

## TEF6642HW

Highly efficient low IF radio one-chip

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The TEF6640, TEF6642, TEF6644 and TEF6646 are single-chip radio ICs containing an AM/FM radio tuner and software-defined radio signal processing.

The TEF6644 and TEF6646 are the premium versions that include the full available feature set. The TEF6640 and TEF6642 are the lite versions including a basic feature set.

The radio receiver includes the AM/FM front ends, tuning synthesizer, channel filtering, FM multipath improvement, demodulation, FM stereo decoding, weak signal processing, noise blanking and Radio Data System (RDS) reception. A maximum amount of digital signal processing is used, taking full advantage of the CMOS IC technology.

The output signals of the radio processing block are provided in digital format on the host IS output (only TEF6642 and TEF6646) and in analog format on the audio DAC outputs.

The TEF6642 and the TEF6646 support the digital standards HD Radio and Digital Radio Mondiale (DRM) in combination with NXP terrestrial digital radio coprocessors such as SAF356x.



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### Features and benefits

- All in one digital receiver including tuner and software defined radio processing
- Easy to control with high-level user interface
- FM receiver with a tuning range from 65 MHz to 108 MHz covering OIRT, Japan, Europe and US bands
- AM receiver covering Long Wave (LW), Medium Wave (MW) and full Short Wave (SW) bands
- Fully integrated tuning system combining low phase noise and fast tuning times
- FM Low-Noise Amplifier (LNA) with Automatic Gain Control (AGC)
- FM mixer for frequency conversion to a low Intermediate Frequency (IF) complex signal
- AM front-end LNA and AGC matching active and passive antenna applications
- AM MW RF selectivity with integrated capacitor bank and automatic calibration
- AM mixer for frequency conversion to a low IF complex signal
- High dynamic range Sigma-Delta (SD) IF Analog-to-Digital Converter (ADC)
- Digital IF signal processing including decimation, shift to baseband, AGC control, In-phase/Quadrature-phase (IQ) correction, Precision Adjacent Channel Suppression (PACS), FM multipath suppression and demodulation
- Baseband PS output for support of HD Radio and DRM with external digital radio coprocessor (TEF6642 and TEF6646)
- Signal quality detection, FM stereo decoding, noise blanking and weak signal processing
- Advanced RDS and Radio Broadcast Data System (RBDS) demodulation and decoding with versatile output configuration
- One synchronous PS audio input and audio output in master mode (TEF6642 and TEF6646)
- Digital audio processing with volume scaling (-12 dB to +6 dB)
- HD Radio blending (TEF6642 and TEF6646)
- One stereo audio Digital-to-Analog Converter (DAC)
- Single 3.3 V supply voltage
- Fast mode I<sup>2</sup>C-bus (400 kHz)
- Built-in 1.2 V regulator control circuit
- Qualified in accordance with AEC-Q100

### Applications

- Single tuner AM/FM receiver for automotive applications supporting analog AM/FM and HD/DRM reception

▶ **Series** [TEF6640](#); [TEF6642](#); [TEF6644](#); [TEF6646](#)  
Highly efficient low IF radio one-chip

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### Package

All type numbers in the table below are discontinued. See the [table Discontinuation information at the bottom of this page for more information.](#)

| Type number   | Package | Outline version             | Reflow-/Wave soldering | Packing                             | Product status                   | Marking          | Orderable part number, (Ordering code (12NC)) |
|---------------|---------|-----------------------------|------------------------|-------------------------------------|----------------------------------|------------------|-----------------------------------------------|
| TEF6642HWW101 |         | <a href="#">sot855-4_po</a> |                        | Tray, Bakeable, Multiple in Drypack | Discontinued Replacement product | Standard Marking | TEF6642HWW101,557 (9352 958 42557)            |
|               |         |                             |                        | Reel 13" Q1/T1 in Drypack           | Discontinued Replacement product | Standard Marking | TEF6642HWW101,518 (9352 958 42518)            |

### Discontinuation information

| Type number   | Ordering code (12NC) | Last-time buy date | Last-time delivery date | Replacement product | DN Notice                             | Status          | Comments                                                      |
|---------------|----------------------|--------------------|-------------------------|---------------------|---------------------------------------|-----------------|---------------------------------------------------------------|
| TEF6642HWW101 | 935295842557         | 31-Mar-16          | 30-Jun-16               | TEF6688HNM102       | DN <a href="#">NXP-DN_201506035DN</a> | Full withdrawal | TEF6688AHNM205, 2nd source version to be released in Q1 2016. |
| TEF6642HWW101 | 935295842518         | 31-Mar-16          | 30-Jun-16               | TEF6688HNM102       | DN <a href="#">NXP-DN_201506035DN</a> | Full withdrawal | TEF6688AHNM205, 2nd source version to be released in Q1 2016. |

### Quality, reliability & chemical content

All type numbers in the table below are discontinued. See the [table Discontinuation information at the bottom of this page for more information.](#)

| Type number   | Orderable part number | Chemical content | RoHS / RHF | Leadfree conversion date | MSL | MSL LF |
|---------------|-----------------------|------------------|------------|--------------------------|-----|--------|
| TEF6642HWW101 | TEF6642HWW101,557     | TEF6642HWW101    |            | Always Pb-free           | 3   | 3      |
| TEF6642HWW101 | TEF6642HWW101,518     | TEF6642HWW101    |            | Always Pb-free           | 3   | 3      |

▶ [Quality and reliability disclaimer](#)

### Discontinuation information

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### Documentation for this product

| File name                   | Title                                                                           | Type | Format          | Date |            |
|-----------------------------|---------------------------------------------------------------------------------|------|-----------------|------|------------|
| <a href="#">75017318</a>    | High-end, DSP-based AM/FM single tuner with support for digital radio - TEF664x |      | Leaflet         | pdf  | 2012-09-03 |
| <a href="#">sot855-4_po</a> | plastic thermal enhanced thin quad flat package; 64 leads; exposed die pad      |      | Outline drawing | pdf  | 2011-04-15 |

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|            |                         |   |
|------------|-------------------------|---|
| 04-12-2014 | <a href="#">TEF6614</a> | > |
| 04-12-2014 | <a href="#">TEF6614</a> | > |

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