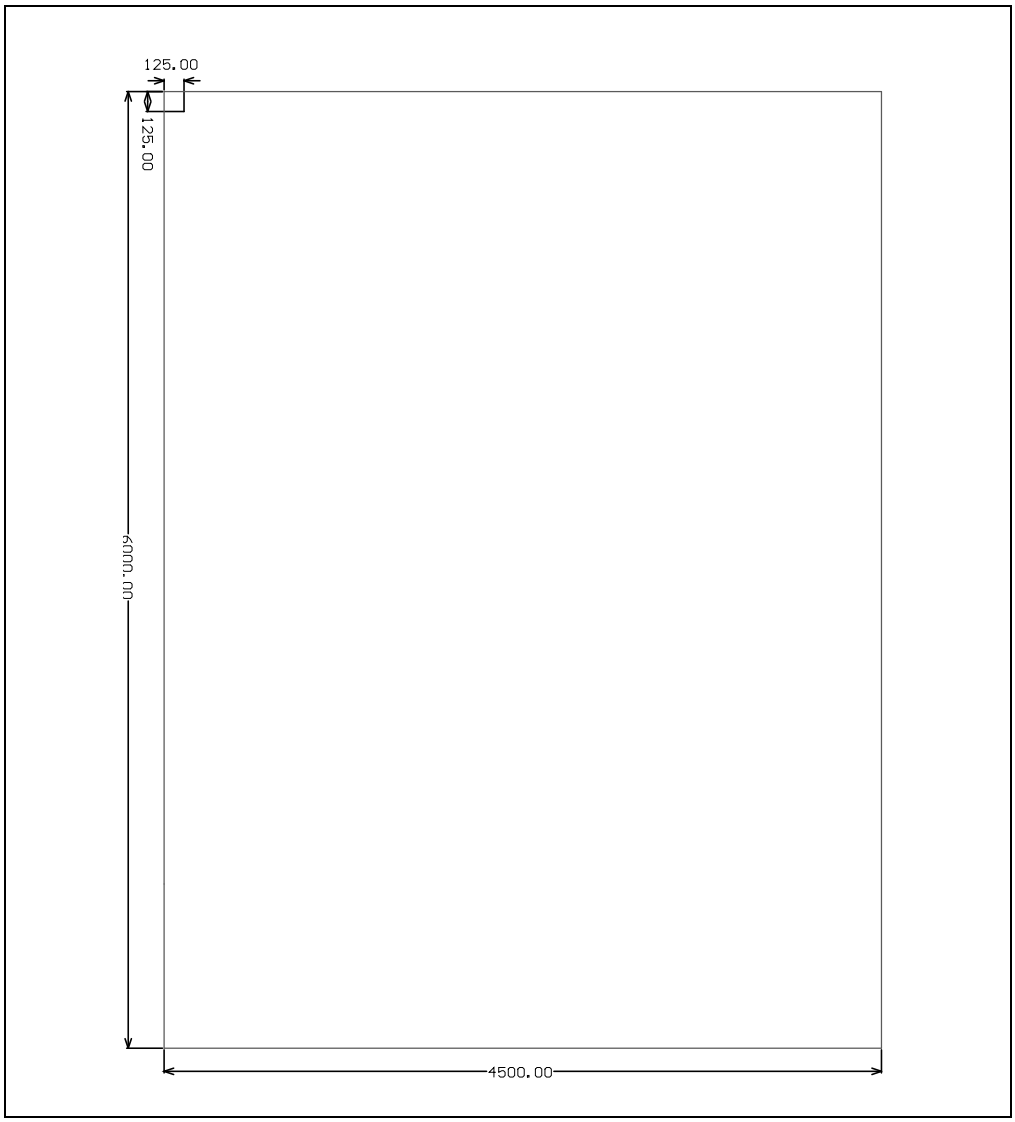
2.5 MECHANICALS

FIGURE 2-2: EVB-KSZ9477 MECHANICAL DIMENSIONS



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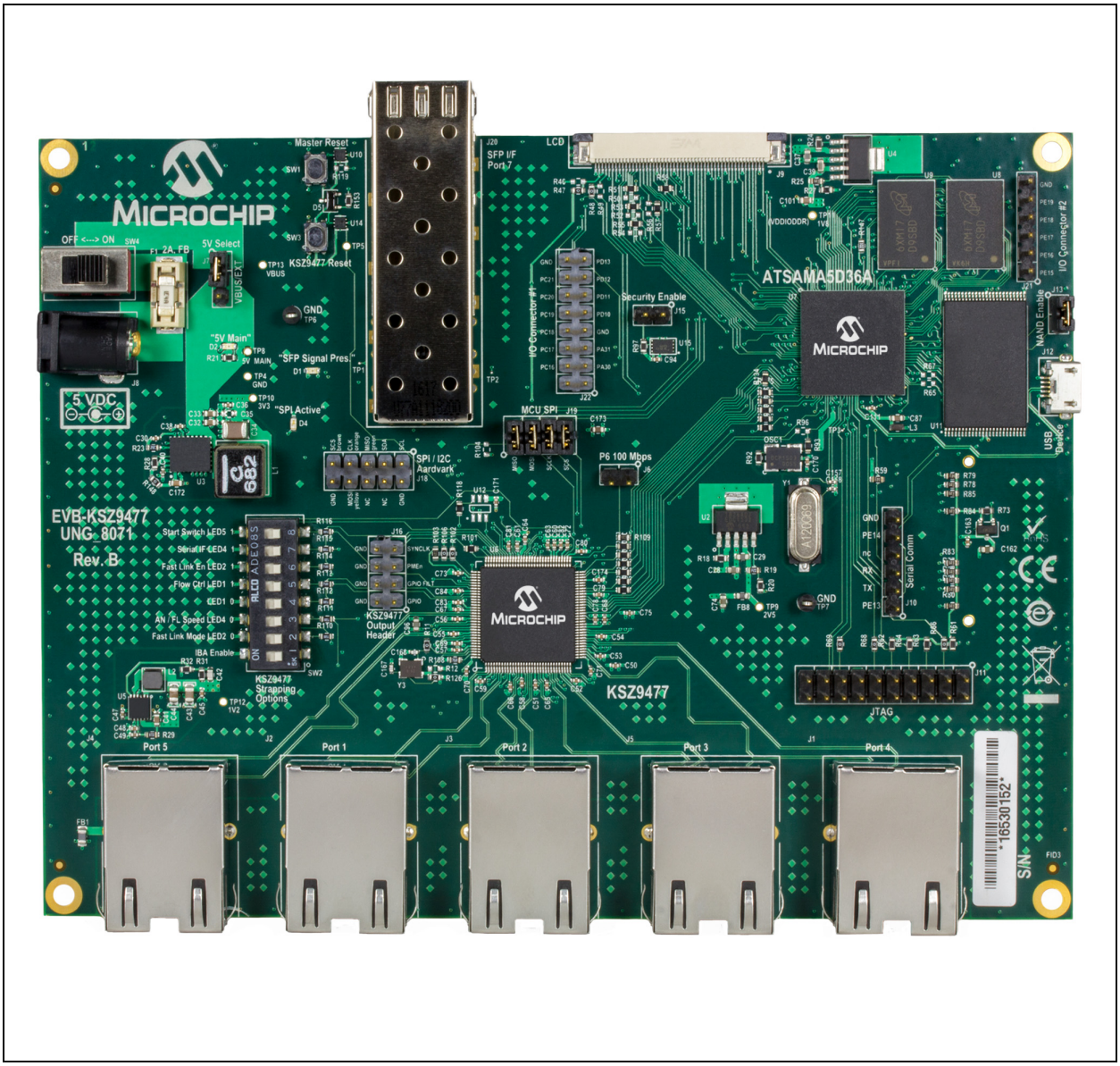
Appendix A. EVB-KSZ9477 Evaluation Board

