

KITUSBSPiEVME USB-to-SPI Interface Board

Featuring the MC68HC908JW32

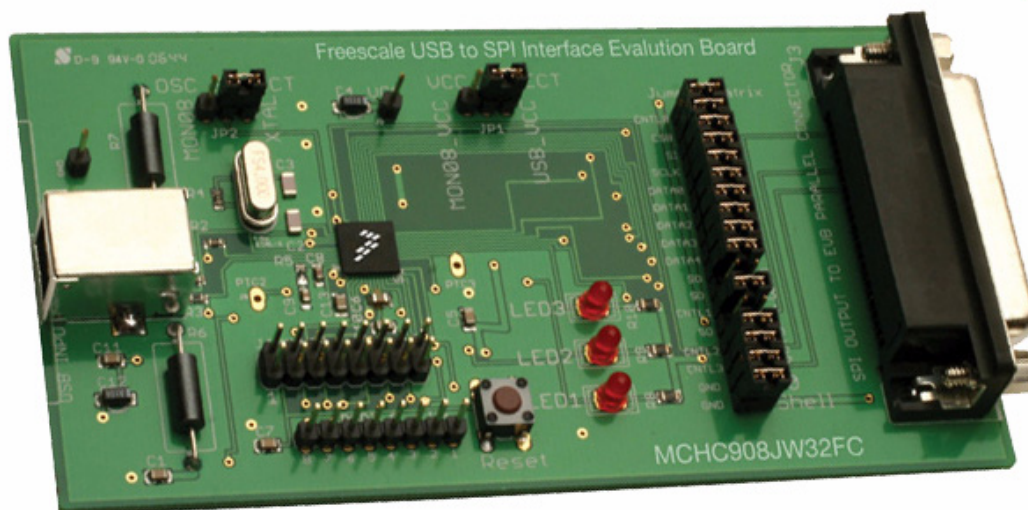


Figure 1. KITUSBSPiEVME Board

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1 Kit Contents/Packing List

- Assembled and tested interface board/module in anti-static bag.
- Six-foot USB 2.0 A-M to B-M cable
- Warranty card

2 Jump Start

- Go to www.freescale.com/analogtools
- Locate your kit
- Review your Tool Summary Page
- Look for



Jump Start Your Design

- Download documents, software and other information

3 Important Notice

Freescall provides the enclosed product(s) under the following conditions:

This evaluation kit is intended for use of ENGINEERING DEVELOPMENT OR EVALUATION PURPOSES ONLY. It is provided as a sample IC pre-soldered to a printed circuit board to make it easier to access inputs, outputs, and supply terminals. This EVB may be used with any development system or other source of I/O signals by simply connecting it to the host MCU or computer board via off-the-shelf cables. This EVB is not a Reference Design and is not intended to represent a final design recommendation for any particular application. Final device in an application will be heavily dependent on proper printed circuit board layout and heat sinking design as well as attention to supply filtering, transient suppression, and I/O signal quality.

The goods provided may not be complete in terms of required design, marketing, and or manufacturing related protective considerations, including product safety measures typically found in the end product incorporating the goods. Due to the open construction of the product, it is the user's responsibility to take any and all appropriate precautions with regard to electrostatic discharge. In order to minimize risks associated with the customers applications, adequate design and operating safeguards must be provided by the customer to minimize inherent or procedural hazards. For any safety concerns, contact Freescale sales and technical support services.

Should this evaluation kit not meet the specifications indicated in the kit, it may be returned within 30 days from the date of delivery and will be replaced by a new kit.

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4 Introduction

The KITUSBSPIEVME board converts from USB to SPI and from USB to parallel data transmission. The main function provided by this board is to allow a PC that may not have a parallel port to communicate with other Freescale evaluation boards via a USB port.

