

APPLICATION NOTE 4175

MAX3541 DVB-T/PAL Tuner

Abstract: The [MAX3541](#) is an integrated, single-conversion terrestrial tuner IC for DVB-T and PAL. The device is designed to convert input signals in the VHF-Low, VHF-High, and UHF bands to an IF frequency of 36MHz. The MAX3541 is designed for television, analog/digital terrestrial receiver, and digital set-top box applications.

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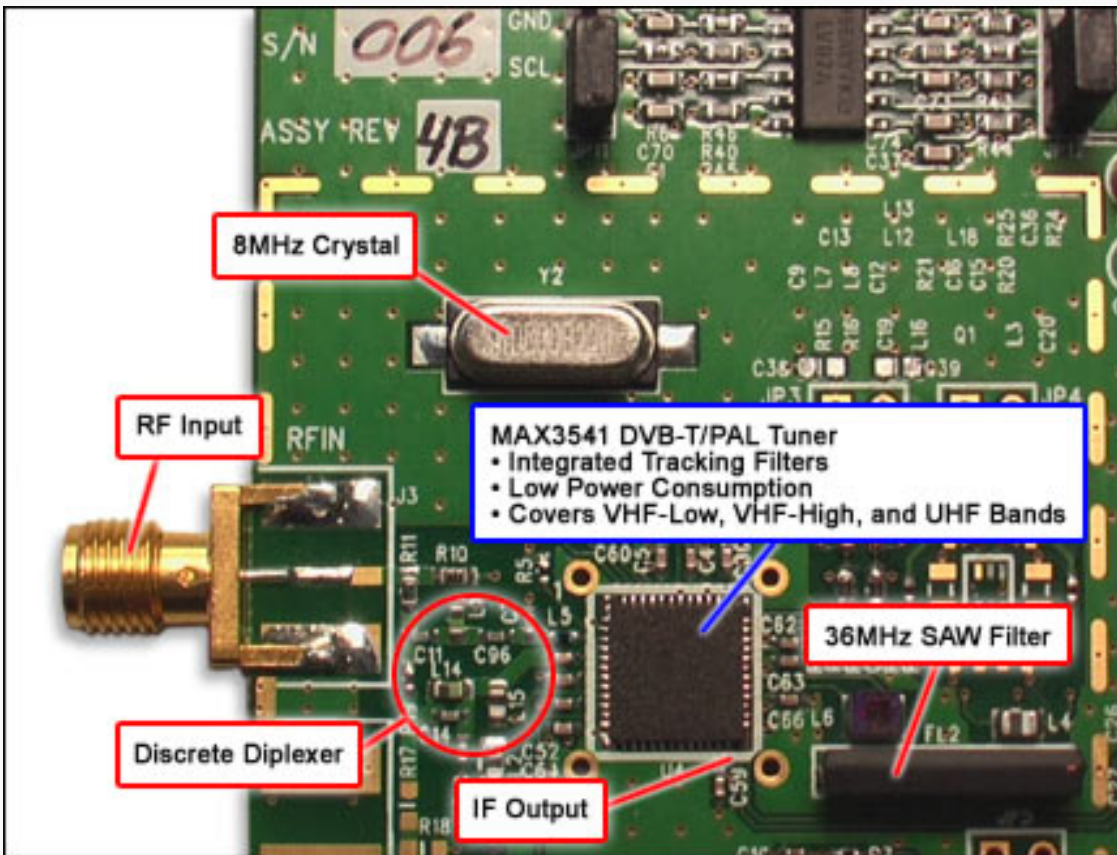


Figure 1. The MAX3541 DVB-T/PAL tuner.