A.1 INTRODUCTION

This appendix shows the EVB-KSZ9477 Evaluation Board.

FIGURE A-1: EVB-KSZ9477 EVALUATION BOARD



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Appendix B. KSZ9477 Evaluation Board Schematics

B.1 INTRODUCTION

This appendix shows the EVB-KSZ9477 Evaluation Board Schematics.

FIGURE B-1: EVB-KSZ9477 BOARD POWER I/O AND REGULATORS

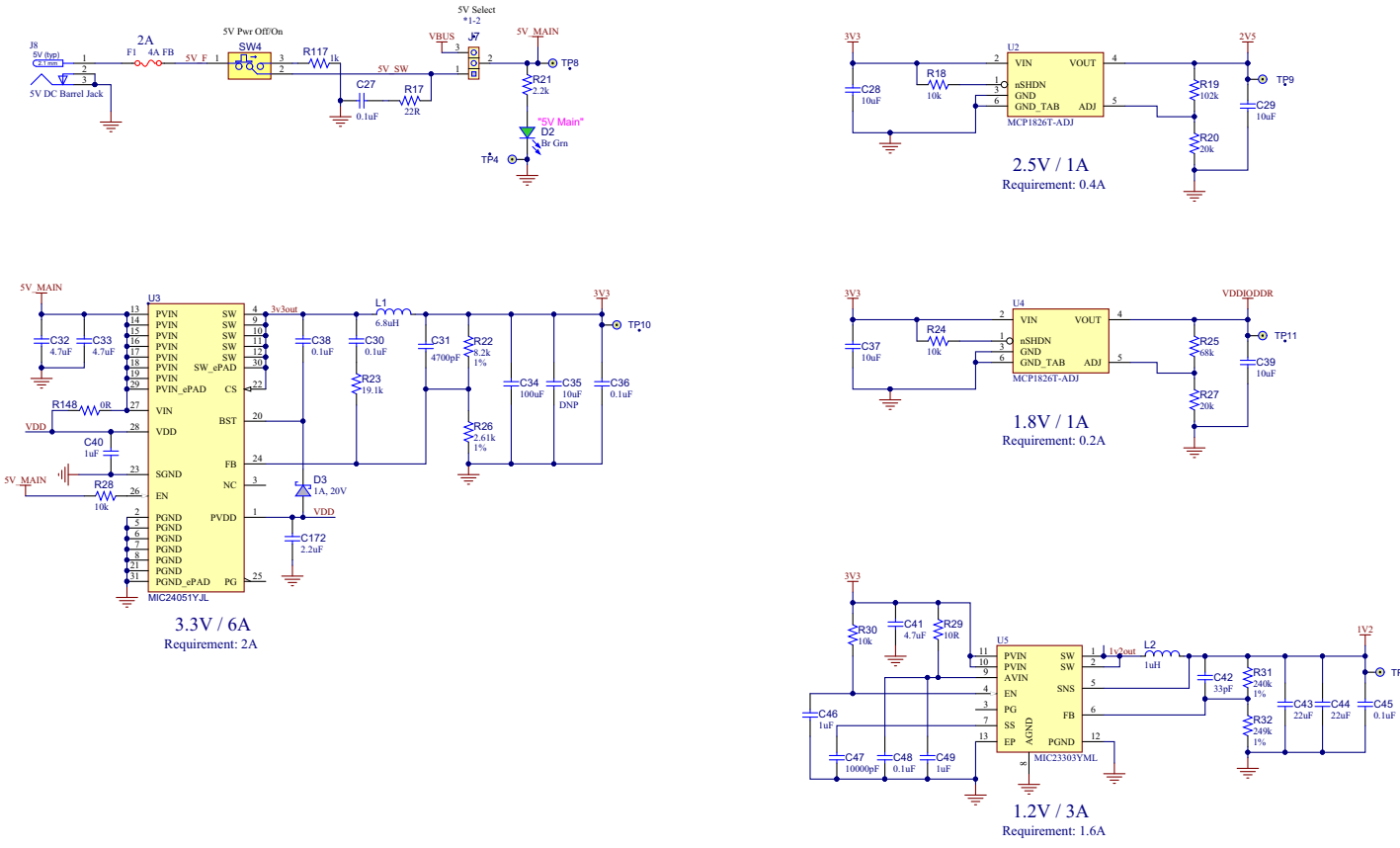

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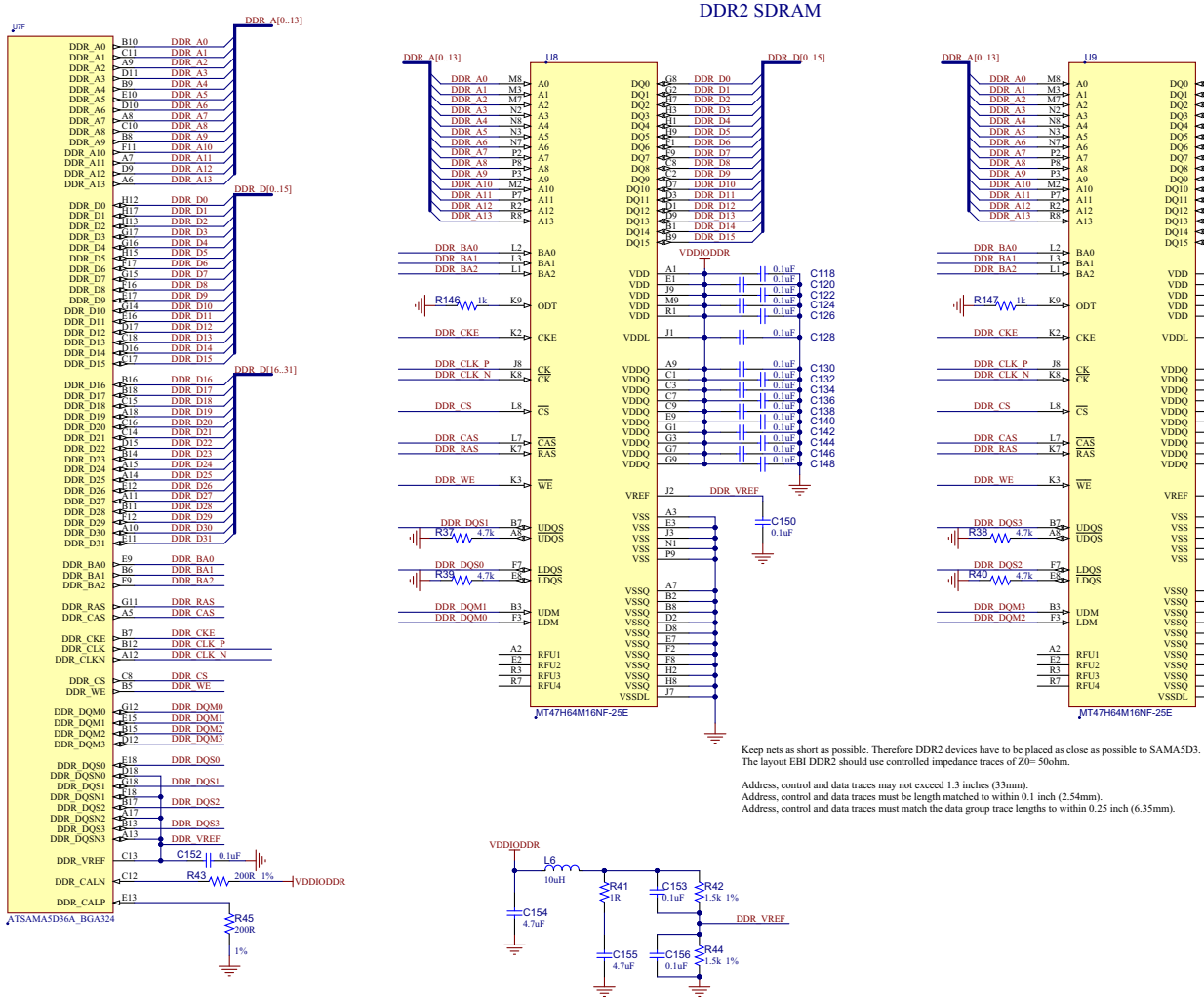
FIGURE B-2: EVB-KSZ9477 DDR2 SDRAM



