




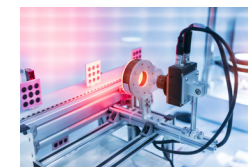


Wireless Connectivity

Product Leaflet

	Bluetooth® Low Energy	Bluetooth® LE & IEEE® 802.15.4			
					
SERIES	PAN1740A	PAN1780	PAN1781	PAN1782	PAN1770
STATUS	Mass Production	Mass Production	Mass Production	In Development	Mass Production
PART NUMBER	ENW89852A1KF	ENW89854A1KF ENW89854A3KF (PAN1780AT)	ENW89857A1KF	ENW89858A1KF	ENW89854C1KF (Standard) ENW89854C2KF (APPROTECT)
RF CATEGORY	Bluetooth®5.0	Bluetooth® 5.1, IEEE® 802.15.4 & NFC-A	Bluetooth® 5.1, IEEE® 802.15.4	Bluetooth® 5.x, IEEE® 802.15.4	Bluetooth® 5.1, IEEE® 802.15.4 & NFC-A
SOFTWARE & DRIVERS	SDK by Dialog	nRF5 SDK by Nordic nRF Connect SDK	nRF5 SDK by Nordic nRF Connect SDK	nRF5 SDK by Nordic Nordic Connect SDK	nRF5 SDK by Nordic nRF Connect SDK
INTEGRATED CIRCUIT	DA14585	nRF52840	nRF52820	nRF52833	nRF52840
SIZE [MM]	9.0 x 9.5 x 1.8	15.6 x 8.7 x 2.0	15.6 x 8.7 x 2.0	15.6 x 8.7 x 2.0	15.6 x 8.7 x 2.0
RX SENSITIVITY [DBM]	-93 @ 1Mb/s	-95 @ 1Mb/s -103 @ 125kb/s	-95 @ 1Mb/s -103 @ 125kb/s	-96 @ 1Mb/s -103 @ 125kb/s	-95 @ 1Mb/s -103 @ 125kb/s
TX POWER (MAX.) [DBM]	+0	+8	+8	+8	+8
POWER SUPPLY [V]	2.2 to 3.3	1.7 to 5.5	1.7 to 5.5	1.7 to 5.5	1.7 to 5.5
CURRENT CONSUMPTION	Tx: 4.9mA, 3V @ 0dBm Rx: 4.9mA, 3V	Tx: 4.8mA, 3.3V @ 0dBm Rx: 4.8mA, 3.3V	Tx: 4.9mA @ 0dBm Rx: 4.7mA	Tx: 4.9mA @ 0dBm Rx: 4.7mA	Tx: 4.8mA, 3.3V @ 0dBm Rx: 4.8mA, 3.3V
SLEEP MODE CURRENT	Sleep Mode (Full RAM Retention): 4µA Deep Sleep Mode: 520nA	Wake-on-RTC: 1.5µA Off Mode: 0.4µA	Wake-on-RTC: 1.2µA Off Mode: 0.3µA	Wake-on-RTC: 1.5µA Off Mode: 0.6µA	Wake-on-RTC: 1.5µA Off Mode: 0.4µA
INTERFACES	GPIO, UART, SPI+, I2C, ADC, 3-axis QD	GPIO, UART, QSPI, I2C, I2S, ADC, PDM, PWM, NFC-A, USB2.0	GPIO, UART, SPI, I2C, USB2.0, QDEC	GPIO, UART, QSPI, I2C, I2S, ADC, PDM, PWM, COMP, USB2.0	GPIO, UART, QSPI, I2C, I2S, ADC, PDM, PWM, NFC-A, USB2.0
MICROCONTROLLERS AND MEMORY	ARM® Cortex®-M0 96kB SRAM, 64kB OTP	ARM® Cortex®-M4F 256kB RAM, 1MB Flash	ARM® Cortex®-M4 32kB RAM, 256kB Flash	ARM® Cortex®-M4 128kB RAM, 512kB Flash	ARM® Cortex®-M4F 256kB RAM, 1MB Flash
OPERATING TEMP. [°C]	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85
EVALUATION KIT	ENW89852AXKF (Dongle) ENW89852AWKF (Dongle Kit)	ENW89854AUKF (Board) ENW89854AVKF (AT Board)	ENW89857AXKF (Board)	ENW89858AXKF (Board)	ENW89854CXKF (Standard) ENW89854CZKF (APPROTECT)