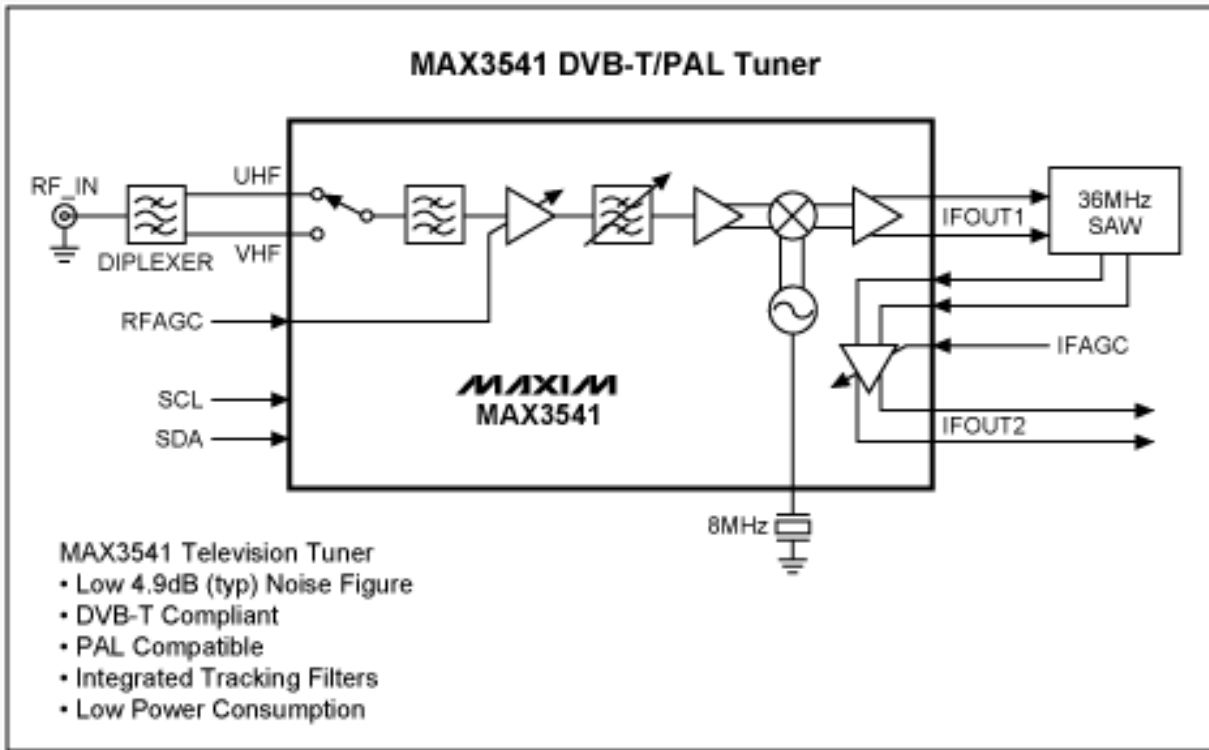


Figure 2. Tuner system block diagram.

DVB-T system performance for the MAX3541 with a DVB-T demodulator complies with the NorDig 1.0.2 specification. Typical UHF sensitivity is -81dBm. **Figure 3** shows system immunity to digital interferers. These measurements are for DVB-T with 64QAM, 2/3 code rate, 8MHz bandwidth, 8k mode, and 1/4 guard interval.