DS50002594A-page 25

FIGURE B-3: EVB-KSZ9477 ETHERNET PORT AND SGMII SFP

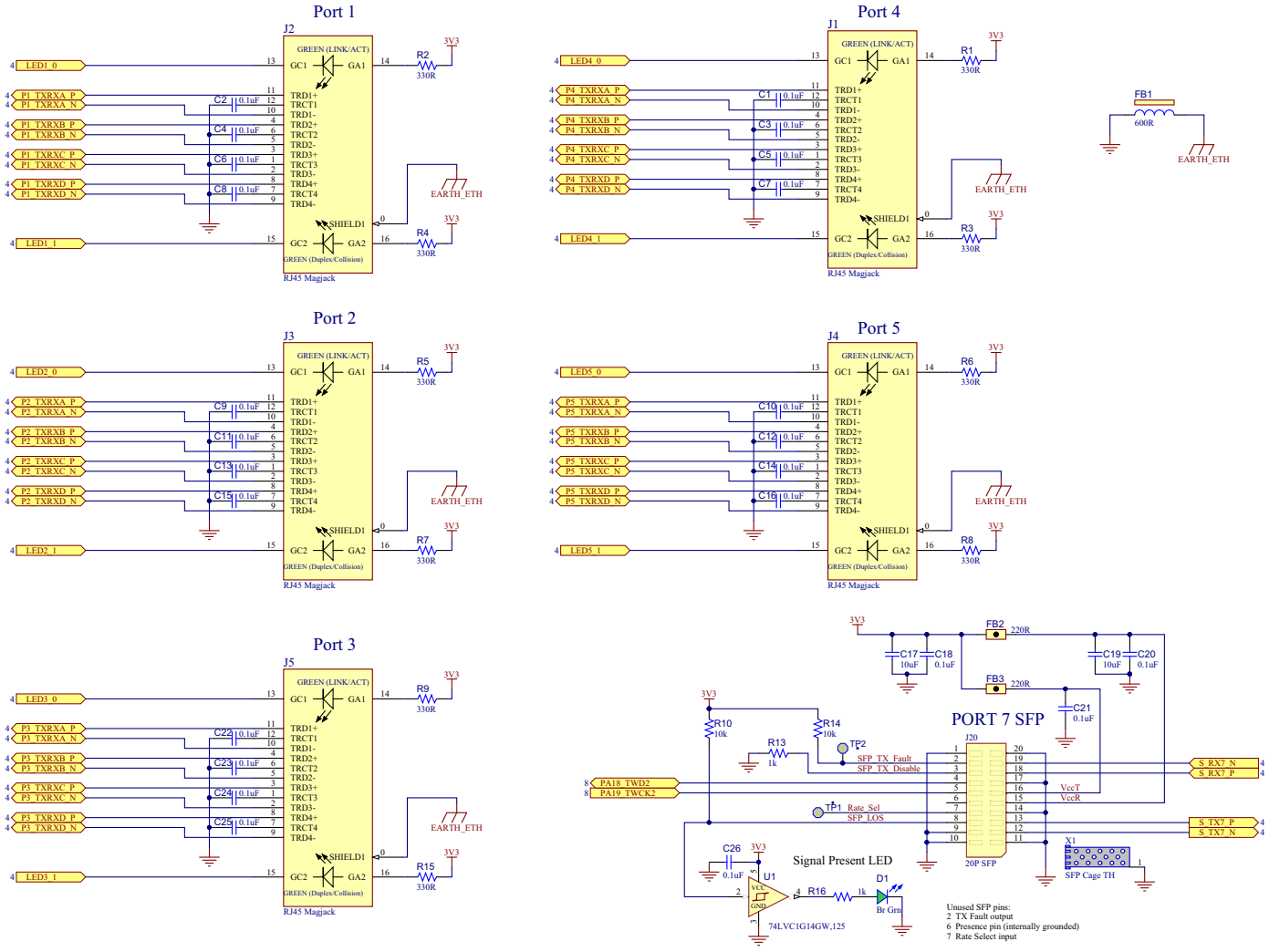


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FIGURE B-4: EVB-KSZ9477 SCHEMATIC - KSZ9477 RGMII TO SAMA5D3

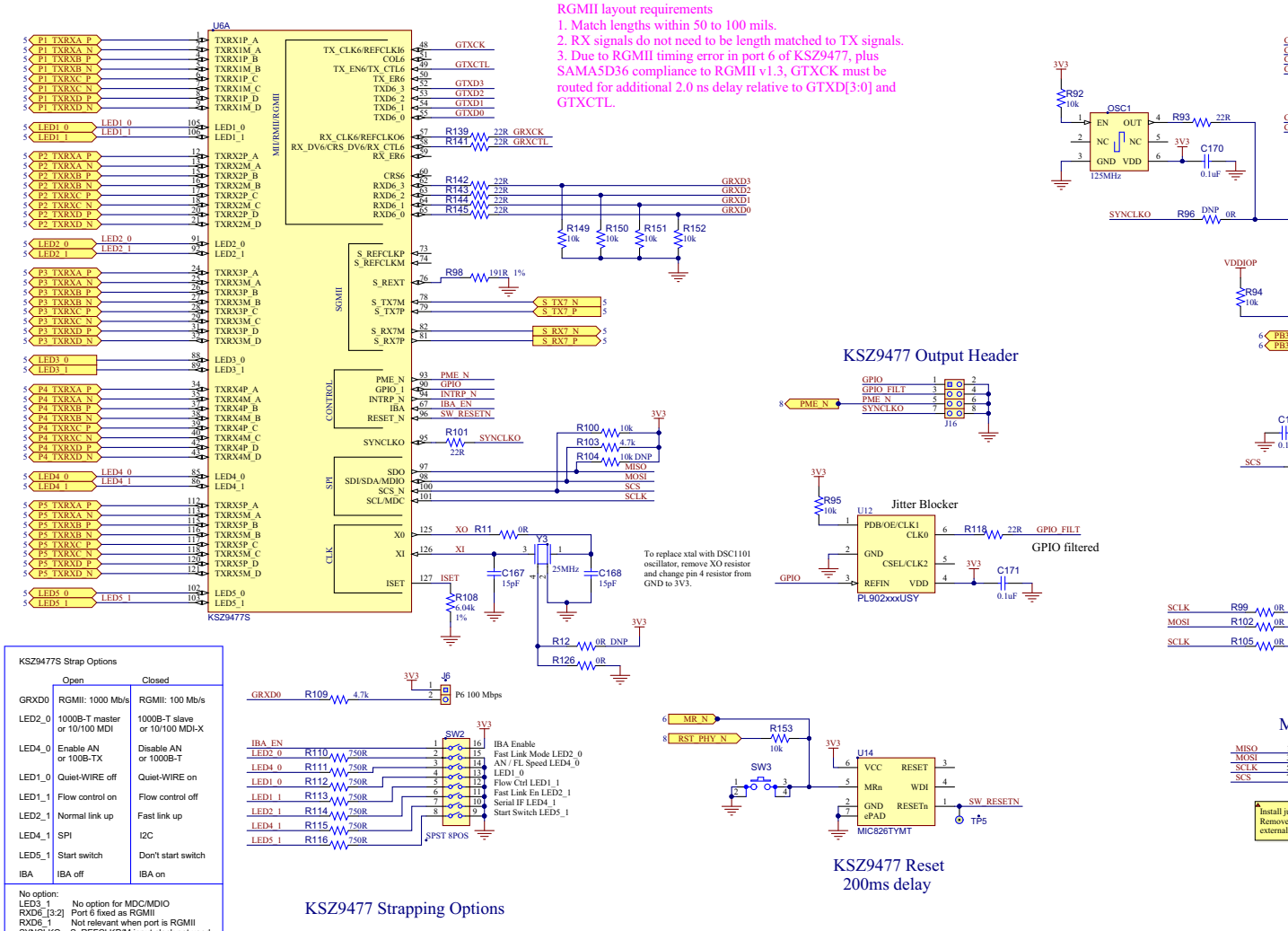

