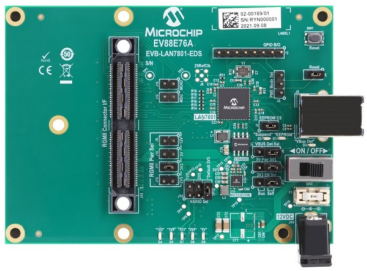

MICROCHIP EVB-LAN7801 Ethernet Development System User Guide

EVB-LAN7801
Ethernet Development System
User's Guide

Contents

EVB-LAN7801 Ethernet Development System

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ISBN: 978-1-5224-9352-5
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NOTES: .

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 "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 the Microchip EVB-LAN7801-EDS (Ethernet Development System). Items discussed in this chapter include:

- Document Layout
- Conventions Used in this Guide
- Warranty Registration
- The Microchip Website
- Development Systems Customer Change Notification Service
- Customer Support
- Document Revision History

DOCUMENT LAYOUT

This document features the EVB-LAN7801-EDS as a development tool for Microchip LAN7801 in its Ethernet development system. The manual layout is as follows:

- Chapter 1. "Overview" – This chapter shows a brief description of the EVB-LAN7801-EDS.
- Chapter 2. "Board Details and Configuration" – This chapter includes details and instructions for using the EVB-LAN7801-EDS.
- Appendix A. "EVB-LAN7801-EDS Evaluation Board"– This appendix shows the EVB-LAN7801-EDS evaluation board image.
- Appendix B. "Schematics" – This appendix shows the EVB-LAN7801-EDS schematic diagrams.
- Appendix C. "Bill of Materials"– This appendix includes the EVB-LAN7801-EDS Bill of Materials.

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) { … }

WARRANTY REGISTRATION

Please complete the enclosed Warranty Registration Card and mail it promptly. Sending the Warranty Registration Card entitles users to receive new product updates. Interim software releases are available at the Microchip website.

THE MICROCHIP WEBSITE

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- General Technical Support – Frequently Asked Questions (FAQs), technical support requests, online discussion groups, Microchip consultant program member listing
- Business of Microchip – Product selector and ordering guides, latest Microchip press releases, listing of seminars and events, listings of Microchip sales offices, distributors and factory representatives

DEVELOPMENT SYSTEMS CUSTOMER CHANGE NOTIFICATION SERVICE

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The Development Systems product group categories are:

- Compilers – The latest information on Microchip C compilers, assemblers, linkers and other language tools. These include all MPLABCC compilers; all MPLAB™ assemblers (including MPASM™ assembler); all MPLAB linkers (including MPLINK™ object linker); and all MPLAB librarians (including MPLIB™ object librarian).
- 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 non-production development programmers such as PICSTART Plus and

PICkit™ 2 and 3.

CUSTOMER SUPPORT

Users of Microchip products can receive assistance through several channels:

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

  Customers should contact their distributor, representative or field application engineer (FAE) for support. Local sales offices are also available to help customers. A listing of sales offices and locations is included in the back of this document.

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

DOCUMENT REVISION HISTORY

Revisions	Section/Figure/Entry	Correction
DS50003225A (11-22-21)	Initial release	

Overview

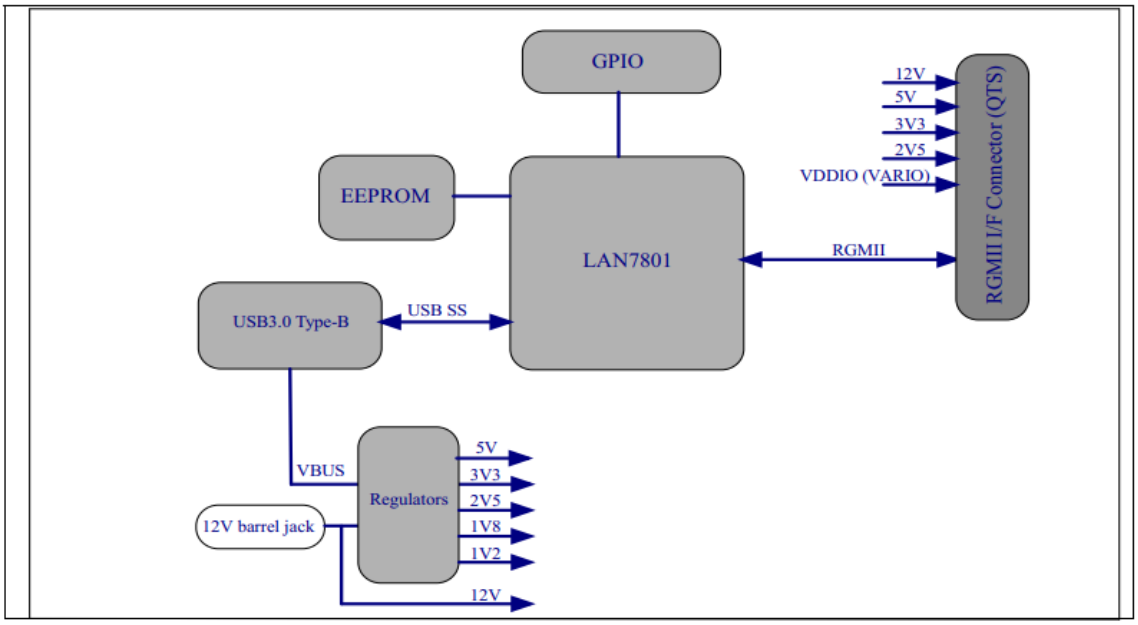
1.1 INTRODUCTION

The EVB-LAN7801 Ethernet Development System is a USB Bridge-based platform for evaluating Ethernet switch and PHY products. Compatible switch and PHY evaluation boards connect to the EDS board via an RGMII connector. These daughter boards are available separately. The EDS board is not intended for stand-alone use and has no Ethernet capabilities when no daughter board is connected. See Figure 1-1. The board is built around a LAN7801 Super Speed USB3 Gen1 to 10/100/1000 Ethernet Bridge.
The bridge device has support for external switch and PHY devices via RGMII. In addition, there are configuration jumpers to evaluate different power schemes, as well as the MIIM and GPIO options of the LAN7801. The EVB-LAN7801-EDS board comes with an EEPROM preloaded with firmware to support the EVB-KSZ9131RNX evaluation board out of the box. Users can access registers and configure for a different daughter board by using the MPLAB® Connect Con-figurator tool. The EEPROM bin files and the configurator are available for download on the product page of this board. Users may modify bin files for their needs.