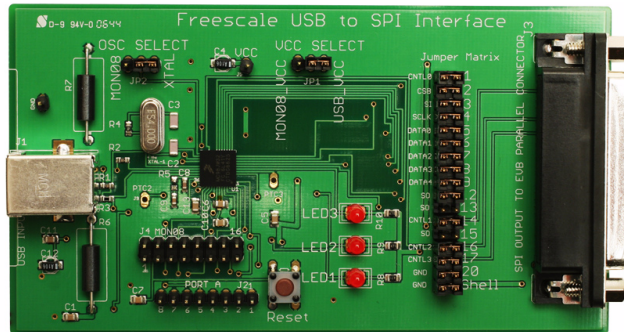
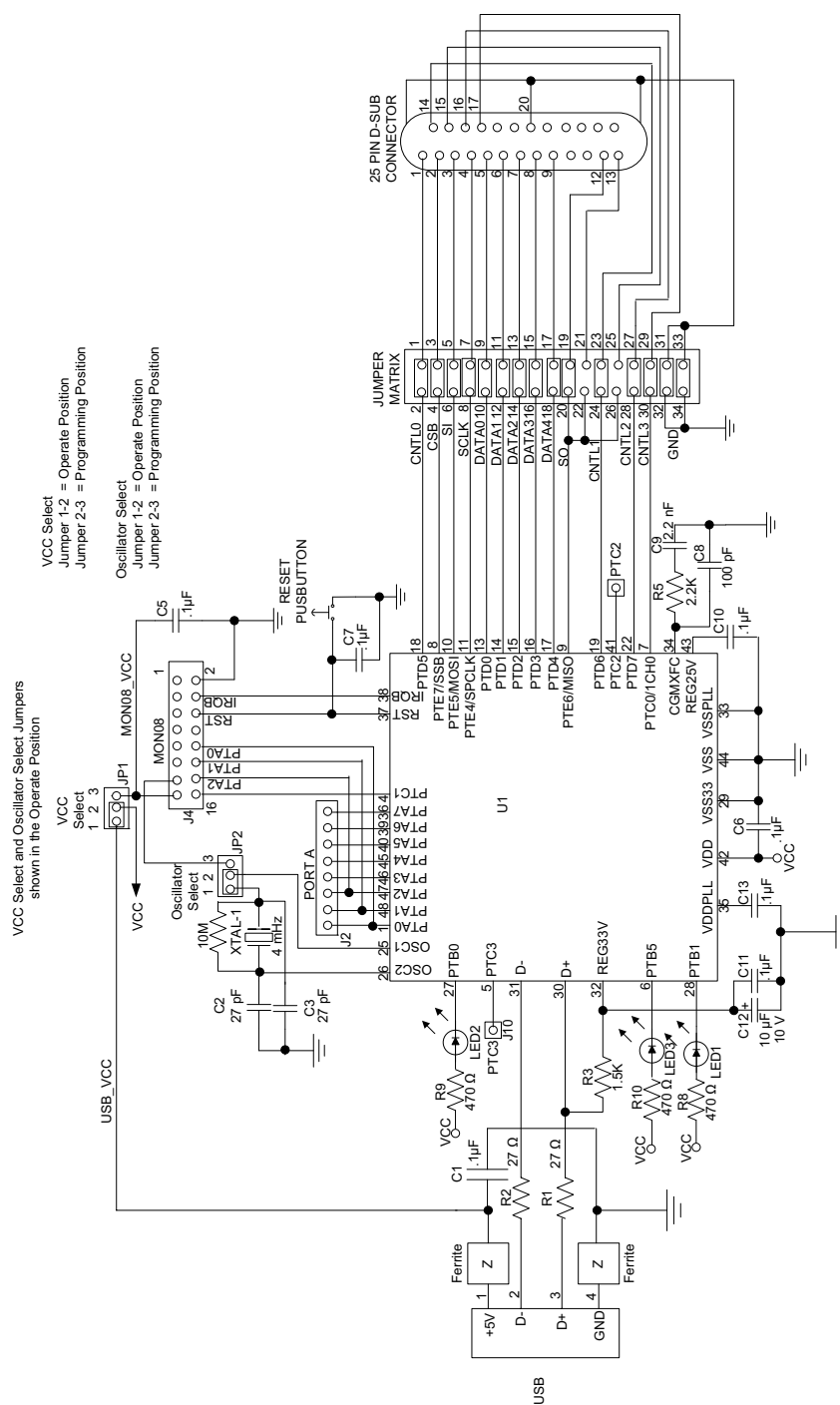


