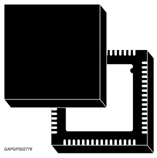
TDA7707

Quad-band dual-channel AM/FM/HD-Radio™/DAB/DRM radio receiver IC

Data brief



VFQFPN64 (9 x 9 x 0.85 mm)

Features

- Dual AM/FM reception with digital IF processing
- Digital radio support for dual-channel HD-Radio™ and DAB/DRM reception through external coprocessor
- Integrated phase antenna diversity processing
- Integrated IF-filters with high selectivity, dynamic range and adaptive bandwidth control
- Drift-free and alignment-free digital IF-signal processing with high performance and flexibility
- RDS demodulation with group and block synchronization
- Analog DAC stereo output and I2S digital output
- I2S, JESD204B, LVDS, high-speed digital I/Q base-band interface
- I2C/SPI bus-controlled
- Single 3.3 V external supply

Description

The TDA7707 is a single chip fully-CMOS quad-band, dual-channel tuner for analog and digital terrestrial radio receiver applications.

The TDA7707 features multiple front-end low-noise amplifiers (LNAs) to cover AM LW/MW/SW bands, the entire FM band, DAB band-III and band-L, with advanced DSP-controlled automatic gain control (AGC) amplifier and mixer stages.

After on-chip IF filtering, the TDA7707 digitizes the signal with a very high dynamic range ADC; it processes the complex phase-quadrature base-band signal allowing applications like FM phase-diversity, integrated background tuner, and dual channel HD-Radio™ and DAB filtering. The double HD-Radio™/DAB base-band output signal is suitable for direct transmission to the STA680 HD-Radio™ decoder or STA660 DAB/DRM decoder through a dedicated low-EMI serial interface.

In combination with the STA680 HD-Radio™ decoder or the STA660 DAB/DRM decoder, the TDA7707 allows to realize complete, multi-standard receiver solution, with low bill of material, high performance and automotive grade quality and reliability.

TDA7707 is pin-to-pin compatible with ST's single-channel tuner TDA7708, allowing efficient design of scalable terrestrial radio-receiver platforms.

