



KSZ8895 EDS2 Daughter Card User Guide

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Preface

NOTICE TO CUSTOMERS

All documentation becomes dated, and this manual is no exception. Microchip tools and documentation are constantly evolving to meet customer needs, so some actual dialogs and/or tool descriptions may differ from those in this document. Please refer to our web site (www.microchip.com) to obtain the latest documentation available.

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 “DSXXXXA”, where “XXXX” 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 the KSZ8895 EDS2 Daughter Card User Guide. Items discussed in this chapter include:

- [Document Layout](#)
- [Conventions Used in this Guide](#)
- [Warranty Registration](#)
- [The Microchip Web Site](#)
- [Development Systems Customer Change Notification Service](#)
- [Customer Support](#)
- [Document Revision History](#)

DOCUMENT LAYOUT

This document features the KSZ8895 EDS2 Daughter Card. The manual layout is as follows:

- **Chapter 1. “Overview”** – This chapter provides an overview of the KSZ8895 EDS2 and a brief description of the card’s features.
- **Chapter 2. “Getting Started”** – This chapter provides information on the setup and operation of the KSZ8895 EDS2 Daughter Card.
- **Chapter 3. “Hardware”** – This chapter shows the different connection types found on the KSZ8895 EDS2 Daughter Card.
- **Chapter 4. “System Boot”** – This chapter explains how to use device tree overlays when booting the host system.
- **Appendix A. “Schematics”** – This section shows the schematic drawings of the KSZ8895 EDS2 Daughter Card.
- **Appendix B. “Bill of Materials”** – This section shows the Bill of Materials (BOM) for the KSZ8895 EDS2 Daughter Card.
- **Appendix C. “PCB Layers”** – This section shows the PCB layers of the KSZ8895 EDS2 Daughter Card.

CONVENTIONS USED IN THIS GUIDE

This manual uses the following documentation conventions:

DOCUMENTATION CONVENTIONS

Description	Represents	Examples
Arial font:		
Italic characters	Referenced books	<i>MPLAB[®] IDE User's Guide</i>
	Emphasized text	...is the <i>only</i> 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	<u><i>File>Save</i></u>
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	<i>file.o</i> , where <i>file</i> can be any valid filename
Square brackets []	Optional arguments	mcc18 [options] <i>file</i> [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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- **General Technical Support** – Frequently Asked Questions (FAQs), technical support requests, online discussion groups, Microchip consultant program member listing
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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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- 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

Revisions	Section/Figure/Entry	Correction
DS50003881A (05-30-25)	Initial release	

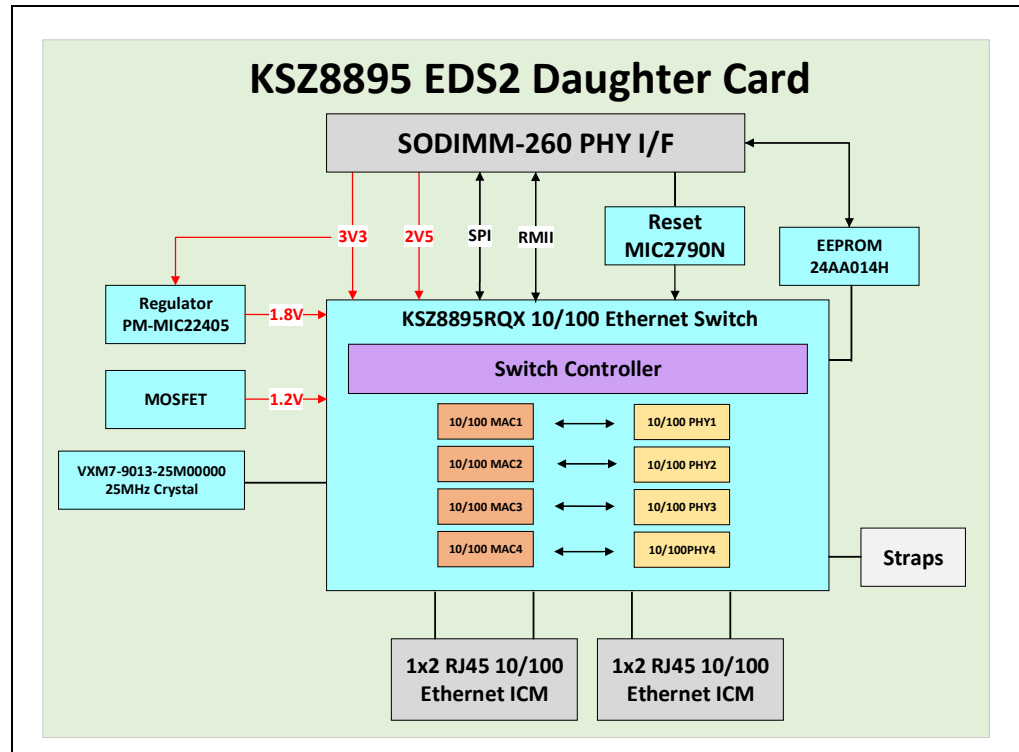
Chapter 1. Overview

1.1 INTRODUCTION

The KSZ8895 EDS2 Daughter Card is designed for evaluation of the Microchip KSZ8895 Gigabit Ethernet RGMII Switch when used with a Microchip EDS2 compatible host board. A SODIMM 260-pin connector for the EDS2 Host – KSZ8895 Interface is used due to its high performance, high pin count, and low cost.

This document describes the KSZ8895 EDS2 Daughter Card setup and user interface features. A simplified block diagram is shown in [Figure 1-1](#).

FIGURE 1-1: KSZ8895 EDS2 DAUGHTER CARD BLOCK DIAGRAM



1.2 FEATURES

Below are the features of the KSZ8895 EDS2 Daughter Card:

- Microchip KSZ8895RQX 10/100 Ethernet Switch with RMII
- Microchip VXM7-9013-25M0000 crystal for 25 MHz
- Microchip MIC2790N Reset supervisor with Reset LED indicator
- Microchip 24AA014H I²C Serial EEPROM for board identification
- LDO controlled MOSFET power regulation
- Two dual 10/100 Mb RJ45 Integrated Connector and Magnetic with LED connectors
- MDC/MDIO Management Interface
- Compliant with the SODIMM EDS2 Interface Specification
- PHY Reset DIP switch feature to hold the KSZ8895 in Reset
- Test points for GPIOs, power rails, and GND
- Green LED indicator for 1V2 power rail

1.3 REFERENCES

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

- *KSZ8895 Data Sheet*
- *KSZ8895 EDS2 Daughter Card Schematics*
- *KSZ8895 Hardware Design Checklist*
- *SAM9X75 Curiosity Rev 5 Schematics*
- *SAM9X75 Curiosity Rev 5 User's Guide*
- *EDS2 SODIMM IF Development Guide*

1.4 ACRONYMS AND DEFINITIONS

[Table 1-1](#) shows the terms used in this user guide.

TABLE 1-1: ACRONYMS AND DEFINITIONS

Term	Definition
ARP	Address Resolution Protocol
COM	Communications Port
DHCP	Dynamic Host Configuration Protocol
DIP	Dual In-line Package
DSUB	D - Subminiature
EP	Extended Page
GPIO	General Purpose Input/Output
ICM	Integrated Connector Magnetic
IEEE	Institute of Electrical and Electronics Engineers
I/O	Input/Output
IP	Internet Protocol
LAN	Local Area Network
LSB	Least Significant Byte/Bit
MAC	Media Access Controller
MDIO	Management/Data Input/Output
MII	Media Independent Interface

TABLE 1-1: ACRONYMS AND DEFINITIONS (CONTINUED)

Term	Definition
NIC	Network Interface Card
OUI	Organizationally Unique Identifier
PC	Personal Computer
PCB	Printed Circuit Board
PCS	Physical Sublayer
PDU	Payload Data Unit
PHY	Physical Layer Transceiver
PN	Part Number
QSGMII	Quad Serial Gigabit Media Independent Interface
1-USGMII	Quad Universal Serial Gigabit Media Independent Interface
SMA	Sub-Miniature Version A
SODIMM	Small Outline Dual In-Line Memory Module
TCXO	Temperature-Compensated Crystal Oscillator
TFTP	Trivial File Transfer Protocol
USB	Universal Asynchronous Receiver/Transceiver
VDFN	Very-Small Dual Flat, No Leads
VM	Virtual Machine
VREG	Voltage Regulator
XO	Crystal Oscillator

NOTES:

Chapter 2. Getting Started

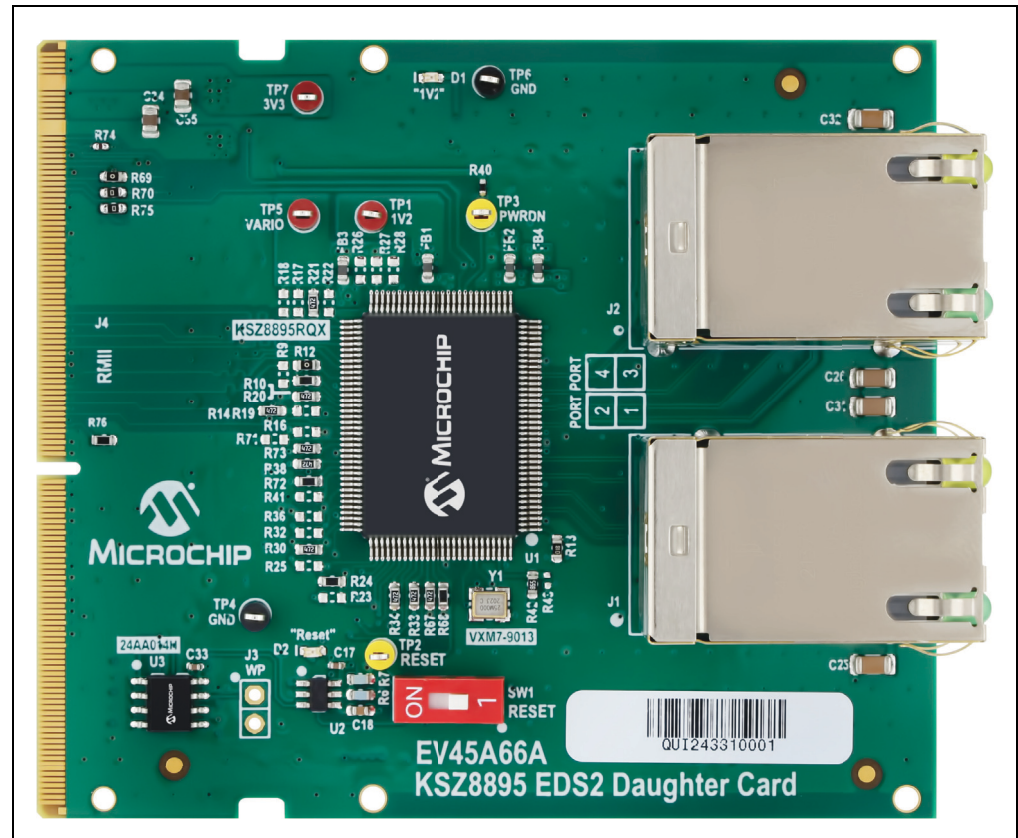
2.1 OVERVIEW

This chapter provides a quick start guide for using the KSZ8895 EDS2 Daughter Card. The SAM9x75 Curiosity (Rev 5) serves as the host board. Refer to the *SAM9x75 Curiosity User's Guide* for the correct jumper configuration.

2.2 KSZ8895 INSTALLATION

Figure 2-1 shows the KSZ8895 EDS2 Daughter Card.

