The Si21682D integrates two separate high-performance digital demodulators for the DVB-T2/T and DVB-C standards into a single compact package. Leveraging Silicon Labs' proven digital demodulation architecture, the Si21682D achieves excellent reception performance for each media while significantly minimizing front-end design complexity, cost, and power dissipation. Connecting the Si21682D to a dual terrestrial/cable TV tuner results in a high-performance and cost optimized TV front-end solution.

Silicon Labs' internally-developed DVB-T2 (including T2-Lite) demodulators support all modes specified by the DVB-T2 standard (V1.4.1). Main features of the DVB-T2 mode are, SISO and MISO support, FEF management, fully autonomous signal acquisition including automatic L1 signaling parsing support for all pilot patterns, and DVB-T2/T auto-detection.

The DVB-T and DVB-C, including ITU-T J.83 annex B, demodulators are enhanced versions of proven and broadly used Si2164/67/68/69 Silicon Labs devices. The Si21682D offers an on-chip blind scanning algorithm for the DVB-C standard, as well as blind lock function. The Si21682D embeds two independent programmable transport stream interfaces which provide a flexible range of output modes, including a cross-bar functionality, and are fully compatible with all MPEG decoders or conditional access modules to support any customer application.

**Features**

- Pin-to-pin compatible with all dual demodulator family: Si216x2 and Si218x2
- API compatible with all single and all dual demodulators
- DVB-T2 and T2-Lite (ETSI EN 302 755-V1.4.1)
  - Bandwidth: 1.7, 5, 6, 7 or 8 MHz
  - NorDig Unified 2.5 and D-Book 8 compliant
- DVB-T (ETSI EN 300 744)
  - NorDig Unified 2.5, D-Book 8 compliant
- DVB-C (ETSI EN 300 429) / ITU-T J.83 Annex A/B/C
  - 1 to 7.2 MSymbol/s, C-Book compliant
  - I^2C serial bus interfaces (master and host)
  - Upgradeable with firmware patch download via fast SPI or I^2C (broadcast mode supported)
  - Dual independent differential IF input for T/C tuners
  - GPIOs and multi-purpose ports (two per demodulator)
  - Separate flexible TS interfaces with serial or parallel outputs and cross-bar feature
  - Fast lock times for all standards
  - Only two power supplies: 1.2 and 3.3 V
  - 8x8 mm, QFN-68 pin package, Pb-free/RoHS compliant

**Applications**

- Multi-receiver iDTV: on-board or in a NIM
- Advanced multimedia PVR STBs
- PC-TV accessories
- PVR, DVD, and Blu-Ray disc recorders
Selected Electrical Specifications

(\(T_A = -10\) to 70 °C).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Condition</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
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<tbody>
<tr>
<td>General</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Input clock reference</td>
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<td>—</td>
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<td>MHz</td>
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<tr>
<td>Supported XTAL frequency</td>
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<td>30</td>
<td>MHz</td>
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<tr>
<td>Total power consumption for each demodulator</td>
<td>DVB-T2^1</td>
<td>—</td>
<td>356</td>
<td>—</td>
<td>mW</td>
</tr>
<tr>
<td></td>
<td>DVB-T^2</td>
<td>—</td>
<td>182</td>
<td>—</td>
<td>mW</td>
</tr>
<tr>
<td></td>
<td>DVB-C^3</td>
<td>—</td>
<td>142</td>
<td>—</td>
<td>mW</td>
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<tr>
<td>Thermal resistance ((\theta_{JA}))</td>
<td>4 layer PCB</td>
<td>—</td>
<td>42</td>
<td>—</td>
<td>°C/W</td>
</tr>
</tbody>
</table>

Power Supplies

| VDD_VCORE | 1.14 | 1.20 | 1.30 | V   |
| VDD_VANA  | 3.00 | 3.30 | 3.60 | V   |
| VDD_VIO   | 3.00 | 3.30 | 3.60 | V   |

Notes:
1. Test conditions: 8 MHz, 256-QAM, 32K FFT, CR = 3/5, GI = 1/128, PP7, parallel TS, C/N at picture failure.
2. Test conditions: 8 MHz, 8K FFT, 64-QAM, parallel TS.
3. Test conditions: 6.9 Mbaud, 256-QAM, parallel TS.

Pin Assignments

Selection Guide

| Part #       | Description | Dual Digital TV Demodulator for DVB-T2/T/C, 8x8 mm QFN-68 | Dual Digital Demodulators | Copyright © 2015 by Silicon Laboratories | 11.20.2015 | Silicon Laboratories and Silicon Labs are trademarks of Silicon Laboratories Inc. | Other products or brandnames mentioned herein are trademarks or registered trademarks of their respective holders |