General Description

The MxL541C is a low-power single-chip satellite receiver IC, featuring four L-band Full-Spectrum Capture® (FSC®) tuners and four demodulators that are compliant with DVB-S and DIRECTV legacy standards.

The MxL541C receives signals from the L-band RF inputs, each from 950 MHz to 2150 MHz, and demodulates four satellite channels to produce four independent serial TS outputs. All four TS outputs support two-wire, modes, or four-wire.

Each of the four TS output ports can carry a TS from any of the internal four DVB-S/DVB-S2/DIRECTV legacy demodulators.

The MxL541C communicates with satellite LNBs through on-chip DiSEqC and FSK modems.

All major functions are incorporated onto the device, including LNAs, channel filters, AGC, adaptive equalizers, PLLs, crystal load capacitors, and demodulators. The MxL541C enables simple, compact board designs with low-power consumption and reduced BOM costs.

The MxL541C is controlled via an I^2C interface, and operates using 1.8V and 1.1V core supplies and an I/O supply of 3.3V. The MxL541C is available in a small 10 mm x 10 mm footprint 72-pin QFN package.

Applications

- STBs
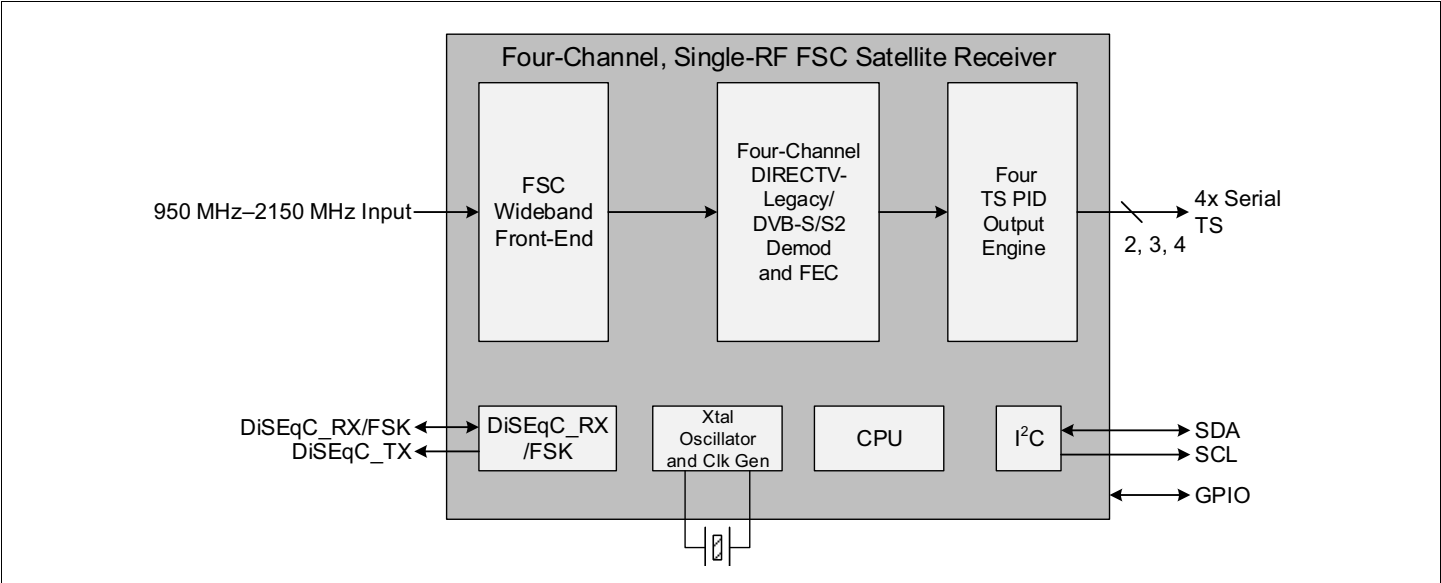- Residential gateways
- SAT>IP multi-switch
- IP-LNB

Features

- Ultra low power
- Symbol rates of:
  - 1 MSps to 45 MSps in DVB-S and DVB-S2 modes
  - 20 MSps to 30MSps in DIRECTV legacy mode
- DIRECTV full transponder loading compliant
- Broadcast wake-up
- Conversion from DIRECTV legacy packets to standard DVB-S/DVB-S2 TS packets
- Single-channel or Network Tuner mode
- Integrated LNAs
- Differential RF inputs
- Channel spectrum analysis data available through I^2C
- On-chip programmable crystal load capacitors to reduce external components
- Coexistence with MoCA, LTE, and WiFi
- Automatic channel acquisition
- Auto-detection and auto-correction of spectral inversion
- Four serial TS output ports, configurable in two-wire, three-wire, or four-wire modes
- PID filtering and output TS multiplexing with 2:1 or 4:1 ratio in serial TS mode, or 4:1 ratio in parallel TS mode
- Unicable, *EN50494:2007* and *EN50607:2013* standards, and SWM single-cable LNB distribution
- DiSEqC 2.2 two-way LNB control interface and FSK modem
- I^2C compatible interface

Supported Standards

- DVB-S
- DVB-S2
- DIRECTV legacy standard

Block Diagram

Ordering Information

Marketing Part Number	Ordering Part Number	Package	Dimensions	Shipping
MxL541C	MxL541C-AK-T	SAWN QFN72	10 mm x 10 mm x 0.85 mm	Tray
MxL541C	MxL541C-AK-R	SAWN QFN72	10 mm x 10 mm x 0.85 mm	Tape and Reel

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