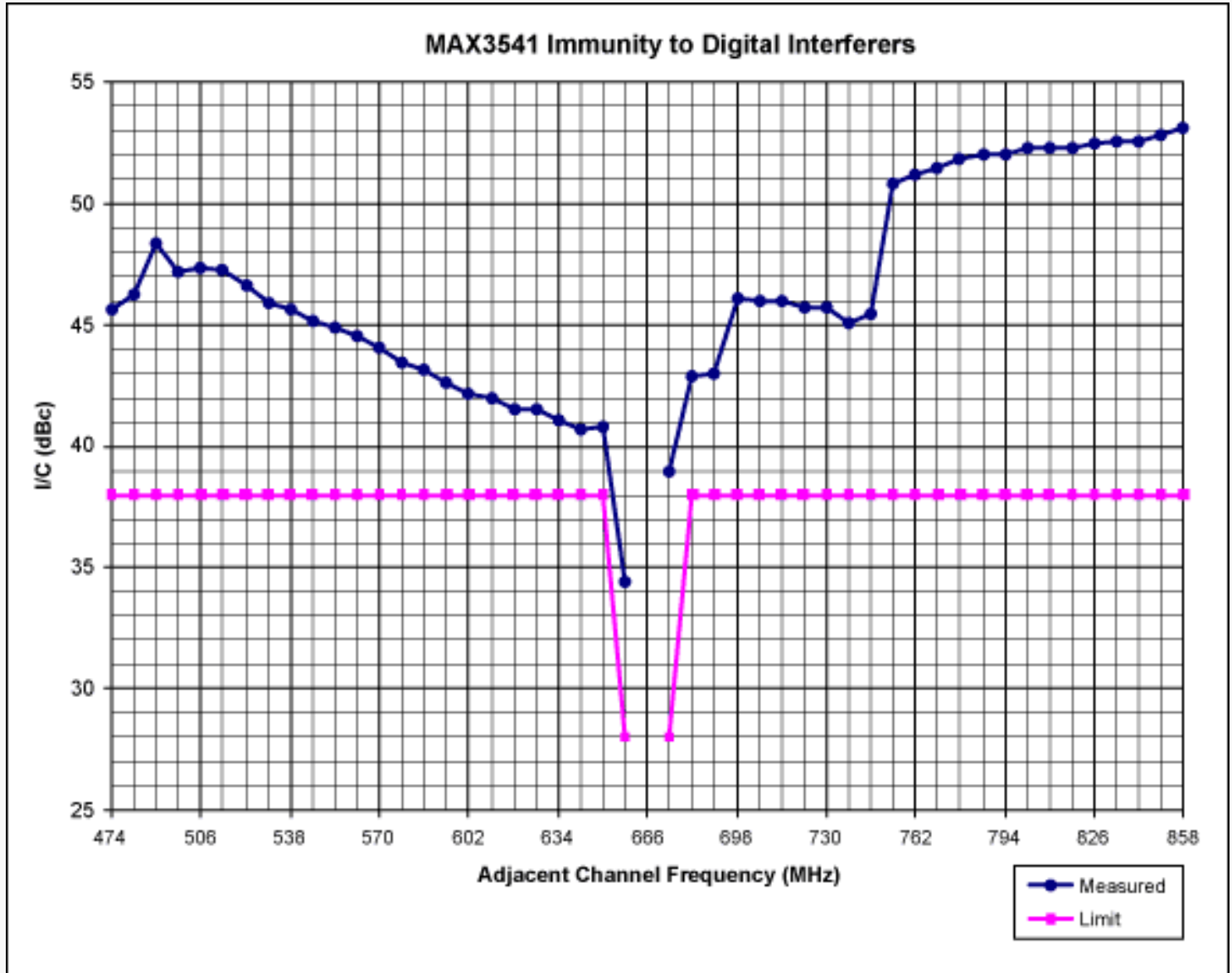


Figure 3. Data shows the immunity to digital interferers. This performance satisfies the NorDig 1.0.3 standard with 2.8dB margin.

