Panasonic
INDUSTRY
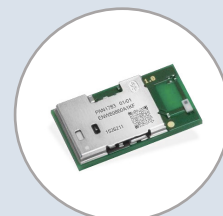
New Product Introduction

PAN1783 Bluetooth® Low Energy Module

The **PAN1783 is a Bluetooth 5.4 Low Energy (LE) module** based on the Nordic nRF5340 single chip controller. It is available with an on-board chip antenna and with a RF-bottom pad. The Bluetooth 5.4 features isochronous channels and LE audio. It supports high throughput of 2 Mbps, advertising extensions, and long range. The all-in-one SoC including a superset of the most prominent nRF52 Series features combined with more performance and memory, while minimizing current consumption. An output power of up to 3 dBm and the improved sensitivity of the nRF5340 in combination with the LE coded PHY make the module very attractive for advanced computer peripherals and I/O devices, advanced wearables, and wireless audio devices. In addition, the ultra-low current consumption of the PAN1783 makes the module an ideal choice for battery powered devices. With two Cortex®-M33 processors, one as an application processor (with 128 MHz or 64 MHz operation, 512 kB RAM, built-in 1 MB flash memory) and the other one as a network processor (with 64 MHz operation, 64 kB RAM, 256 kB flash), the **PAN1783** can easily be used in standalone mode, thereby eliminating the need for an external processor, saving complexity, space, and cost. The rich set of security features from the ARM TrustZone® CryptoCell™ 312 security subsystem provide the necessary means for secure device operation in the IoT space. The **PAN1783** supports angle of arrival (AoA) and angle of departure (AoD) direction finding using Bluetooth. Additionally, the PAN1783 also supports Type 2 Near Field Communication (NFC-A) for use in simplified pairing and payment solutions (external antenna required).

General Features and Benefits

- Surface mount type dimensions:15.6 mm × 8.7 mm × 2.2 mm
- Same form factor as PAN1780 with the same pitch but one more pin
- Nordic nRF5340 featuring two Cortex®-M33 processors: one as an application processor (with 128 MHz or 64 MHz operation, 512 kB RAM, built-in 1 MB flash memory), and the other one as a network processor (with 64 MHz operation, 64 kB RAM, 256 kB flash)
- Bluetooth 5.4 LE including LE 2M and LE Coded
- Supports 802.15.4 ZigBee® and Thread
- Includes ARM TrustZone® CryptoCell™ 312, SPU, KMU, ACL
- Security features: Trusted execution, root-of-trust, secure key storage, 128-bit AES
- Up to 48× General Purpose I/Os (GPIO), which are shared by up to 5× SPI, 4× I^{2}C, 4× UART, 4× PWM, 8× ADC, NFC-A, QSPI, nRESET
- USB 2.0 full-speed device interface

PAN1783 Characteristics

- Typical sensitivity: -98 dBm (at 1 Mbps) and -104 dBm (at 125 kbps)
- Programmable output power: from 3 dBm to -40 dBm
- Typical System current consumption: 0.9 µA (in System OFF), 1.3 µA (in System ON), 1.5 µA (in System ON with network core RTC running)
- Typical Radio current consumption: 5.3 mA (at 3 dBm Tx power), 4.1 mA (at 0 dBm Tx power), 3.7 mA (in Rx at 1 Mbps), 4.1 mA (in Rx at 2 Mbps)
- On-module DC-DC and LDO regulators with automated low current modes
- Voltage range: 1.7 V to 5.5 V
- Temperature range: -40 °C to 85 °C

Bluetooth Features

- LE 2M and LE Coded
- LE Audio and Isochronous Channels
- Extended Advertising and Channel Sounding
- Mesh Networking

Part Numbers	Description	Series Name
ENW-89860A1KF	PAN1783, BLE Module with antenna	PAN1783
ENW-89860C1KF	PAN1783A, BLE Module with bottom-pad	PAN1783A
ENW89860AXKF	PAN1783 Evaluation Board	PAN1783
ENW89860CXKF	PAN1783A Evaluation Board	PAN1783A

Block Diagram
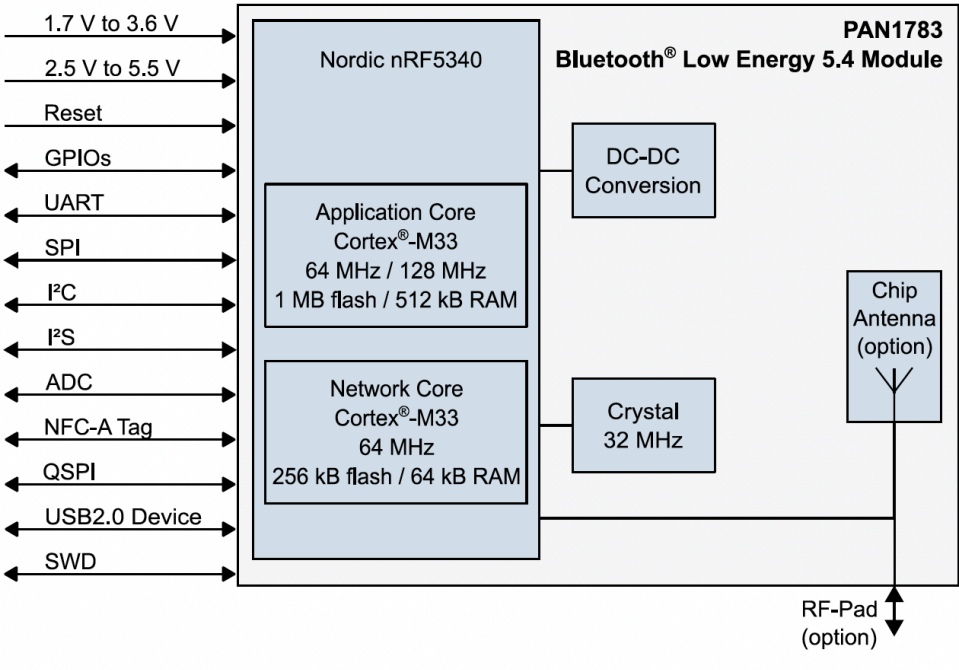
PAN1783 Series Evaluation Kits

The PAN1783 Series Evaluation Boards are available with either PAN1783 or PAN1783A series Bluetooth 5.4 Low Energy Module in Arduino form factor, based on the Nordic Semiconductor nrf5340 single-chip controller.
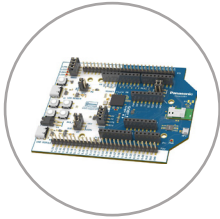
Easily access all the different module interfaces like USB, UART, NFC, and GPIOs, which makes the evaluation board ideal for the evaluation of the module as well as rapid prototyping of products. All GPIOs are led out via pin headers, and the Arduino form factor allows the connection of shields available on the mass market.