# MAX2141

# Low-Power XM Satellite Radio Receiver

Complete XM Satellite Radio Tuner for Simultaneous Data and Audio Applications Uses Half the Power

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## Description

The MAX2141 complete low-power receiver is designed for XM satellite radio applications. To form a complete XM radio, the MAX2141 requires only an active antenna module, a crystal, and a SAW filter. The small number of external components needed makes the MAX2141 platform the lowest cost and the smallest wideband receiver solution available.

The receiver includes a self-contained RF AGC loop and IF AGC loop, effectively providing a total dynamic range in excess of 92dB. Channel selectivity is achieved by the SAW filter and by the on-chip lowpass filters. An integrated fractional-N synthesizer allows fine frequency step, making possible the implementation of a software AFC loop. Additionally, a reference buffer is provided for driving a baseband controller.

An I²C bus-compatible interface programs the MAX2141, providing features such as programmable gains, variable-bandwidth lowpass filter tuning, and various power-down modes.

The MAX2141 is Maxim's 2nd-generation device for XM satellite radio applications. It is a drop-in replacement for the 1st-generation MAX2140. While significantly reducing power dissipation, the MAX2141 adds an optional closed-loop IF power control, standby mode, enhanced reference buffer, and improved RF gain-control accuracy.

The MAX2141 is rated to operate over the -40°C to +85°C extended temperature range and is available in a 7mm x 7mm, 44-pin thin QFN package.

## Key Features

- Pin Compatible with the MAX2140
- Self-Contained RF AGC Loop
- Self-Contained IF AGC Loop
- +2.85V to +3.6V Operating Voltage Range
- Complete Integrated Frequency Generation
- Overcurrent Protection for External LNA
- Low-Power Standby Mode
- Very Small 44-Pin TQFN Package
- 250mW Power Dissipation (at $V_{CC}$ = +3.0V)

## Applications/Uses

- XM Satellite Radio

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