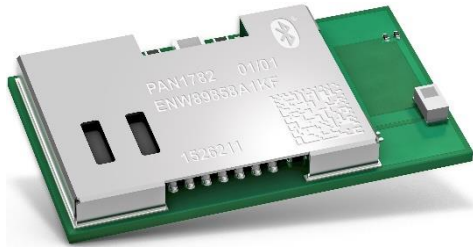


# PAN1782

## Bluetooth® Low Energy Module



### [OVERVIEW]

The PAN1782 is a Bluetooth 5.1 Low Energy (LE) module based on the Nordic nRF52833 single chip controller.

The Bluetooth 5.1 features additionally a higher symbol rate of 2 Mbps using the high speed LE 2M PHY or a significantly longer range using the LE coded PHY at 500 kb/s or 125 kb/s. The new channel selection algorithm (CSA#2) improves the performance in high interference environments. Furthermore, the new LE advertising extensions allow for much larger amounts of data to be broadcasted in connectionless scenarios.

An output power of up to 8 dBm and the high sensitivity of the nRF52833 in combination with the LE coded PHY make the module very attractive in applications, where a long range is required.

In addition, the ultra-low current consumption of the PAN1782 makes the module an ideal choice for battery powered devices.

With the ARM® Cortex®-M4 processor, 128 kB RAM, and the built-in 512 kB flash memory, the PAN1782 can easily be used in standalone mode, thereby eliminating the need for an external processor, saving complexity, space, and cost.

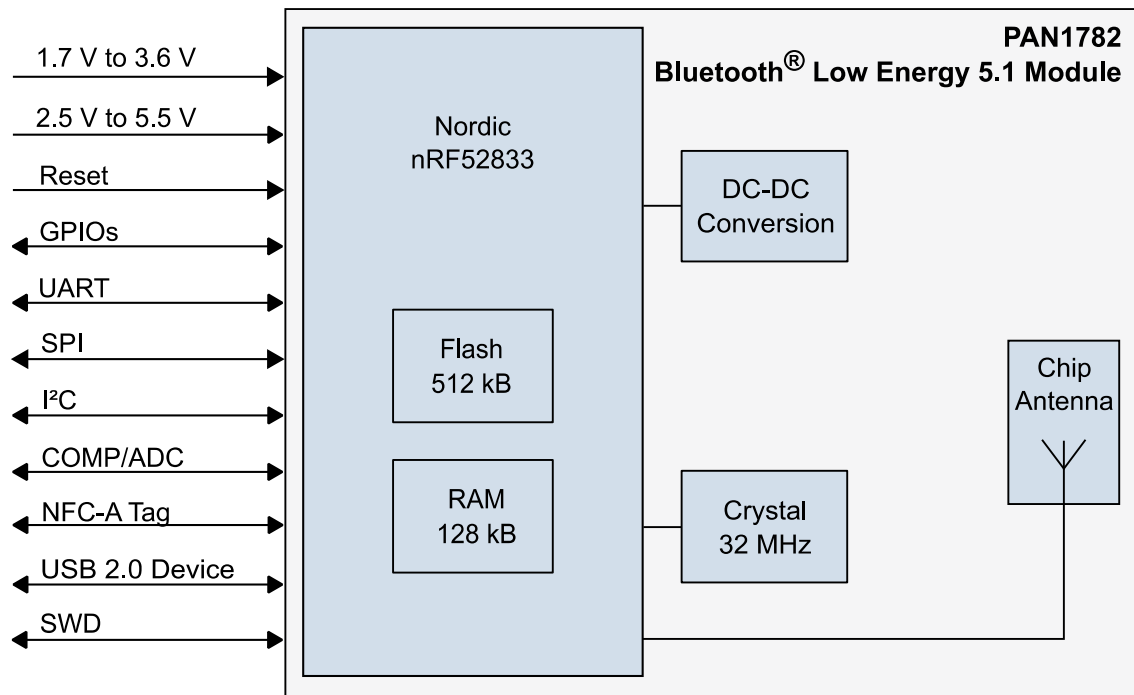
The PAN1782 supports angle of arrival (AOA) and angle of departure (AOD) direction finding using Bluetooth. Additionally, the PAN1782 also supports Type 2 Near Field Communication (NFC-A) for use in simplified pairing and payment solutions (external antenna required).

A 128-bit AES/ECB/CCM/AAR co-processor is included for on-the-fly packet encryption.

### [FEATURES]

- Surface mount type dimensions: 15.6 mm × 8.7 mm × 2 mm
- Pin compatible hardware drop-in replacement for PAN1026A, PAN1762, and PAN1781
- Nordic nRF52833 featuring ARM Cortex-M4 running with 64 MHz
- Bluetooth 5.1 LE including LE 2M and LE coded PHY
- Embedded 512 kB flash memory and 128 kB internal RAM
- 128-bit AES/ECB/CCM/AAR co-processor
- Up to 16 General Purpose I/O's (GPIO), which are shared with up to 4x SPI, 2x I<sup>2</sup>C, 2x UART, 8CH ADC, COMP, QDEC, NFC-A, 4x PWM, nRESET. Usage is limited by number of available GPIO ports.
- USB 2.0 full-speed device interface
- Built-in temperature sensor

## [BLOCK DIAGRAM]



## [BLUETOOTH]

- LE 2 Mbps high speed PHY, LE long range coded PHY
- LE advertising extensions (advertising on 40 channels total)
- Channel selection algorithm #2
- LE secure connections
- Angle of arrival (AOA) and angle of departure (AOD) direction finding

## [TECHNICAL CHARACTERISTICS]

- Typical sensitivity: -96 dBm at 1 Mb/s and -103 dBm at 125 kb/s
- Typical max. output power: 8 dBm, configurable from -20 dBm in 4 dB steps and -40 dBm in whisper mode
- Typical current consumption: 4.9 mA in Tx (at 0 dBm) and 4.7 mA in Rx mode
- Typical current consumption: 0.6  $\mu$ A in System OFF mode, 1.5  $\mu$ A with RTC wake up
- 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