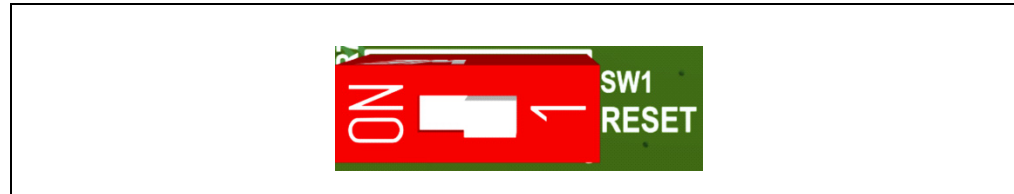
FIGURE 2-1: KSZ8895 EDS2 DAUGHTER CARD



Perform the following steps to install the KSZ8895 EDS2 Daughter Card in the SOD-
IMM EDS2 connector:

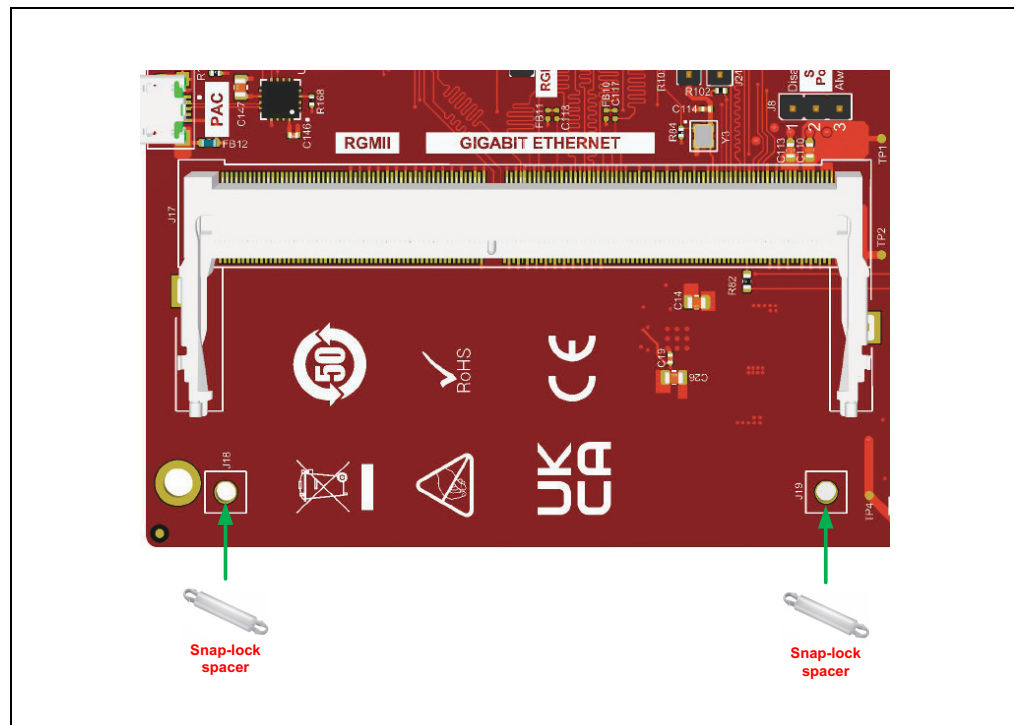
1. Verify that the host board power is OFF.
2. Verify if the SW1 slide switch is set as shown in [Figure 2-2](#).

FIGURE 2-2: SW1 SLIDE SWITCH



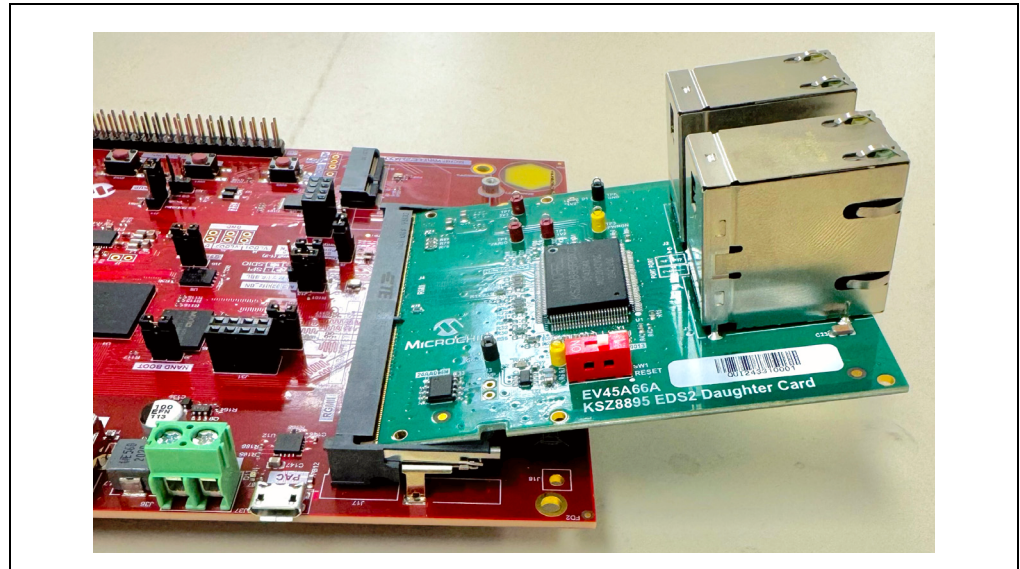
3. Install the two snap lock spacers (Würth Elektronik part number 709652500) included in the kit on the SAM9X75 Curiosity mounting holes J18 and J19 for mechanical support. See [Figure 2-3](#).

FIGURE 2-3: SNAP LOCK SPACERS



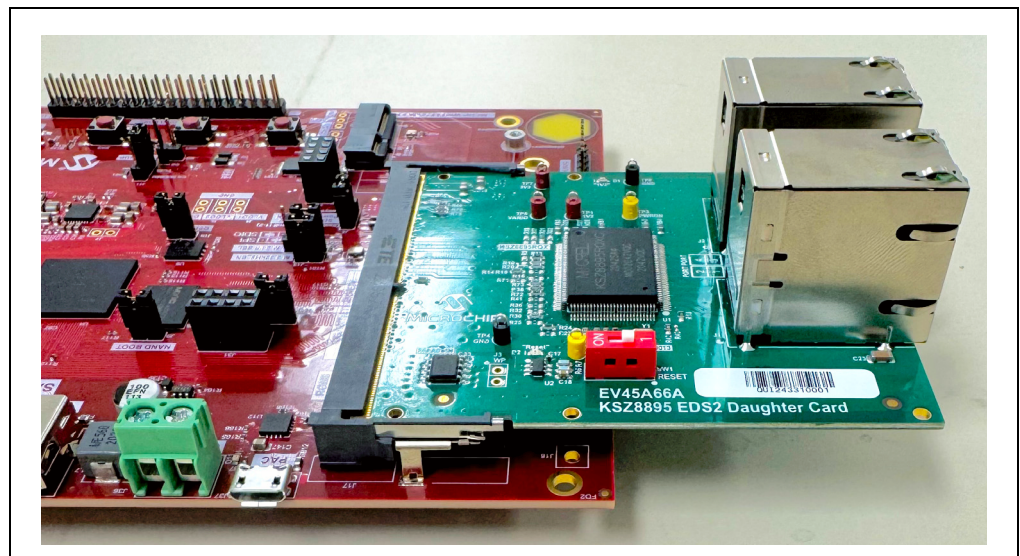
4. Grab the daughter card by its board edges. Align to SODIMM EDS2 receptacle and insert the board fingers' edge at a 45-degree angle into the SODIMM connector as shown in [Figure 2-4](#).

FIGURE 2-4: KSZ8895 EDS2 DAUGHTER CARD INSTALLATION



5. Push down the daughter card until it latches into the SODIMM receptacle latches.
6. After installation, check if the boards appear as shown in [Figure 2-5](#).

FIGURE 2-5: INSTALLED KSZ8895 EDS2 DAUGHTER CARD



7. Connect an Ethernet cable between the Daughter Card's RJ45 port 1 and a link partner device.

CAUTION

Connecting or disconnecting Ethernet cables after the board is powered is **NOT** recommended as the board fingers could be disconnected from the SODIMM receptacle and leave the board in an inconsistent state or even cause damage to the board.

2.3 QUICK START

Conduct the following steps to start using the KSZ8895 EDS2 Daughter Card:

1. Insert a programmed microSD card on SAM9X75 Curiosity microSD card slot J14.
2. Connect a USB to serial cable to SAM9X75 Curiosity J35.
3. Connect a 5V 1A power supply with a 2.1 mm ID, 5.5 mm OD DC plus to the SAM9X75 Curiosity DC jack J1. (required)
4. Press the WKUP/START buttons (SW1/SW4) on the curiosity board to turn on the system.
5. Start and complete the boot process. Refer to [Chapter 4. “System Boot”](#) for detailed instructions.

2.4 KSZ8895 EDS2 DAUGHTER CARD REMOVAL

Complete the following procedure to remove the KSZ8895 from the SODIMM EDS2 receptacle:

1. Verify that the host board power is OFF.
2. Disconnect the RJ45 cables.
3. If snap locks are used, release them from the daughter card. A pair of long-nose pliers can be used to close the latch pins for easy release.
4. Gently pull the SODIMM receptacle arms away from the daughter card. It should snap upwards.
5. Grab the daughter card by its edges and remove it from the SODIMM EDS2 receptacle.

Chapter 3. Hardware

3.1 INTRODUCTION

This chapter provides a description of the KSZ8895 EDS2 Daughter Card hardware, including headers, test points, LEDs, and switches on the board.

The top side and bottom side of the KSZ8895 are shown in [Figure 3-1](#) and [Figure 3-2](#), respectively.

FIGURE 3-1: KSZ8895 EDS2 DAUGHTER CARD (TOP SIDE)

