

Description

A universal digital TV tuner, the Si2147 supports digital reception for all worldwide terrestrial and cable TV standards. By combining Silicon Laboratories' proven digital low-IF architecture with а 5th-generation RF front-end, the Si2147 maintains the highest performance that exceeds that of MOPLL-based tuners, including industry-leading 2nd order distortion performance. Pinand API-compatibility to the previous generation minimize customers' development effort.

The Si2147 delivers unprecedented integration with no external balun, tracking filters, LNAs, SAW filters, or inductive power supply filtering. While other solutions may also eliminate the balun, they suffer degradation in NF and 2nd order distortion compromising reception. Silicon Laboratories' proprietary and field-proven architecture delivers not only an optimized BOM but also world-class system performance. Options for single or dual supply and internal power-on reset are included. A harmonic rejection mixer delivers outstanding immunity to Wi-Fi and LTE interference, replacing the need for external filtering.

For advanced digital terrestrial TV reception, DVB-T2 and DVB-C2 constellations demand outstanding phase noise specifications, and the Si2147 rises to the challenge, delivering industry-leading integrated phase noise. Additionally, a software-selectable cable mode offers optimized return loss.

The Si2147 delivers exceptional picture quality and a higher number of received stations when compared to other solutions. Incorporating worldwide field experience from four prior tuner generations in mass production, the Si2147 delivers the highest tolerance to real-world reception conditions.

Features

- Worldwide digital TV tuner
 - ATSC/QAM, DVB-T2/T/C2/C, ISDB-T/C, DTMB
- Industry-leading margin to A/74, NorDig, D-Book, C-Book, ARIB, EN55020, OpenCable™ specifications
- Lowest BOM for a silicon digital TV tuner
 - No balun
 - No SAW filters or wire-wound inductors
 - Integrated LNAs and complete tracking filters
- Best-in-class real-world reception
 - Exceeds discrete MOPLL-based tuners
 - Industry-leading phase noise performance
 - High immunity to Wi-Fi and LTE interference
- Low power consumption
 - 3.3 V and 1.8 V power supplies
 - Single-supply option for 3.3 V-only operation
- Integrated power-on reset circuit
- Low-IF output to SoC or demodulator
- Standard CMOS process technology
- 4x4 mm, 28-pin QFN package
- RoHS compliant

Applications

- Digital ½-NIM tuner module
- iDTV (Integrated Digital TV)
- Digital terrestrial and cable STB
- Digital PVR, DVD and Blu-Ray disc recorder
- PC-TV accessories





Selected Electrical Specifications

 $(V_{DD H}=3.3 \text{ V}, V_{DD L}=1.8 \text{ V}, V_{DD D}=1.8 \text{ V}, T_{A}=25 ^{\circ}\text{C})$

Test Condition	Тур	Unit
	1.8 and 3.3, or only 3.3	V
XOUT Disabled	484	mW
	42 to 870	MHz
VHF-L	4.0	dB
VHF-H	3.7	dB
UHF	3.8	dB
Terrestrial mode	3	dB
Cable mode	9	dB
VHF-H, N±18, ±36	+5	dBm
VHF-H, N±1, ±2	-6	dBm
1 kHz 10 kHz 100 kHz 1 MHz	-100 -100 -105 -132	dBc/Hz
DSB: 125 Hz to 4 MHz	0.25 (-47)	^o rms (dBc)
ut Center Frequency channel BW=6 MHz 7 MHz 8 MHz		MHz
Programmable	0.5 to 2.0	Vppd
	VHF-L VHF-H UHF Terrestrial mode Cable mode VHF-H, N±18, ±36 VHF-H, N±18, ±36 VHF-H, N±1, ±2 1 kHz 10 kHz 100 kHz 1 MHz DSB: 125 Hz to 4 MHz channel BW=6 MHz 7 MHz 8 MHz	1.8 and 3.3, or only 3.3 XOUT Disabled 484 42 to 870 VHF-L 4.0 VHF-H 3.7 UHF 3.8 Terrestrial mode 3 Cable mode 9 VHF-H, N±18, ±36 +5 VHF-H, N±1, ±2 -6 1 kHz 10 kHz 100 kHz 1 MHz -100 -105 -132 DSB: 125 Hz to 4 MHz 0.25 (-47) 4 to 7 4.5 to 6.5 5 to 6

Selection Guide

Part #	Description
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Pin Assignments



4x4 mm QFN-28 Package Information



Symbol	Min	Nom	Мах	Unit
A	0.80	0.85	0.90	mm
D, E	4.00 BSC			mm
е	0.50 BSC			mm
f	3.50 BSC			mm