



TDA18253HN

Cable Silicon Tuner

Rev. 3 — 10 September 2010

Product data sheet

1. General description

The TDA18253HN is a Silicon Tuner IC designed specifically for high definition multi-tuner cable Set-Top Boxes (STBs) supporting single streaming and multi-streaming PVR STBs with watch, record, video-on-demand and in-home video distribution capability.

Used in conjunction with the TDA10024HN (digital channel demodulator), the TDA18253HN covers all worldwide digital cable standards.

- The TDA18253HN ensures a low system cost as:
 - Costly components such as low-noise amplifiers, Surface Acoustic Wave (SAW) filters and incremental crystal oscillators are eliminated from the system BOM
- The TDA18253HN high-performance Silicon Tuner meets today's digital cable TV reception needs with:
 - Same level of performance for master and slave tuners
 - Low power consumption
 - High linearity
 - Low noise figure
- The TDA18253HN ensures ease of use with:
 - Easy on-board integration
 - Efficient and effective PCB design
 - Reduced external components

2. Features and benefits

- Single 3.3 V power supply
- Low power consumption
- Extended frequency coverage up to 1002 MHz
- Digital cable reception for STB
- Supports 4 tuner functions for PVR boxes:
 - ◆ 1 × low IF output
 - ◆ 3 × RF outputs to drive slave tuners
- RF loop-through
- Fully integrated IF selectivity; eliminating the need for external SAW filters
- Alignment free
- Fully integrated oscillators with no external component
- Integrated wideband gain control
- Crystal oscillator output buffer (16 MHz) for single crystal applications



- I²C-bus provides:
 - ◆ 3.3 V and 5 V microcontroller compatibility
 - ◆ Received Signal Strength Indicator (RSSI) data access
 - ◆ Die temperature sensor data access
- Lead-free manufacturing

3. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
f_{RF}	RF frequency	center of channel	54	-	1002	MHz
NF_{tun}	tuner noise figure	normal mode; maximum gain	-	7	8.5	dB
φ_n	phase noise	worst case in the RF frequency range				
		10 kHz	-	-85	-	dBc/Hz
		100 kHz	-	-105	-	dBc/Hz
P	power dissipation	normal mode	-	750	-	mW
α_{image}	image rejection	normal mode	55	62	-	dB

4. Ordering information

Table 2. Ordering information

Type number	Package		
	Name	Description	Version
TDA18253HN/C1	HVQFN48	plastic thermal enhanced very thin quad flat package; no leads; 48 terminals; body 7 × 7 × 0.85 mm	SOT619-1

5. Block diagram

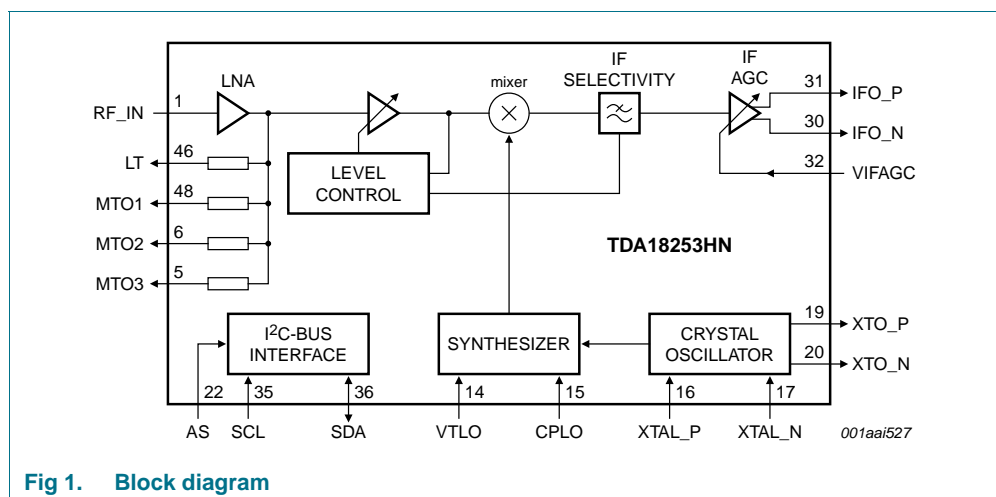


Fig 1. Block diagram

6. Limiting values

Table 3. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
V _{CC}	supply voltage		-0.3	+3.60	V
V _I	input voltage	pins SDA and SCL	-0.3	+5.5	V
		all other pins			
		V _{CC} < 3.3 V	-0.3	V _{CC} + 0.3	V
		V _{CC} > 3.3 V	-0.3	+3.6	V
T _{stg}	storage temperature		-40	+150	°C
T _j	junction temperature		-	95	°C
V _{ESD}	electrostatic discharge voltage	EIA/JESD22-A114 (human body model)	2	-	kV
		EIA/JESD22-A115 (machine model)	200	-	V

7. Abbreviations

Table 4. Abbreviations

Acronym	Description
AGC	Automatic Gain Control
BOM	Bill Of Materials
IC	Integrated Circuit
IF	Intermediate Frequency
LNA	Low-Noise Amplifier
PCB	Printed-Circuit Board
PVR	Personal Video Recorder
RF	Radio Frequency
SAW	Surface Acoustic Wave
STB	Set-Top Box

8. Revision history

Table 5. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
TDA18253HN_SDS v.3 ^[1]	20100910	Product data sheet	-	-

[1] Revisions 1 and 2 are not available.

9. Legal information

9.1 Data sheet status

Document status ^{[1][2]}	Product status ^[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

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