TDA18212HN

Silicon Tuner for terrestrial and cable digital TV reception

Rev. 2 — 12 August 2010 Product data sheet

1. General description

The TDA18212HN is a Silicon Tuner designed for terrestrial and cable TV reception for digital signals. TDA18212HN/M (Master) is to be used as a stand-alone tuner IC or Master in dual tuner application. TDA18212HN/S (Slave) is only to be used as Slave Silicon Tuner in dual tuner application.

The TDA18212HN supports all digital TV standards and delivers a LOW IF (LIF) signal to a channel demodulator for digital TV.

The TDA18212HN facilitates design-ins by:

- Allowing easy on-board integration
- Drastically reducing the size of the tuner function
- Providing flexibility in system solution development
- Allowing straightforward dual tuner applications optimization

2. Features and benefits

- Fully integrated IF selectivity; eliminating the need for external SAW filters
- Worldwide digital terrestrial and cable including A74
- Fully integrated oscillators
- Alignment free
- Single 3.3 V supply voltage
- Low power consumption
- Integrated wideband gain control
- Crystal oscillator output buffer (16 MHz) for single crystal applications
- I^2C-bus interface compatible with 3.3 V microcontrollers
- Slave tuner output function to drive second (slave) Silicon Tuner
- Easy programming
- 5 ms tuning time
- LIF channel center frequency output ranging from 3 MHz to 5 MHz
- 1.7 MHz, 6 MHz, 7 MHz, 8 MHz and 10 MHz channel bandwidths
- Ready for DVB-T2
- Loop-Through (LT)
- RoHS compliant

3. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
f_{RF}	RF frequency	full range of RF input	42	-	870	MHz
NF_{tun}	tuner noise figure	75 Ω source; maximum gain	-	5.0	5.6	dB
φ_{jit}	phase jitter	UHF; integrated from 250 Hz to 4 MHz	-	0.4	0.6	degree
α_{image}	image rejection	worst case for image rejection and 4 MHz IF frequency for levels above −50 dBm	55	63	-	dB
ICP_{1dB}	1 dB input compression point	at tuner input and minimum gain	124	-	-	dBμV

4. Ordering information

Table 2. Ordering information

Type number	Package		
	Name	Description	Version
TDA18212HN/M/C1[1]	HVQFN40	plastic thermal enhanced very thin quad flat package; no leads; 40 terminals; body 6 × 6 × 0.85 mm	SOT618-1
TDA18212HN/S/C1[2]			

[1] M for master.

[2] S for slave.

