



TDA18250AHN

Cable silicon tuner

Rev. 1 — 10 July 2013

Product short data sheet

1. General description

The TDA18250A is a silicon tuner designed specifically for worldwide cable and terrestrial digital Set Top Boxes (STB).

- The TDA18250A ensures a low system cost by saving external components such as:
 - Low-Noise Amplifiers
 - Surface Acoustic Wave (SAW) filters
 - RF splitter

Moreover, thanks to its 8 kV ESD capability, EIA/JESD22-A114 (HBM), on the RF input pin and the loop-through pin, the application level ESD protection can be reduced.

- The TDA18250A silicon tuner meets current and future digital cable and terrestrial TV reception with:
 - Low-power consumption
 - High linearity
 - Very low noise figure (3.8 dB typical)
 - High immunity to wireless interferers (WLAN, LTE and GSM)
- The TDA18250A ensures ease of use with:
 - Easy on-board integration
 - Efficient and effective PCB design
 - Reduced external components
 - Integrated Zero Power Loop-Through (ZPLT)

2. Features and benefits

- Single 3.3 V supply voltage
- RF frequency coverage up to 1 GHz
- Flexible low IF output from 3 MHz to 7.5 MHz to ease the matching with various demodulators
- RoHS compliant
- I²C-bus interface compatible with 3.3 V microcontrollers
- Strong Immunity to wireless interferers (WLAN, GSM, LTE)
- Multi-reference clock frequency compliant: 16 MHz, 24 MHz, 25 MHz, 27 MHz and 30 MHz
- Crystal oscillator output buffer to drive demodulator, SoC or slave tuner
- Slave Tuner Output (STO), integrated splitter for dual tuner applications



- Fully integrated oscillators
- LT output, both in active and Zero Power Loop-Through mode (ZPLT)
- Fully integrated IF and RF selectivity; eliminating the need for external SAW filters
- Single-ended RF input (no need for external balun)
- Enhanced ESD protection (8 kV HBM) on RF_IN and ZPLT pins
- Alignment free
- Excellent return loss compatible with cable requirements
- Integrated RSSI function, readable through I²C-bus
- Integrated temperature sensor
- Integrated gain control

3. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
f_{RF}	RF frequency	RF input frequency range	42	-	1002	MHz
NF_{tun}	tuner noise figure	75 Ω ; maximum gain				
		$f_{RF} < 862$ MHz	-	3.8	-	dB
		$f_{RF} \geq 862$ MHz	-	4.5	-	dB
ϕ_{jit}	phase jitter	integrated from 250 Hz to 4 MHz	-	0.4	0.6	Degree
α_{image}	image rejection	IF = 5 MHz, RF (image) level ≥ 60 dB μ V	-	62	-	dB
$P_{i(max)}$	maximum input power	single channel	115	-	-	dB μ V
P	power dissipation		-	0.740	-	W

4. Ordering information

Table 2. Ordering information

Type number	Package		
	Name	Description	Version
TDA18250AHN/C1	HVQFN32	plastic thermal enhanced very thin quad flat package; no leads; 32 terminals; body 5 × 5 × 0.85 mm	SOT617-3

