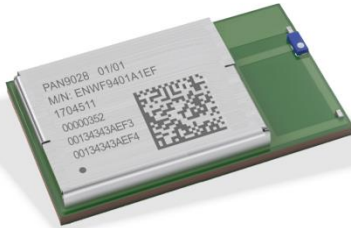# PAN9028
Wi-Fi Dual Band 2.4 GHz/5 GHz and Bluetooth® Module

[OVERVIEW]

The PAN9028 is a dual band 2.4 GHz and 5 GHz 802.11 a/b/g/n/ac Wi-Fi radio module with integrated Bluetooth BR/EDR/Low Energy (LE), specifically designed for highly integrated and cost-effective applications. The simultaneous and independent operation of the two standards enables very high data rates (802.11ac) and low-power operation (Bluetooth LE). Integrated power management, a fast dual-core CPU, 802.11i security standard support, and high-speed data interfaces deliver the performance for the speed, reliability, and quality requirements of next generation products.
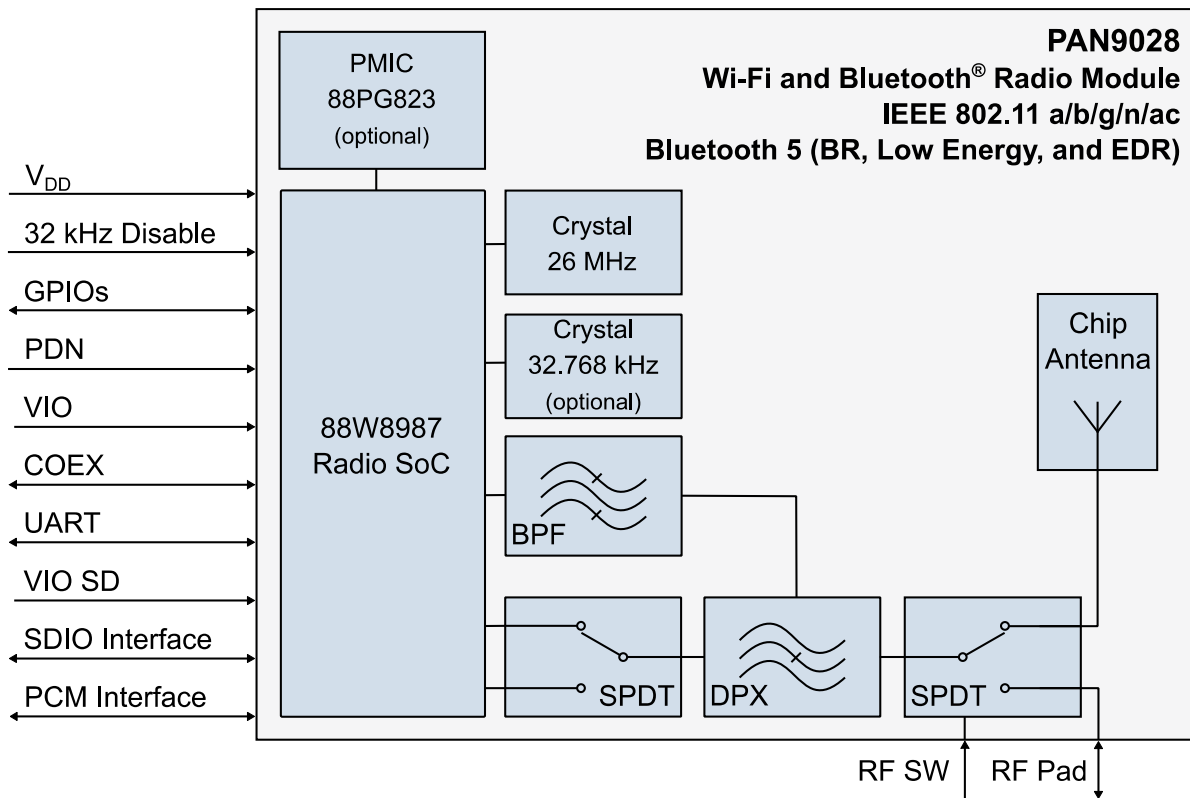Tx power calibration data, Wi-Fi, and Bluetooth system parameters are pre-stored on the one-time-programmable memory of the PAN9028 during production at Panasonic. This simplifies passing the certification process for PAN9028 customers. Furthermore, the module reduces design, test, and calibration effort resulting in reduced time-to-market compared to discrete solutions.

Integrating Wi-Fi and Bluetooth wireless connectivity allows high throughput applications for industrial devices and appliances. The combination of Wi-Fi and Bluetooth provides the highest flexibility for connectivity.

[FEATURES]

- Dual band 2.4 GHz and 5 GHz 802.11 a/b/g/n/ac Wi-Fi/Bluetooth com-bo module
- Supports 802.11i security standards through AES, CCMP, and more security mechanism
- 802.11e Quality of Service is supported for multimedia application
- IEEE 802.11ac (Wave 2), 1×1 spatial stream with data rates up to 433 Mbps (MCS9, 80 MHz channel bandwidth)
- IEEE 802.11ac MU-MIMO beamformee
- Bluetooth 5 (includes LE)
- Dual simultaneous and independent WLAN and Bluetooth operation
- Dynamic Rapid Channel Switching (DRCS) for simultaneous operation in 2.4 GHz and 5 GHz bands
- Indoor location and navigation with IEEE 802.11mc
- Power management with sleep clock
- Coexistence interface for arbitration of co-located WLAN, Bluetooth, or mobile wireless system (e.g. LTE or ZigBee®)
- Generic interfaces include SDIO 3.0 and high-speed UART for host processor connection
- Software driver Linux®

Wireless Connectivity

[BLOCK DIAGRAM]

PAN9028
Wi-Fi and Bluetooth® Radio Module
IEEE 802.11 a/b/g/n/ac
Bluetooth 5 (BR, Low Energy, and EDR)

PMIC 88PG823 (optional)

V$_{DD}$
32 kHz Disable
GPIOs
PDN
VIO
COEX
UART
VIO SD
SDIO Interface
PCM Interface

88W8987 Radio SoC

Crystal 26 MHz
Crystal 32.768 kHz (optional)
BPF
SPDT DPX SPDT
Chip Antenna

RF SW   RF Pad

[TECHNICAL CHARACTERISTICS]

- Surface Mount Type (SMT) 24 mm × 12 mm × 2.8 mm
- NXP® 88W8987 WLAN 2.4 GHz and 5 GHz and Bluetooth single-chip solution inside
- Single power supply: 3.3 V with Marvell® 88PG823 Power Management IC (optional)
- Tx power: 16 dBm at 802.11b
- Rx sensitivity: –97 dBm at 802.11b DSSS 1 Mbps
- IEEE 802.11ac 20 MHz, 40 MHz, 80 MHz channel bandwidth
- Long and Short Guard Interval support
- Current consumption Wi-Fi typical 320 mA (at Tx) and 70 mA (at Rx)
- SDIO 1 bit or 4 bit
- Wide temperature range of -30 °C to 85 °C