Figure 1. KITUSBSPIEVME Converter Board

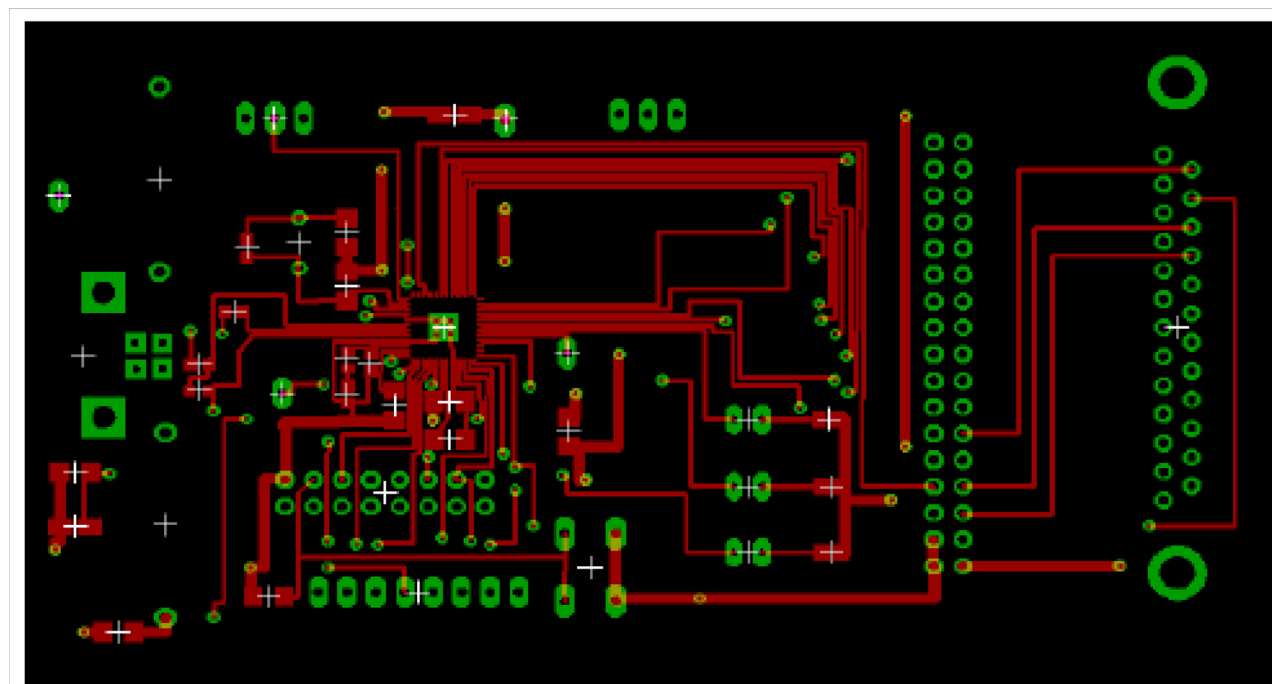
Freescale analog ICs are manufactured using the SMARTMOS process, a combinational BiCMOS manufacturing flow that integrates precision analog, power functions and dense CMOS logic together on a single cost-effective die.