Table 1. Device summary

Order code	Package	Packing
TDA7707	VFQFPN64 (9 x 9 x 0.85 mm)	Tray

Contents

1 Block and typical application diagrams

Figure 1. Block diagram

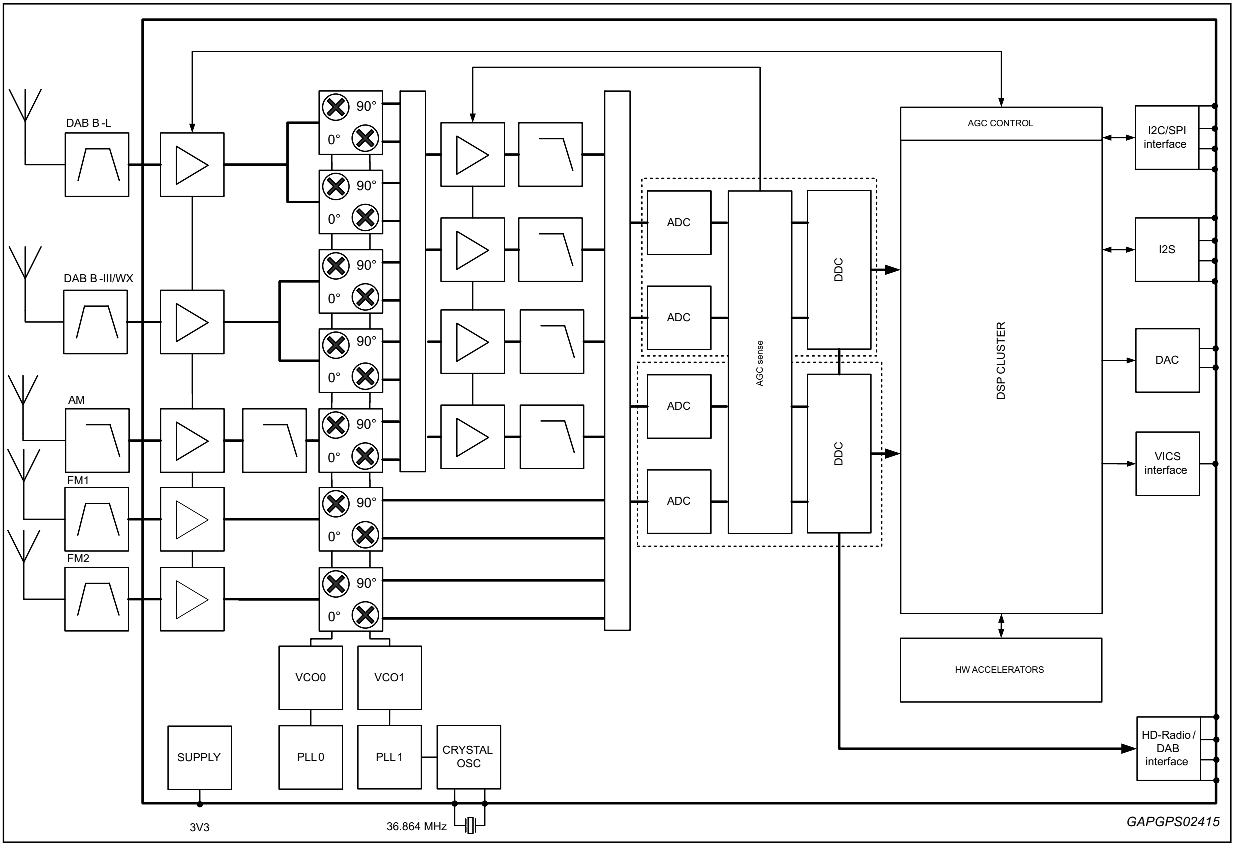
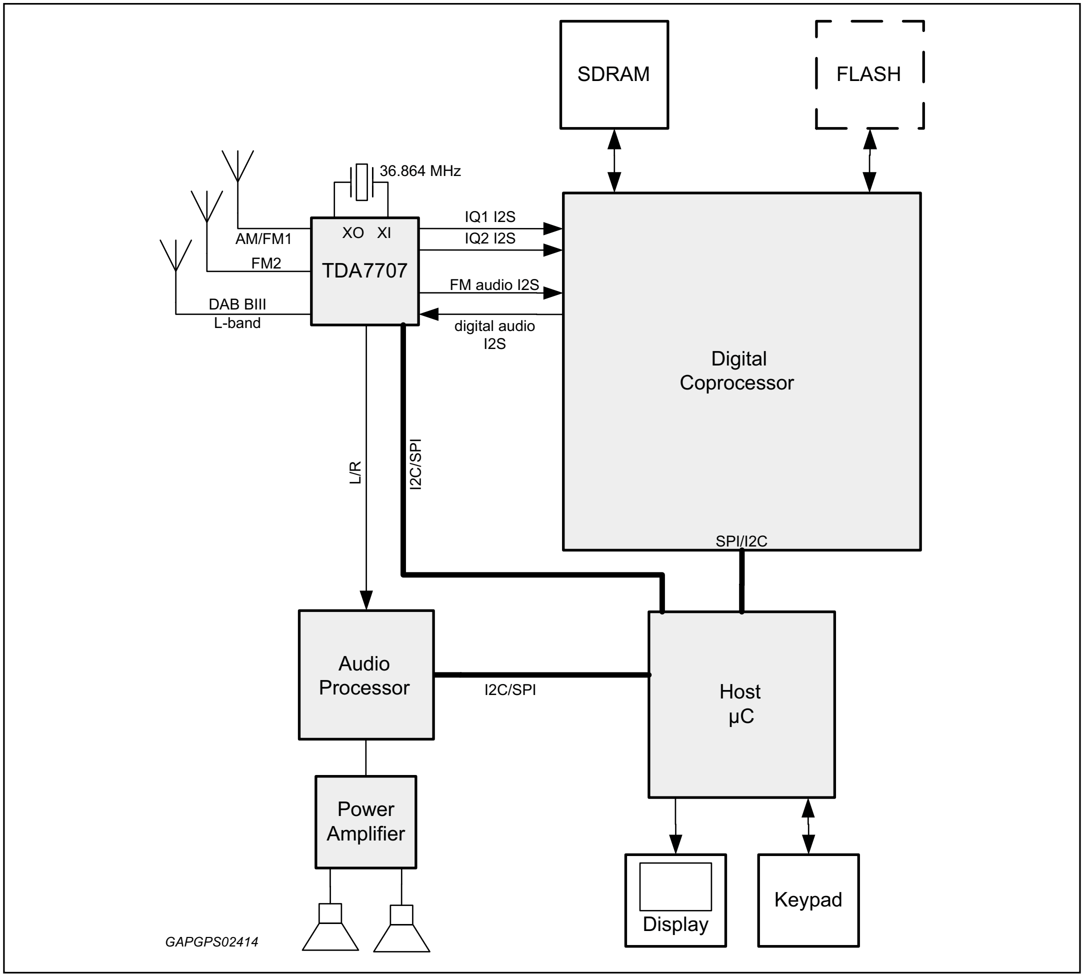


