

ST7540 Power Line Transceiver

The highly compact and cost effective solution for narrowband power line communication



STMicroelectronics' narrowband Power Line Transceivers (PLT) provide reliable communication over existing power lines with limited data throughput required by main remote control applications like Automatic Meter Reading (AMR) and Management (AMM), street lighting control, loads management and home and building automation.

The very favorable cost/performance ratio makes ST's transceivers a unique communication alternative or extension of more conventional dedicated wireline and wireless systems.

This new ST7540 Power Line Transceiver is the most compact and cost effective solution from ST.

Key features

- Half duplex binary FSK transceiver
- 8 programmable communication frequencies
- Programmable baud from 600 to 4800 bps
- Integrated single ended line driver
- Freezable power amplifier output level
- Tunable output active filtering
- Integrated 5 V, 50 mA linear voltage regulator
- Integrated 3.3 V, 50 mA linear voltage regulator
- Secure access 48 bit control register
- Programmable carrier and preamble detection
- Programmable band in use detection
- Programmable header and frame length recognition
- Watchdog timer
- SPI/UART microcontroller interfacing
- Very low power consumption ($I_q=3.5$ mA)
- Very high sensitivity (0.25 mV RMS)
- Compliant with CENELEC EN50065 and FCC part 15 regulatory specifications
- Compact 4.4x8.7x1 mm TSSOP28 exposed pad package

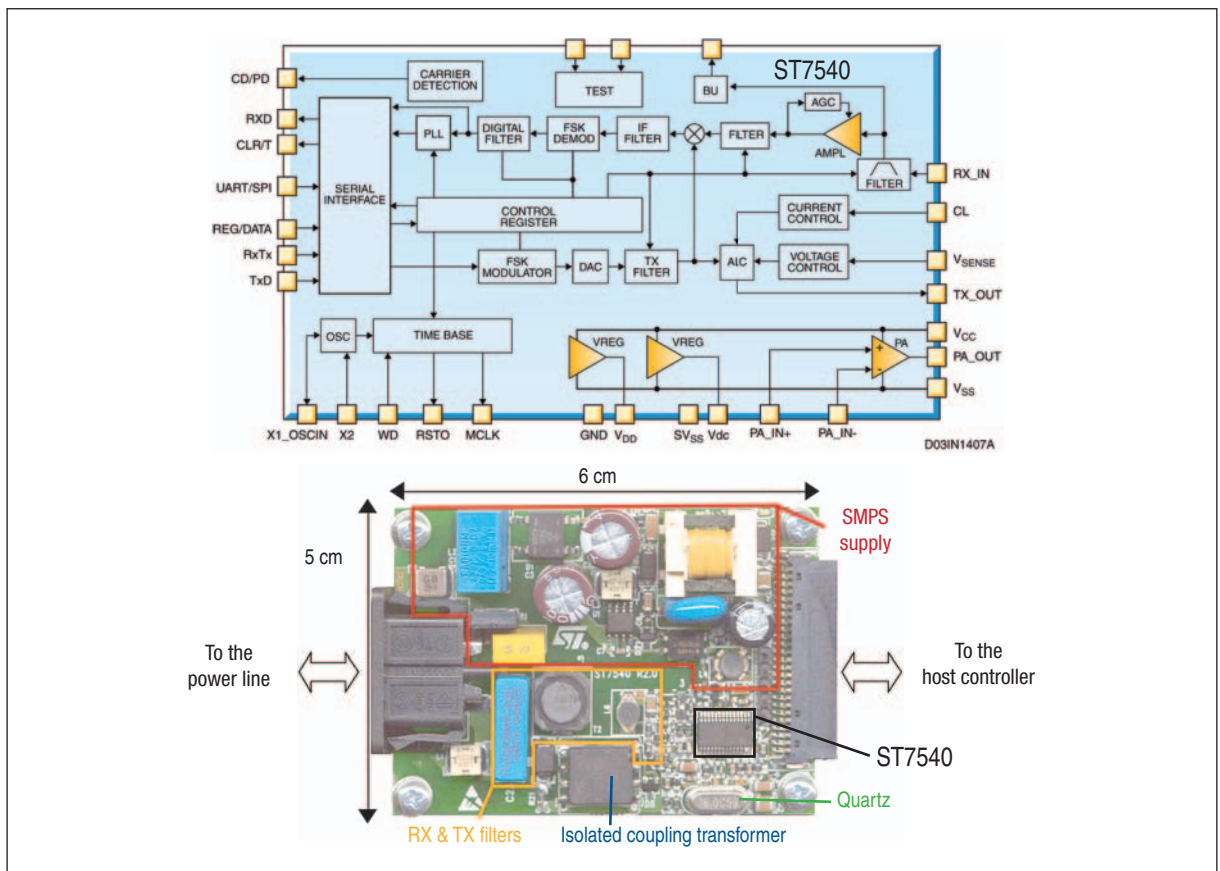
Main applications

- Outdoor applications:
 - Remote Automatic Meter Reading (AMR) and bidirectional Automatic Meter Management (AMM) for
 - Electricity
 - Water
 - Gas
 - Street and traffic lighting control
- Indoor Applications:
 - Home and building automation
 - Smart appliances networking
 - Room scenarios
 - Lighting fixture control
 - Security
 - Load management

Based on field proven ST7538 “modem core”, the ST7540 transceiver has been innovatively designed to dramatically reduce power line communication node size and cost for applications that do not require “specialized” auxiliary functions, but just flexible and robust low data rate communication. By exploiting the power capabilities of one of ST’s submicron mixed signal technologies, a new single ended power amplifier has been embedded in the integrated analog front end. It is able to push a continuous output RMS current of 500 mArms (1.4 A peak) and output voltage levels higher than 3.5 Vrms, maintaining at the same time high linearity and spurious rejection in compliance with the most strict EMC international regulation. The new power amplifier architecture has all input and output terminals accessible, allowing flexible on board feedback topology implementation with few signal passive components for output active filtering.

Depending on mains impedance, the output power level is adjusted accordingly through an automatic level control block. This block is controlled by two analog feedbacks which at the same time keep a constant output voltage within a safe output current range. In particularly noisy environments, a voltage control loop noise rejection feature can be selected to freeze the transmitted output level. The ST7540 also integrates two linear regulators for 5 V and 3.3 V whose outputs are available for external microcontroller supply. The device operation is controlled by a 48 bit internal register, programmable through a synchronous serial interface. Additional functions such as preamble detection, header recognition and frame length count, time-out and band in use are also included to simplify application design and reduce part count. A complete evaluation environment based on new “plug and play” demo boards and Windows compatible software will enable engineers to exploit all the ST7540 capabilities.

ST7540 internal block diagram and demonstration board



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Full product information at www.st.com

Order code: FL7540PLT0507