1.2 BLOCK DIAGRAM

Refer to Figure 1-1 for the EVB-LAN7801-EDS Block Diagram.

FIGURE 1-1: EVB-LAN7801-EDS BLOCK DIAGRAM



1.3 REFERENCES

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

- LAN7801 SuperSpeed USB 3.1 Gen 1 to 10/100/1000 Data Sheet

1.4 TERMS AND ABBREVIATIONS

- EVB – Evaluation Board
- MII – Media Independent Interface
- MIIM – Media Independent Interface Management (also known as MDIO/MDC)
- RGMII – Reduced Gigabit Media Independent Interface
- I² C – Inter Integrated Circuit
- SPI – Serial Protocol Interface
- PHY – Physical Transceiver

Board Details and Configuration

2.1 INTRODUCTION

This chapter describes the power, Reset, clock, and configuration details of the EVB-LAN7801 Ethernet Development System.

2.2 POWER

2.2.1 VBUS Power

The evaluation board can be powered by the connected host via the USB cable. The appropriate jumpers must be set to VBUS SEL. (See Section 2.5 "Configuration" for details.) In this mode, operation is limited to 500 mA for USB 2.0 and 900 mA for USB 3.1 by the USB host. (See LAN7801 Data Sheet for more details). In most cases, this will be sufficient for operation even with attached daughter boards.

2.2.2 +12V Power

A 12V/2A power supply may be connected to J14 on the board. The F1 fuse is provided on the board for overvoltage protection. The appropriate jumpers must be set to BARREL JACK SEL. (See Section 2.5 "Configuration" for details.) The SW2 switch must be in the ON position to power the board.

2.3 RESETS

2.3.1 SW1

The SW1 push button can be used to reset the LAN7801. If a jumper is installed at J4, SW1 will also reset the

connected daughter board.

2.3.2 PHY_RESET_N

The LAN7801 can reset the daughter board via the PHY_RESET_N line.

2.4 CLOCK

2.4.1 External Crystal

The evaluation board utilizes an external crystal, which provides the 25 MHz clock to the LAN7801.

2.4.2 125 MHz Reference Input

By default, the CLK125 line on the LAN7801 is tied to ground as there is no 125 MHz reference on board to operate from. To test this functionality and for the connected daughter board to supply a 125 MHz reference, remove R8 and populate R29 with a 0 ohm resistor.

2.4.3 25 MHz Reference Output

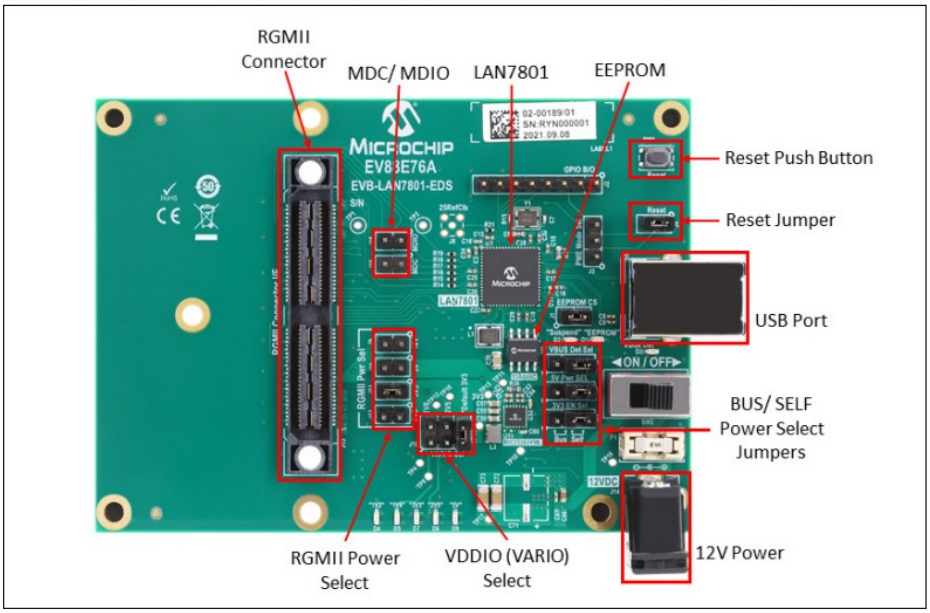
The LAN7801 outputs a 25 MHz reference to the daughter board. To use this reference for a different off-board device, the RF connector at J8 can be populated.

2.5 CONFIGURATION

This section describes the different board features and configuration settings of the EVB-LAN7801 Ethernet Development System.

A top view of the EVB-LAN7801-EDS is shown in Figure 2-1.

FIGURE 2-1: EVB-LAN7801-EDS TOP VIEW WITH CALLOUTS



2.5.1 Jumper Settings

Table 2-1, Table 2-2, Table 2-3, Table 2-4, and Table 2-5 describe the jumper settings.

The recommended initial configuration is indicated by the term, “(default),” listed in the tables.

TABLE 2-1: INDIVIDUAL TWO-PIN JUMPERS

Jumper	Label	Description	Open	Closed
J1	EEPROM CS	Enables external EEPROM for LA N7801	Disabled	Enabled (Default)
J4	Reset	Enables SW1 Reset button to rese t daughter board device	Disabled	Enabled (Default)

TABLE 2-2: RGMII POWER SELECT JUMPERS

Jumper	Label	Description	Open	Closed
J9	12V	Enables 12V to be passed to the daughter board	Disabled (Default)	Enabled
J10	5V	Enables 5V to be passed to the daughter board	Disabled (Default)	Enabled
J11	3V3	Enables 3.3V to be passed to the daughter board	Disabled	Enabled (Default)

Note 1: Check which voltages your connected daughter board needs to operate and connect accordingly.
TABLE 2-2: RGMII POWER SELECT JUMPERS

Jumper	Label	Description	Open	Closed
J12	2V5	Enables 2.5V to be passed to the daughter board	Disabled (Default)	Enabled

Note 1: Check which voltages your connected daughter board needs to operate and connect accordingly.
TABLE 2-3: INDIVIDUAL THREE-PIN JUMPERS

Jumper	Label	Description	Jumper 1-2	Jumper 2-3	Open
J3	PME Mode Sel	PME mode pull-up/ pull-down selection	10K Pull-down	10K Pull-up	No Resistor (Default)

Note 1: PME_Mode pin can be accessed from GPIO5.
TABLE 2-4: VARIO SELECT SIX-PIN JUMPER