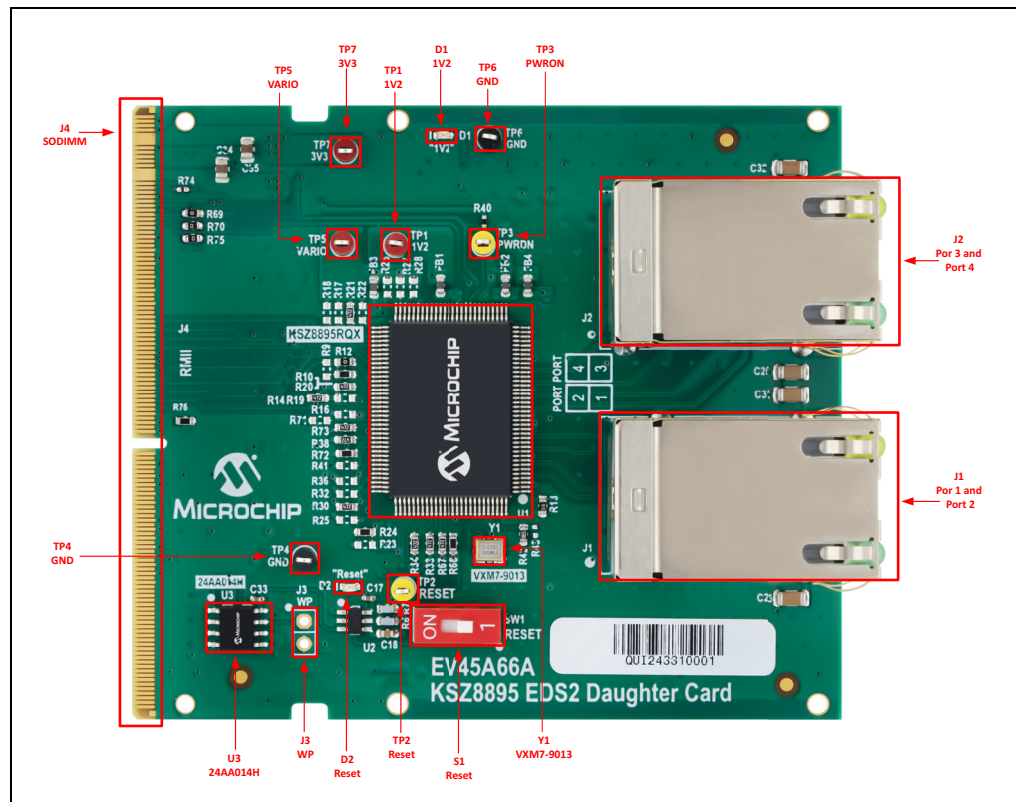
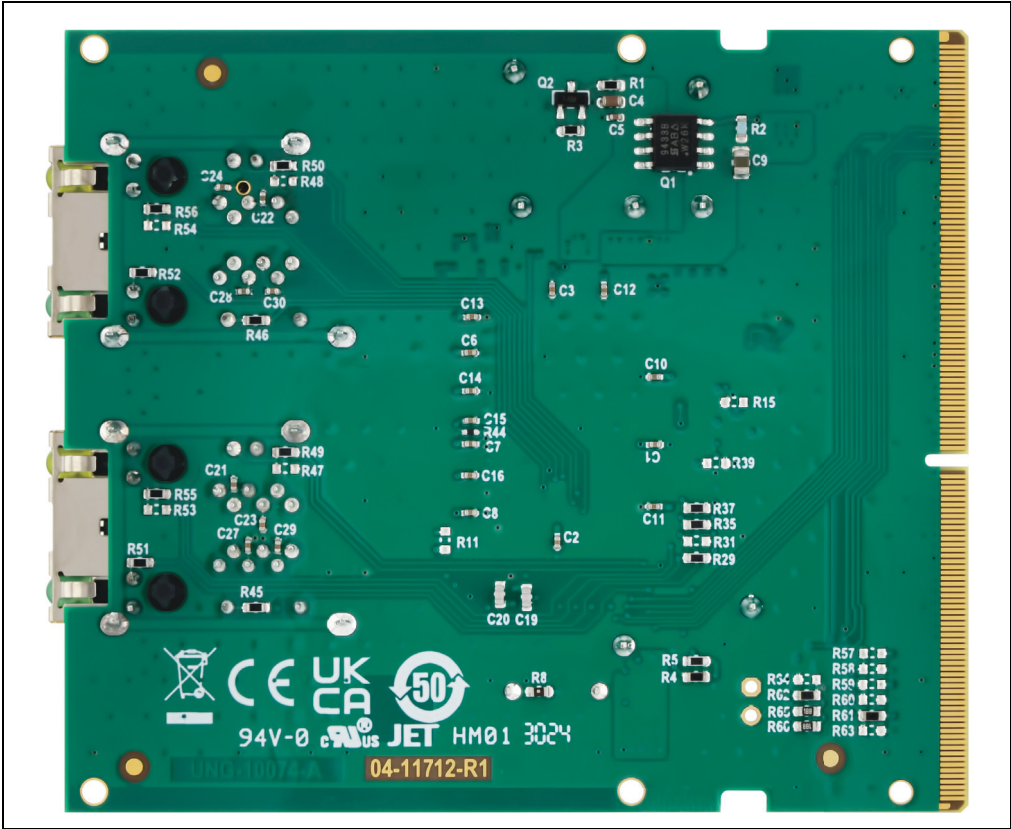


FIGURE 3-2: KSZ8895 EDS2 DAUGHTER CARD (BOTTOM SIDE)



3.2 CONNECTORS

Table 3-1 describes the connectors on the KSZ8895 EDS2 Daughter Card.

TABLE 3-1: KSZ8895 EDS2 DAUGHTER CARD CONNECTORS

Reference Designator	Name	Description
J1	RJ45 ICM 1x2	Ethernet RJ45 connector with integrated magnetics for 1 Gb ports 1 and 2.
J2	RJ45 ICM 1x2	Ethernet RJ45 connector with integrated magnetics for 1 Gb ports 1 and 2.
J3	WP Header 1x2	EEPROM Write Protect footprint (header not installed). Used to disable write protection during factory programming.
J4	SODIMM-260 Pin Edge Connector	Provides power and signals for operation. Connects to Micro-chip EDS2 compatible host.

3.3 TEST POINTS

Table 3-2 lists the test points on the KSZ8895.

TABLE 3-2: KSZ8895 EDS2 DAUGHTER CARD TEST POINTS

Test Point	Color	Description
TP1	Red	1V2
TP2	Yellow	Reset
TP3	Yellow	Power Down
TP4	Black	GND
TP5	Red	VARIO
TP6	Black	GND
TP7	Red	3V3

3.4 LEDS

Table 3-3 details the LEDS on the KSZ8895.

TABLE 3-3: KSZ8895 EDS2 DAUGHTER CARD LEDS

Reference Designator	Name	Description
D1	1V2	Green LED 1V2 indicator
D2	RESET	Red LED RESET indicator
J1A - Left	RJ45 Port 1 - Left	Green LED connected to KSZ8895 LED1-0
J1A - Right	RJ45 Port 1 - Right	Yellow LED connected to KSZ8895 LED1-1
J1B - Left	RJ45 Port 2 - Left	Green LED connected to KSZ8895 LED2-0
J1B - Right	RJ45 Port 2 - Right	Yellow LED connected to KSZ8895 LED2-1
J2A - Left	RJ45 Port 3 - Left	Green LED connected to KSZ8895 LED3-0
J2A - Right	RJ45 Port 3 - Right	Yellow LED connected to KSZ8895 LED3-1
J2B - Left	RJ45 Port 4 - Left	Green LED connected to KSZ8895 LED4-0
J2B - Right	RJ45 Port 4 - Right	Yellow LED connected to KSZ8895 LED4-1

The DIP Switch (SW1), as shown in [Figure 3-3](#), can be used to place the KSZ8895 EDS2 Daughter Card in Reset without affecting the rest of the system. This feature is useful when testing and updating the KSZ8895 Linux[®] driver after the system has booted up.

3.7 CLOCKS

The KSZ8895 EDS2 Daughter Card uses a Microchip VXM7-9013-25M0000 25 MHz crystal for the KSZ8895 clock reference.

The KSZ8895 generates a 125 MHz clock for Synchronous Ethernet (SyncE) applications. The clock is buffered with a Microchip PL102-10TC buffer to drive to the SOD-IMM EDS2 connector.

3.8 POWER

The KSZ8895 EDS2 Daughter Card requires 3.3V, 2.5V, and 1.2V. The EDS2 SODIMM EDS2 interface provides 3.3V, 2.5V, and VARIO (3.3V or 2.5V). An on-board MOSFET, driven by the KSZ8895 LDO, is used to generate the 1V2 required by the KSZ8895 analog and digital core power inputs.

3.9 KSZ8895 EDS2 DAUGHTER CARD EEPROM

The KSZ8895 EDS2 Daughter Card includes a Microchip 24AA014H EEPROM with half-array write protection (40H to 7Fh) for identification. Only some locations in the protected area starting at 40h are programmed as shown in [Figure 3-4](#). Details on these fields are specified in [Table 3-5](#).

FIGURE 3-4: EEPROM CONTENTS

Offset (h)	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00000000	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
00000010	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
00000020	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
00000030	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
00000040	A3	01	01	04	07	00	88	95	01	00	45	56	34	35	41	36
00000050	36	41	41	31	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
00000060	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
00000070	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	AA	00	00	AA

TABLE 3-5: EDS2 DAUGHTER CARD EEPROM

Byte Address	Name	Type	Description
40	KEY	INT	Magic number = A3h
41	REV	INT	EEPROM revision
42	DCTYPE	INT	Daughter card type: 0 = PHY, 1 = SWITCH
43	NPORTS	INT	Number of ports
44	MACIF	INT	MAC Interface: RMII 07h RGMII 09h RGMII_ID 0Ah RGMII_RXID 0Bh RGMII_TXID 0Ch SGMII 04h QSGMII 13h
45	DPN_PNUM	INT	Device part number: [23:20] Product family - KSZ - LAN - VSC [19:16] Part number upper 4 bits
46			Device Part number bits [15:8]
47			Device Part number bits [7:0]
48	CTRLIF	INT	Control interface: 7:5 = Reserved 4:3 = SPI Mode 2 = SPI Control available 1 = I ² C Control available 0 = MIIM Control available
49	SPIR	INT	SPI rate
4A	DEVT	ASCII	Dev Tools part number
4B			
4C			
4D			
4E			
4F			
50			
51			
52	BREVU	ASCII	UNG board revision letter
53	BREVD	ASCII	Dev Tools board revision number
7C	IDBYTE0	INT	ID BYTE 1 = AAh
7D	IDBYTE1	INT	ID BYTE 2 = 00h
7E	IDBYTE2	INT	ID BYTE 3 = 00h
7F	CHECKSUM	INT	CHECKSUM = AAh

The EEPROM's contents can be read within Linux via the following command:

```
# i2cdump -f -y -r 0-0x7F 1 0x54
```

FIGURE 3-5: EEPROM DUMP

```
COM11 - Tera Term VT
File Edit Setup Control Window Help
# i2cdump -f -y -r 0-0x7F 1 0x54
No size specified (using byte-data access)
 0 1 2 3 4 5 6 7 8 9 a b c d e f 0123456789abcdef
00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff .....
10: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff .....
20: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff .....
30: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff .....
40: a3 01 01 04 07 00 88 95 01 00 45 56 34 35 41 36  ??????..EU45A6
50: 36 41 41 31 ff ff ff ff ff ff ff ff ff ff ff ff  6AA1.....
60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff .....
70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff  .....?..?
#
```

NOTES:

Chapter 4. System Boot

4.1 OVERVIEW

This chapter describes the boot process using the SAM9X75 Curiosity EDS2 host using Linux software running on the SAM9X75. The boot process for other EDS2 host platforms should be similar.

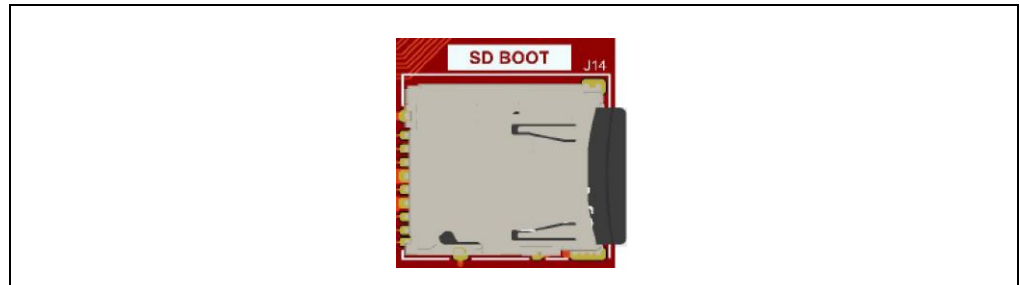
The EDS2 host board should be properly configured with Linux and driver supporting the KSZ8895. Refer to the software documentation on the KSZ8895 EDS2 Daughter Card product page. Download the microSD card image and program into a microSD card using a tool, such as balenaEtcher.