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FIGURE B-5: EVB-KSZ9477 POWER CONNECTIONS FOR SWITCH AND SOC

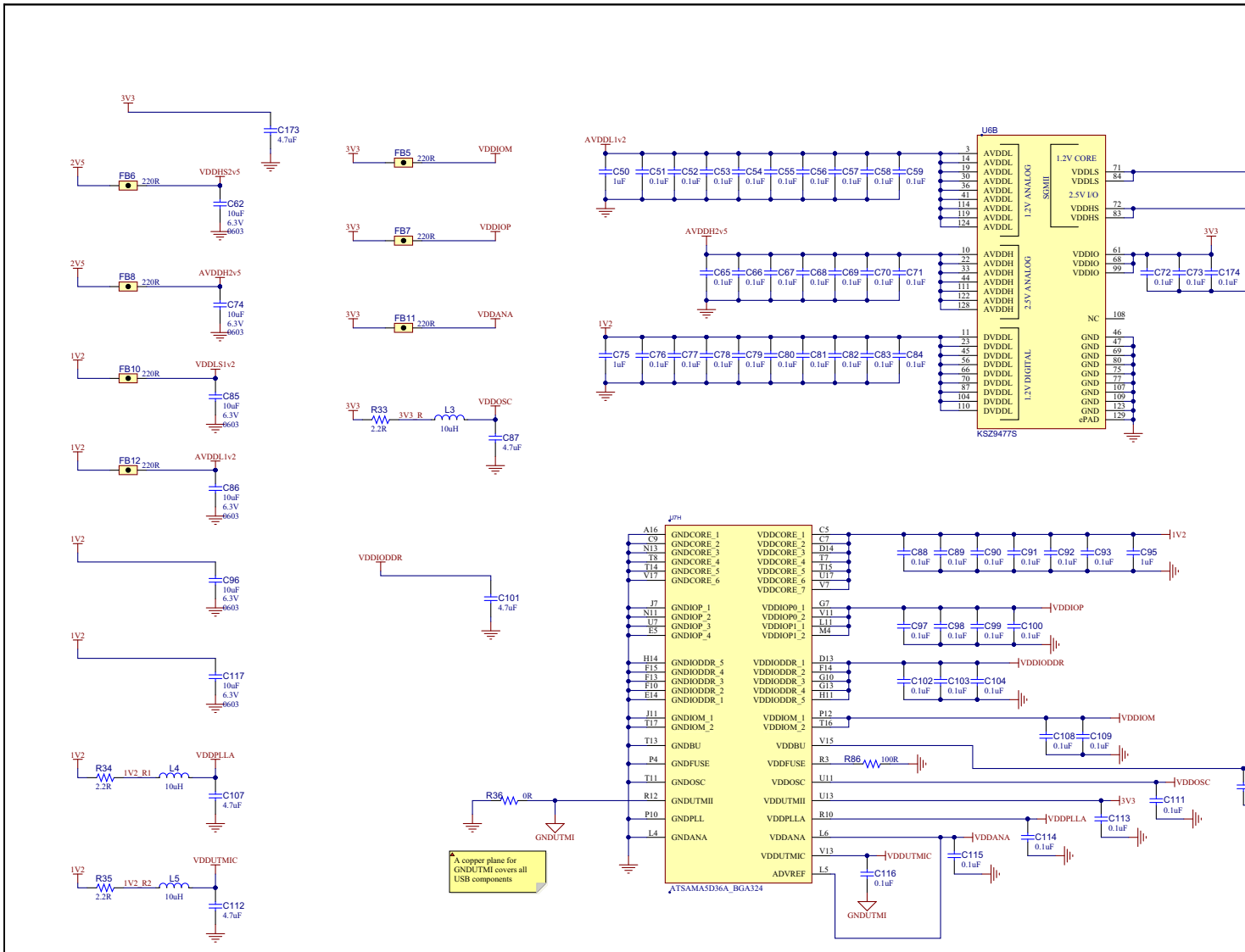

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FIGURE B-6: EVB-KSZ9477 SOC CORE CONNECTIONS NAND FLASH SD CARD

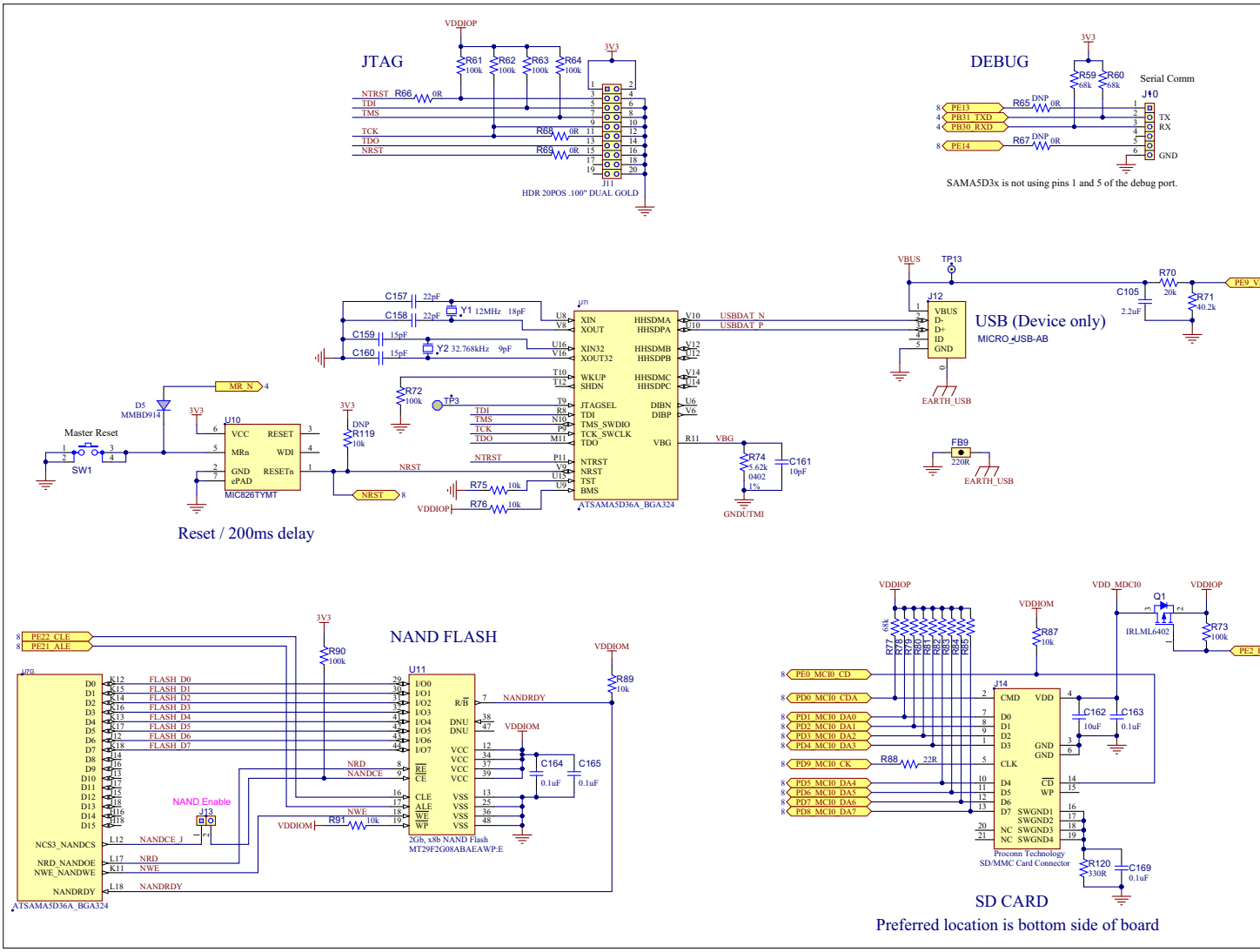
