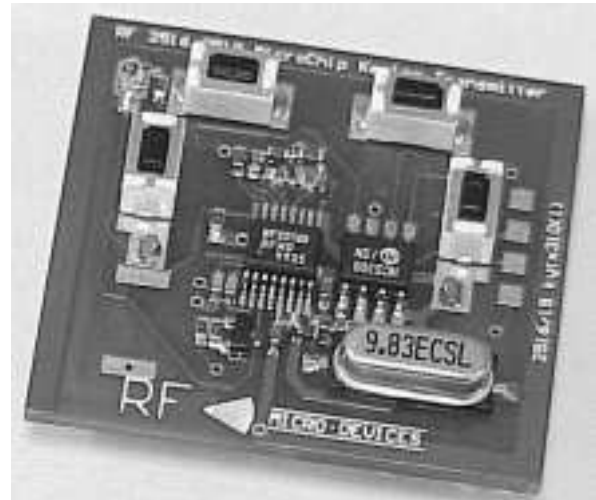


Typical Applications

- Remote Keyless Entry
- Remote Controls
- Wireless Security Systems
- Remote Monitoring

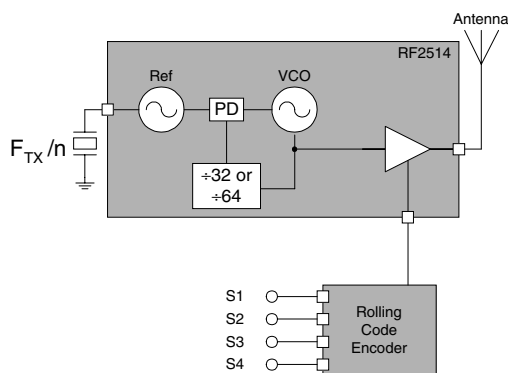
Product Description

The DK1002T is the transmitter half of our remote keyless entry system evaluation kit. It is designed to allow the user to easily and quickly demonstrate the operation of the RF2514 in a typical application. Everything needed to demonstrate a one way transmitter is included. The RF2514 is setup to demonstrate a typical keyless entry system using a rolling code encoder while operating at 868MHz. A battery is included and the antenna is printed on the circuit board. This unit is designed to work with the mating receiver, DK1002R.



Optimum Technology Matching® Applied

- | | | |
|------------------------------------------------|-----------------------------------|--------------------------------------|
| <input type="checkbox"/> Si BJT | <input type="checkbox"/> GaAs HBT | <input type="checkbox"/> GaAs MESFET |
| <input checked="" type="checkbox"/> Si Bi-CMOS | <input type="checkbox"/> SiGe HBT | <input type="checkbox"/> Si CMOS |



Functional Block Diagram

Features

- Complete Transmitter
- Programmable Rolling Code Encoder
- Four Pushbutton Functionality
- LED Indicator
- Mates With DK1002R Receiver
- Battery and Antenna

Ordering Information

DK1002T Available only as part of the DK1002 Reference Design Kit

RF Micro Devices, Inc.
7625 Thorndike Road
Greensboro, NC 27409, USA

Tel (336) 664 1233
Fax (336) 664 0454
<http://www.rfmd.com>

DK1002T

Absolute Maximum Ratings

Parameter	Rating	Unit
Supply Voltage	-0.5 to +3.6	V _{DC}
Operating Ambient Temperature	-40 to +85	°C
Storage Temperature	-40 to +150	°C



Caution! ESD sensitive device.

RF Micro Devices believes the furnished information is correct and accurate at the time of this printing. However, RF Micro Devices reserves the right to make changes to its products without notice. RF Micro Devices does not assume responsibility for the use of the described product(s).

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Overall					T=25°C, V _{CC} =3.0V, Freq=868MHz
Frequency Range		868		MHz	
Modulation		OOK			
Modulation Frequency		1		kHz	Set by mode of encoder.
Output Power		70		dBμV/m	Measured in GTEM test cell
ON/OFF Ratio		75		dB	
PLL and Prescaler					
Prescaler Divide Ratio		32			10kHz Offset, 50kHz loop bandwidth
PLL Phase Noise		-97		dBc/Hz	
		-102		dBc/Hz	100kHz Offset, 50kHz loop bandwidth
Harmonics (average)		35		dBμV/m	Measured in GTEM test cell.
Reference Frequency		13.577		MHz	
Crystal Frequency Spurs		25		dBμV/m	Measured in GTEM test cell.
Power Supply					
Voltage		3.0		V	Specifications
	2.0		3.0	V	Operating limits
Current Consumption (Avg.)	4	7	9	mA	

DK1002T Theory of Operation

Introduction

The small 3V lithium button cell is installed in the back of the transmitter board by sliding the battery completely into the clip provided. The larger flat surface of the battery, marked with a "+" should be in contact with the clip, also marked with a "+" and should be facing away from the printed circuit board. It will normally require some force to insert the battery completely.

