



# TDA18275

Hybrid (analog and digital) silicon tuner for terrestrial and cable TV reception

Rev. 2 — 14 October 2013

Product short data sheet

## 1. General description

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The TDA18275 is a high performance silicon tuner designed for terrestrial and cable TV reception for both analog and digital broadcasts.

The TDA18275 supports all analog and digital TV standards and delivers a Low IF (LIF) signal to a demodulator for analog TV and/or a channel demodulator for digital TV.

The TDA18275 facilitates TV design by:

- Allowing on-board integration
- Drastically reducing the tuner Bill Of Material (BOM)
- Providing flexibility in system solution development

## 2. Features and benefits

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- Single 3.3 V supply voltage
- Worldwide multistandard terrestrial and cable capabilities
- Alignment free
- RoHS compliant
- I<sup>2</sup>C-bus interface compatible with 3.3 V microcontrollers
- Fully integrated oscillators
- Fully integrated RF selectivity (no need for RF tracking filters coils)
- 2 programmable General-Purpose Outputs (GPO)
- Dual IF output ports
- 1.7 MHz, 6 MHz, 7 MHz, 8 MHz and 10 MHz channel bandwidths
- LIF channel center frequency output ranging from 0.8 MHz to 7.5 MHz
- Fully integrated IF selectivity; eliminating the need for external SAW filters
- Large flexibility in the IF filtering stage to ease the matching with various demodulators circuits
- Single-ended RF input, no need for external balun
- Excellent return loss compatible with cable requirements
- Power Level Detector (PLD) embedded
- Integrated gain control
- Self-AGC synchronization mode (VSync) for analog reception
- Very fast tuning time
- Strong immunity to LTE interferers in the digital dividend bandwidth
- Strong immunity to WLAN interferers (802.11 a/b/g/n)



### 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	-	1002	MHz
$NF_{tun}$	tuner noise figure	75 $\Omega$ impedance source; maximum gain; RF < 870 MHz	-	3.3	3.8	dB
		75 $\Omega$ impedance source; maximum gain; 870 MHz $\leq$ RF $\leq$ 1002 MHz	-	3.9	4.5	dB
$\Phi_{jit}$	phase jitter	integrated from 250 Hz to 4 MHz	-	0.4	0.6	degree
$\alpha_{image}$	image rejection	worst case, measured at 4 MHz IF frequency and for image levels above 60 dB $\mu$ V	-	65	-	dB
CSO	composite second-order distortion	worst interferer over RF frequency with respect to wanted carrier	[1] -	-70	-65	dBc
CTB	composite triple beat		-	-70	-65	dBc
ICP <sub>1dB</sub>	1 dB input compression point	at the tuner input and minimum gain	120	-	-	dB $\mu$ V

[1] Test scenario: standard NTSC M/N.

### 4. Ordering information

Table 2. Ordering information

Type number	Package		Version
	Name	Description	
TDA18275HN/C1	HVQFN32	plastic thermal enhanced very thin quad flat package; no leads; 32 terminals; body 5 × 5 × 0.85 mm	SOT617-11