Jumper	Label	Description	Jumper 1-2 “1V8”	Jumper 3-4 “2V5”	Jumper 5-6 “Default 3V3”
J18	VARIO Sel	Selects the VARIO level for the board and daughter board	1.8V VARIO voltage	2.5V VARIO voltage	3.3V VARIO voltage (Default)

Note 1: Only one VARIO voltage can be selected at a time.
TABLE 2-5: **BUS/SELF-POWER SELECT JUMPERS**

Jumper	Label	Description	Jumper 1-2*	Jumper 2-3*
J6	VBUS Det Sel	Determines source for LAN7801 VBUS_DET pin	Bus-Powered mode	Self-Powered mode (Default)
J7	5V Pwr Sel	Determines source for board 5V power rail	Bus-Powered mode	Self-Powered mode (Default)
J17	3V3 EN Sel	Determines the source for the 3V3 regulator enable pin	Bus-Powered mode	Self-Powered mode (Default)

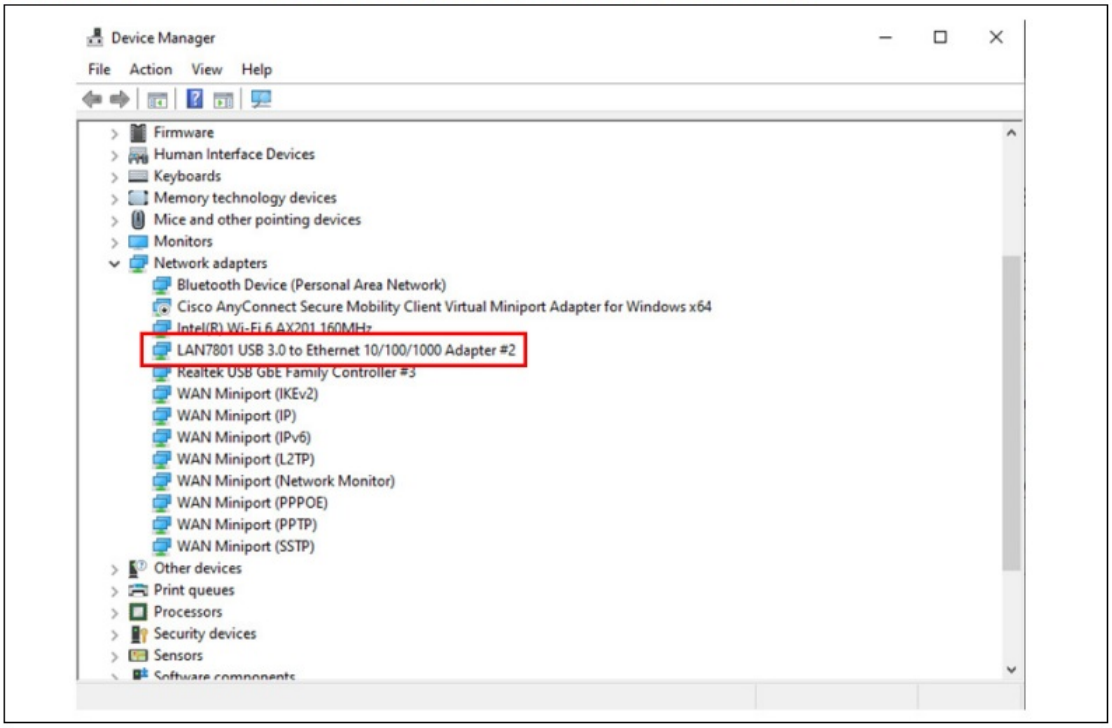
Note 1: Jumper settings between J6, J7, and J17 should always match.

2.6 USING THE EVB-LAN7801-EDS

The EVB-LAN7801-EDS evaluation board is connected to the PC through a USB cable. The LAN7801 device supports Windows® and Linux® operating system. The drivers are provided on the LAN7801 device's product page for both operating systems.

A 'readme' file that describes the driver installation process in detail is also provided with the drivers. For example, once the drivers are installed correctly for Windows 10, the board can be detected in the Device Manager as shown in Figure 2-2.

FIGURE 2-2: EVB-LAN7801-EDS PORT NUMBERING



The EVB-LAN7801-EDS can be used to evaluate the LAN7801 USB Ethernet Bridge alongside various other Microchip PHY and switch devices.

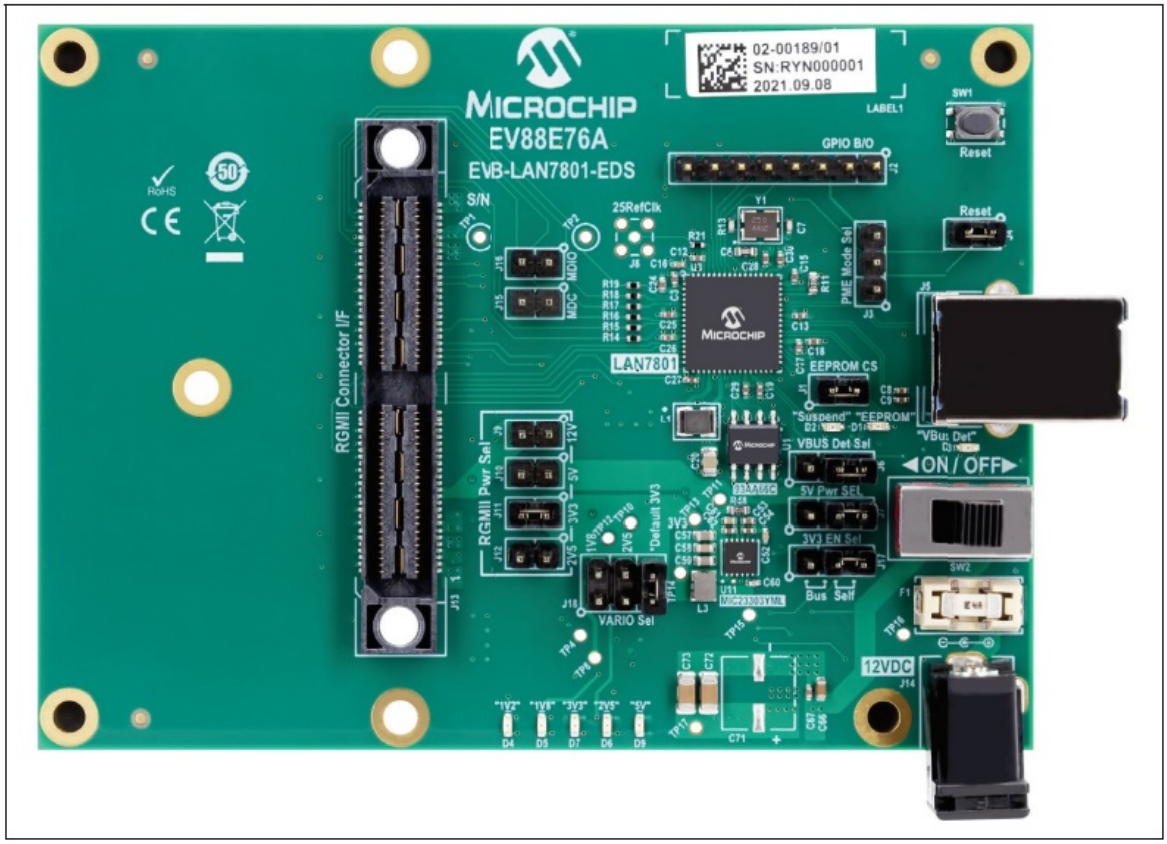
For example, with the EVB-KSZ9131RNX evaluation board installed, the EVB can be tested as a simple bridge device by connecting the USB port to the PC and Network cable to the daughter board. Using the network cable, the PC can be connected to a network to perform a ping test.

