



NXP DSP-based single-chip background tuners TEF701x

Superior background reception in all major standards, plus HD Radio & DRM

Specifically designed for background reception, these single-chip solutions support all the major global background receiver standards and, when combined with a coprocessor, also support HD Radio and DRM.

KEY FEATURES

- ▶ Alignment-free digital receiver with tuner and software-defined radio processing
- ▶ FM background receiver with a tuning range of 65 to 108 MHz to cover Eastern Europe (OIRT), Japan, Europe, and US bands
- ▶ AM background receiver (TEF7018) receiver covering LW, MW, and full SW
- ▶ Fully integrated tuning system with low phase noise and fast tuning
- ▶ Variable IF bandwidth filtering (FM PACS) and demodulation
- ▶ Baseband I²S output supporting digital radio standards
- ▶ FM-HD Radio and DRM+ (TEF7016) with external digital radio coprocessor
- ▶ HD Radio and DRM1 (TEF7018) with external digital radio coprocessor
- ▶ AM and FM noise blanking, signal quality detection, and weak signal processing
- ▶ Advanced RDS and RBDS demodulation and decoding
- ▶ Excellent RDS sensitivity performance

- ▶ MPX output supporting an external DARC demodulator and RTIC
- ▶ Two mono audio DACs: one analog output for FM MPX and mono analog audiooutput
- ▶ Single 3.3 V supply voltage
- ▶ Fast mode I²C-bus (400 kHz)
- ▶ Configurable GPIO pins for RDS, quality status, RDS data available interrupt, and generic I²C-bus controlled I/O
- ▶ I²S audio output
- ▶ Qualified in accordance with AEC-Q100

APPLICATIONS

- ▶ Background reception for worldwide automotive applications
 - Radio Data System (RDS)
 - Radio Broadcast Data System (RBDS)
 - Traffic Message Channel (TMC)
 - DARC (VICS and RTIC)



General Description

The NXP TEF7016 and TEF7018 are analog single-chip radio background ICs that support all the major global background receiver standards, including Radio Data System (RDS), Radio Broadcast Data System (RBDS), Traffic Message Channel (TMC), and DARC (VICS and RTIC). Using either device in combination with an SAF356x or SAF360x coprocessor adds support for HD Radio and Digital Radio Mondiale (DRM).

As follow-ons to the industry-proven TEF7006 and TEF7007 background receivers, these next-generation devices offer improved performance and a feature set that optimizes the total system cost. As part of NXP's industry-leading portfolio for car radios, they enable an efficient, high-performance application.

Both devices are housed in an HVQFN32 package designed for two- and multi-layer PCB applications. The radio receiver includes the AM/FM front-ends, a tuning synthesizer, channel filtering, demodulation, weak-signal processing, noise blanking

in FM mode, RDS and DARC reception, and optional FM multi-path improvements.

The TEF7018 supports AM and FM, HD Radio, and Digital Radio Mondiale (DRM30 and DRM+). It also includes a complete feature set for AM IF noise blanking and AM SoftMute on Modulation.

The TEF7016 is an FM-only version that has optional support for the digital radio standards FM-HD Radio and DRM+.

Both devices include a digital audio output (mono) via an I²S interface. DARC reception is supported via the MPX output-to-VICS/RTIC decoders.

The TEF701x are optimized for the usage with any of these tuner families: TEF665x, TEF668x, SAF775x, and SAF360x. To save PCB space and design cost they can also share a common crystal oscillator.

Selection guide

Features		TEF7016	TEF7018
Package		HVQFN32	HVQFN32
Crystal clock		4 or 9,216 MHz	4 or 9,216 MHz
Supply		3.3 V	3.3 V
AM band support		-	√
HD Radio / DRM support		Optional (on FM)	√
FM bands	JP, EU, US	√	√
	OIRT	√	√
RDS demodulator		√	√
RDS demodulator output		√	√
RDS decoder		√	√