5 Schematic

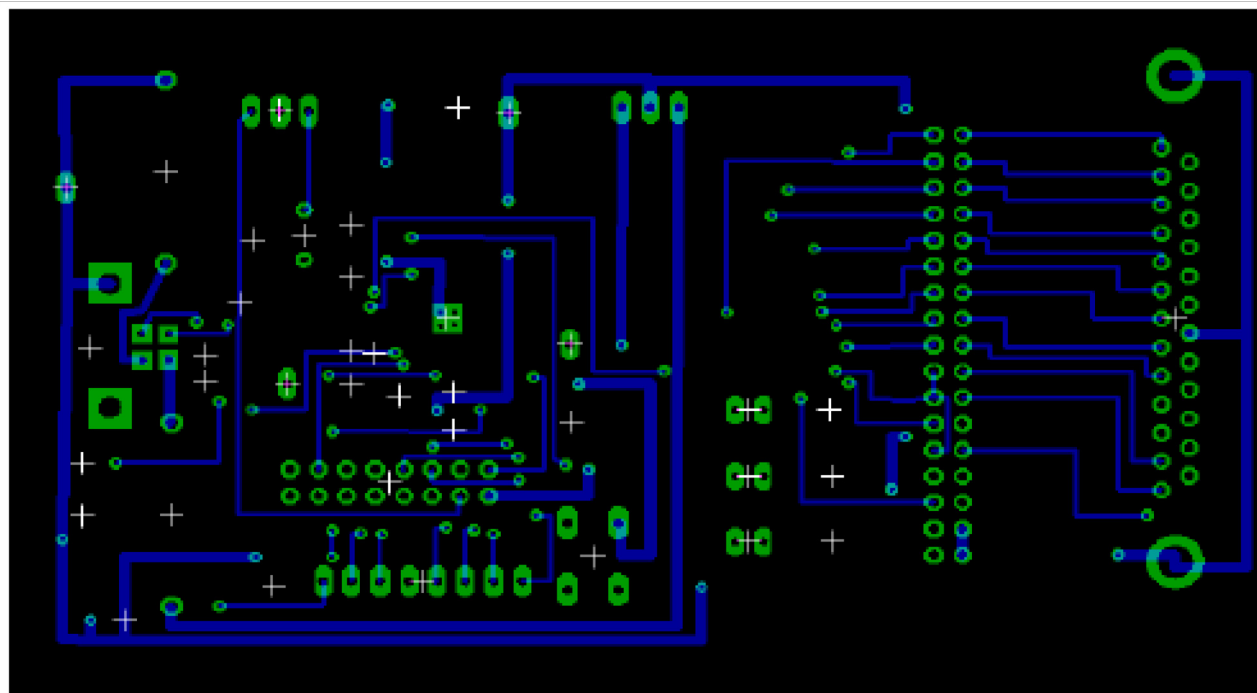


6 Board Layout

6.1 Top Layer Routing



6.2 Bottom Layer Routing



7 Bill of Material

Schematic Label	Device/Signal Name	Value/Description	Manufacturer	Part Number	Package
Capacitors					
C1	USB_VCC	CAP CER 0.1 μ F 50 V 20% Z5U CC1206 ROHS COMPLIANT			CC1206
C2	OSC2	CAP CER 27 PF 50 V 5% C0G CC1206			CC1206
C3	OSC1	CAP CER 27 PF 50 V 5% C0G CC1206			CC1206
C4	VBAT	CAP CER 0.1 μ F 50 V 20% Z5U CC1206 ROHS COMPLIANT			CC1206
C5	MON08_VCC	CAP CER 0.1 μ F 50 V 20% Z5U CC1206 ROHS COMPLIANT			CC1206
C6	VCC	CAP CER 0.1 μ F 50 V 20% Z5U CC1206 ROHS COMPLIANT			CC1206
C7	VOSC	CAP CER 0.1 μ F 50 V 20% Z5U CC1206 ROHS COMPLIANT			CC1206
C8	CGMXFC	CAP CER 100 PF 50 V 10% COG 0603 ROHS			CC1206
C9	CGMXFC	CAP CER 0.022 μ F 25 V 10% X7R CC0603			CC1206
C10	REG2.5V	CAP CER 0.1 μ F 50 V 20% Z5U CC1206 ROHS COMPLIANT			CC1206
C11	REG3.3V	CAP CER 0.1 μ F 50 V 20% Z5U CC1206 ROHS COMPLIANT			CC1206
C12	REG3.3V	CAP TANT 10 μ F 10 V 10% -- CASE_A ROHS			Case A
C13	VDD_PLL	CAP CER 0.1 μ F 50 V 20% Z5U CC1206 ROHS COMPLIANT			CC1206
C14	VR_OUT	CAP TANT 10 μ F 10 V 10% -- CASE_A ROHS			Case A
Resistors					
R1	D-	RES TF 27 1/10 W 1% RC0603 ROHS COMPLIANT			RC0603
R2	D+	RES TF 27 1/10 W 1% RC0603 ROHS COMPLIANT			RC0603
R3	D-	RES TF 1.50 K 1/10 W 1% RC0603 ROHS COMPLIANT			RC0603
R4	OSC1 OSC2	RES TF 10 M 1/10 W 5% RC0603 ROHS COMPLIANT			RC0603
R5	CGMXFC	RES TF 2.2 K 1/10 W 5% RC0603 ROHS COMPLIANT			RC0603
R6	USB_VCC	JUMPER WIRE WITH FERRITE BEAD 28L0138-40R-10			
R7	GND	JUMPER WIRE WITH FERRITE BEAD 28L0138-40R-10			
R8	LED1 PU	RES TF 470 1/8 W 5% RC0805 ROHS COMPLIANT			RC0805
R9	LED2 PU	RES TF 470 1/8 W 5% RC0805 ROHS COMPLIANT			RC0805
R10	LED3 PU	RES TF 470 1/8 W 5% RC0805 ROHS COMPLIANT			RC0805