EVB-LAN7801-EDS Evaluation Board

A.1 INTRODUCTION

This appendix shows the top view of the EVB-LAN7801-EDS evaluation board.

FIGURE A-1: EVB-LAN7801-EDS EVALUATION BOARD



NOTES:

Schematics

B.1 INTRODUCTION

This appendix shows the EVB-LAN7801-EDS schematics.

FIGURE B-1: EVB-LAN7801-EDS BLOCK DIAGRAM

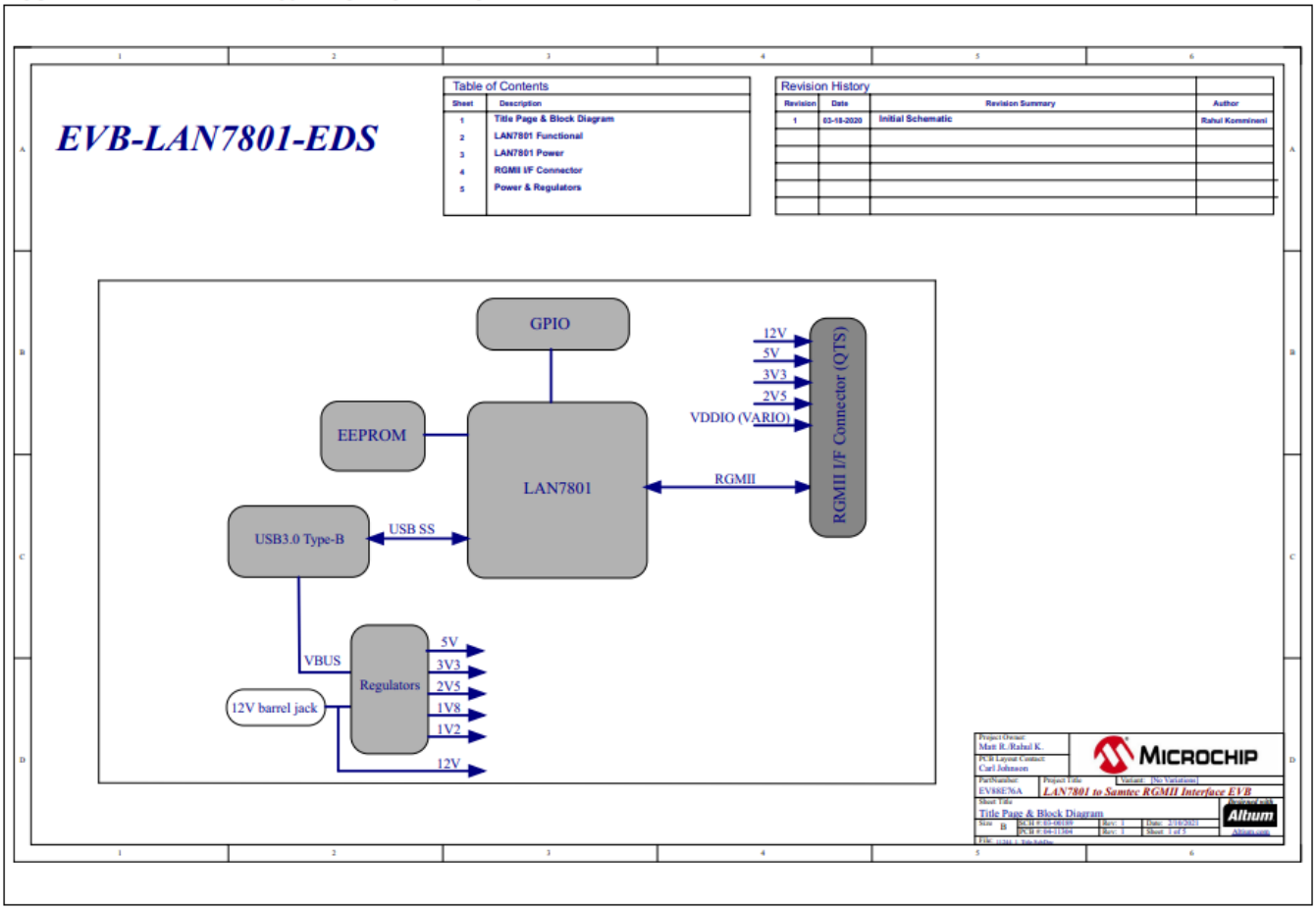


FIGURE B-2: LAN7801 FUNCTIONAL

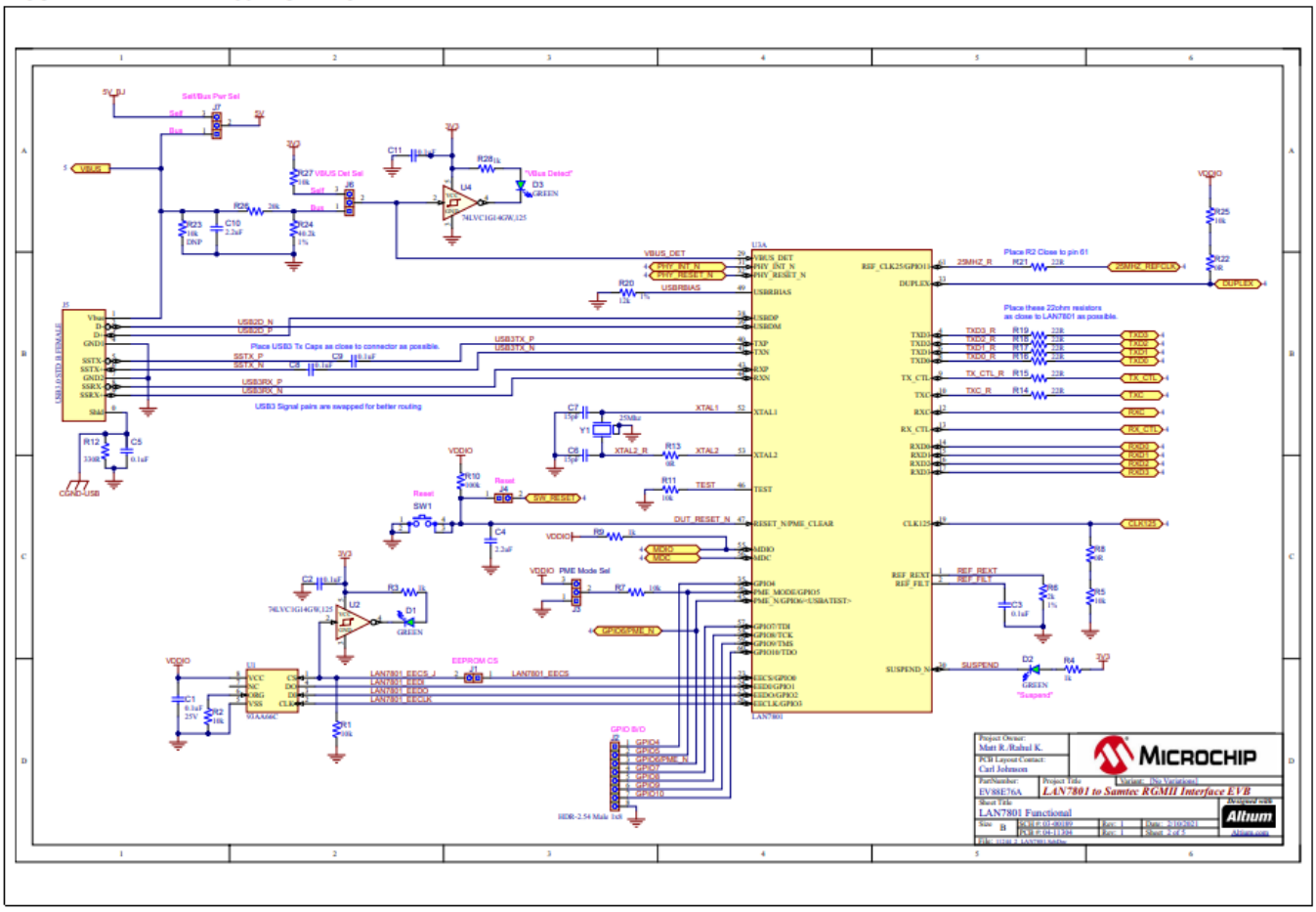


