

## Bluetooth® Solutions from Texas Instruments



### Key Features

- Best cost and performance Bluetooth® Specifications v1.1 and v1.2 single-chip solutions for mobile terminals
- Industry best power management including lowest power consumption, direct connection to battery (up to 5.4 V) and shut-down (6  $\mu$ A) to enable market's longest talk, standby and shut-down times
- Complete solutions for faster time-to-market and integration costs savings
  - Complete set of reference designs with TI's OMAP™ platform and GSM/GPRS/WCDMA chipsets
  - WLAN collaborative coexistence solution
- Digital Radio Processor (DRP) using TI's cutting-edge 130-nm CMOS.

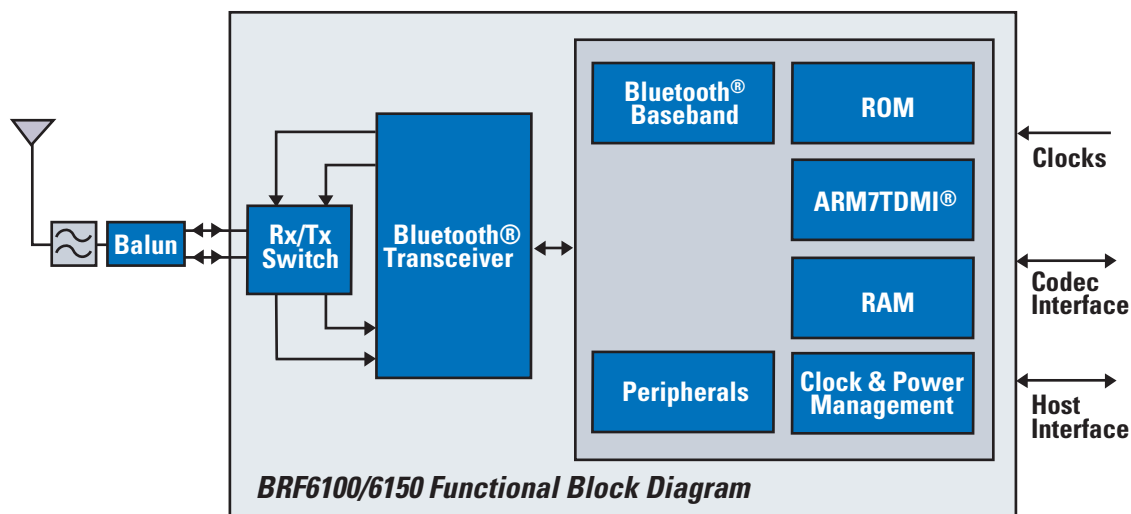
## PRODUCT BULLETIN

### Overview

The Bluetooth® single-chip solution from TI is a highly integrated, certified CMOS Bluetooth single-chip solution forming a complete Bluetooth wireless communications unit. It integrates the Bluetooth baseband, RF, memory (ROM and RAM) and power management on one chip to enhance performance, reduce cost and minimize board space.

The Bluetooth single-chip solution incorporates TI's digital radio technology (DRP), a revolution in RF technology offering major advantages over the existing solutions based on analog RF. These benefits include increased scalability, lower power consumption, reduced size and ultimately lower cost.

The single-chip solution is ideally suited for low cost, low power, high-volume applications such as mobile handheld devices, where cost, performance and space are critical.



## *BRF6100: Bluetooth® specification v1.1 single-chip solution*

Based on TI's 130-nm CMOS process, the BRF6100 is TI's Bluetooth specification v1.1 certified (over -40 to +85 degrees) single-chip solution. The device integrates all necessary functionality and requires only 15 external passives resulting in very low cost (less than 3.5\$) and small form factor (~70mm<sup>2</sup>) solution, making it well suited for mobile terminals.

The BRF6100 incorporates TI's Digital RF Processor (DRP), a revolution in RF technology that offers major advantages. These benefits include leading RF performance, RF stability (below +/-1.5 dBm variations over all), lowest power consumption (HV3/13 mA), software adaptability to layout variations and fast low-cost production line testing.

BRF6100 is currently part of TI wireless reference designs and development platforms including GSM/GPRS reference designs TCS2110, TCS2200, TCS2600 and WANDA, the Tri-wireless concept design. These solutions are offered via the TCS Wireless Software Suite and provide seamless integration with the OMAP processor which supports all major operating systems.

BRF6100 implements the market proven collaborative coexistence solution with TI's WLAN solutions, enabling the user to benefit from simultaneous voice calls (using a Bluetooth headset) and WEB browsing (via WLAN access point).

BRF6100 is in mass production and used by numerous cellular and wireless PDA products.

### **BRF6100 key benefits**

- Single-chip Bluetooth solution increases performance, reduces cost and minimizes board space
- Increased scalability, low-power consumption and reduced size due to RF technology advances
- Long talk and standby times from best-in-class power consumption
- Bluetooth Specification v1.1 certified (Classes 2 and 3)
- Integration and complete reference designs available with TI's OMAP platform and GSM/GPRS/WLAN chipsets for fast time-to-market.

