

# KIT33662xEFEVBE Evaluation Board

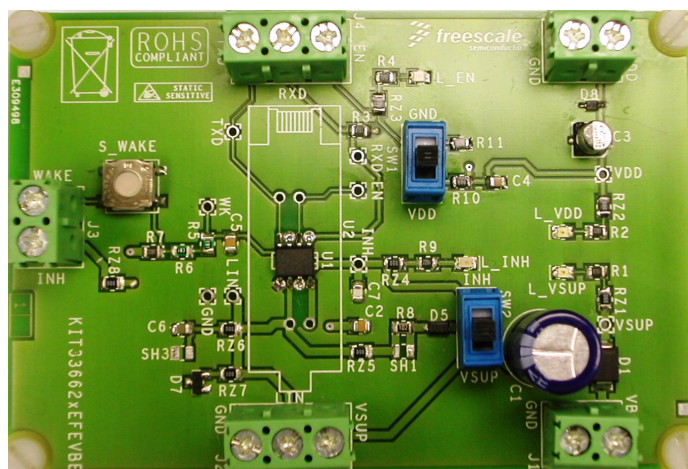


Figure 1. KIT33662xEFEVBE

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# 1 Kit Contents / Packing List

- KIT33662JEFEVBE or KIT33662LEFEVBE Evaluation Board
- CD MC33662

## 2 Important Notice

Freescale 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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## 3 Kit Introduction

This Evaluation Board is supplied for preliminary evaluation purposes. This kit is populated with a production device, and gives to you the opportunity to test the device in various configuration cases to quickly evaluate these features. This kit can also be used for Electro Static Discharge (ESD) and Bulk Current Injection (BCI) tests.

### 3.1 Evaluation Board Features

- Individually routed power supply inputs for VDD and VBAT
- Status of product indicated by an LED
- Slave or master configuration via a switch
- Wake button
- Mode selector via a switch
- Test point for every pin

### 3.2 Device Description/Features

- Operational from a  $V_{SUP}$  of 7.0 to 18 V DC, functional up to 27 V DC, and handles 40 V during Load Dump
- Compatible with LIN Protocol Specification 1.3, 2.0, 2.1, and SAEJ2602-2
- Active bus wave shaping, offering excellent radiated emission performance
- Sustains up to 15.0 kV minimum ESD IEC61000-4-2 on the LIN Bus, WAKE, and VSUP pins
- Very high immunity against electromagnetic interference
- Low standby current in Sleep mode
- Over-temperature protection
- Local and remote wake-up capability reported by the RXD pin
- Fast baud rate mode selection reported by RXD
- 5.0 and 3.3 V compatible digital inputs without any required external components

## 4 Required Equipment

To use this kit you need:

- +12 VDC power supply
- +5.0 VDC power supply
- 0/+5.0 V waveform generator

## 5 KIT33662xEFEVBE Setup Configuration

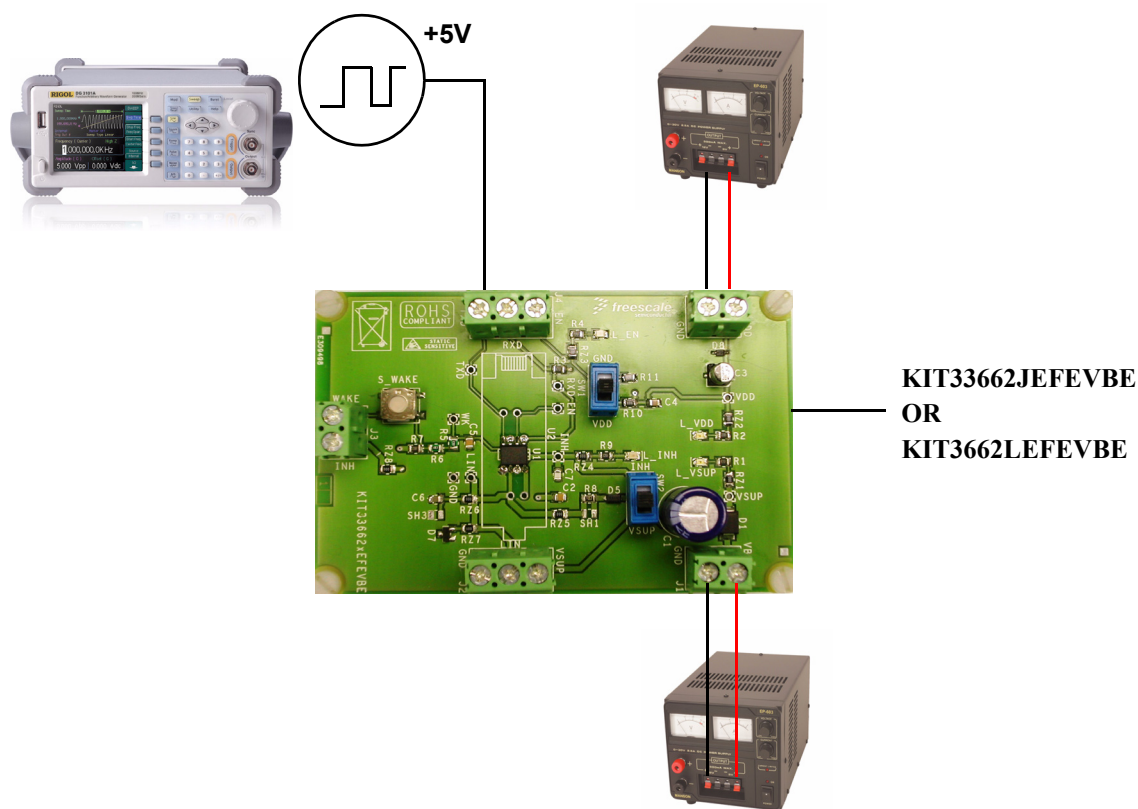
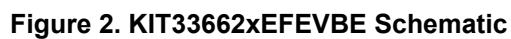


Figure 1. KIT33662xEFEVBE Setup Configuration Diagram



## 7 Using Hardware

### 7.1 Jumper Connections

RZ1	LED for VSUP state
RZ2	LED for VDD state
RZ3	LED for EN state
RZ4	LED for INH state
RZ5	enable SW2
RZ6	add C6 on LIN bus
RZ7	add D7 on LIN bus
RZ8	can be change to add load on INH BUS
R10	can be change to limit current on EN pin <sup>(1)</sup>
R11	can be change to limit current on EN pin <sup>(1)</sup>
SW1	connect EN pin to: <ul style="list-style-type: none"> <li>• VDD (1)</li> <li>• EN connector (2)</li> <li>• GND (3)</li> </ul>
SW2	add load on LIN bus and set Master/slave configuration: <ul style="list-style-type: none"> <li>• connected to VSUP (1)(Master configuration 1)</li> <li>• unconnected (2)(Slave configuration)</li> <li>• INH (3)(Master Configuration 2)</li> </ul>
SW3	connect the WAKE pin to GND
SH1	slot to change the load value on LIN bus
SH3	slot to change the load value on LIN bus

Note:

1. In this case, RZ3 must be unsoldered to have 5.0 V on the EN pin



## 8 Board Layout

### 8.1 Assembly Top Layer

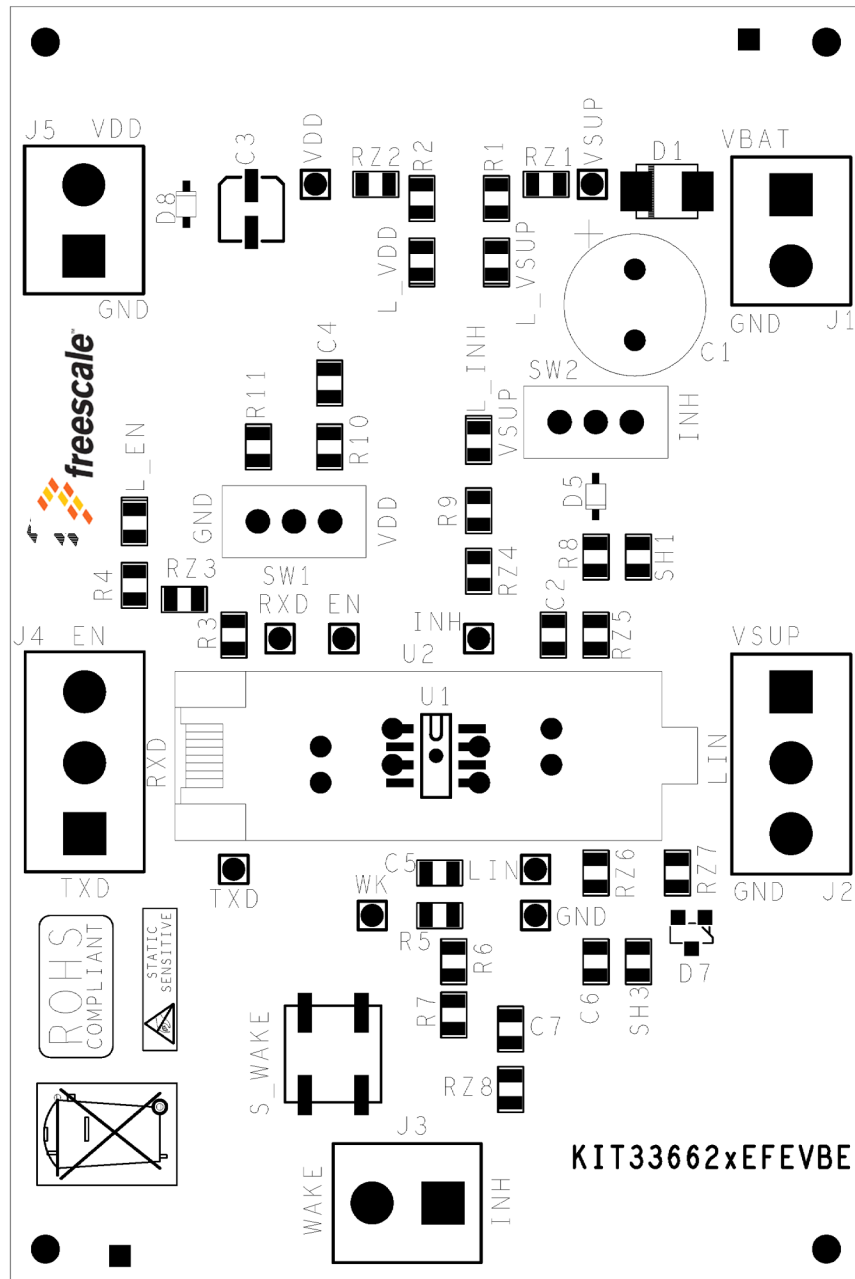


Figure 3. Assembly Top Layer

## 8.2 Top Layer Routing

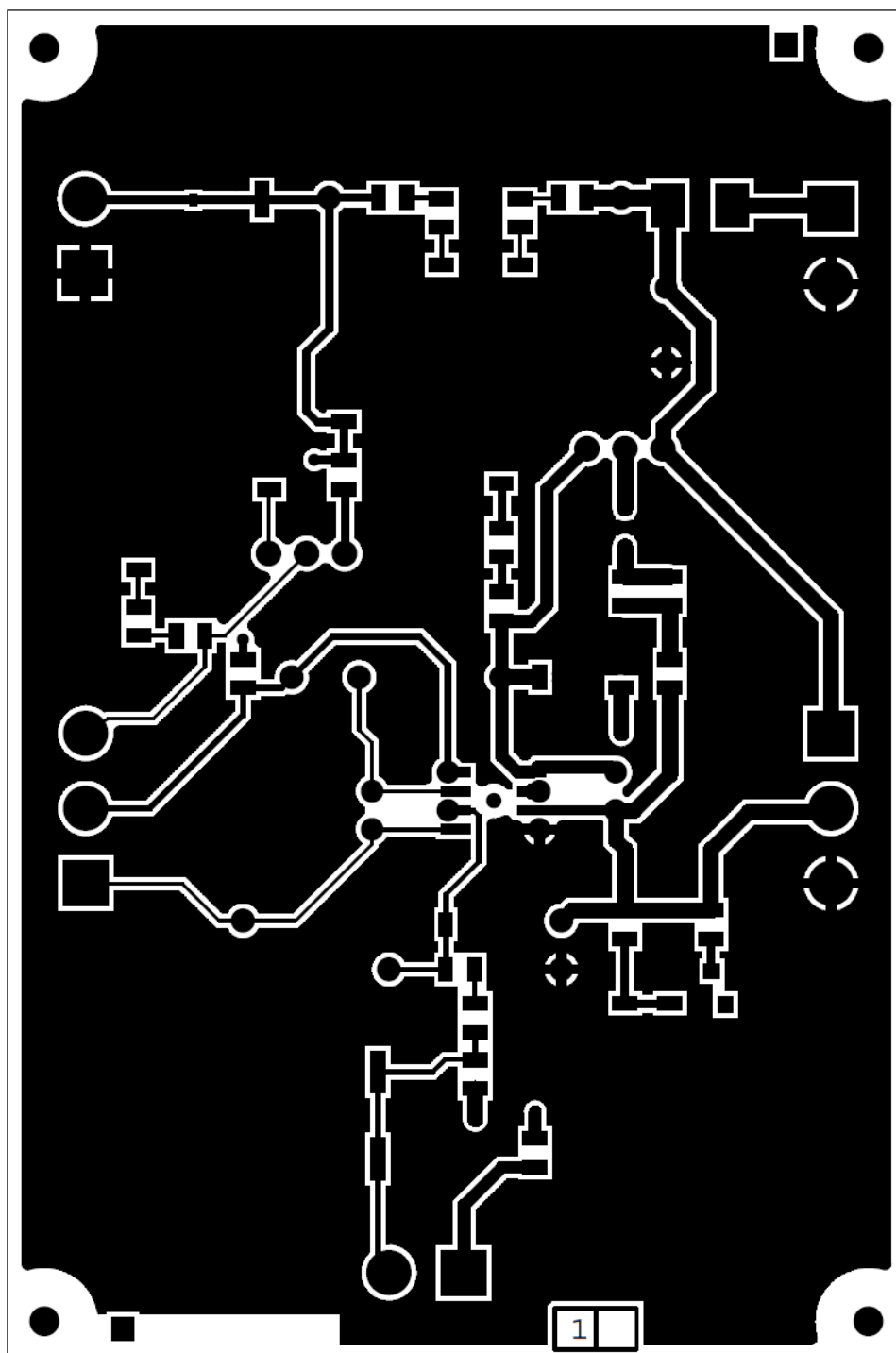


Figure 4. Top Layer Routing

### 8.3 Bottom Layer Routing

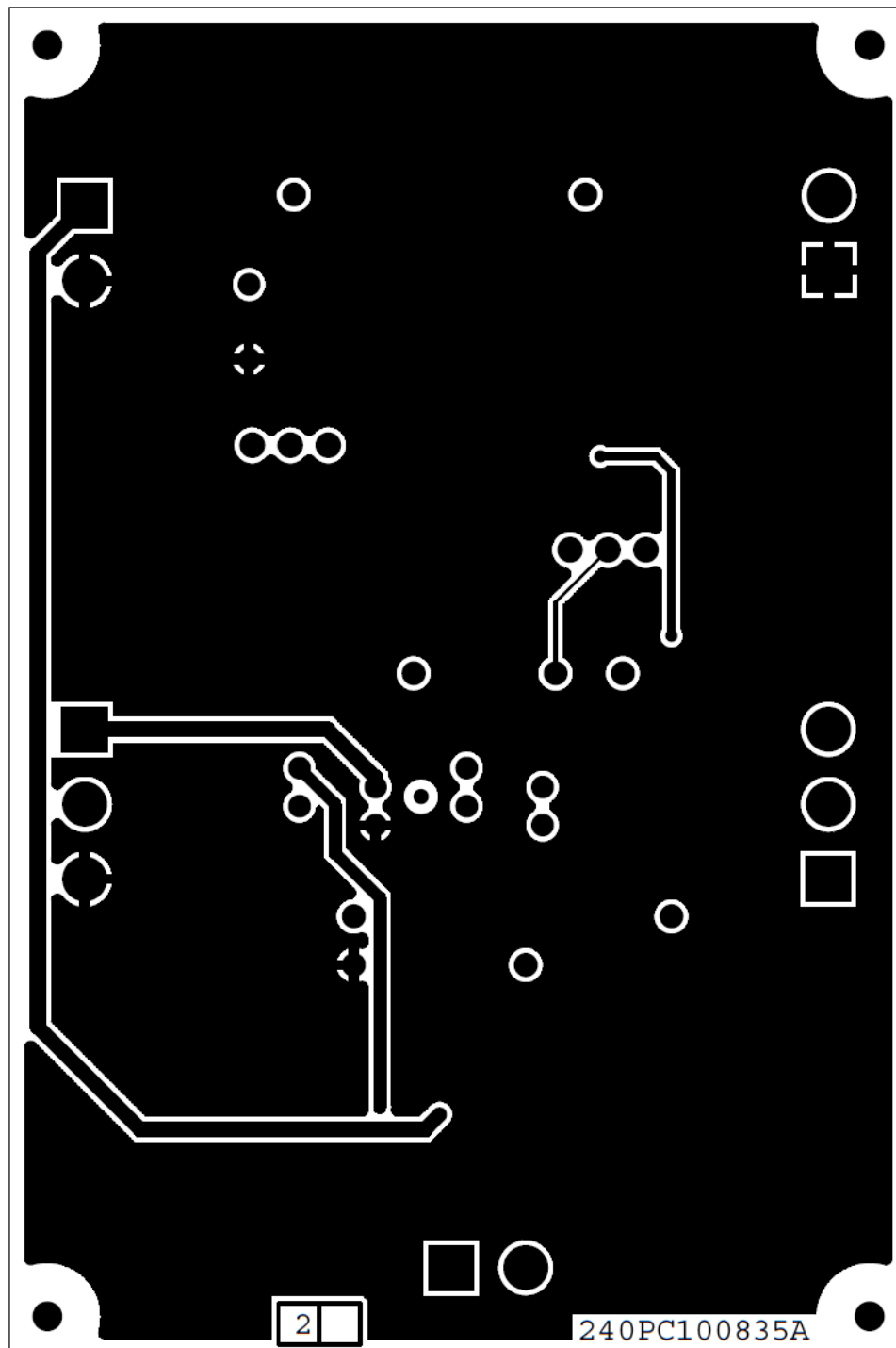


Figure 5. Bottom Layer Routing

## 9 Bill of Material

**Table 1. KIT33662xEFEVBE Bill of Material <sup>(2)</sup>**

Quantity	Part Reference	Device or Value	Description
<b>Freescall Components</b>			
1	U1	MC33662JEF or MC33662LEF	10kbps baud rate 20kbps baud rate
1	U2	Socket	SOIC8 socket - LIN Transceiver
<b>Capacitors</b>			
1	C1	330 $\mu$ F/100 V	CAP ALEL 20% - RADIAL
2	C2, C5	100 nF/100 V	CAP CER 10% - X7R 0805