FIGURE B-3: LAN7801 POWER

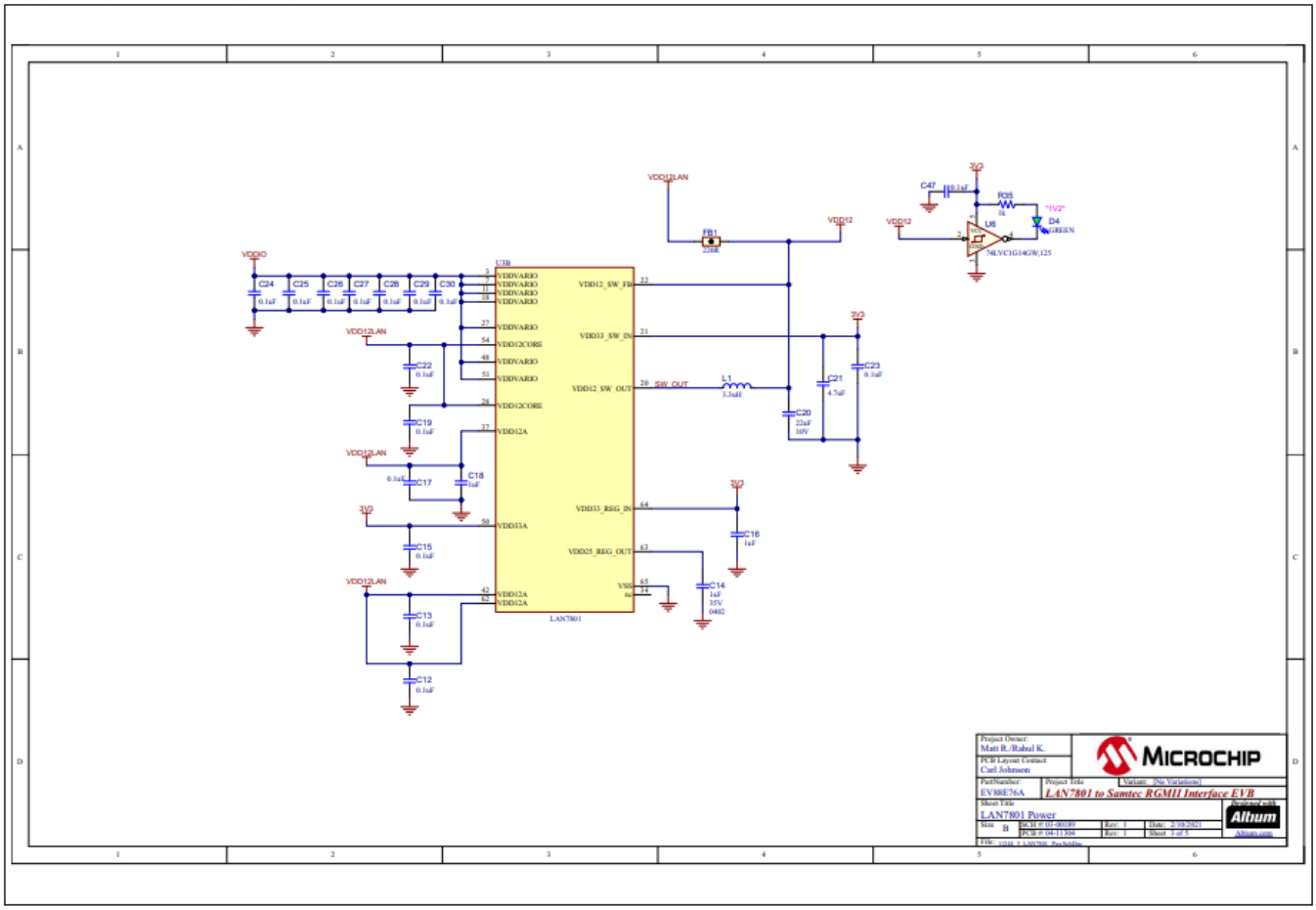


FIGURE B-4: RGMII/IF CONNECTOR

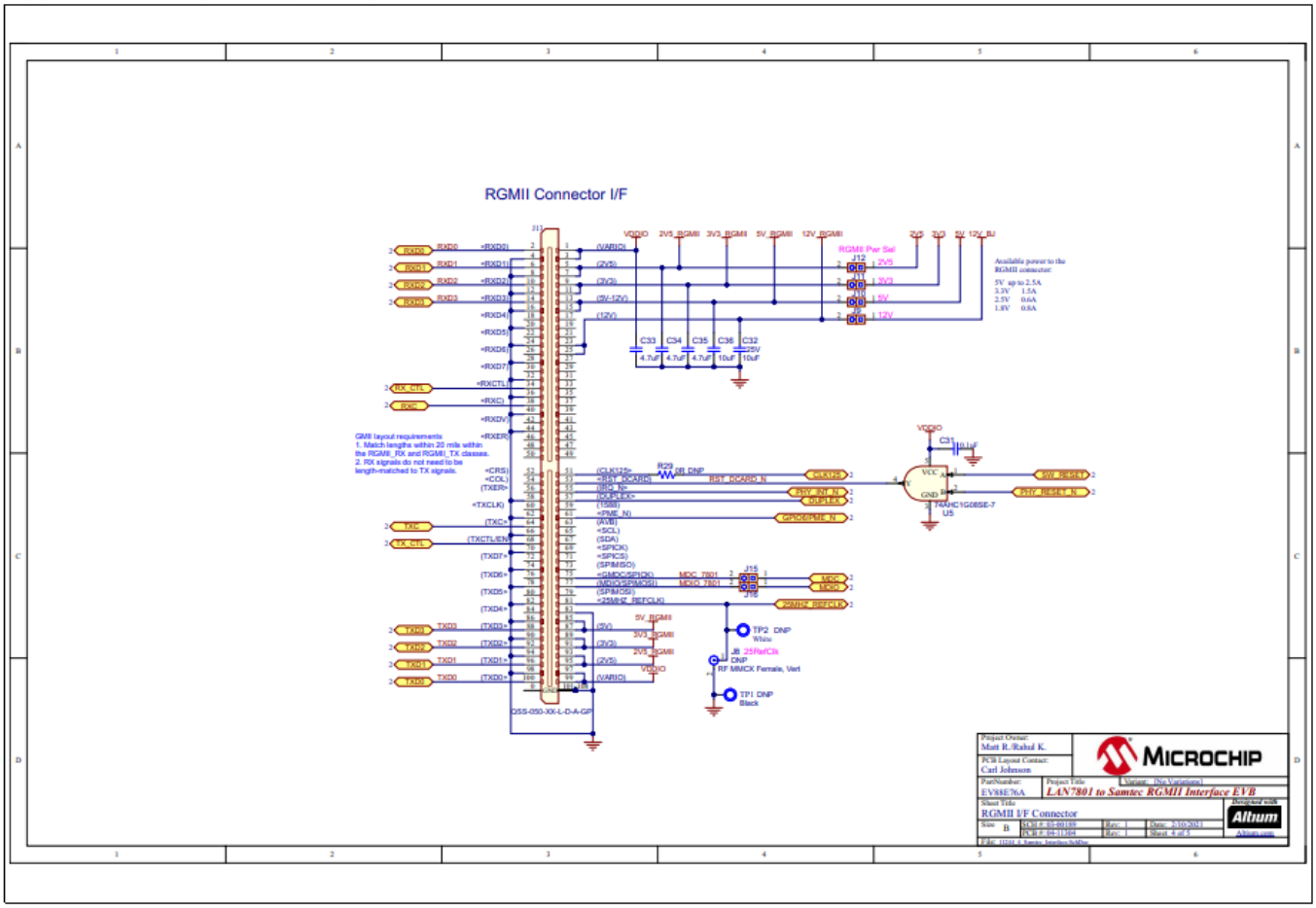
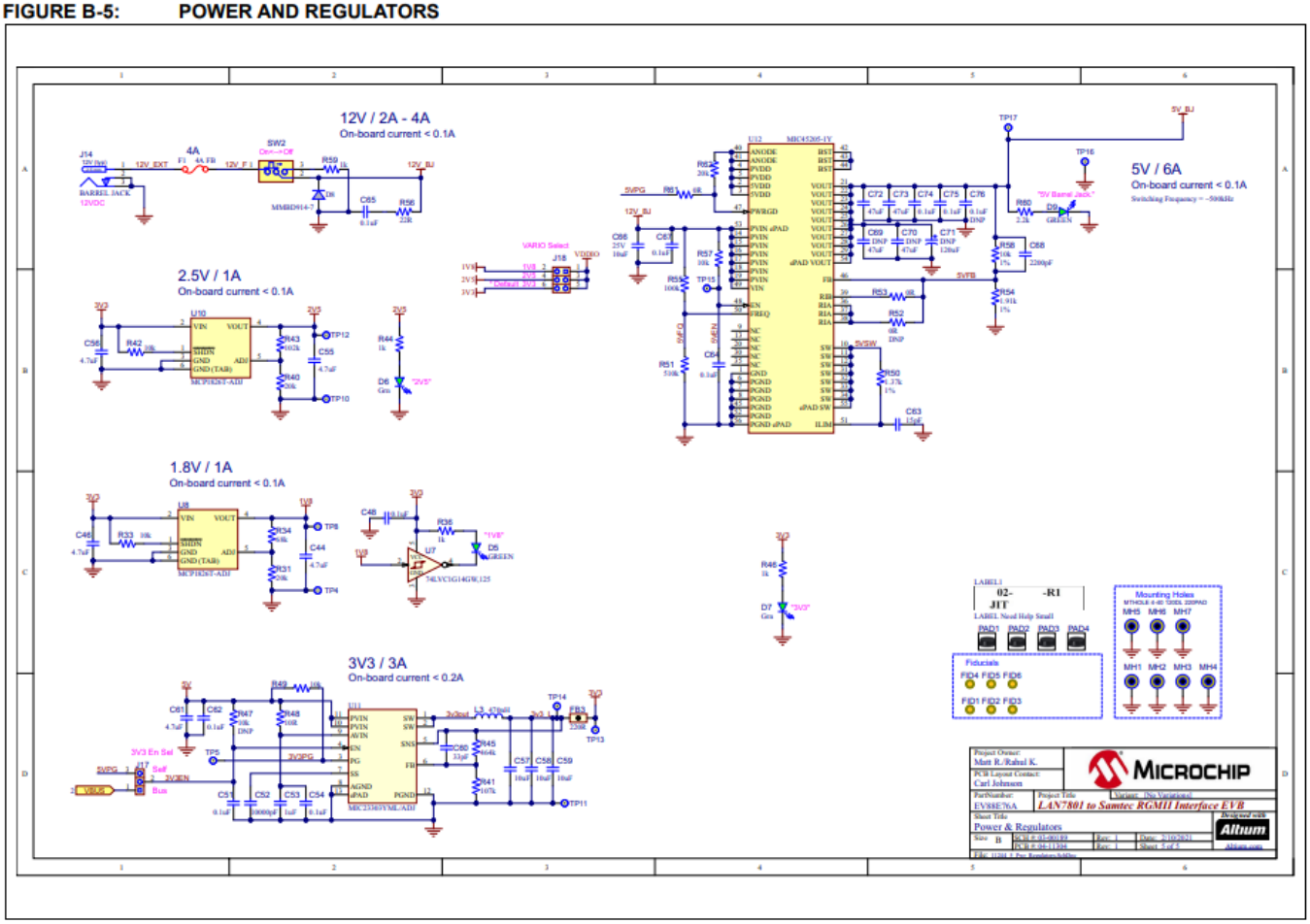