4.2 KSZ8895 EDS2 SYSTEM POWER-UP

At this point the KSZ8895 should be installed in the SODIMM EDS2 connector. Perform the following steps to power up the SAM9X75 Curiosity EDS2:

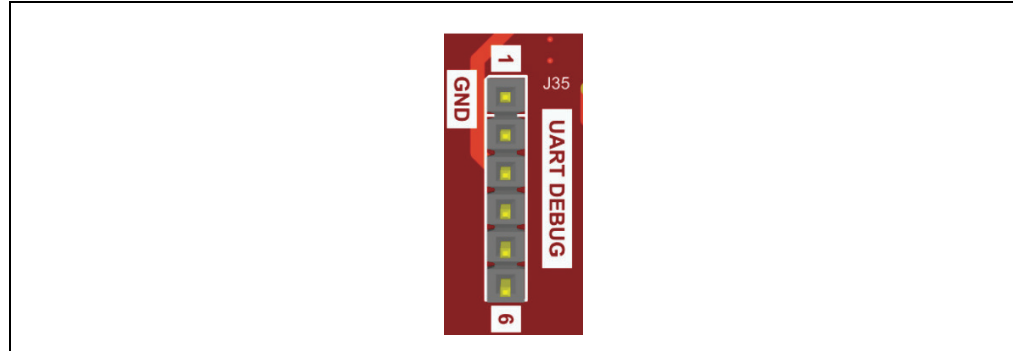
1. Verify the host board's default jumper settings within the *SAM9X75 Curiosity EDS2 User's Guide*.
2. Insert the microSD card in SAM9X75 Curiosity microSD card slot J14. See [Figure 4-1](#).

FIGURE 4-1: MICROSD CARD



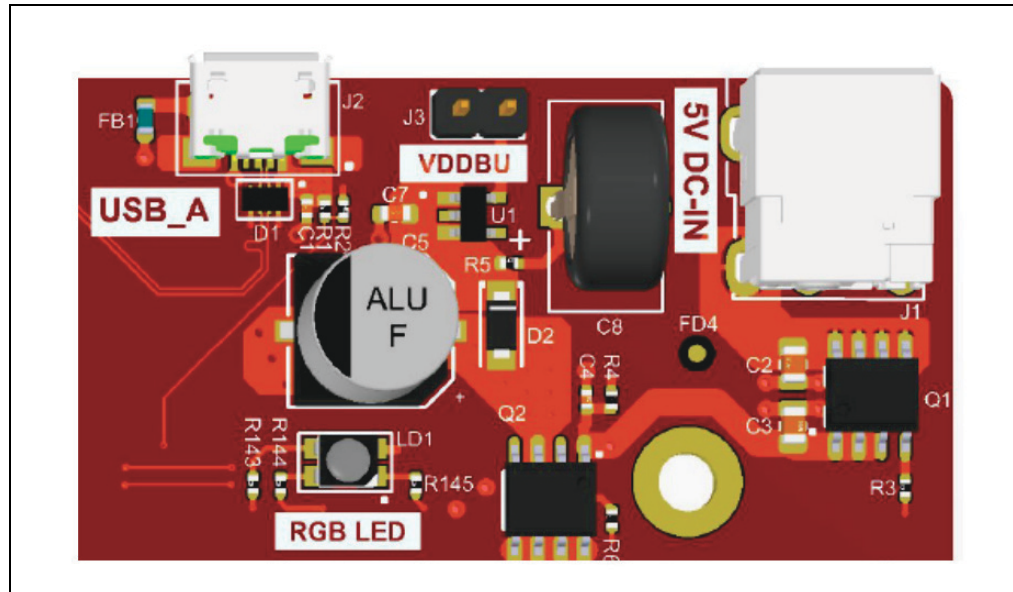
3. Connect the 1x6 female header of an FTDI or compatible TTL-232R-3V3 USB-to-serial cable into the UART debug header J35 on the SAM9X75 Curiosity EDS2. Note that the header black wire must connect to pin 1 of J35. See [Figure 4-2](#).

FIGURE 4-2: SAM9X75 UART DEBUG HEADER



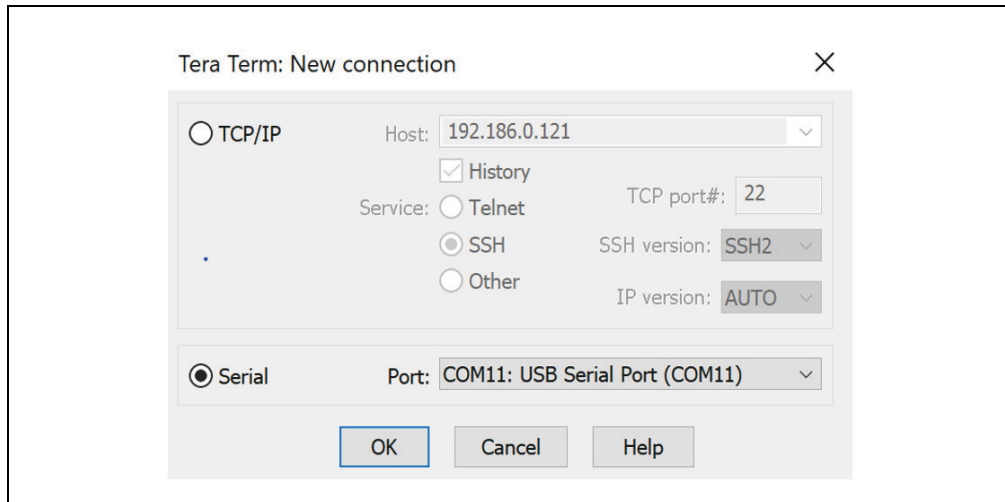
4. Press the WKUP/START buttons (SW1/SW4) on the curiosity board to turn on the system.
5. Connect a 5V 1A (minimum) power supply with a DC plug to DC Jack J1 on the SAM9X75 Curiosity EDS2 host. The RGB LED LD1 should begin its startup sequence. See [Figure 4-3](#).

FIGURE 4-3: SAM9X75 CURIOSITY DC JACK, MICRO USB, AND RGB LED



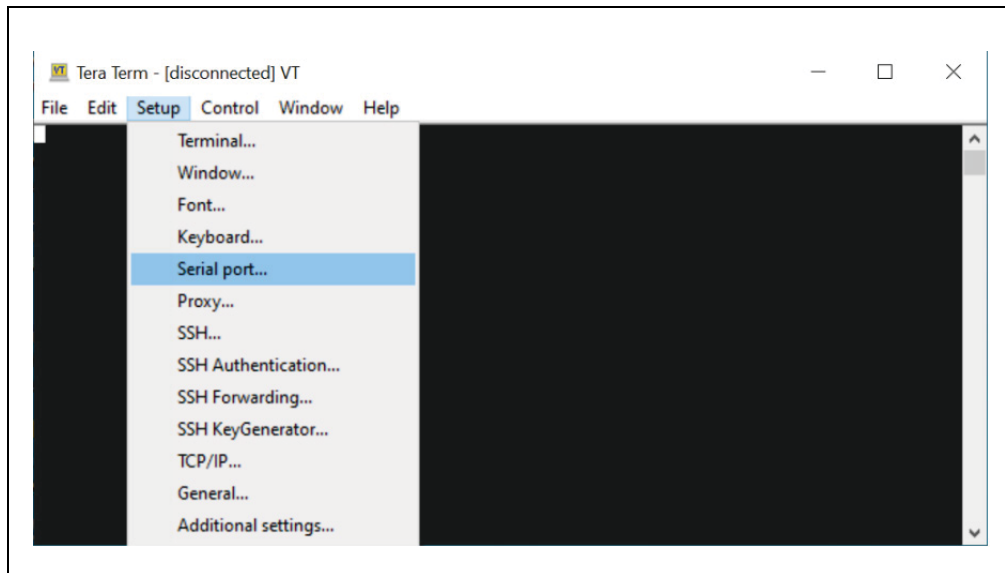
6. Open Tera Term. Tick the **Serial** radio button and look for COMx:USB Serial Port.
7. COM11 is shown in [Figure 4-4](#). Windows may assign a different port number. Click on **OK**.

FIGURE 4-4: TERA TERM SERIAL PORT SELECTION



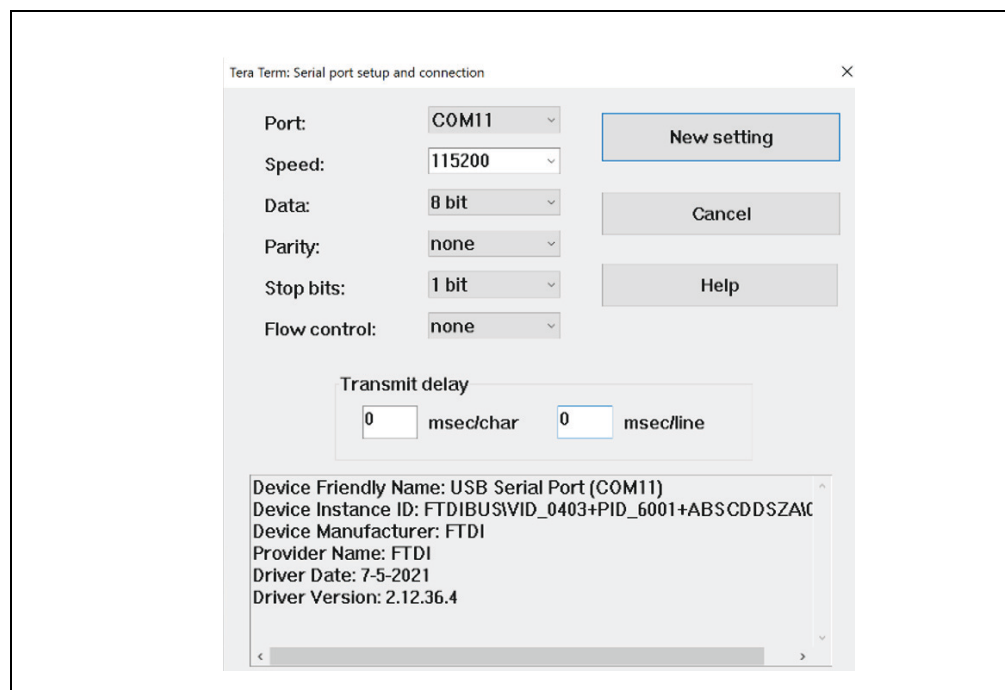
8. Go to the Setup menu and select Serial port. See [Figure 4-5](#).

FIGURE 4-5: TERA TERM SETUP MENU



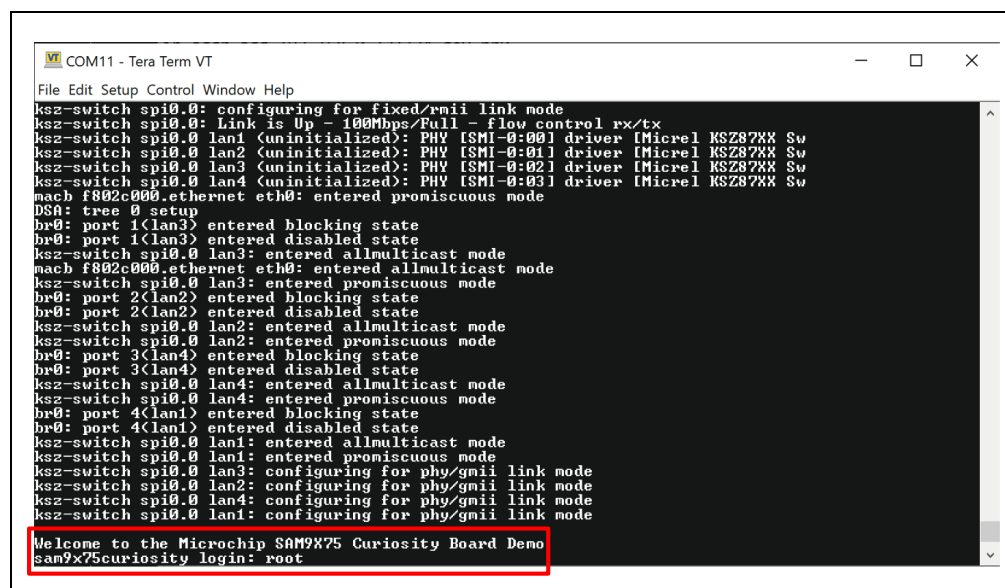
- Set the selected port to 115200, 8-bit, no parity, 1 stop bit, no flow control, and 40 msec/line. Click on **OK**. See [Figure 4-6](#).

