Receiver ICs

TriQuint Semiconductor has unveiled its latest in a series of Gallium Arsenide (GaAs) TDMA-mode monolithic receiver ICs. The TQ5122 cellular frequency band receiver and the TQ5622 PCS band frequency are complementary devices specifically designed for use in IS-136/TDMA handsets in both the U.S. cellular and PCS frequency bands.

The TQ5122 and TQ5622 are low current devices that include a power down or &quotsleep&quot mode to extend both standby and talk times in wireless applications. Both devices include a LNA, mixer, LO buffer, and IF buffer amplifier and operate from a single 2.8 volt power supply. The TQ5122 and TQ5622 are designed to minimize the number of external bypass and matching elements to keep board space and cost to a minimum. Both devices draw typically 12 mA in the &quoton&quot state and less than 100 mA in the &quotoff&quot state. Conversion gain is 18.5 dB and 17.5 dB respectively. Both have an Input Intercept point, IIP3, of greater than &#150 9 dBm and noise figures better than 2.8 dB. They meet all electrical requirements for IS-136 phones.

Both ICs are packaged in a small, inexpensive JEDEC QSOP-16 plastic package and are shipped in tape and reel format. Technical support is available along with data sheets and evaluation boards.

The LNA section of the ICs are cascaded common source FETs. It is designed to operate on DC supply voltages from 2.7 V to 5 V. The source terminal must be grounded as close as possible to Pin 8 to avoid significant gain reduction due to degeneration. The LNA requires an input matching circuit to obtain best noise figure, gain and return loss.

The Mixer IF output for the IC set is an &quotopen-drain&quot configuration, allowing flexibility in matching to various filter types and various IF frequencies. For evaluation of the LNA and mixer, it is usually necessary to impedance match the IF port to the 50 W test system. When verifying or adjusting the matching circuit board, the LO drive should be injected at pin 5 at the nominal power level of &#150 4 dBm, since the LO level does have an impact on the IF impedance. There are several networks that can be used to properly match the IF port to the SAW or ceramic IF filter. The mixer supply voltage is applied through the IF port, so the matching circuit topology must contain either an RF choke or shunt inductor.

Source URL (retrieved on *04/17/2014 - 4:00am*):
http://www.wirelessdesignmag.com/product-releases/2001/04/receiver-ics