FIGURE B-5: POWER AND REGULATORS



Bill of Materials

C.1 INTRODUCTION

This appendix contains the EVB-LAN7801-EDS evaluation board Bill of Materials (BOM).

TABLE C-1:BILL OF MATERIALS

Item	Qty	Reference	Description	Populated	Manufacturer	Manufacturer Part Number
1	1	C1	CAP CER 0.1 µF 25V 10% X7R SMD 0603	Yes	Murata	GRM188R71E104KA01D
2	31	C2, C3, C5, C8, C9, C11, C12, C13, C15, C17, C19, C22, C23, C24, C25, C26, C27, C28, C29, C30, C31, C47, C48, C51, C54, C62, C64, C65, C67, C74, C75	CAP CER 0.1 µF 50V 10% X7R SMD 0402	Yes	TDK	C1005X7R1H104K050BB
3	2	C4, C10	CAP CER 2.2 µF 6.3V 10% X7R SMD 0603	Yes	TDK	C1608X7R0J225K080AB
4	3	C6, C7, C63	CAP CER 15 pF 50V 5% NP0 SMD 0402	Yes	Murata	GRM1555C1H150JA01D

5	3	C14, C16, C18	CAP CER 1 µF 35V 10% X5R SMD 0402	Yes	Murata	GRM155R6YA105KE11D
6	1	C20	CAP CER 22 µF 10V 20% X5R SMD 0805	Yes	Taiyo Yuden	LMK212BJ226MGT
7	1	C21	CAP CER 4.7 µF 6.3V 20% X5R SMD 0603	Yes	Panasonic	ECJ-1VB0J475M
8	2	C32, C66	CAP CER 10 µF 25V 20% X5R SMD 0603	Yes	Murata	GRM188R61E106MA73D
9	8	C33, C34, C35, C44, C46, C55, C56, C61	CAP CER 4.7 µF 6.3V 20% X5R SMD 0402	Yes	Murata	GRM155R60J475ME47D
10	4	C36, C57, C58, C59	CAP CER 10 µF 6.3V 20% X5R SMD 0603	Yes	Kyocera AVX	06036D106MAT2A
11	1	C52	CAP CER 10000 pF 16V 10% X7R SMD 0402	Yes	KEMET	C0402C103K4RACTU
12	1	C53	CAP CER 1 µF 16V 10% X5R SMD 0402	Yes	TDK	C1005X5R1C105K050BC
13	1	C60	CAP CER 33 pF 50V 5% NP0 SMD 0402	Yes	Murata	GRM1555C1H330JA01D
14	1	C68	CAP CER 2200 pF 25V 5% C0G SMD 0402	Yes	KEMET	C0402C222J3GACTU
15	2	C69, C70	CAP CER 47 µF 10V 20% X5R SMD 1206	DNP	KEMET	C1206C476M8PACTU
16	1	C71	CAP ALU 120 µF 20V 20% SMD C6	DNP	Panasonic	20SVPF120M
17	2	C72, C73	CAP CER 47 µF 10V 20% X5R SMD 1206	Yes	KEMET	C1206C476M8PACTU
18	1	C76	CAP CER 0.1 µF 50V 10% X7R SMD 0402	DNP	TDK	C1005X7R1H104K050BB
19	8	D1, D2, D3, D4, D5, D6, D7, D9	DIO LED GREEN 2V 30 mA 35 mcd Clear SMD 0603	Yes	Vishay Lite-On	LTST-C191KGKT
20	1	D8	DIO RECT MMBD914-7-F 1.25 V 200 mA 75V SMD SOT-23-3	Yes	Diodes	MMBD914-7-F
21	1	F1	RES FUSE 4A 125 VAC/VDC FAST SMD 2-SMD	Yes	Littelfuse	0154004.DR
22	1	FB1	FERRITE 220R@100 MHz 2A SMD 0603	Yes	Murata	BLM18EG221SN1D
23	1	FB3	FERRITE 500 mA 220R SMD 0603	Yes	Murata	BLM18AG221SN1D
24	8	J1, J4, J9, J10, J11, J12, J15, J16	CON HDR-2.54 Male 1×2 AU 5.84 MH TH VERT	Yes	Samtec	TSW-102-07-G-S
25	1	J2	CON HDR-2.54 Male 1×8 Gold 5.84 MH TH	Yes	AMPHENOL ICC (FCI)	68001-108HLF

26	4	J3, J6, J7, J17	CON HDR-2.54 Male 1×3 AU 5.84 MH TH VERT	Yes	Samtec	TSW-103-07-G-S
27	1	J5	CON USB3.0 STD B Female TH R/A	Yes	Wurth Electronics	692221030100
28	1	J8	CON RF Coaxial MMCX Female 2P TH VERT	DNP	Bel Johnson	135-3701-211

TABLE C-1:BILL OF MATERIALS (CONTINUED)