FIGURE 4-6: TERA TERM SERIAL PORT SETUP



- At the login prompt, enter `root`. See [Figure 4-7](#).

FIGURE 4-7: LINUX® PING



Note: For the succeeding steps, it is assumed that a host PC with an Ethernet port that can be pinged at 192.168.0.80 is available.

- Verify that the KSZ8895 driver has loaded into the kernel. See [Figure 4-8](#).

FIGURE 4-8: # DMSG | GREP -I KSZ

```

COM11 - Tera Term VT
File Edit Setup Control Window Help
# dmesg | grep -i ksz
[ 0.000000] OF: fdt: Machine model: SAM9X75-Curiosity: KSZ8895 RMII PHY Daughter C
ard
[ 15.219888] ksz-switch spi0.0: found switch: KSZ8895, rev 0
[ 20.836959] ksz-switch spi0.0: configuring for fixed/rmii link mode
[ 20.842227] ksz-switch spi0.0: Link is Up - 100Mbps/Full - flow control rx/tx
[ 20.854816] ksz-switch spi0.0 lan1 (uninitialized): PHY [SMI-0:00] driver [Micrel
KSZ87XX Switch] (irq=POLL)
[ 20.884668] ksz-switch spi0.0 lan2 (uninitialized): PHY [SMI-0:01] driver [Micrel
KSZ87XX Switch] (irq=POLL)
[ 20.931144] ksz-switch spi0.0 lan3 (uninitialized): PHY [SMI-0:02] driver [Micrel
KSZ87XX Switch] (irq=POLL)
[ 20.979521] ksz-switch spi0.0 lan4 (uninitialized): PHY [SMI-0:03] driver [Micrel
KSZ87XX Switch] (irq=POLL)
[ 21.659563] ksz-switch spi0.0 lan1: entered allmulticast mode
[ 21.706440] ksz-switch spi0.0 lan1: entered promiscuous mode
[ 21.869117] ksz-switch spi0.0 lan2: entered allmulticast mode
[ 21.923617] ksz-switch spi0.0 lan2: entered promiscuous mode
[ 21.972256] ksz-switch spi0.0 lan3: entered allmulticast mode
[ 22.017845] ksz-switch spi0.0 lan3: entered promiscuous mode
[ 22.067504] ksz-switch spi0.0 lan4: entered allmulticast mode
[ 22.134398] ksz-switch spi0.0 lan4: entered promiscuous mode
[ 22.208566] ksz-switch spi0.0 lan1: configuring for phy/gmii link mode
[ 22.247294] ksz-switch spi0.0 lan2: configuring for phy/gmii link mode
[ 22.330630] ksz-switch spi0.0 lan3: configuring for phy/gmii link mode
[ 22.354220] ksz-switch spi0.0 lan4: configuring for phy/gmii link mode
#
  
```

- Plug an Ethernet cable into one of the RJ45 ports. Check the link status with the IP utility. One of the LAN ports shows an “Up” status indicator. See [Figure 4-9](#).

FIGURE 4-9: # IP -C LINK

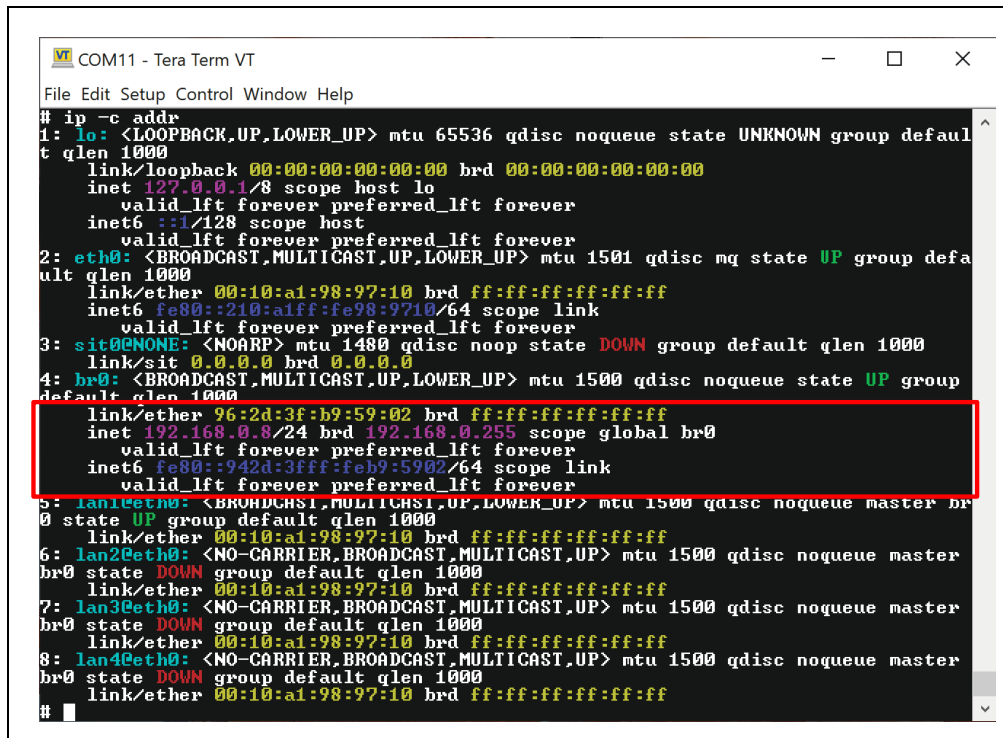
```

COM11 - Tera Term VT
File Edit Setup Control Window Help
Welcome to the Microchip SAM9X75 Curiosity Board Demo
sam9x75curiosity login: root
# ksz-switch spi0.0 lan1: Link is Up - 100Mbps/Full - flow control rx/tx
br0: port 1(lan1) entered blocking state
br0: port 1(lan1) entered forwarding state

# ip -c link
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN mode DEFAULT
    group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1501 qdisc mq state UP mode DEFH
    LI group default qlen 1000
    link/ether 00:10:a1:98:97:10 brd ff:ff:ff:ff:ff:ff
3: sit0@NONE: <NOARP> mtu 1480 qdisc noop state DOWN mode DEFAULT group default
    qlen 1000
    link/sit 0.0.0.0 brd 0.0.0.0
4: br0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP mode D
    EFault group default qlen 1000
    link/ether 76:2d:3f:b9:59:02 brd ff:ff:ff:ff:ff:ff
5: lan1@eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue master br
    0 state UP mode DEFAULT group default qlen 1000
    link/ether 00:10:a1:98:97:10 brd ff:ff:ff:ff:ff:ff
6: lan2@eth0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue naster
    br0 state DOWN mode DEFAULT group default qlen 1000
    link/ether 00:10:a1:98:97:10 brd ff:ff:ff:ff:ff:ff
7: lan3@eth0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue naster
    br0 state DOWN mode DEFAULT group default qlen 1000
    link/ether 00:10:a1:98:97:10 brd ff:ff:ff:ff:ff:ff
8: lan4@eth0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue naster
    br0 state DOWN mode DEFAULT group default qlen 1000
    link/ether 00:10:a1:98:97:10 brd ff:ff:ff:ff:ff:ff
#
  
```

13. Verify that your IP configuration is compatible with your network. The example in [Figure 4-10](#) indicates the switch is configured with an IP address of 192.168.0.8 with 24 bits for the network mask which is equivalent to 255.255.255.0. This configuration provides access to other devices on the 192.168.0.x addressed network.

FIGURE 4-10: # IP -C ADDR

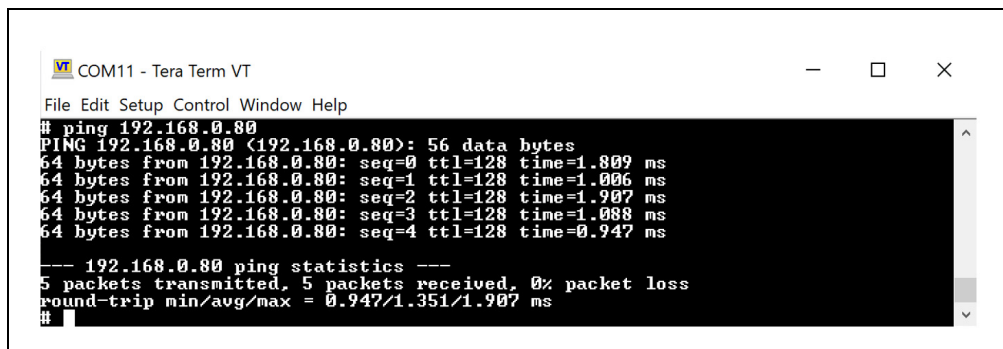


```
COM11 - Tera Term VT
File Edit Setup Control Window Help
# ip -c addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1501 qdisc mq state UP group default qlen 1000
    link/ether 00:10:a1:98:97:10 brd ff:ff:ff:ff:ff:ff
    inet6 fe80::210:a1ff:fe98:9710/64 scope link
        valid_lft forever preferred_lft forever
3: sit0: <NONE> mtu 1480 qdisc noop state DOWN group default qlen 1000
    link/sit 0.0.0.0 brd 0.0.0.0
4: br0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default qlen 1000
    link/ether 96:2d:3f:b9:59:02 brd ff:ff:ff:ff:ff:ff
    inet 192.168.0.8/24 brd 192.168.0.255 scope global br0
        valid_lft forever preferred_lft forever
    inet6 fe80::942d:3fff:feb9:5902/64 scope link
        valid_lft forever preferred_lft forever
5: lan1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue master br0 state UP group default qlen 1000
    link/ether 00:10:a1:98:97:10 brd ff:ff:ff:ff:ff:ff
6: lan2: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue master br0 state DOWN group default qlen 1000
    link/ether 00:10:a1:98:97:10 brd ff:ff:ff:ff:ff:ff
7: lan3: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue master br0 state DOWN group default qlen 1000
    link/ether 00:10:a1:98:97:10 brd ff:ff:ff:ff:ff:ff
8: lan4: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue master br0 state DOWN group default qlen 1000
    link/ether 00:10:a1:98:97:10 brd ff:ff:ff:ff:ff:ff
#
```

14. Enter the following command to perform a ping test (see [Figure 4-11](#)):

```
#ping 192.168.0.80
```

FIGURE 4-11: KSZ8895 EDS2 DAUGHTER CARD SYSTEM PING TEST



```
COM11 - Tera Term VT
File Edit Setup Control Window Help
# ping 192.168.0.80
PING 192.168.0.80 (192.168.0.80): 56 data bytes
64 bytes from 192.168.0.80: seq=0 ttl=128 time=1.809 ms
64 bytes from 192.168.0.80: seq=1 ttl=128 time=1.006 ms
64 bytes from 192.168.0.80: seq=2 ttl=128 time=1.907 ms
64 bytes from 192.168.0.80: seq=3 ttl=128 time=1.088 ms
64 bytes from 192.168.0.80: seq=4 ttl=128 time=0.947 ms

--- 192.168.0.80 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 0.947/1.351/1.907 ms
#
```



KSZ8895 EDS2 DAUGHTER CARD USER GUIDE

Appendix A. Schematics

A.1 INTRODUCTION

This appendix shows the KSZ8895 EDS2 Daughter Card schematics.