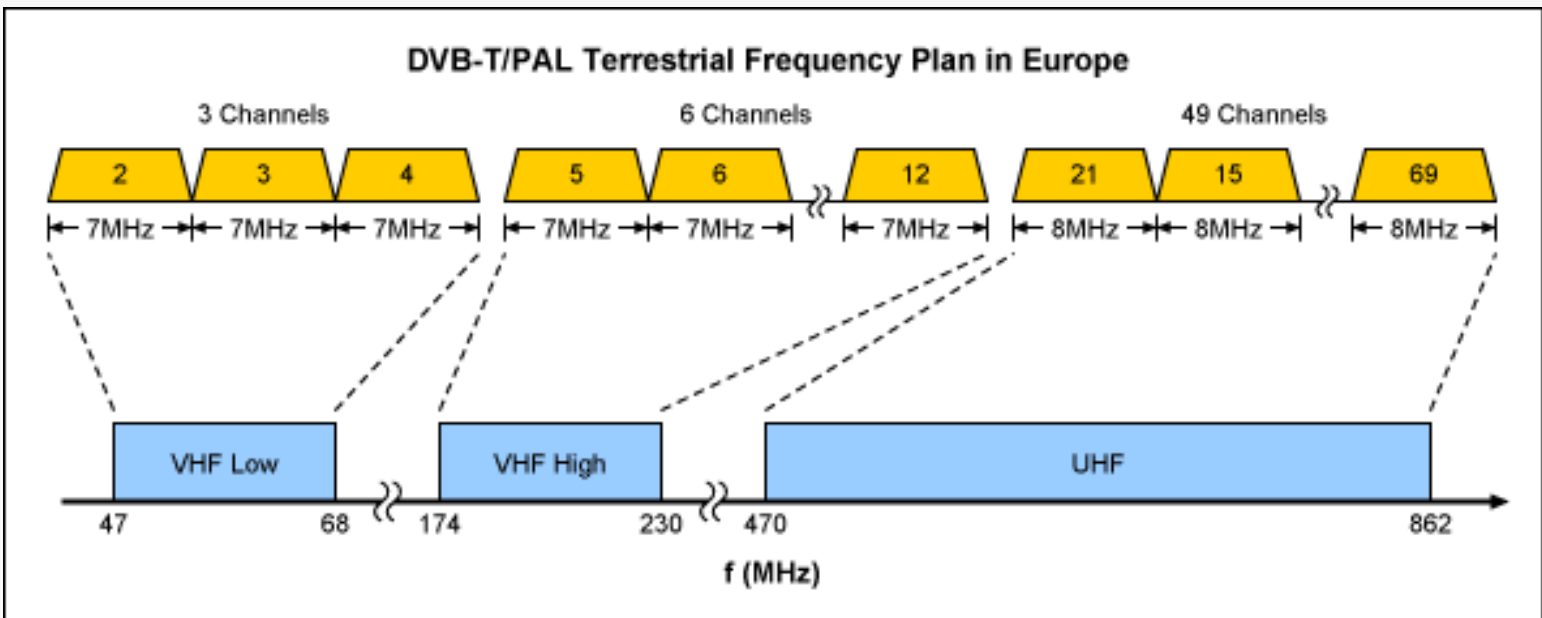


Figure 4. The DVB-T/PAL signal is broadcast in the VHF Low, VHF High, and UHF bands as shown above. Channel spacing is 7MHz in the VHF bands and 8MHz in the UHF band.

Detailed Description

The MAX3541 is a complete single-conversion television tuner designed for use in analog/digital terrestrial applications and digital set-top boxes. This television tuner draws only 760mW of power from a +3.3V supply voltage.

The MAX3541 is designed to convert PAL or DVB-T signals in the 47MHz to 68MHz, 174MHz to 230MHz, and 470MHz to 862MHz bands to an IF frequency of 36MHz.

The MAX3541 includes a variable-gain low-noise amplifier, multiband tracking filters, a harmonic-rejection mixer, a low-noise IF amplifier, an IF power detector, and a variable-gain IF amplifier. The MAX3541 also includes fully monolithic VCOs and tank circuits, as well as a complete frequency synthesizer. This highly integrated design allows for low-power tuner-on-board applications without the cost and power-dissipation issues of dual-conversion tuner solutions. The MAX3541 is specified for operation in the -40°C to +85°C temperature range and is available in a leadless 48-pin flip-chip (fcLGA) package.

Related Parts

MAX3541: [QuickView](#) -- [Full \(PDF\) Data Sheet](#) -- [Free Samples](#)

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