



# TDA18219HN

Silicon Tuner for terrestrial and cable digital TV reception

Rev. 4 — 29 March 2011

Product data sheet

## 1. General description

The TDA18219HN supports most digital TV standards and delivers a LOW IF (LIF) signal to a channel demodulator for digital TV. Standards that are covered include DVB-T, ISDB-T, DTMB and DVB-C.

The TDA18219HN facilitates design-ins by:

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

## 2. Features and benefits

- Fully integrated IF selectivity; eliminating the need for external SAW filters
- 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<sup>2</sup>C-bus interface compatible with 3.3 V microcontrollers
- 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
- 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 $\Omega$ source; maximum gain	-	5.0	5.9	dB



Table 1. Quick reference data ...continued

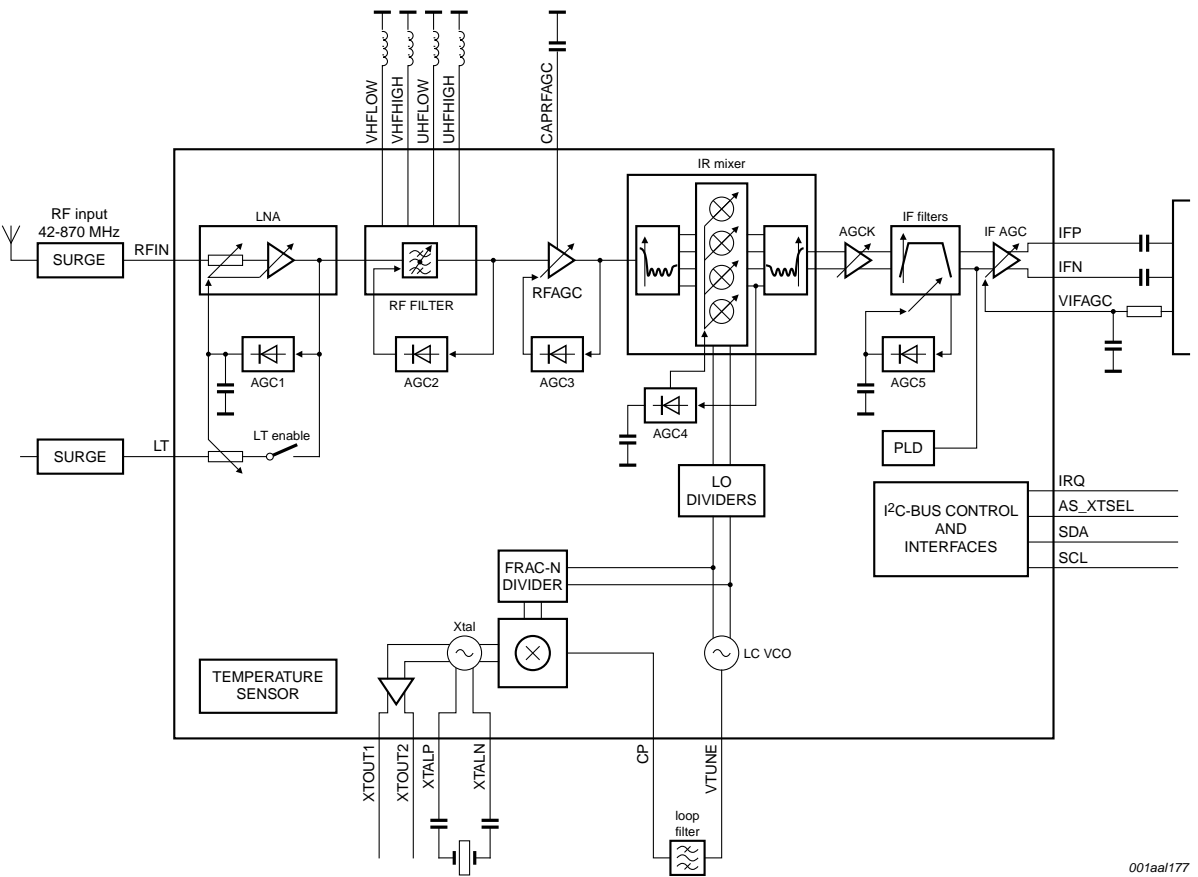
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$\phi_{jit}$	phase jitter	UHF; integrated from 1 kHz to 4 MHz	-	0.5	0.7	degree
$\alpha_{image}$	image rejection	worst case for image rejection and 4 MHz IF frequency for levels above -50 dBm	55	63	-	dB
ICP <sub>1dB</sub>	1 dB input compression point	at tuner input and minimum gain	124	-	-	dB $\mu$ V

## 4. Ordering information

Table 2. Ordering information

Type number	Package		
	Name	Description	Version
TDA18219HN/C1	HVQFN40	plastic thermal enhanced very thin quad flat package; no leads; 40 terminals; body 6 × 6 × 0.85 mm	SOT618-1

## 5. Block diagram



001aal177

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	+3.6	V
$V_i$	input voltage	pins SDA and SCL	-0.3	+3.6	V
		all other pins:			
		$V_{CC} < 3.3\text{ V}$	-0.3	$V_{CC} + 0.3$	V
		$V_{CC} > 3.3\text{ V}$	-0.3	+3.6	V
$T_{stg}$	storage temperature		-40	+150	°C
$T_j$	junction temperature		-	+120	°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<sup>2</sup>C-bus. The junction temperature:  $T_j = T_{amb} + \Delta T_{j-c}$ , where  $\Delta T_{j-c} = \text{power} \times R_{th}$ .

[2] Class III: 500 V to 1000 V.

## 7. Abbreviations

**Table 4. Abbreviations**

Acronym	Description
AGC	Automatic Gain Control
AGCK	Automatic Gain Control step Killer
DTMB	Digital Terrestrial Multimedia Broadcast
DVB	Digital Video Broadcasting
DVB-T/C/H	DVB-Terrestrial/Cable/Handheld
ESD	ElectroStatic Discharge
FCDM	Field-induced Charged-Device Model
FRAC-N	FRActional-N
IC	Integrated Circuit
IF	Intermediate Frequency
IR	Image Rejection
IRQ	Interrupt ReQuest
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
RoHS	Restriction of Hazardous Substances

Table 4. Abbreviations ...continued

Acronym	Description
SAW	Surface Acoustic Wave
SCL	Serial CLock line
SDA	Serial DAta line
UHF	Ultra High Frequency
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
TDA18219HN_SDS v.4	20110329	Product data sheet	-	TDA18219HN_SDS v.3
Modifications:	• <a href="#">Section 2</a> : updated			
TDA18219HN_SDS v.3	20101001	Product data sheet	-	TDA18219HN_SDS v.2
TDA18219HN_SDS v.2 <sup>[1]</sup>	20100816	Preliminary data sheet	-	-

[1] Revision 1 is not available

## 9. Legal information

### 9.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	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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