### 5. Block diagram

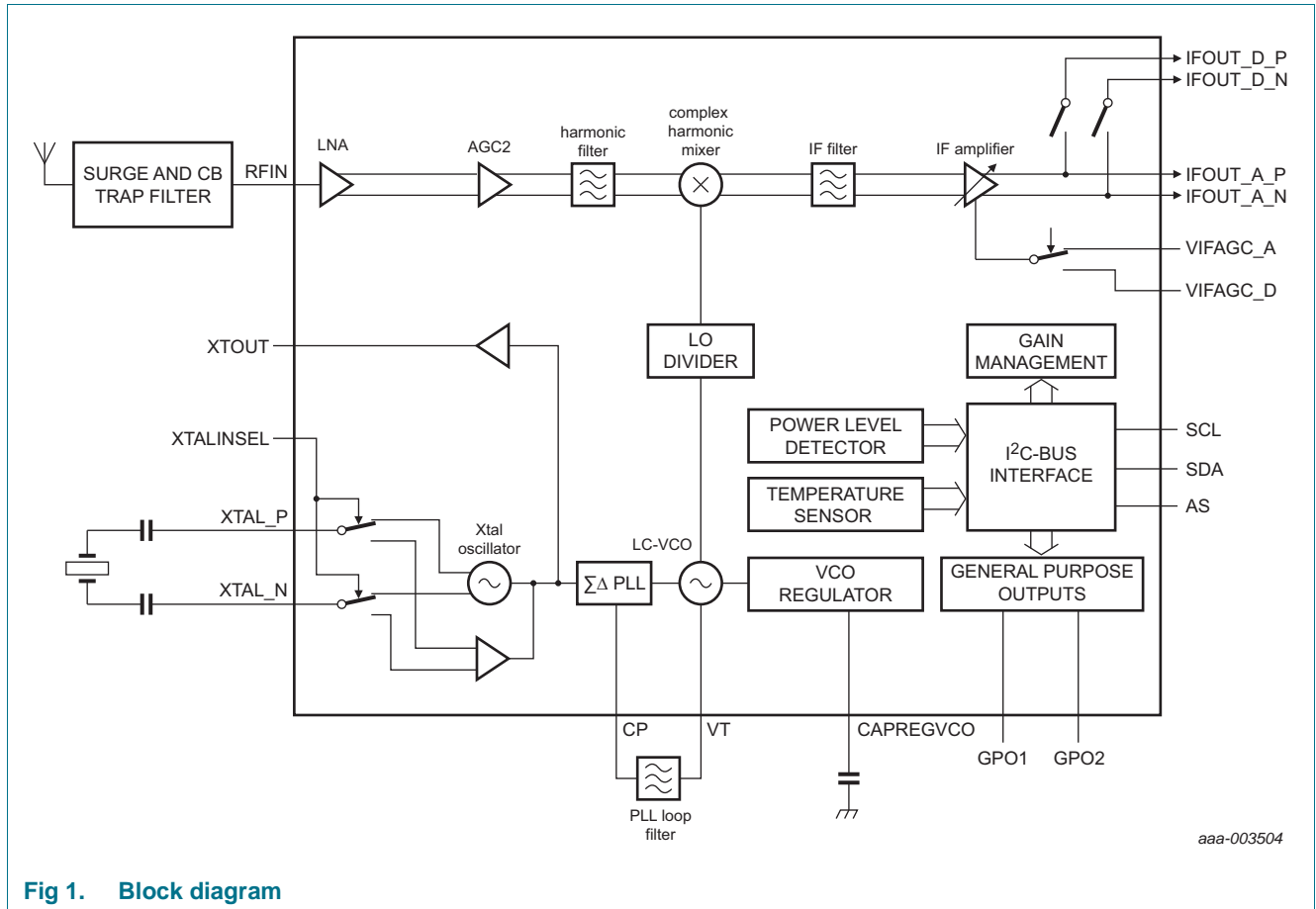


Fig 1. Block diagram

## 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	+3.6	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
$T_{stg}$	storage temperature		-40	+150	°C
$T_j$	junction temperature		-	150	°C
$T_{amb}$	ambient temperature		-20	<a href="#">[1]</a>	°C
$V_{ESD}$	electrostatic discharge voltage	EIA/JESD22-A114 (HBM)	-2	+2	kV
		EIA/JESD22-C101-C (FCDM) class III <a href="#">[2]</a>	1000	-	V
<b>GPO pins: GPO1 and GPO2</b>					
$V_{CC}$	supply voltage	$0\text{ V} < V_{pu} < 5.5\text{ V}$ ; $R_{pu} > 390\ \Omega$	-0.3	+5.5	V
$I_{CC}$	supply current	corresponding GPO ON	-20	0	mA
$V_{ESD}$	electrostatic discharge voltage	EIA/JESD22-A114 (HBM)	-650	+650	V
		EIA/JESD22-C101-C (FCDM) class IV <a href="#">[2]</a>	1000	-	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 IV:  $\geq 1000\text{ V}$ .

## 7. Abbreviations

**Table 4. Abbreviations**

Acronym	Description
AGC	Automatic Gain Control
AS	Address Selection
BOM	Bill Of Material
CB	Citizen Band
ESD	ElectroStatic Discharge
FCDM	Field-induced Charged-Device Model
GPO	General Purpose Outputs
HBM	Human Body Model
IF	Intermediate Frequency
LC-VCO	Inductors and Capacitors - Voltage Controlled Oscillator
LIF	Low IF
LNA	Low-Noise Amplifier
LO	Local Oscillator
LTE	Long-Term Evolution
NF	Noise Figure
NTSC	National Television System Committee
PCB	Printed-Circuit Board
PLD	Power Level Detector
PLL	Phase-Locked Loop
RF	Radio Frequency
RoHS	Restriction of Hazardous Substances
SAW	Surface Acoustic Wave
VCO	Voltage Controlled Oscillator
VSync	Vertical Synchronization
Xtal	Crystal
WLAN	Wireless Local Area Network

## 8. Revision history

**Table 5. Revision history**

Document ID	Release date	Data sheet status	Change notice	Supersedes
TDA18275_SDS v.2	20131014	Product short data sheet	-	TDA18275_SDS v.1
Modifications:	<ul style="list-style-type: none"> <li>• <a href="#">Table 1</a>: updated.</li> </ul>			
TDA18275_SDS v.1	20130710	Preliminary short data sheet	-	-

## 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.

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