RF Monolithics, Inc.

TRC101/102

With Power Amp

By

Bob Nelson

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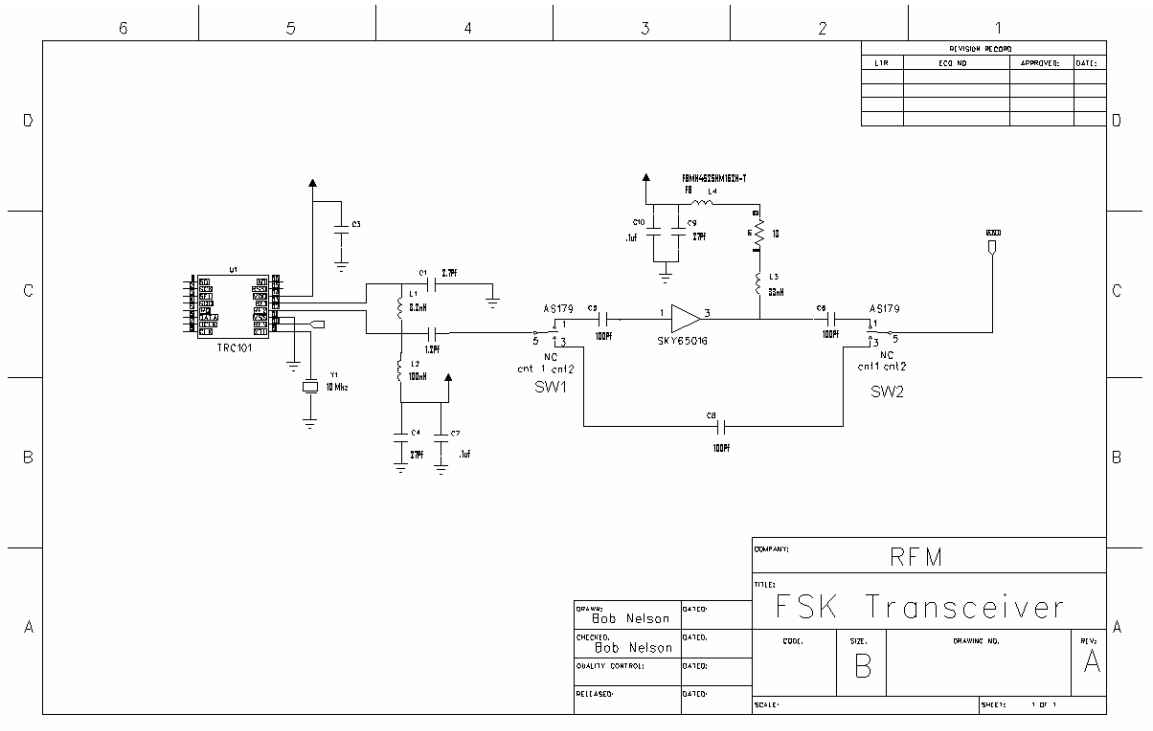
Scope:

This application will demonstrate the ease of implementing a power amplifier to increase the RF output when using the TRC10X in FHSS mode. This document will give you the schematic and BOM to implement the design. Keep in mind that the TRC101/2 will meet or exceed FCC 15.249 power requirements and this application note is intended to increase the power out while the radio is being used has a FHSS mode meeting FCC 15.247 rules and regulations.

Schematic:



Theory:

The simple addition of a 50 ohm power amplifier is straight forward. The only additional components required to interface to the amplifier are two switches to bypass the PA during receive operations and to switch the PA in during transmit.

During receive SW1 and SW2 are in there normally close positions. The RF path will be from the antenna to pin 5 of SW2 to pin 3 to pin 3 of SW1 to pin 5. This bypasses the PA and connects the antenna to the transceiver though the 50 ohm matching network.

While in transmit mode the RF path will be from the 50 ohm matching network to SW1 pin3 to pin 1. There is a series DC blocking cap C5. This is required by the PA along with the same cap on the output to keep any DC power from being on the antenna. The output of the PA is the fed though SW2 pin1 to pin5 to the antenna.

The micro that is controlling the transceiver can control SW1 and SW2 (TR switching).

The power out can be controlled with the TRC101/2 by using the adjustable power output control internal to the transceiver. This will allow you to tweak the output power to save battery power and to meet your requirements.

BOM:

The bill of material (BOM) is short and does not require many parts as other solutions do. The TRC101/2 only requires a minimum number of components to implement to RF solution.

1 ea TRC101 or TRC102 (http://www.RFM.com)
1 ea 10 MHz crystal
2 ea inductors for matching
6 ea capacitors for DC blocking and EMI
2 ea AS179 RF SPDT RF switches
(http://www.skyworksinc.com/products_detailpop2.asp?pid=7121)
1 ea Sky65016 or similar power amplifier
(http://www.skyworksinc.com/products_display_item.asp?did=4425)

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