1	C3	4.7 $\mu$ F/10 V	CAP ALEL 20% - RADIAL
1	C4	100 nF/10 V	CAP CER 10% - X7R 0805
1	C6	68 pF/100 V	CAP CER 10% - X7R 0805
1	C7	100 pF/100 V	CAP CER 10% - X7R 0805
<b>Resistors</b>			
2	R1, R3	8.2 K	RES TF 1/8 W 5% - RC0805
4	R2, R4, R7, R9	2.2 K	RES TF 1/8 W 1% - RC0805
2	R5, R6	18 k	RES TF 1/8 W 1% - RC0805
	R8	1.0 K	RES TF 1/8 W 5%
2	R10, R11	0	RES 0 - RC0805
8	RZ1, RZ2, RZ3, RZ4, RZ5, RZ6, RZ7, RZ8	0	RES 0 - RC0805
<b>Diode</b>			
1	D1	MBRS1100T3G	Schottky 1.0 A 100 V - SMB
1	D5	1N4148WS	DIODE 150 mA 53 V - SOD-323
1	D7	MMBZ27VCLT1	Dual Common Cathode Zeners - SOT-23
1	D8	MM3Z10VT1G	Zener 10 V 5% 200 mW - SOD-323
2	L_INH, L_EN	LXT0805GW	LED GREEN 20MA
2	L_VDD, L_VSUP	LXT0805RW	LED RED 20MA
<b>Connectors</b>			
3	J1, J3, J5	PCB 2WAY 250 V/16 A	CON 2
2	J2, J4	PCB 3WAY 250 V/16 A	CON 3
2	SW1, SW2	TG39P0 20 V/0.4 A	SPDT ON-OFF-ON
1	S-WAKE	KSC221J 32 V/50 mA	SW SPST SMT

Note:

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

## 10 References

Following are locations where you can obtain information on other Freescale products and application solutions.

Description	URL
<b>Reference Web Sites</b>	<b>Reference URL Locations</b>
<a href="#">MC33662 Data Sheet</a>	<a href="http://www.freescale.com/files/analog/doc/data_sheet/MC33662.pdf">http://www.freescale.com/files/analog/doc/data_sheet/MC33662.pdf</a>
<a href="#">Application Notes</a>	<a href="http://www.freescale.com/files/analog/doc/app_note/AN2409.pdf">http://www.freescale.com/files/analog/doc/app_note/AN2409.pdf</a>
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