Table 2. Main features list

Features list	
Number of Channels	2
Reception Band	AM/FM/DAB
AM/FM Weak-Signal-Processing	√
FM Phase-diversity	√
RDS decoder	√
HD-Radio™ 1.0/1.5/2.0	Supported (1)
DAB/DRM 1.0/1.5	Supported (1)
Base Band Interface	I2S JESD204B
VICS interface	√
Control interface	I2C/SPI
Digital Audio out	√
Stereo audio DAC	√

1. With external coprocessor.

Figure 2. Typical FM phase-diversity and digital radio application



2 Package information

In order to meet environmental requirements, ST (also) offers these devices in ECOPACK® packages. ECOPACK® packages, are lead-free. The category of second Level Interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label.

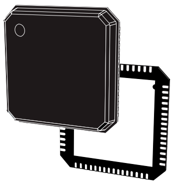
ECOPACK® is an ST trademark. ECOPACK® specifications are available at: *www.st.com*.

Figure 3. VFQFPN64 mechanical data and package dimensions

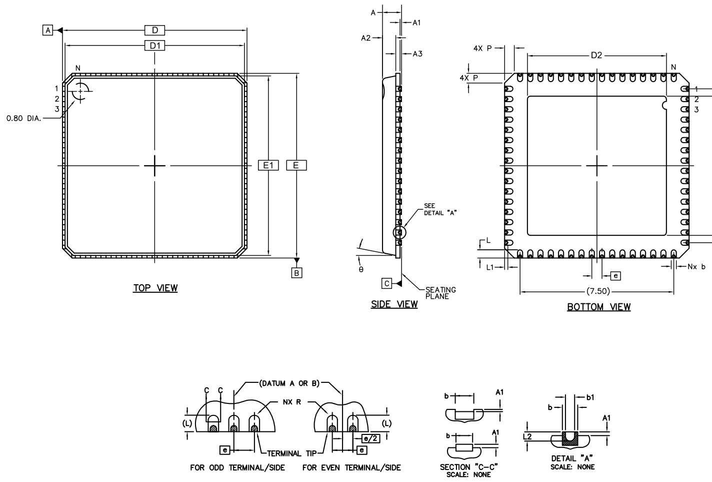
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	0.80	0.85	1.0	0.0315	0.0335	0.0394
A1	0.0	0.02	0.05	0.0	0.0008	0.0020
A2	0.55	0.65	0.75	0.0217	0.0256	0.0295
A3	0.20 REF			0.0079 REF		
b (1)	0.20	0.25	0.30	0.0079	0.0098	0.0118
b1	0.10			0.0039		
D	9.00 BSC			0.3543 BSC		
E	9.00 BSC			0.3543 BSC		
D2	6.60	6.70	6.80	0.2598	0.2638	0.2677
E2	6.60	6.70	6.80	0.2598	0.2638	0.2677
e	0.50 BSC			0.0197 BSC		
N	64					
D1	8.75			0.3445		
E1	8.75			0.3445		
L	0.30	0.40	0.50	0.0118	0.0157	0.0197
L1		0.15	0.30		0.0059	0.0118
L2		0.10			0.0039	
Φ	0° (min), 14° (max)					
P		0.42			0.0165	

(1) Maximum allowable burrs is 0.076 mm in all directions.

OUTLINE AND MECHANICAL DATA



VFQFPN64
(9 x 9 x 0.85mm, pitch 0.50)
Very **F**ine **Q**uad **F**lat **P**ackage **N**o lead



8511068 B

GAPGPS02904

Package is compliant to IPC/JEDEC J-STD-020D June 2007 standard Moisture/Reflow Sensitivity Classification for Nonhermetic Solid State Surface Mount Devices", MSL Level 3.

3 Revision history

Table 3. Document revision history

Date	Revision	Changes
16-Dec-2014	1	Initial release.