

Low-power dual wide-band satellite tuner



DVB-S[®]
DVB-S2[®]



STMicroelectronics

STV6120 quad-input dual direct-conversion wideband tuner, compliant with worldwide satellite broadcast standards

The digital set-top box and PVR market continually demands ever-decreasing costs – both through the bill of materials for the final consumer product and the costs of designing that product.

To help meet this demand, ST has created the STV6120 satellite tuner IC for digital satellite TV broadcast applications. This device is a highly-integrated, low-cost, low-power dual satellite silicon tuner with integrated RF switch matrix and a high specification ensuring it meets the requirements of today's satellite broadcast formats; DVB-S1, DVB-S2, ISDB-S, ABS-S and others.



Key features

- Four LNA inputs
- On-chip 4:2 matrix
- Input frequency range 250 MHz to 2150 MHz
- Two independently programmable tuners
- RF to baseband direct conversion
- Single 3.3 V DC supply
- Fractional N synthesizers
- Extremely low phase noise, compliant with DVB-S2 requirements
- Flexible crystal frequency output to drive the demodulator IC
- Continuously variable gain: 0 to 65 dB
- Additional and programmable gain on baseband amplifier: 0 to 16 dB
- Programmable 5-to-36 MHz cut-off frequency (Butterworth 5th-order baseband filters)
- Compatible with 5 V and 3.3 V I²C buses

Key performance figures

- Noise figure at maximum gain: 12.5 dB (max.)
- Best-in-class linearity:
 - IIP3 = +7.5 dBm (min.)
 - IIP2 = +28 dBm (min.)
 - THD = -40 dB (max.)
- Low synthesizer phase noise:
 - Integrated phase noise [1k,1M] <0.5° typ

Key benefits

- Reduces board cost through fewer and less expensive discrete components, and board area savings
- Reduces development cost by simplifying RF design whilst ensuring best-in-class performance

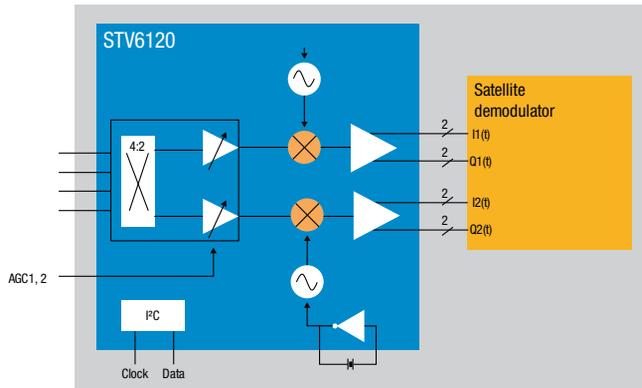
Targeted applications

- Direct broadcasting satellite (DBS) QPSK/8PSK demodulation
- Set-top boxes

The STV6120 is controlled by an I2C interface and has been designed to minimize the external bill of materials to reduce manufacturing costs and to simplify the board layout. The reduced component count ensures greater system reliability leading to increased consumer satisfaction.

When used together, the STV6120 and ST's successful demodulator and MPEG decoder ICs (such as the STV0900/STV0910 and the STi7105/STi708/STiH236/STiH205/STiH238/STiH207/STiH239) combine to form highly cost-effective complete satellite solutions.

Application diagram



Evaluation boards and reference designs

A full range of evaluation boards are available for the STV6120.

For faster time-to-market for satellite platforms, ST provides a wide range of STV6120-based example designs, ranging from small form-factor NIM reference designs - including industry-leading DVB-S1/S2 demodulators (STV0900/STV0910) - to complete set-top box ready-to-industrialize designs. Complete design packages, including schematics, layout and detailed RF recommendations, are available upon request.

The STV6120 is fully supported by software drivers supplied as part of ST's STAPI driver suite.



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