Schematic Label	Device/Signal Name	Value/Description	Manufacturer	Part Number	Package
LEDs					
LED1	LED	LED 5 mm VERT LOW CUR RED PC MNT	DIALIGHT	561-1101-060	PCB Vertical 5 mm
LED2	LED	LED 5 mm VERT LOW CUR RED PC MNT	DIALIGHT	561-1101-060	PCB Vertical 5 mm
LED3	LED	LED 5 mm VERT LOW CUR RED PC MNT	DIALIGHT	561-1101-060	PCB Vertical 5 mm
Integrated Circuits					
U1	MICRO	MC68HC908JW32 8 bit USB/SPI microcontroller ROHS COMPLIANT	FREESCALE SEMICONDUCTOR	MC68HC908JW32	QFN-48
Crystal Oscillators					
XTAL-1	OSC1 OSC2	XTAL 4.0 MHZ RSN 50 PPM TH CL=10 PF ROHS	FOX ELECTRONICS	FOXSLF/040	HC49/S
Connectors, Jumpers and Switches					
JP1	VCC SELECT	3 pin HDR 1X10 100 MIL CTR LOW PROFILE BREAKAWAY ROHS COMPLIANT			
JP2	OSC SELECT	3 pin HDR 1X10 100 MIL CTR LOW PROFILE BREAKAWAY ROHS COMPLIANT			
J1	USB	USB B PC MOUNT FEMALE CONNECTOR ROHS COMPLIANT			
J2	PORT A	8 pin HDR 1X10 100 MIL CTR LOW PROFILE BREAKAWAY ROHS COMPLIANT			
J3	PARALLEL PORT	CON 25 DB RA SKT TH -- AU BRDLK ROHS COMPLIANT			
J4	MON08	16-pin HDR 2X8 100 MIL CTR LOW PROFILE BREAKAWAY ROHS COMPLIANT			
J5	VCC	1 pin HDR 1X1 100 MIL CTR LOW PROFILE BREAKAWAY ROHS COMPLIANT			
J6	JUMPER MATRIX	34 pin HDR 2X17 100 MIL CTR LOW PROFILE BREAKAWAY ROHS COMPLIANT			
J7	GND	1 pin HDR 1X1 100 MIL CTR LOW PROFILE BREAKAWAY ROHS COMPLIANT			
J8	PORT D	8 pin HDR 1X9 100 MIL CTR LOW PROFILE BREAKAWAY ROHS COMPLIANT			
J9	PTC2	1 pin HDR 1X1 100 MIL CTR LOW PROFILE BREAKAWAY ROHS COMPLIANT			
J10	PTC3	1 pin HDR 1X1 100 MIL CTR LOW PROFILE BREAKAWAY ROHS COMPLIANT			
SW1	RESET PB	SW PB MOM SMT			

Note: Freescale does not assume liability, endorse, or warrant components from external manufacturers that are referenced in circuit drawings or tables. While Freescale offers component recommendations in this configuration, it is the customer's responsibility to validate their application.

8 References

Following are URLs where you can obtain information on other Freescale products and application solutions:

Freescale.com Support Pages	URL
KITUSBSPIEVME Tool Summary Page	http://www.freescale.com/webapp/sps/site/prod_summary.jsp?code=KITUSBSPIEVME
SPIGen Tool Summary Page	http://www.freescale.com/files/soft_dev_tools/software/device_drivers/SPIGen.html
Analog Home Page	http://www.freescale.com/analog
Automotive Home Page	http://www.freescale.com/automotive

8.1 Support

Visit www.freescale.com/support for a list of phone numbers within your region.

8.2 Warranty

Visit www.freescale.com/warranty for a list of phone numbers within your region.

9 Revision History

Revision	Date	Description of Changes
1.0	2/2008	Initial Release
2.0	12/2009	Converted to new format
3.0	3/2010	Updated to new format
4.0	4/2013	- Add Jump Start link for downloading software and/or documents - Add Introduction including board photo

How to Reach Us:**Home Page:**

freescale.com

Web Support:

freescale.com/support

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