29	1	J13	CON STRIP High Speed Stacker 6.36mm Female 2×50 SMD VERT	Yes	Samtec	QSS-050-01-L-D-A-GP
30	1	J14	CON JACK Power Barrel Black Male TH RA	Yes	CUI Inc.	PJ-002BH
31	1	J18	CON HDR-2.54 Male 2×3 Gold 5.84 MH TH VERT	Yes	Samtec	TSW-103-08-L-D
32	1	L1	INDUCTOR 3.3 µH 1.6A 20% SMD ME3220	Yes	Coilcraft	ME3220-332MLB
33	1	L3	INDUCTOR 470 nH 4.5A 20% SMD 1008	Yes	ICE Components	IPC-2520AB-R47-M
34	1	LABEL1	LABEL, ASSY w/Rev Level (small modules) Per MTS-0002	MECH	—	—
35	4	PAD1, PAD2, PAD3, PAD4	MECH HW Rubber Pad Cylindrical D7.9 H5.3 Black	MECH	3M	70006431483
36	7	R1, R2, R5, R7, R11, R25, R27	RES TKF 10k 5% 1/10W SMD 0603	Yes	Panasonic	ERJ-3GEYJ103V
37	1	R3	RES TKF 1k 5% 1/10W SMD 0603	Yes	Panasonic	ERJ-3GEYJ102V
38	8	R4, R9, R28, R35, R36, R44, R46, R59	RES TKF 1k 1% 1/10W SMD 0603	Yes	Panasonic	ERJ3EKF1001V
39	1	R6	RES TKF 2k 1% 1/10W SMD 0603	Yes	Panasonic	ERJ-3EKF2001V
40	5	R8, R13, R22, R53, R61	RES TKF 0R 1/10W SMD 0603	Yes	Panasonic	ERJ-3GEY0R00V
41	2	R10, R55	RES TKF 100k 1% 1/10W SMD 0603	Yes	Vishay	CRCW0603100KFKEA
42	1	R12	RES MF 330R 5% 1/16W SMD 0603	Yes	Panasonic	ERA-V33J331V
43	7	R14, R15, R16, R17, R18, R19, R21	RES TKF 22R 1% 1/20W SMD 0402	Yes	Panasonic	ERJ-2RKF22R0X

44	1	R20	RES TKF 12k 1% 1/10W SMD 0603	Yes	Yageo	RC0603FR-0712KL
45	1	R23	RES TKF 10k 5% 1/10W SMD 0603	DNP	Panasonic	ERJ-3GEYJ103V
46	1	R24	RES TKF 40.2k 1% 1/16W SMD 0603	Yes	Panasonic	ERJ-3EKF4022V
47	1	R26	RES TKF 20k 5% 1/10W SMD 0603	Yes	Panasonic	ERJ-3GEYJ203V
48	2	R29, R52	RES TKF 0R 1/10W SMD 0603	DNP	Panasonic	ERJ-3GEY0R00V
49	3	R31, R40, R62	RES TKF 20k 1% 1/10W SMD 0603	Yes	Panasonic	ERJ3EKF2002V
50	5	R33, R42, R49, R57, R58	RES TKF 10k 1% 1/10W SMD 0603	Yes	Panasonic	ERJ-3EKF1002V
51	1	R34	RES TKF 68k 1% 1/10W SMD 0603	Yes	Stackpole Electronics	RMCF0603FT68K0
52	1	R41	RES TKF 107k 1% 1/10W SMD 0603	Yes	Panasonic	ERJ-3EKF1073V
53	1	R43	RES TKF 102k 1/10W 1% SMD 0603	Yes	Stackpole Electronics	RMCF0603FT102K
54	1	R45	RES TKF 464k 1% 1/10W SMD 0603	Yes	Panasonic	ERJ-3EKF4643V
55	1	R47	RES TKF 10k 1% 1/10W SMD 0603	DNP	Panasonic	ERJ-3EKF1002V
56	1	R48	RES TKF 10R 1% 1/10W SMD 0603	Yes	Stackpole Electronics	RMCF0603FT10R0
57	1	R50	RES TKF 1.37k 1% 1/10W SMD 0603	Yes	Yageo	RC0603FR-071K37L
58	1	R51	RES TKF 510k 1% 1/10W SMD 0603	Yes	Panasonic	ERJ-3EKF5103V
59	1	R54	RES TKF 1.91k 1% 1/10W SMD 0603	Yes	Panasonic	ERJ-3EKF1911V
60	1	R56	RES TKF 22R 1% 1/10W SMD 0603	Yes	Yageo	RC0603FR-0722RL
61	1	R60	RES TKF 2.2k 1% 1/10W SMD 0603	Yes	Panasonic	ERJ-3EKF2201V

TABLE C-1:BILL OF MATERIALS (CONTINUED)

62	1	SW1	SWITCH TACT SPST-NO 16V 0.05A PTS810 SMD	Yes	ITT C&K	PTS810SJM250SMTRLFS
63	1	SW2	SWITCH SLIDE SPDT 120V 6A 1101M2S3CQE2 TH	Yes	ITT C&K	1101M2S3CQE2
64	1	TP1	MISC, TEST POINT MULTI PURPOSE MINI BLACK	DNP	Terminal	5001
65	1	TP2	MISC, TEST POINT MULTI PURPOSE MINI WHITE	DNP	Keystone Electronics	5002
66	1	U1	MCHP MEMORY SERIAL EEPROM 4k Microwire 93AA66C-I/SN SOIC-8	Yes	Microchip	93AA66C-I/SN
67	3	U2, U4, U7	74LVC1G14GW,125 SCHMITT-TRG INVERTER	Yes	Philips	74LVC1G14GW,125
68	1	U3	MCHP INTERFACE ETHERNET LAN7801-I/9JX QFN-64	Yes	Microchip	LAN7801T-I/9JX
69	1	U5	IC LOGIC 74AHC1G08SE-7 SC-70-5	Yes	Diodes	74AHC1G08SE-7
70	1	U6	IC LOGIC 74AUP1T04 SINGLE SCHMITT TRIGGER INVERTER SOT-553	Yes	Nexperia USA Inc.	74AUP1T04GWH
71	2	U8, U10	MCHP ANALOG LDO ADJ MCP1826T-ADJE/DC SOT-223-5	Yes	Microchip	MCP1826T-ADJE/DC
72	1	U11	MCHP ANALOG SWITCHER ADJ MIC23303YML DFN-12	Yes	Microchip	MIC23303YML-T5
73	1	U12	MCHP ANALOG SWITCHER Buck 0.8-5.5V MIC45205-1YMP-T1 QFN-52	Yes	Microchip	MIC45205-1YMPT1
74	1	Y1	CRYSTAL 25MHz 10pF SMD ABM8G	Yes	Abracon	ABM8G-25.000MHZ-B4Y-T

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