5. Block diagram

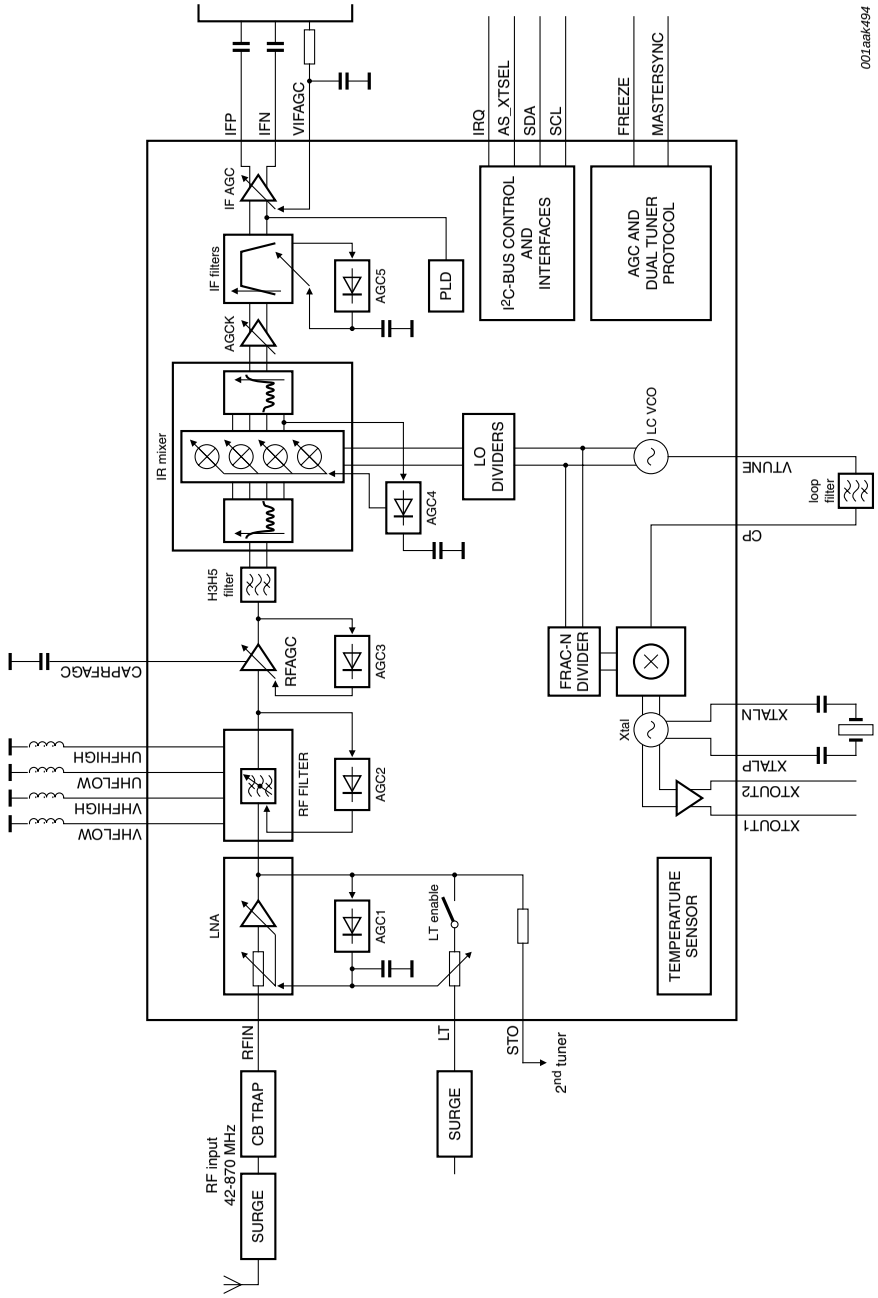

Fig 1. Block diagram TDA18212HN/M

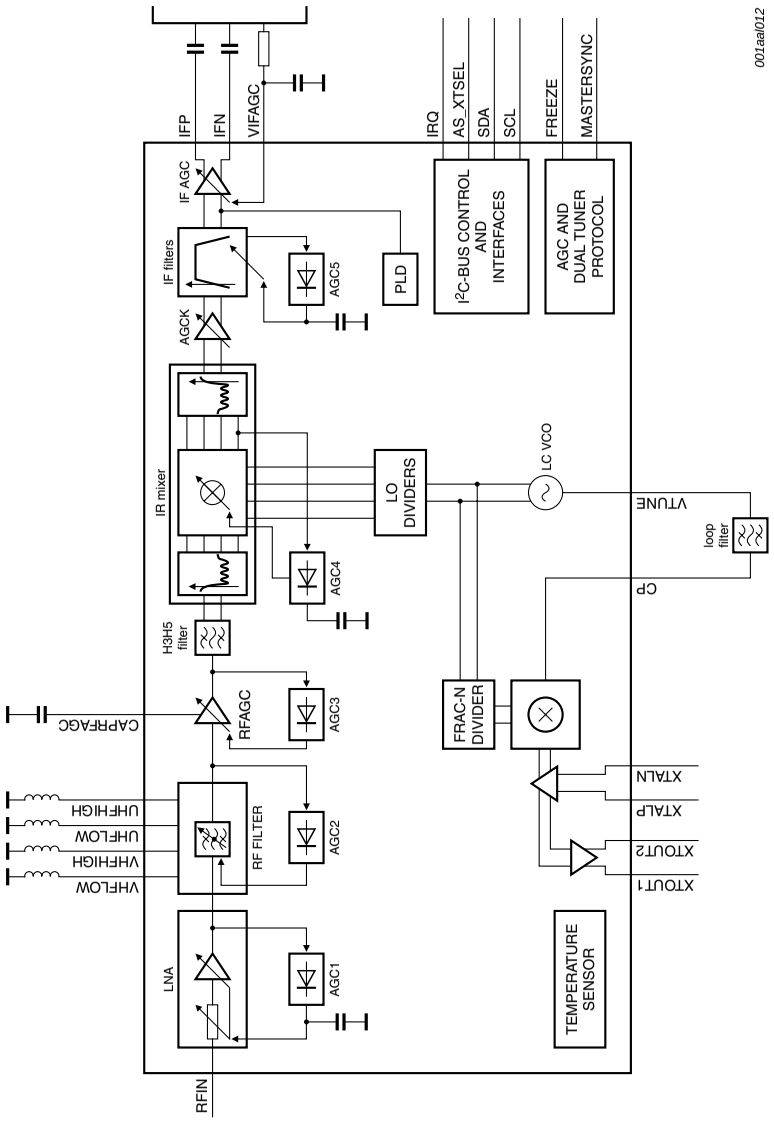

Fig 2. Block diagram TDA18212HN/S

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	+3.6	V
V_I	input voltage	pins SDA and SCL	−0.3	+3.6	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		-	125	°C
T_{amb}	ambient temperature		−20	[1]	°C
V_{ESD}	electrostatic discharge voltage	EIA/JESD22-A114 (human body model)	−2	+2	kV
		EIA/JESD22-C101-C (FCDM) class III[2]	750	-	V

[1] The maximum allowed ambient temperature $T_{amb(max)}$ depends on the assembly conditions of the package and especially on the design of the Printed-Circuit Board (PCB) and die connection. The application mounting must be done in such a way that the maximum junction temperature is never exceeded. The junction temperature can be obtained by reading the temperature sensor bit via I^2C-bus. The junction temperature: $T_j = T_{amb} + \Delta T_{j-c}$. where ΔT_{j-c} = power × R_{th}.

[2] Class III: 500 V to 1000 V

7. Abbreviations

Table 4. Abbreviations

Acronym	Description
AGC	Automatic Gain Control
AGCK	Automatic Gain Control number K
CB	Citizens' Band
DTMB	Digital Terrestrial Multimedia Broadcast
DVB	Digital Video Broadcasting
DVB-T/T2/C/H	DVB-Terrestrial/Terrestrial second generation/Cable/Handheld
ESD	ElectroStatic Discharge
EU	European Union
FCDM	Field-Induced Charged-Device Model
FRAC-N	FRACtional-N
IC	Integrated Circuit
IF	Intermediate Frequency
IR	Image Rejection
ISDB-T	Integrated Services Digital Broadcasting - Terrestrial
LC-VCO	Inductors and Capacitors - Voltage Controlled Oscillator
LNA	Low-Noise Amplifier
LO	Local Oscillator
LT	Loop-Through
RF	Radio Frequency

Table 4. Abbreviations *...continued*

Acronym	Description
RoHS	Restriction on Hazardous Substances
SAW	Surface Acoustic Wave
STO	Slave Tuner Output
UHF	Ultra High Frequency
US	United States
VCO	Voltage Controlled Oscillator
VHF	Very High Frequency

8. Revision history

Table 5. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
TDA18212HN_SDS v.2[1]	20100812	Product data sheet	-	-

[1] Revision 1 is 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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