

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.

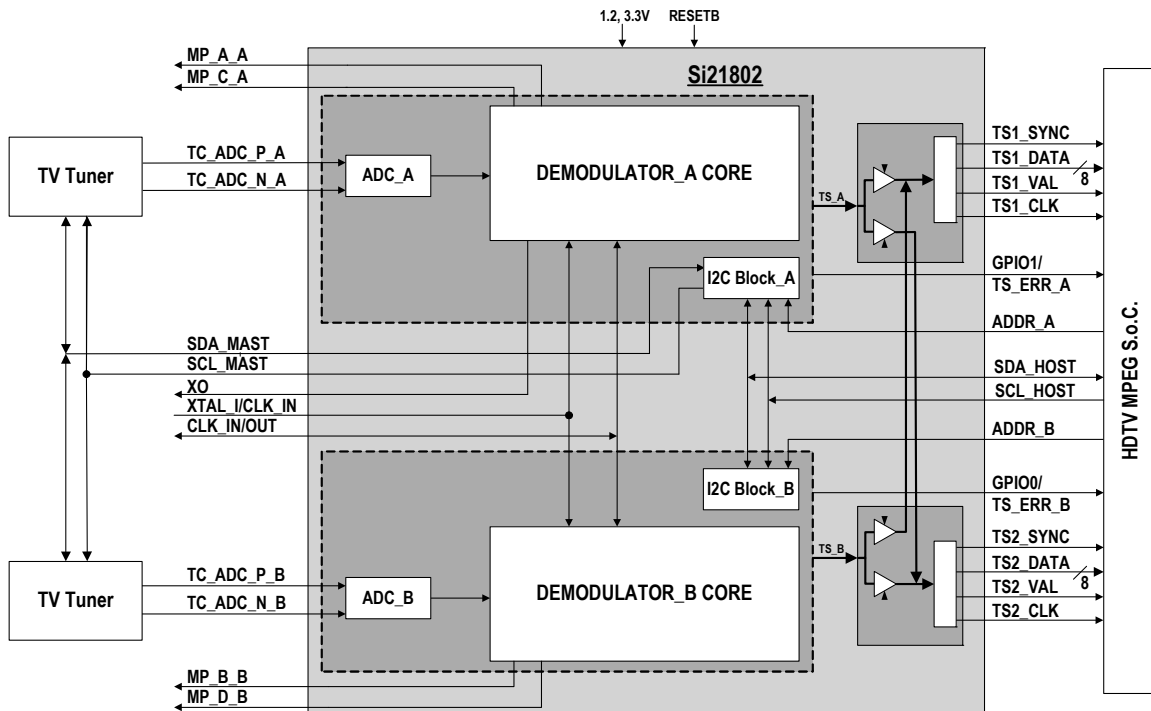
The Si21802 embeds two independent programmable transport stream interfaces which provide a flexible range of output modes, including a cross-bar functionality, and are fully compatible with all MPEG decoders or conditional access modules to support any customer application.

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



Selected Electrical Specifications

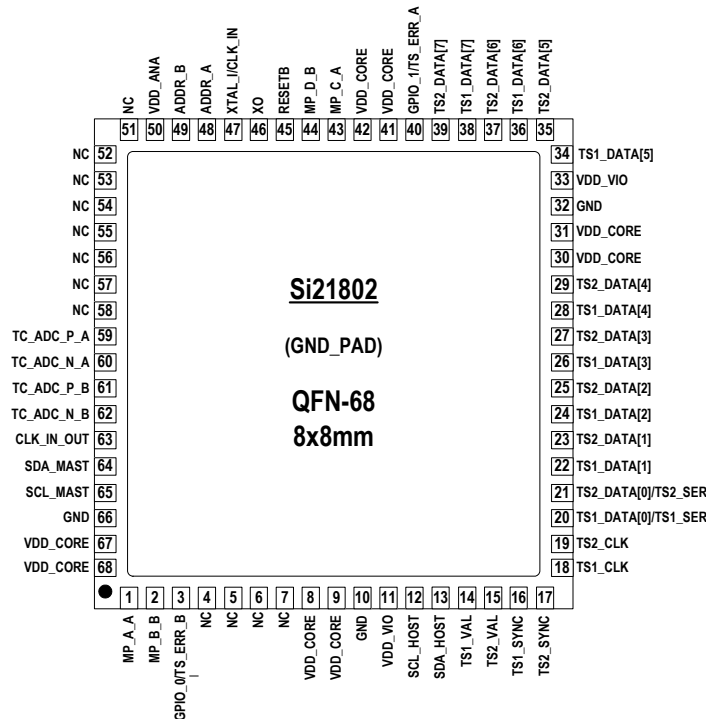
(T_A = -10 to 75 °C)

Parameter	Test Condition	Min	Typ	Max	Unit
General					
Input clock reference		4	—	30	MHz
Supported XTAL frequency		16	—	30	MHz
Total power consumption	ISDB-T ¹		168		mW
	DVB-T ²	—	182	—	mW
	DVB-C ³	—	142	—	mW
Thermal resistance (θ _{JA})	4 layer PCB	—	42	—	°C/W
Power Supplies					
V _{DD_VCORE}		1.14	1.20	1.30	V
V _{DD_VANA}		3.00	3.30	3.60	V
V _{DD_VIO}		3.00	3.30	3.60	V

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



Selection Guide

Part Number	Description
Si21802-B60-GM	Dual ISDB-T and DVB-T/C Demodulator, 8x8 mm QFN-68