FIGURE A-1: KSZ8895 EDS2 DAUGHTER CARD TITLE PAGE

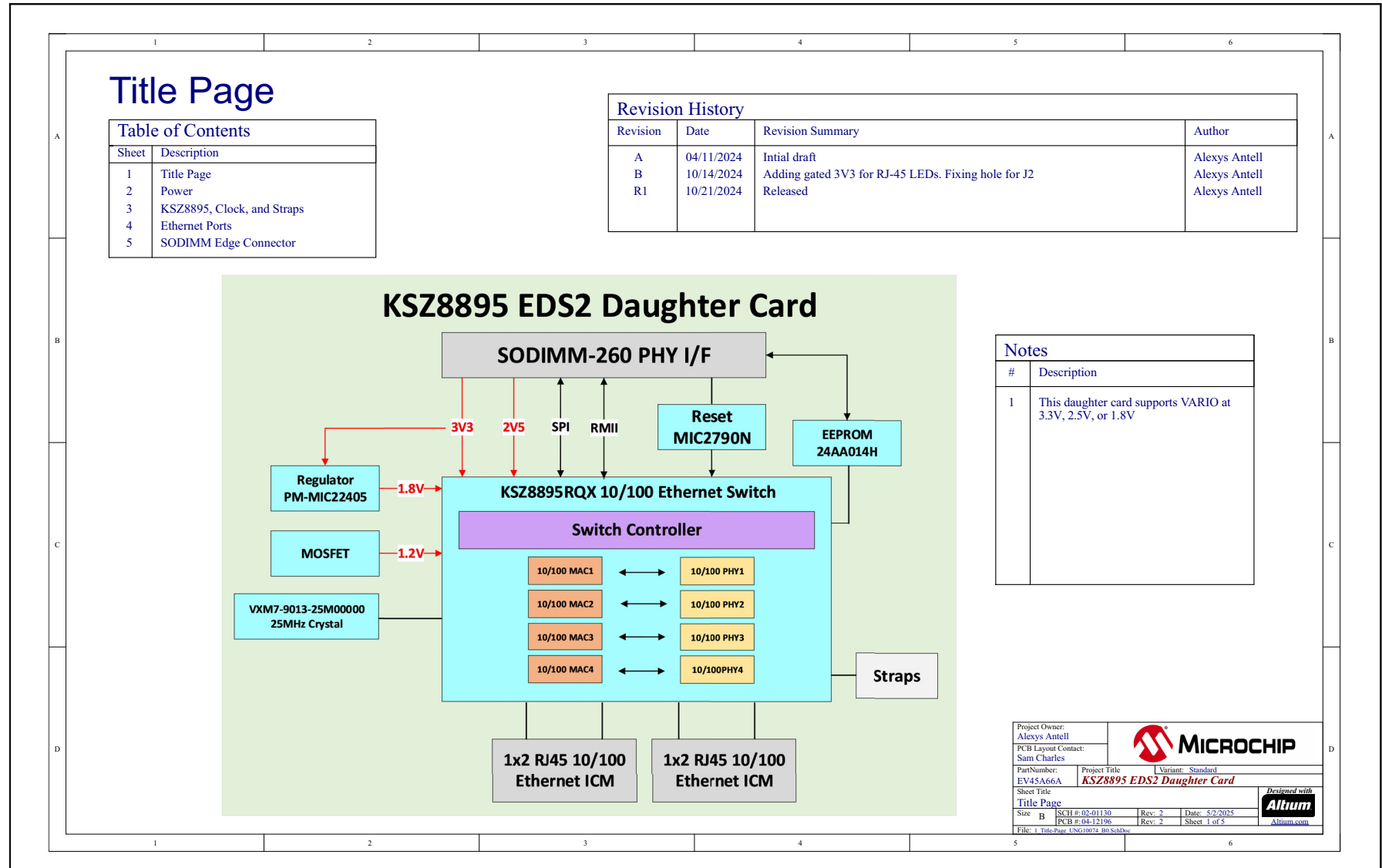


FIGURE A-2: KSZ8895 EDS2 DAUGHTER CARD POWER

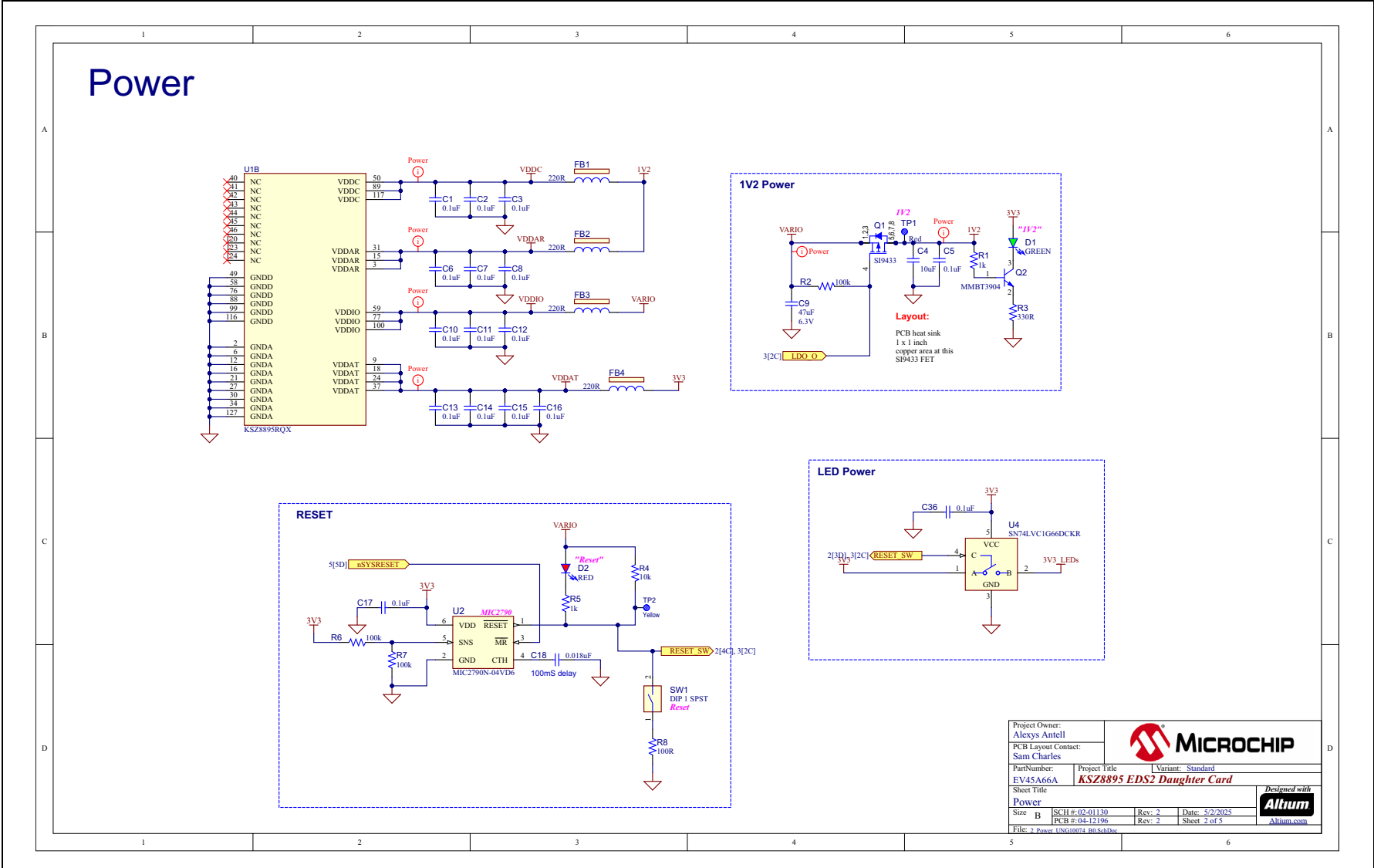
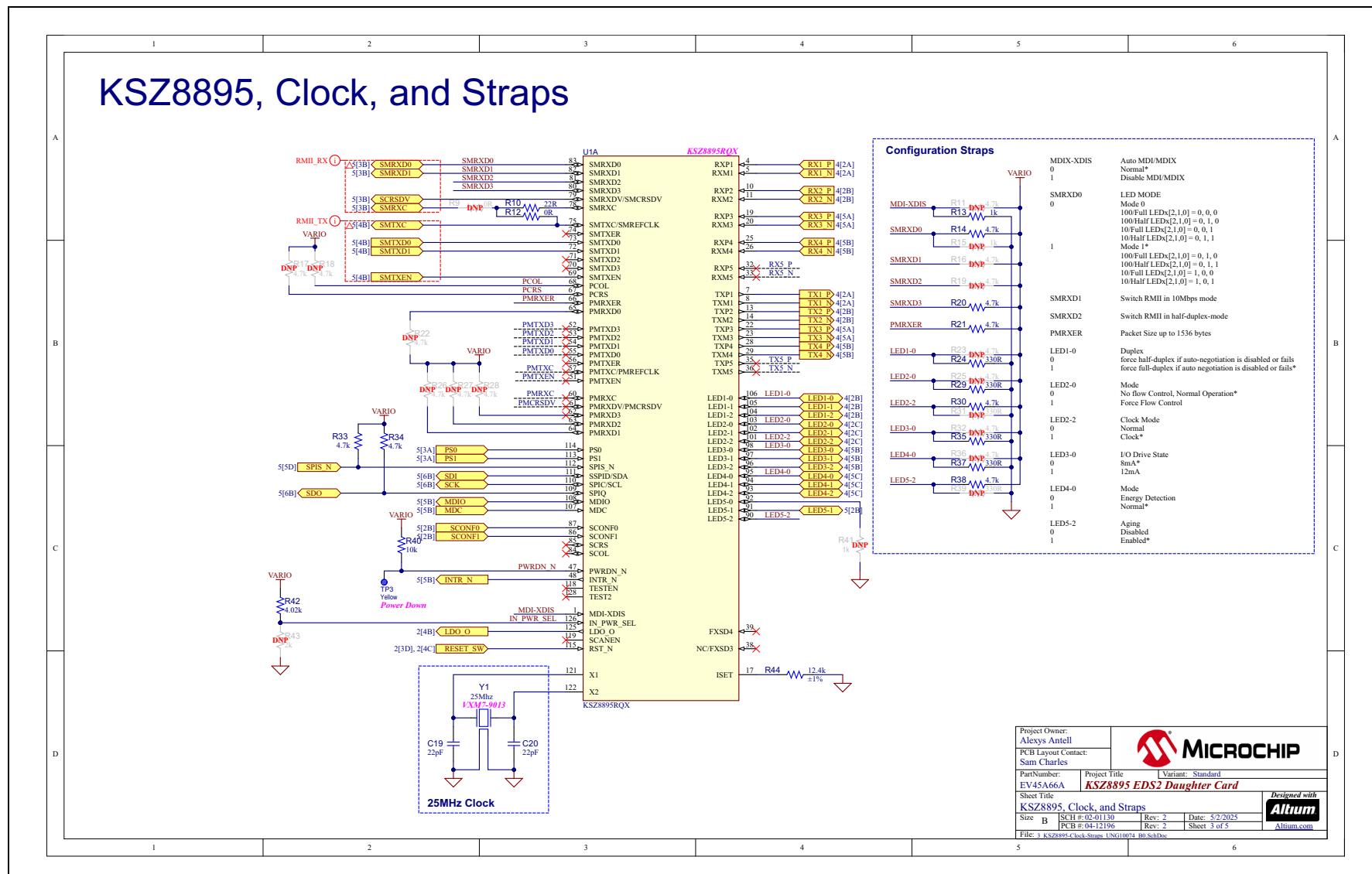
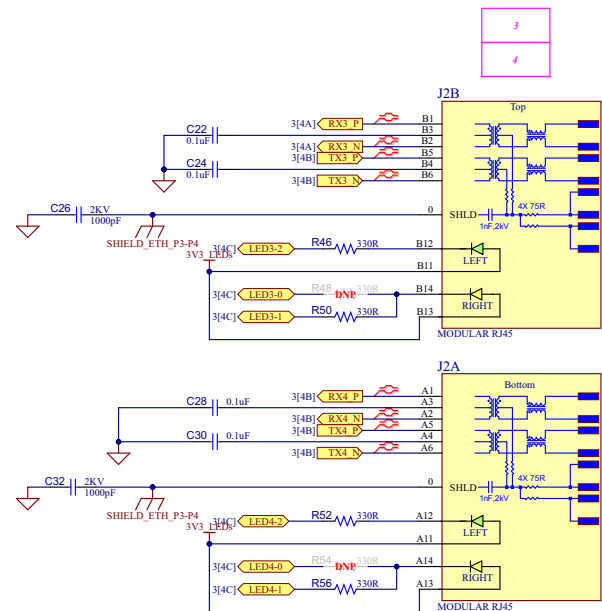


