

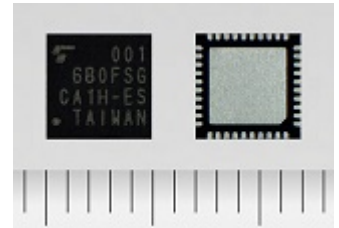
Two New ICs Compliant with Bluetooth® Ver.5.0

Toshiba Electronic Devices & Storage Corporation adds two new ICs, "TC35680FSG (built-in Flash ROM)" and "TC35681FSG" to its lineup of ICs compliant with Bluetooth® low energy standard. Sample shipments will start at the end of January.

The new ICs support all data rates of high-speed 2M PHY and Coded PHY (500 kbps and 125 kbps) newly added to the Bluetooth® low energy ver.5.0 standard.

The receiver sensitivity at 125 kbps has -105 dBm, which is an industry-leading [Note1] level. Additionally, a built-in high efficiency power amplifier in the transmission block allows up to +8 dBm transmission power.

This can realize long-distance communication with low current consumption.



Features

- Compliant with Bluetooth® 5 standard, Master / Slave connections
- All data rates of Bluetooth® 5 supported: LE 2M / 1M / 500k / 125k bps
- Long distance communication: RF transmission power +8 to -40 dBm, RF Receiver sensitivity -105 dBm (at 125 kbps)

Applications

- Various IoT devices, Beacon Tag, and Healthcare
- Industrial devices

Bluetooth® low energy supported devices shown in the above. Especially the system requirement is a high throughput and long distance.

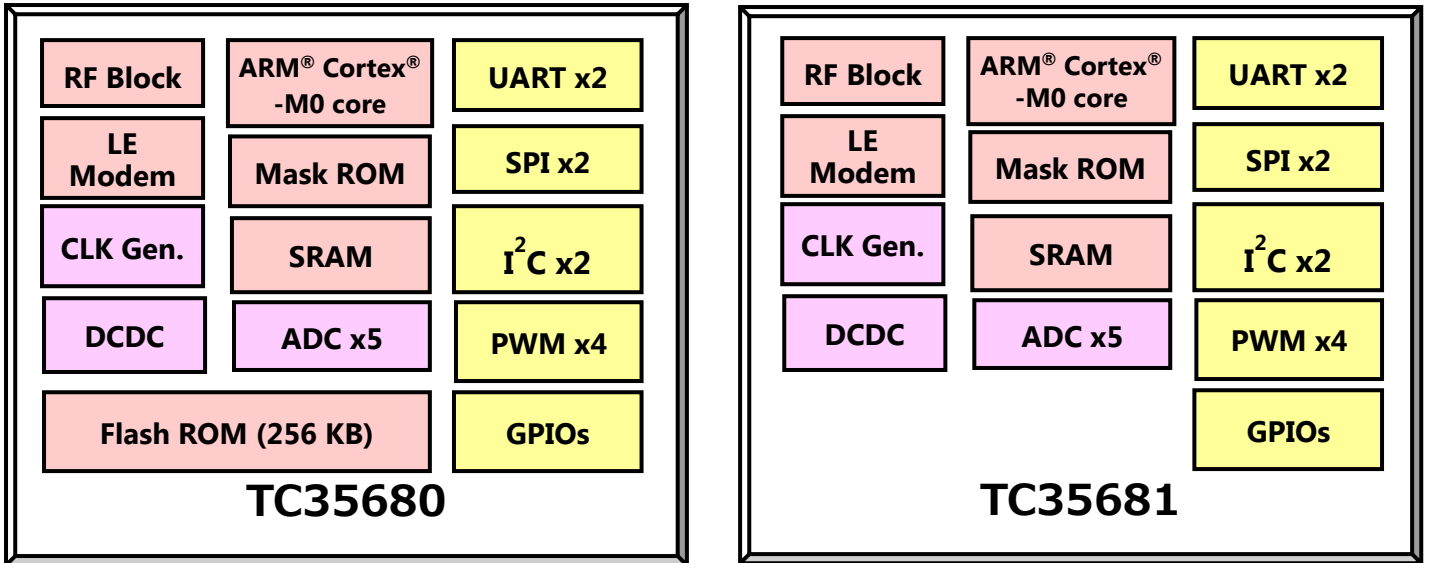
Note1: As for 22nd December, 2017. Toshiba Electronic Devices & Storage Corporation survey.

* The Bluetooth® word mark is registered trademarks owned by the Bluetooth SIG, Inc.

* ARM and Cortex are registered trademarks of ARM Limited (or its subsidiaries) in the EU and/or elsewhere.

Preliminary

Block Diagram



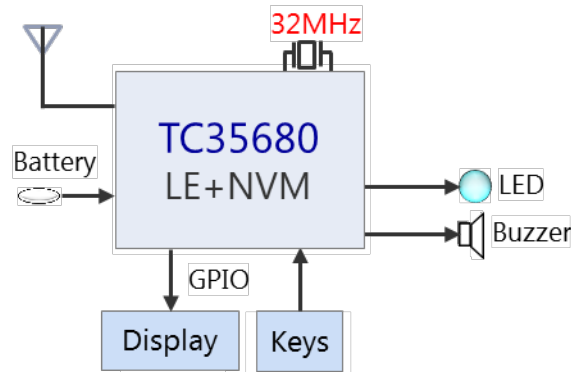
Note: Some of the functional blocks, circuits, or constants in the block diagram may be omitted or simplified for explanatory purposes.

Product Specifications

Specifications	TC35680FSG/TC35681FSG
Bluetooth® Core spec	V5.0
CPU core	Cortex-M0
Peak current Tx	11.0 mA (3.0 V operation, +8 dBm, at 1 Mbps)
Peak current Rx	5.1 mA (3.0V operation, at 1 Mbps)
Tx Output Power	+8 dBm to -40 dBm
Rx Sensitivity	-94.5 dBm (at 1 Mbps) -105 dBm (at 125kbps)
Standalone operation	Supported
LE secure connection	Supported
Maximum # of Connections	1 master or 1slave
User NVM area	128 KB (Only TC35680FSG)
User RAM area	TBD
Input Main Clock Frequency	32 MHz
PKG	QFN40 5.0x5.0 mm, 0.4 mm pitch
Operation Temperature	-40 / +85 °C (TC35680FSG) -40 / +125 °C (TC35681FSG)

Preliminary

System Configuration Example



Note: The system configuration shown in this document are provided for reference purposes only. Thorough evaluation is required, especially at the mass production design stage.

This product is under development as of the release date of this document. Please note that the development may stop or change without any prior notice for any reason. At this time, we are unable to provide samples or sell mass production versions of this product. Due to the ongoing development of the product, the product descriptions listed herein may differ from the specifications of sample or mass production versions of this product that may be released. In particular, we neither guarantee any of the characteristics, features and performance data outlined in this document nor shall any deviation between the information contained in this document and the final specifications of the product entitle you to any compensation claim. Please contact our sales representatives for details of development progress and the latest versions of relevant product information.