Description
The Si2167D integrates digital demodulators for first and second generation DVB standards (DVB-T/C/S/S2 and S2X) in a single advanced CMOS die. Leveraging Silicon Labs’ proven digital demodulation architecture, the Si2167D achieves excellent reception performance for each media while significantly minimizing front-end design complexity, cost, and power dissipation. Connecting the Si2167D to a hybrid TV tuner or digital only tuner, such as Silicon Labs’ Si217x/5x/4x devices, results in a high-performance and cost optimized TV or STB front-end solution.

DVB-T and DVB-C demodulators are enhanced versions of proven and broadly used Si2169/68/67/64/62/60 Silicon Labs devices. Furthermore, ITU-T J.83 Annex B is also supported for US and South American cable networks. The IF input supports standard IF (36 MHz) or low-IF.

For DVB-T and DVB-S/DSS, an innovative and advanced FEC decoding scheme is implemented resulting in higher performance.

The satellite reception allows demodulating widespread DVB-S, DIRECTV™ (DSS), DVB-S2, DIRECTV™ (AMC) legacy standards, and new Part II of DVB-S2 (S2X) satellite broadcast standard. A zero-IF input (different) allows for a seamless connection to market proven satellite silicon tuners. Si2167D embeds DiSEqC™ 2.0 LNB interface for satellite dish control and an equalizer to compensate for echoes in long cable feeds from the antenna to the satellite tuner input.

The Si2167D offers an on-chip blind scan algorithm for DVB-S/S2/S2X and DVB-C standards, as well as a blind lock function. The Si2167D programmable transport stream output interface provides a flexible range of output modes and is fully compatible with all MPEG decoders or conditional access modules to support any customer application.

Features
- Pin-to-pin compatible with all Si216x/8x single demods family
- API compatible with all single and dual demods families
- DVB-S2 (ETSI EN 302 307-1 V1.4.1)
  - QPSK/8PSK demodulator
- DVB-S2X (ETSI EN302 307-2 V1.1.1)
  - Broadcast services supported
  - QPSK/8PSK, 8/16/32APSK modulator
  - Roll-off factors from 0.05 to 0.35
- DVB-T (ETSI EN 300 744)
  - OFDM demodulator and enhanced FEC decoder
  - NorDig Unified 2.5 and D-Book 8 compliant
- DVB-C (ETSI EN 300 429) and ITU-T J.83 Annex A/B/C
  - QAM demodulator and FEC decoder
  - 1 to 7.2 Msymbol/s
- DVB-S and DSS supported
  - QPSK demodulator and enhanced FEC decoder
  - 1 to 45 Msymbol/s for all satellite standards (<40 MSp in 32APSK)
  - LDPC and BCH FEC decoding for DVB-S2/S2X standard
  - I²C serial bus interfaces (master and host)
  - Firmware control (embedded ROM/NVM)
  - Upgradeable with patch download via I²C or fast SPI
  - Flexible TS output interface (serial, parallel, and slave)
  - DiSEqC™ 2.0 interface and Unicable™ support for satellite
  - Fast lock times for all media
  - Low power consumption
  - Two power supplies: 1.2 and 3.3 V
  - 7x7 mm, QFN-48 pin package, Pb-free/RoHS compliant

Applications
- iTV: on-board design or in a NIM
- Advanced multimedia STB, PVR, and Blu-ray recorders
- PC-TV accessories
### Selected Electrical Specifications

\( T_A = -10 \text{ to } 75 \, ^\circ\text{C} \)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Condition</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
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<tr>
<td>General</td>
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<tr>
<td>Input clock reference</td>
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<td>DVB-S2(^3)</td>
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<td>DVB-S(^4)</td>
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<td>mW</td>
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<td>V</td>
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<tr>
<td>( V_{DD_VIO} )</td>
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<td></td>
<td>V</td>
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</table>

**Notes:**
1. Test conditions: 8 MHz, 8K FFT, 64-QAM, parallel TS.
2. Test conditions: 6.9 Mbaud, 256-QAM, parallel TS.
4. Test conditions: 30 Mbaud, CR = 7/8, parallel TS, at QEF: BER = 2 \times 10^{-4}.

### Pin Assignments

![Pin Assignment Diagram](image)

### Selection Guide

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>Si2167-D60-GM</td>
<td>DVB-T/C/S/S2/S2X Digital TV Demodulator, 7x7 mm QFN-48</td>
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