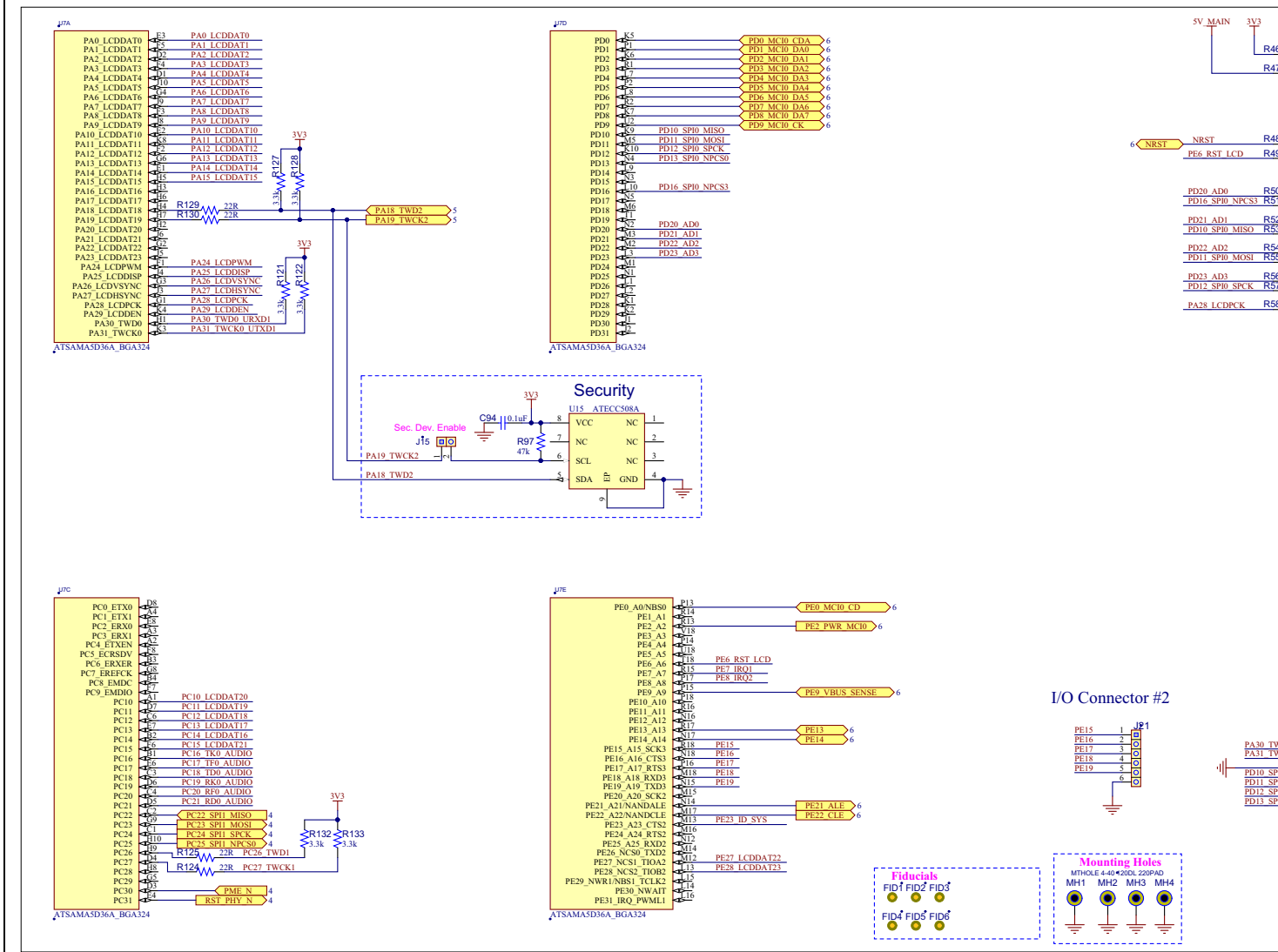


FIGURE B-7: EVB-KSZ9477 SOC GPIO LCD CONNECTOR MISC HEADER



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Appendix C. Bill of Materials (BOM)

C.1 INTRODUCTION

This appendix includes the EVB-KSZ9477 Evaluation Board Bill of Materials (BOM).

