Description
The Si21802 integrates two separate high-performance digital demodulators for the Japanese and South American terrestrial ISDB-T standard and for the DVB-T and DVB-C standards in a single compact package. Leveraging Silicon Labs’ proven digital demodulation architecture, the Si21802 achieves excellent reception performance for each media while significantly minimizing front-end design complexity, cost, and power dissipation. Connecting the Si21802 to a dual terrestrial/cable TV tuner results in a high-performance and cost optimized TV or STB front-end solution.

Leveraging significant field experience in DVB terrestrial demodulation (DVB-T), the Si21802 dual demodulator can accept standard or low-IF inputs (differential) and complies with the Brazilian SBTVD-T terrestrial specifications (ABNT NBR 16.601 and 15.604). Main features include fast channel scan, very short lock times, state of the art CCI performance, partial reception, and auxiliary channels decoding. DVB-T and DVB-C demodulators are next-generation enhanced versions of proven and broadly-used Silicon Labs’ Si2169/68/67/66/64/62/60 devices.

The cable reception allows demodulating widely deployed DVB-C legacy standard (ITU-T J.83 Annex A/C) and the Americas’ cable standard (ITU-T J.83 Annex B).

The Si21802 offers an on-chip blind scanning algorithm for DVB-C standard, as well as blind lock function.

The Si21802 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
- ISDB-T (ABNT NBR 16.601 and 15.604)
  - 6, 7, and 8 MHz bandwidth
  - Partial reception supported (reception of only one OFDM segment at the center of a group of segments)
  - AC1 and AC2 decoding
- 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
- I²C serial bus interfaces (master and host)
- Upgradeable with firmware patch download via fast SPI or I²C (broadcast mode supported)
- Firmware control (embedded ROM/NVM)
- 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 media
- Low power consumption
- 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
Si21802-B60
Dual ISDB-T and DVB-T/C Demodulator

Selected Electrical Specifications
($T_A = –10$ to $75$ °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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Notes:
1. Test conditions: 8K, 64-QAM, CR = 7/8, GI = 1/32, 13 segments
2. Test conditions: 8 MHz, 8K FFT, 64-QAM, parallel TS.
3. Test conditions: 6.9 Mbaud, 256-QAM, parallel TS.

Pin Assignments

![Pin Assignments Diagram]

Selection Guide

<table>
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<th>Part Number</th>
<th>Description</th>
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<td>Dual ISDB-T and DVB-T/C Demodulator, 8x8 mm QFN-68</td>
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