When the batteries are first installed and the devices are activated, the receiver may not recognize the transmitter. This is normal and only indicates that the receiver must learn the transmitter. This is accomplished with the following procedure:

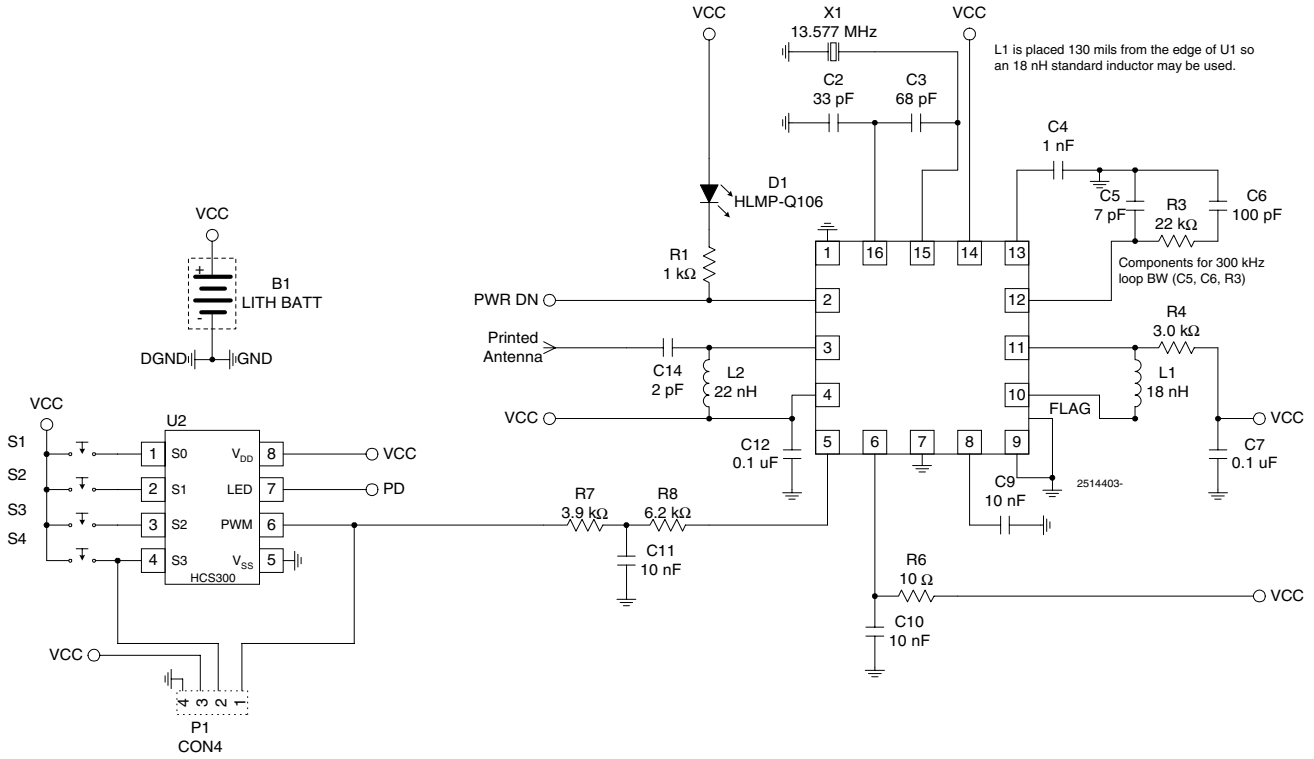
1. Install the batteries, if not already installed
2. Turn on the receiver using the power switch as described above
3. Momentarily depress the button marked "LEARN" on the receiver. This may be accessed through an opening in the clear cover on the front of the receiver with a small tool. This will cause the LED located next to the button to be illuminated.
4. While the LED is illuminated, depress any button on the transmitter. When a button on the transmitter is depressed, the LED on the transmitter will be illuminated. Continue depressing the button on the transmitter until the LED on the receiver is no longer illuminated. Release the button on the transmitter.
5. Depress a button on the transmitter once again. Continue depressing the button until the LED on the receiver begins to flash. Release the button on the transmitter.
6. The LED on the receiver will stop flashing. The process is complete.
7. To verify proper operation, depress any button on the transmitter. An LED on the receiver should be illuminated and the LED located next to the "LEARN" button should flash. When one of the buttons on the transmitter is depressed, the buzzer will sound.

The transmitter has four pushbuttons that activate the transmitter. The four buttons represent four separate functions that could be activated using the system. This evaluation board uses the Microchip encoder chip for secure transmissions. Further information about this device may be obtained from Microchip Technology Inc., Chandler, Arizona, USA. An LED is included to indicate that the device is activated and four pads are included for programming the HCS300 device. The device is preprogrammed with a dummy serial number. An antenna is printed onto the circuit board for convenience. The transmitter is simply operated by pressing any of the buttons. While the button is depressed, the LED on the transmitter is illuminated.

The 868MHz transmitter uses a 13.577MHz crystal which may be identified by the label on the top of the crystal can. The following pages show the schematic for the 868MHz transmitter, the bill of material for the 868MHz transmitter, the printed circuit board layout for the 868MHz transmitter. These materials, along with the Gerber files for the PCBs may be found on the Internet at www.rfmd.com.

Evaluation Board Schematic 868MHz

(Download [Bill of Materials](http://www.rfmd.com) from www.rfmd.com.)



DK1002T

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TRANSCEIVERS