TABLE C-1: BILL OF MATERIALS

Item	Qty	Reference	Description	Populated	Manufacturer	
1	126	C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C18, C20, C21, C22, C23, C24, C25, C26, C30, C36, C38, C45, C48, C51, C52, C53, C54, C55, C56, C57, C58, C59, C60, C61, C63, C64, C65, C66, C67, C68, C69, C70, C71, C72, C73, C76, C77, C78, C79, C80, C81, C82, C83, C84, C88, C89, C90, C91, C92, C93, C97, C98, C99, C100, C102, C103, C104, C108, C109, C110, C111, C113, C114, C115, C116, C118, C119, C120, C121, C122, C123, C124, C125, C126, C127, C128, C129, C130, C131, C132, C133, C134, C135, C136, C137, C138, C139, C140, C141, C142, C143, C144, C145, C146, C147, C148, C149, C150, C151, C152, C153, C156, C163, C164, C165, C166, C169, C170, C171, C174	CAP CER 0.1uF 50V 10% X7R SMD 0402	YES	TDK Corporation	C10
2	13	C17, C19, C28, C29, C37, C39, C62, C74, C85, C86, C96, C117, C162	CAP CER 10uF 6.3V 20% X5R SMD 0603	YES	AVX	060
3	2	C27, C94	CAP CER 0.1uF 50V 10% X7R SMD 0402	YES	TDK Corporation	C10
4	1	C31	CAP CER 4700pF 16V 10% X7R SMD 0402	YES	Murata Electronics North America	GR
5	10	C32, C33, C41, C87, C101, C107, C112, C154, C155, C173	CAP CER 4.7uF 16V 10% X5R SMD 0603	YES	TDK Corporation	C16
6	1	C34	CAP CER 100uF 6.3V 20% X5R SMD 1210	YES	TDK Corporation	C32
7	6	C40, C46, C49, C50, C75, C95	CAP CER 1uF 16V 10% X5R SMD 0402	YES	TDK Corporation	C10
8	1	C42	CAP CER 33pF 50V 5% NP0 SMD 0603	YES	Cal-Chip	GM
9	2	C43, C44	CAP CER 22uF 16V 10% X5R SMD 0805	YES	TDK	C20
10	1	C47	CAP CER 10000pF 16V 10% X7R SMD 0402	YES	KEMET	C04
11	2	C105, C172	CAP CER 2.2uF 16V 10% X5R SMD 0603	YES	TDK	C16
12	2	C157, C158	CAP CER 22pF 50V 5% NP0 SMD 0402	YES	Murata	GR
13	4	C159, C160, C167, C168	CAP CER 15pF 50V 5% NP0 SMD 0402	YES	Murata	GR
14	1	C161	CAP CER 10pF 50V 5% NP0 SMD 0402	YES	Murata	GR
15	2	D1, D2	LED, Bright Green, 0603	YES	Lite-On	LTS
16	1	D3	DIODE SCHOTTKY 20V 1A SOD523	YES	NXP USA Inc.	PM
17	1	D4	LED, Blue, 0603	YES	Kingbright	APT
18	1	D5	DIO RECT MMBD914LT1G 1V 10mA 100V SMD SOT-23-3	YES	ON Semiconductor	MM
19	1	F1	FUSE BRD MNT 4A 125VAC/VDC 2SMD	YES	Littlefuse	015
20	1	FB1	FERRITE 2A 600R SMD 0805	YES	TDK Corporation	MP
21	10	FB2, FB3, FB5, FB6, FB7, FB8, FB9, FB10, FB11, FB12	FERRITE 220R @ 100MHz 2A SMD 0603	YES	Murata Electronics North America	BLM

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TABLE C-1: BILL OF MATERIALS (CONTINUED)

Item	Qty	Reference	Description	Populated	Manufacturer	
22	5	J1, J2, J3, J4, J5	CON MODULAR RJ45 MAGJACK TH R/A	YES	Amphenol Commercial Products	RJM
23	3	J6, J13, J15	CON HDR-2.54 MALE 1x2 GOLD 5.84MH TH VERT	YES	Hdr	Hdr-
24	1	J7	HDR 3POS .100" SGL GOLD	YES	Hdr	Hdr-
25	1	J8	CONN PWR JACK 2.5X5.5MM HIGH CUR	YES	CUI Inc.	PJ-(
26	1	J9	CON FPC 687 0.5MM 50P FEMALE SMD R/A	YES	WURTH	687
27	2	J10, J21	CON HDR-2.54 MALE 1x6 GOLD 5.84MH TH VERT	YES	Hdr	Hdr-
28	1	J11	HDR 20POS .100" DUAL GOLD	YES	Hdr	Mak 679
29	1	J12	MICRO_USB-AB	YES	JAE Electronics	DX4
30	2	J16, J19	CON HDR-2.54 Male 2x3 Gold 5.84MH TH VERT	YES	Hdr	Mak 679
31	1	J18	Header, 5-Pin, Dual row	YES	Hdr	Mak 679
32	1	J20	CON SFP 136 0.80MM 20P Female SMD R/A	YES	TE Connectivity AMP Connectors	136
33	1	J22	HDR 16POS .100" DUAL GOLD	YES	Hdr	Mak 679
34	1	L1	INDUCTOR 6.8uH 9.2A 20% XAL7070-682MEC SMD	YES	Coilcraft	XAL
35	1	L2	INDUCTOR 1uH 2.1A 30% SMD L3W3H1.5	YES	Taiyo Yuden	NR3
36	4	L3, L4, L5, L6	INDUCTOR 10uH 80mA 10% SMD 0603	YES	Taiyo Yuden	LBM
37	1	Q1	TRANS FET P-CH IRLML6402 -20V -3.7A 1.3W SOT-23-3	YES	International Rectifier	IRL
38	11	R1, R2, R3, R4, R5, R6, R7, R8, R9, R15, R120	RES TKF 330R 5% 1/10W SMD 0603	YES	Panasonic	ERJ
39	20	R10, R14, R18, R24, R28, R30, R75, R76, R87, R89, R91, R92, R94, R95, R100, R149, R150, R151, R152, R153	RES TKF 10k 1% 1/10W SMD 0603	YES	Panasonic	ERJ
40	12	R11, R36, R47, R48, R66, R68, R69, R99, R102, R105, R106, R126	RES TKF 0R 1/10W SMD 0603	YES	Panasonic	ERJ
41	5	R13, R16, R107, R146, R147	RES TKF 1k 5% 1/10W SMD 0603	YES	Panasonic	ERJ
42	1	R17	RES TKF 22R 1% 1/10W SMD 0603	YES	Yageo	RC(
43	1	R19	RES TKF 102k 1/10W 1% SMD 0603	YES	Stackpole Electronics Inc	RM(
44	3	R20, R27, R70	RES TKF 20k 1% 1/10W SMD 0603	YES	Panasonic	ERJ
45	1	R21	RES TKF 2.2k 1% 1/10W SMD 0603	YES	Panasonic	ERJ
46	1	R22	RES TKF 8.2k 1% 1/10W SMD 0603	YES	Panasonic	ERJ
47	1	R23	RES TKF 19.1k 1% 1/10W SMD 0603	YES	Yageo	RC(

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TABLE C-1: BILL OF MATERIALS (CONTINUED)