5. Block diagram

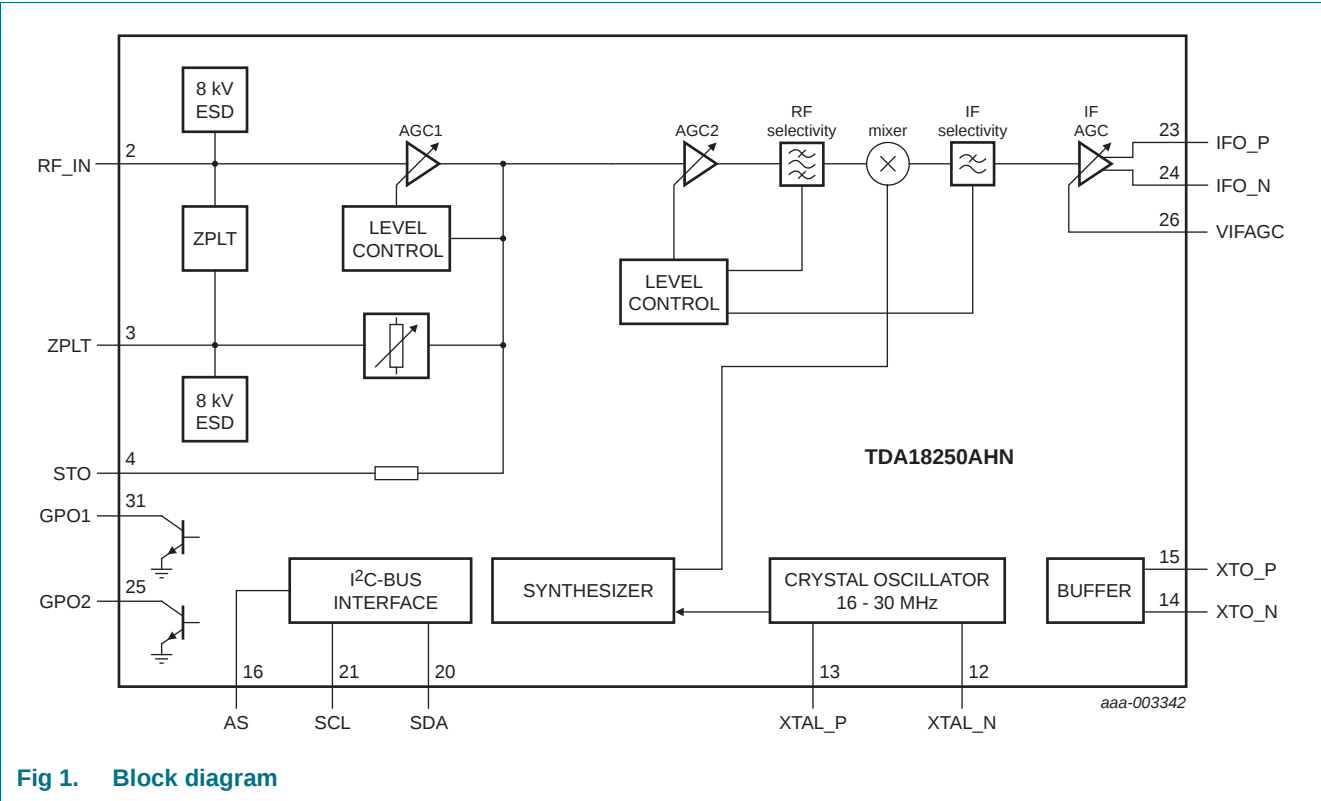


Fig 1. Block diagram

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	$V_{CC} < 3.3\text{ V}$	-0.3	$V_{CC} + 0.3$	V
		$V_{CC} > 3.3\text{ V}$	-0.3	+3.6	V
V_{ESD}	electrostatic discharge voltage	EIA/JESD22-A114 (HBM)	2	-	kV
		EIA/JESD22-A114 (HBM); pins RF_IN and ZPLT	8	-	kV
		EIA/JESD22-C101-C (FCDM) [1]	1	-	kV

[1] It withstands class IV of JEDEC standard.

7. Abbreviations

Table 4. Abbreviations

Acronym	Description
AGC	Automatic Gain Control
ESD	ElectroStatic Discharge
FCDM	Field Charge Device Model
GPO	General Purpose Outputs
HBM	Human Body Model
IC	Integrated Circuit
IF	Intermediate Frequency
JEDEC	Joint Electron Device Engineering Council
LT	Loop-Through
LTE	Long-Term Evolution
PCB	Printed-Circuit Board
RF	Radio Frequency
RoHS	Restriction of Hazardous Substances
RSSI	Received Signal Strength Indicator
SAW	Surface Acoustic Wave
SCL	Serial CLock
SDA	Serial DAta
SoC	System on Chip
STB	Set Top Box
STO	Slave Tuner Output
WLAN	Wireless Local Area Network
Xtal	Crystal
ZPLT	Zero Power Loop-Trough

8. Revision history

Table 5. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
TDA18250AHN_SDS v.1	20130710	Product short data sheet	-	-

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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