FIGURE A-3: KSZ8895 EDS2 DAUGHTER CARD PHY, CLOCK, AND STRAPS

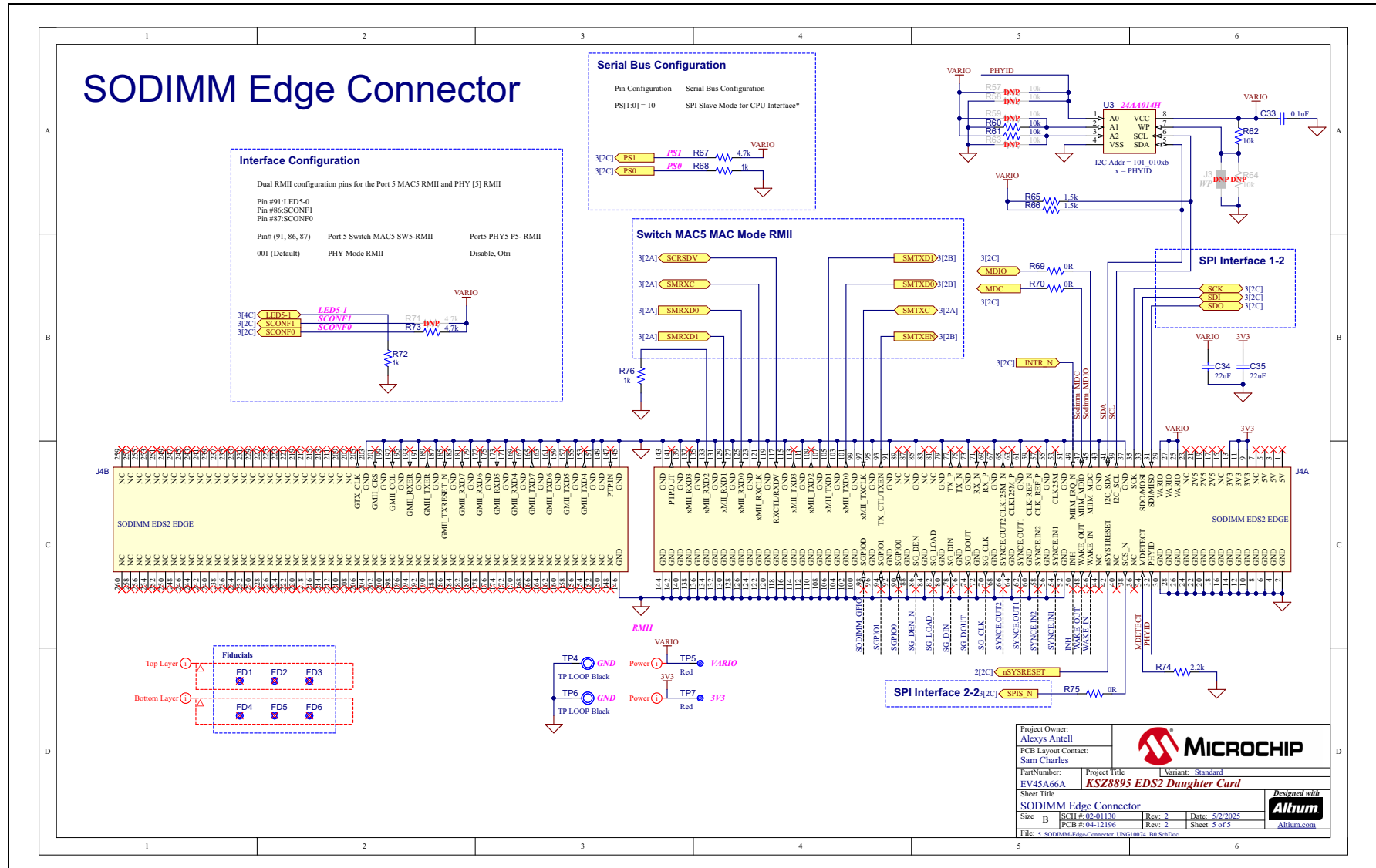


Ethernet Ports



Project Owner: Alexys Antell		 MICROCHIP	
PCB Layout Contact: Sam Charles			
PartNumber: EV45A66A	Project Title KSZ2885 EDS2 Daughter Card	Variant: <u>Standard</u>	Designed with 
Sheet Title Ethernet Ports			
Size: B	SCH #: 02-01130	Rev.: 2	
File: <i>A:\Projects\PCB\UNCI0134_00 Sch.sch</i>		Rev.: 2	Sheet: 4 of 5
			

KSZ8895 EDS2 Daughter Card User Guide





Appendix B. Bill of Materials

B.1 INTRODUCTION

This appendix contains the KSZ8895 Bill of Materials (BOM).

TABLE B-1: BILL OF MATERIALS

Item	Qty	Reference	Description	Populated	Manufacturer	Manufacturer Part Number
1	21	C1, C2, C3, C6, C7, C8, C10, C11, C12, C13, C14, C15, C16, C21, C22, C23, C24, C27, C28, C29, C30	CAP CER 0.1uF 16V 10% X7R SMD 0402	Yes	KEMET	C0402C104K4RACAUTO
2	1	C4	CAP CER 10UF 25V 20% X5R SMD 0603	Yes	Murata Electronics North America	GRM188R61E106MA73D
3	4	C5, C17, C33, C36	CAP CER 0.1uF 50V 10% X7R SMD 0402	Yes	TDK Corporation	C1005X7R1H104K050BB
4	1	C9	CAP CER 47uF 6.3V 20% X5R SMD 0805	Yes	Taiyo Yuden	JMK212BJ476MG-T
5	1	C18	CAP CER 0.018uF 50V 10% X7R SMD 0603	Yes	KEMET	C0603C183K5RACTU
6	2	C19, C20	CAP CER 22pF 50V 5% C0G SMD 0603	Yes	TDK Corporation	C1608C0G1H220J080AA
7	4	C25, C26, C31, C32	CAP CER 1000pF 2KV 10% X7R SMD 1206	Yes	D3_Johanson Dielectrics Inc	202R18W102KV4E
8	2	C34, C35	CAP CER 22uF 16V 10% X5R SMD 0805	Yes	TDK Corporation	C2012X5R1C226K125AC
9	1	D1	DIO LED GREEN 2V 30mA 35mcd Clear SMD 0603	Yes	Lite-On Inc	LTST-C191KGKT
10	1	D2	DIO RED 2V 20mA 54mcd CLEAR SMD 0603	Yes	Lite-On Inc.	LTST-C191KRKT
11	4	FB1, FB2, FB3, FB4	FERRITE 220R@100MHZ 2A SMD 0603	Yes	Murata	BLM18EG221SN1D
12	2	J1, J2	CON MODULAR JACK RJ45 10/100 MAGNETICS 4xLEDs SHIELD TH R/A	Yes	Bel Fuse	1840854-3
13	0	J3	CON HDR-2.54 Male 1x2 Gold 5.84MH TH VERT	No	FCI	77311-118-02LF
14	1	Q1	TRANS FET P-CH SI9433 20V 4.5A 1.3W 0.040R SOIC-8	Yes	Vishay	SI9433BDY-T1-GE3
15	1	Q2	TRANS BJT NPN MMBT3904 40V 200mA 310mW SOT-23-3	Yes	Micro Commercial Components Corporation	MMBT3904-TP
16	5	R1, R5, R68, R72, R76	RES TKF 1k 1% 1/10W SMD 0603	Yes	Panasonic	ERJ-3EKF1001V
17	3	R2, R6, R7	RES TF 100k 1% 1/8W SMD 0603	Yes	Vishay	MCT06030C1003FP500
18	13	R3, R24, R29, R35, R37, R45, R46, R49, R50, R51, R52, R55, R56	RES TKF 330R 1% 1/10W SMD 0603	Yes	Panasonic	ERJ-3EKF3300V
19	4	R4, R60, R61, R62	RES TKF 10k 1% 1/10W SMD 0603	Yes	Vishay, ROHM	CRCW060310K0FKEA, MCR03EZPFX1002
20	1	R8	RES TKF 100R 1% 1/10W SMD 0603 AEC-Q200	Yes	D1_Rohm Semiconductor	KTR03EZPFX1000
21	0	R9	RES TKF 0 OHM 1/10W 0603	Yes	Bourns	CR0603-J/-000ELF
22	1	R10	RES TKF 22R 1% 1/10W SMD 0603	Yes	Panasonic Electronic Components	ERJ-3EKF22R0V
23	0	R11, R16, R17, R18, R19, R22, R23, R25, R26, R27, R28, R32, R36, R71	RES TKF 4.7k 5% 1/10W SMD 0603	Yes	Panasonic	ERJ-3GEYJ472V
24	4	R12, R69, R70, R75	RES TKF 0 OHM 1/10W 0603	Yes	Bourns	CR0603-J/-000ELF
25	1	R13	RES TF 1k 1% 1/10W SMD 0603 AEC-Q200	Yes	Stackpole Electronics Inc	RMCF0603FT1K00

TABLE B-1: BILL OF MATERIALS (CONTINUED)