## BRF6150: Bluetooth® Specification v1.2 single-chip solution

### BRF6150 key benefits

- Industry's longest talk, standby and shut-down times
- Direct connection to battery provides improved power management (2.7 V to 5.4 V)
- Full Bluetooth Specification v1.2, including eSCO, AFH and faster connection
- Low cost and low part count due to high integration and improved interfaces
- Reduced development time through availability of pin-to-pin compatible stacked-flash prototypes (4.5 mm x 4.5 mm)
- Complete reference designs with TI's OMAP™ platform and GSM/GPRS/WCDMA chipsets provide fast time-to-market
- WLAN collaborative coexistence solution
- Manufactured in 130-nm process to meet mass-production needs.

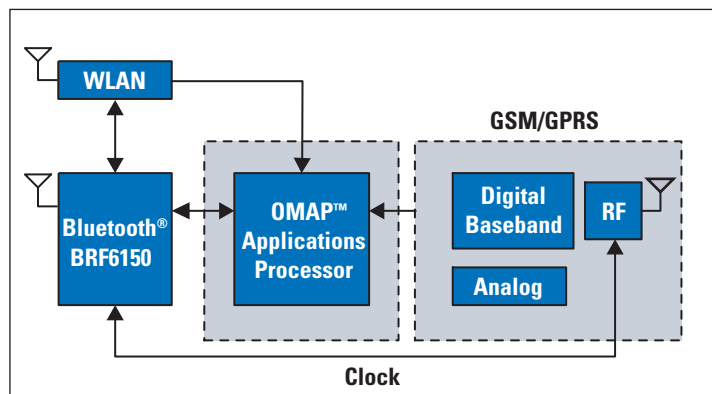
Optimized for mobile terminals, TI's BRF6150 is a highly integrated Bluetooth® Specification v1.2 solution, which combines TI's Bluetooth baseband, RF, ARM7TDMI® and power management into a single chip. Its extreme levels of integration enhance performance and lower power consumption while reducing cost and minimizing board space.

The BRF6150 is based on the BRF6100 and exceeds its performance and features by improving the RF performance and power management capabilities, achieving higher integration and reducing package size resulting with 50 mm<sup>2</sup> Bluetooth solution for cellular phones based on BRF6150.

The BRF6150 is an optimized solution for mobile terminals. It has been tailored to suit all requirements of cellular applications including RF performance, power consumption, solution size, ease of integration and cost. TI's advanced process and novel design enables the BRF6150 to connect directly to the battery (up to 5.4 V), thus saving the cost and space of an external regulator and simplify the interface and integration with the host by separating their power management entities.

Pin-to-pin compatible (4.5 mm x 4.5 mm) stacked-flash prototypes for development and integration in the end-products' final form factor are available to further reduce the Bluetooth solution development time.

The BRF6150 is preintegrated with TI's GSM/GPRS/WCDMA chipsets and OMAP platform. BRF6150 combines TI's industry proven collaborative coexistence mechanism with Bluetooth Specification v1.2 adaptive frequency hopping (AFH) and extended Synchronous Connection Oriented (eSCO) to enable Bluetooth-quality voice link and enhance WLAN data throughput to their maximum performance when colocated into small mobile products such as Smartphone and wireless PDA.



**Smartphone application: BRF6150 interconnects with the OMAP™ applications processor, GSM/GPRS chipset and WLAN.**

## BRF6150 key features

- Full Bluetooth Specification v1.2:
  - Including eSCO, AFH and faster connection
  - Based on BRF6100 and exceeds its leading performance and features
- Improved power management:
  - Direct connection to battery (2.7 V to 5.4 V)
  - Shut-down capability (6  $\mu$ A)
  - 1.76 V to 3.6 V via LDO
  - RF Tx: 25  $\mu$ A
  - RF Rx: 37  $\mu$ A
  - Deep-sleep 30  $\mu$ A
- Improved RF performance:
  - Sensitivity  $-85$  dBm
  - Tx Power  $+7$  dBm and Class 1 ready
  - Blocking approximately 0 dBm at GSM bands
- Highly optimized for mobile terminals:
  - Direct connection to battery
  - Eleven external passives
  - PCB layout area 50 mm<sup>2</sup>
  - McBSP compatible I/F
  - Supports 12-MHz to 40-MHz FCLK signal
- Superior coexistence mechanisms:
  - Collaborative interface with WLAN
  - Bluetooth Specification v1.2 AFH
- Complete reference designs with TI's GSM/GPRS/WCDMA chipsets and OMAP platforms
- DRP technology:
  - Digitally intensive
  - RF built-in-self-test (BIST)
- Smaller package:
  - 4.5 x 4.5 x 0.8 ROM
  - 4.5 x 4.5 stacked-flash prototypes
- Manufactured in TI 130-nm CMOS FAB to meet mass-production needs

TI's next generation Bluetooth solutions for mobile terminals use TI's patented Digital RF Processor (DRP) technology with full support for Bluetooth v1.1 and v1.2 specifications and offer best-in-class on-chip power management, superior performance, most advanced collaborative coexistence solution and higher integration. TI continues to lead with the most comprehensive and cost effective Bluetooth solution.

[www.ti.com/bluetooth](http://www.ti.com/bluetooth)

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