Item	Qty	Reference	Description	Populated	Manufacturer	
48	12	R25, R59, R60, R77, R78, R79, R80, R81, R82, R83, R84, R85	RES TKF 68k 1% 1/10W SMD 0603	YES	Stackpole Electronics Inc	RM
49	1	R26	RES TKF 2.61k 1% 1/16W SMD 0603	YES	MULTICOMP	MC
50	1	R29	RES TKF 10R 1% 1/10W SMD 0603	YES	Stackpole Electronics Inc	RM
51	1	R31	RES TKF 240k 1% 1/10W SMD 0603	YES	Panasonic Electronic Components	ERJ
52	1	R32	RES TKF 249k 1% 1/10W SMD 0603	YES	Panasonic	ERJ
53	3	R33, R34, R35	RES TKF 2.2R 5% 1/10W SMD 0603	YES	Stackpole Electronics Inc	RM
54	6	R37, R38, R39, R40, R103, R109	RES TKF 4.7k 1% 1/10W SMD 0603	YES	ROHM	MC
55	1	R41	RES TKF 1R 1% 1/10W SMD 0603	YES	Yageo	RC
56	2	R42, R44	RES TKF 1.5k 1% 1/10W SMD 0603	YES	Panasonic	ERJ
57	2	R43, R45	RES TKF 200R 1% 1/10W SMD 0603	YES	Yageo	RC
58	25	R51, R53, R55, R57, R58, R88, R93, R101, R118, R124, R125, R129, R130, R134, R135, R136, R137, R138, R139, R140, R141, R142, R143, R144, R145	RES TKF 22R 1% 1/10W SMD 0603	YES	Yageo	RC
59	7	R61, R62, R63, R64, R72, R73, R90	RES TKF 100k 1% 1/10W SMD 0603	YES	Panasonic	ERJ
60	1	R71	RES TKF 40.2k 1% 1/10W SMD 0603	YES	Yageo	RC
61	1	R74	RES TKF 5.62k 1% 1/16W SMD 0402	YES	Vishay Dale	CR
62	1	R86	RES TKF 100R 1% 1/10W SMD 0603	YES	ROHM	MC
63	1	R97	RES TKF 47k 1% 1/10W SMD 0603	YES	Panasonic	ERJ
64	1	R98	RES TKF 191R 1% 1/10W SMD 0603	YES	Yageo	RC
65	1	R108	RES TKF 6.04k 1% 1/10W SMD 0603	YES	Yageo	9T0
66	7	R110, R111, R112, R113, R114, R115, R116	RES TKF 750R 1% 1/10W SMD 0603	YES	Vishay	CR
67	1	R117	RES TKF 1k 1% 1/10W SMD 0603	YES	Panasonic	ERJ
68	6	R121, R122, R127, R128, R132, R133	RES TKF 3.3k 5% 1/10W SMD 0603	YES	Panasonic	ERJ
69	1	R148	RES TKF 0R 1/10W SMD 0603	YES	Panasonic	ERJ
70	2	SW1, SW3	Switch, Tactile, SPST, 50mA, 16VDC, J-lead, 4.2 x 3.2 mm, PTS810, NO	YES	C&K	PTS
71	1	SW2	SWITCH SLIDE SPST 24V 100mA 1825058-9EXT ACT 8POS 24V	YES	TE Connectivity Alcoswitch Switches	1-18
72	1	SW4	SWITCH SLIDE SPDT 120V 6A 1101M2S3CQE2 TH	YES	C&K Components	110
73	2	TP6, TP7	TEST POINT PC MINI .040"D BLACK	YES	Keystone Electronics	500
74	2	U1, U13	74LVC1G14GW,125 SCHMITT-TRG INVERTER	YES	NXP	74L
75	2	U8, U9	IC DDR2 SDRAM 1GBIT 2.5NS 84FBGA	YES	Micron Technology Inc.	MT4
76	1	U11	IC, MT29F2G08ABAE, Rev. E, NAND Flash, 2Gb, x8b, TSOP48	YES	Micron Technology Inc.	MT2
77	1	X1	Cage, SFP, Amphenol, U77-A1118-200 (-1 or -T)	YES	Amphenol	U77

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TABLE C-1: BILL OF MATERIALS (CONTINUED)

Item	Qty	Reference	Description	Populated	Manufacturer	
78	1	Y1	CRYSTAL 12MHz 18pF SMD HC49/US	YES	Abracon	ABL
79	1	Y2	32.768kHz ±20ppm Crystal 9pF 70 kOhm -40°C ~ 85°C Surface Mount 2-SMD	YES	NDK	NX3
80	1	Y3	Crystal 25MHz 6pF SMD 4Pin DFN LCC	YES	Murata Electronics North America	ABM
81	1	J14	Connector, SD/MMC, Push-Pull, RA, SMD, 15 pin+4 shield	YES	Proconn Technology	SDC
82	1	OSC1	OSC MEMS 125.000MHZ CMOS SMD	YES	Microchip/Micrel	DSC
83	2	U2, U4	IC REG LDO ADJ 1A SOT223-6	YES	MICROCHIP	MCI
84	1	U3	IC REG BUCK ADJ 6A SYNC 28QFN	YES	Microchip/Micrel	MIC
85	1	U5	4MHz PWM 3A Buck Regulator with HyperLight Load and Power Good	YES	Microchip Technology	MIC
86	1	U6	IC, 7-Port Gigabit Ethernet Switch with 2 RGMII / MII / RMII Interfaces, TQFP128	YES	Microchip/Micrel	KSZ
87	1	U7	IC, ARM Cortex A5 MPU, 32-bit, 536MHz, 1.2V, 324BGA	YES	Microchip/Atmel	ATS
88	2	U10, U14	IC SUPERVISOR RESET 3.075V 6TDFN	YES	Microchip/Micrel	MIC
89	1	U12	IC JITTER ATTEN	YES	Microchip/Micrel Inc	PL9
90	1	U15	IC INTERFACE ATECC508A UDFN-8	YES	Microchip/Atmel	ATE
91	0	C35	CAP CER 10uF 6.3V 20% X5R SMD 0603	NO	AVX	060
92	0	R12, R46, R49, R50, R52, R54, R56, R65, R67, R96, R123, R131	RES TKF 0R 1/10W SMD 0603	NO	Panasonic	ERJ
93	0	R104, R119	RES TKF 10k 1% 1/10W SMD 0603	NO	Panasonic	ERJ

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