Item	Qty	Reference	Description	Populated	Manufacturer	Manufacturer Part Number
26	9	R14, R20, R21, R30, R33, R34, R38, R67, R73	RES TKF 4.7k 5% 1/10W SMD 0603	Yes	Panasonic	ERJ-3GEYJ472V
27	0	R15	RES TF 1k 1% 1/10W SMD 0603 AEC-Q200	Yes	Stackpole Electronics Inc	RMCF0603FT1K00
28	0	R31, R39, R47, R48, R53, R54	RES TKF 330R 1% 1/10W SMD 0603	Yes	Panasonic	ERJ-3EKF3300V
29	1	R40	RES TKF 10k 5% 1/10W SMD 0402	Yes	Panasonic	ERJ-2GEJ103X
30	0	R41	RES TKF 1k 1% 1/10W SMD 0603	No	Panasonic	ERJ-3EKF1001V
31	1	R42	RES TKF 4.02k 1% 1/10W SMD 0603	Yes	Stackpole Electronics Inc	RMCF0603FT4K02
32	0	R43	RES TKF 2k 5% 1/16W SMD 0402	Yes	Yageo	RC0402JR-072KL
33	1	R44	RES TKF 12.4K 1% 1/10W SMD 0402 AEC-Q200	Yes	Panasonic Electronic Components	ERJ-2RKF1242X
34	0	R57, R58, R59, R63, R64	RES TKF 10k 1% 1/10W SMD 0603	No	ROHM	MCR03EZPFX1002
35	2	R65, R66	RES TF 1.5k 1% 1/8W SMD 0603	Yes	Stackpole Electronics Inc	RNCP0603FTD1K50
36	1	R74	RES TKF 2.2k 1% 1/10W SMD 0402	Yes	Panasonic	ERJ-2RKF2201X
37	1	SW1	SWITCH DIP 1 SPST 24V 25mA 418117270901 TH	Yes	Würth Elektronik	418117270901
38	3	TP1, TP5, TP7	MISC, TEST POINT MULTI PURPOSE MINI RED	Yes	Keystone	5000
39	2	TP2, TP3	MISC, TEST POINT PC MINI, 0.040" D YELLOW	Yes	Keystone	5004
40	2	TP4, TP6	MISC, TEST POINT MULTI PURPOSE MINI BLACK	Yes	Keystone	5001
41	1	U1	MCHP INTERFACE ETHERNET KSZ8895RQX PQFP-128	Yes	Microchip Technology	KSZ8895RQX
42	1	U2	MCHP ANALOG SUPERVISOR 0.4V to 5.5V MIC2790N-04VD6 SOT-23-3	Yes	Microchip Technology	MIC2790N-04VD6
43	1	U3	MCHP MEMORY SERIAL EEPROM 1kb I2C 24AA014H-I/SN 8SOIC	Yes	Microchip Technology	24AA014H-I/SN
44	1	U4	IC SWITCHER SN74LVC1G66DCKR SINGLE BILATERAL SWITCH SC70-5	Yes	Texas Instruments	SN74LVC1G66DCKR
45	1	Y1	MCHP CRYSTAL 25Mhz 10pF SMD L3.2W2.5H0.8	Yes	Microchip Technology	VXM7-9013-25M0000000

NOTES:



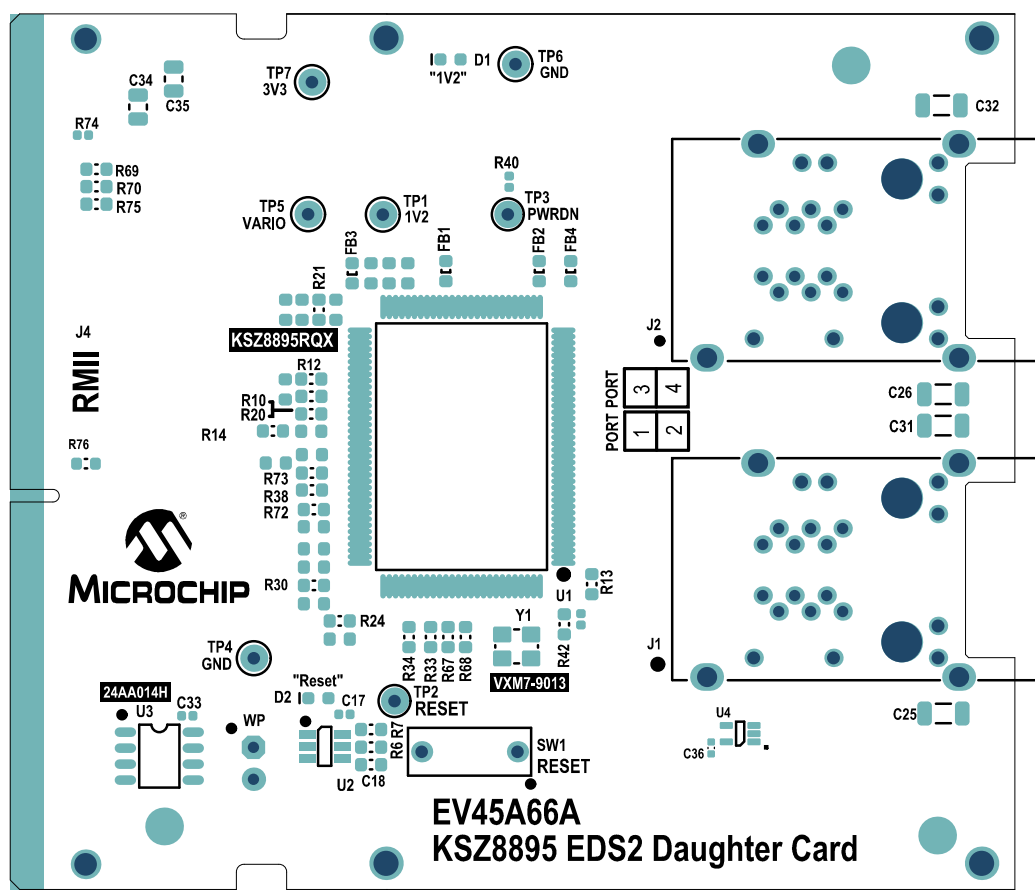
KSZ8895 EDS2 DAUGHTER CARD USER GUIDE

Appendix C. PCB Layers

C.1 INTRODUCTION

This appendix contains the KSZ8895's silkscreen top and bottom layers.

FIGURE C-1: KSZ8895 EDS2 DAUGHTER CARD TOP SILK SCREEN



EV45A66A
KSZ8895 EDS2 Daughter Card

FIGURE C-2: KSZ8895 EDS2 DAUGHTER CARD TOP COPPER

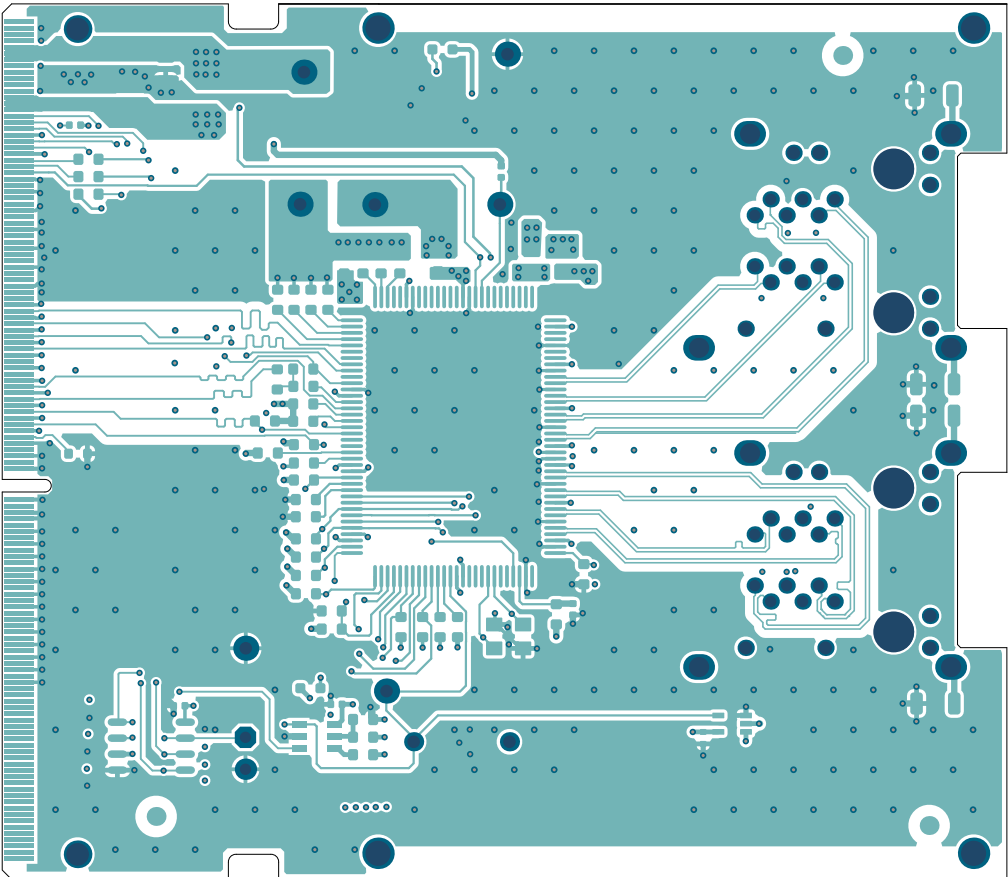


FIGURE C-3: KSZ8895 EDS2 DAUGHTER CARD BOTTOM COPPER

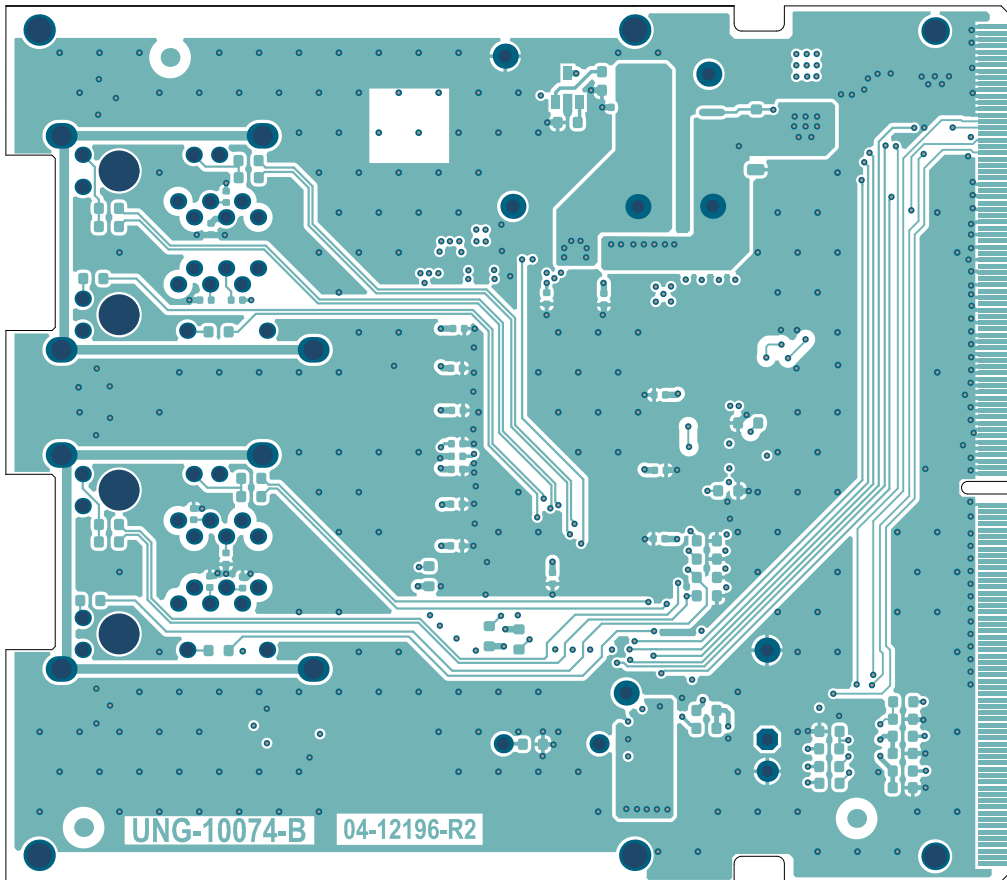


FIGURE C-4: K SZ8895 EDS2 DAUGHTER CARD BOTTOM SILK SCREEN