Applications



Industrial IoT



Smart Home/Building



Beacons







Medical Devices

Status of engineering sample (ES) are expected as of the time of leaflet production.
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Wireless Connectivity

Product Leaflet


	Bluetooth® Dual Mode	Wi-Fi® & Bluetooth® LE		Wi-Fi®
				
SERIES	PAN13x6C/2	PAN9026	PAN9028	PAN9520
STATUS	Mass Production	Mass Production	Mass Production	Mass Production
PART NUMBER	ENW89823A5KF (Chip Antenna) ENW89823C4KF (bottom Pad)	ENWF9202A1EF (EU) ENWF9201A1EF (US) ENWF9203A1EF (CA) ENWF9208A1EF (Multi-region)	ENWF9408A1EF (with PMIC) ENWF9408A2EF (without PMIC)	ENW49D01A1KF (4 MB Flash / 2 MB RAM) ENW49D02A1KF (1 MB Flash / No RAM)
RF CATEGORY	Bluetooth® 5.1 Dual Mode (BR, EDR, Bluetooth® LE)	Wi-Fi® Radio 2.4 GHz & 5.0 GHz 802.11 a/b/g/n & Bluetooth® 5.0 (BR, EDR, LE)	Wi-Fi® Radio 2.4 GHz & 5.0 GHz 802.11 a/b/g/n/ac & Bluetooth® 5.2 (BR, EDR, LE)	Wi-Fi® Embedded 802.11 b/g/n
SOFTWARE & DRIVERS	HCI Bluetooth Stack for MSP432 or STM32 Bluetooth Service Pack with Init Script	HCI Linux & i.MX RT Support MCUXpresso	HCI Linux & i.MX RT Support MCUXpresso	ESP-IDF by Espressif Arduino IDE
INTEGRATED CIRCUIT	CC2564C	88W8977	88W8987	ESP32-S2
SIZE [MM]	9.0 x 9.5 x 1.8 (with Antenna) 9.0 x 6.5 x 1.8 (no Antenna)	17.5 x 10.0 x 2.6	24.0 x 12.0 x 2.8	24.0 x 13.0 x 3.1
RX SENSITIVITY [DBM]	-90	-98 @ 1M-DSSS	-98 @ 1M-DSSS	-97 @ IEEE 802.11b
TX POWER (MAX.) [DBM]	+10 (Chip Antenna) +11.5 (no Antenna)	+17 @ IEEE 802.11b	+16 @ IEEE 802.11b	+19.8 @ IEEE 802.11b
POWER SUPPLY [V]	1.7 to 4.8	1.8 to 3.3	3.3 with PMIC 1.1, 1.8, 2.2, 3.3 without PMIC	3.0 to 3.6
CURRENT CONSUMPTION	Tx: 40mA, 3.3V @ 8dBm Rx: 20mA, 3.3V	Tx: 400mA @ 11Mb/s Rx: 70mA @ 11Mb/s	Tx: 320mA @ 11Mb/s Rx: 60mA @ 11Mb/s	Tx: 190mA, 3.3V @ 19.5 dBm Rx: 63mA, 3.3V @ 1Mb/s
SLEEP MODE CURRENT	Deep Sleep Mode: 105 µA	Power Down Mode: 150µA	Power Down Mode: 150µA	Deep sleep mode <100 µA
INTERFACES	GPIO, UART, PCM	SDIO 3.0, HS UART, PCM	GPIO, SDIO 3.0, HS UART, PCM	GPIO, UART, SPI, I2C, I2S, RMT, PWM, USB, LCD, ADC & DAC
MICROCONTROLLERS AND MEMORY			88PG823 Power Management IC (PMIC)	Xtensa® 32-bit LX7 320 kB SRAM, 128 kB ROM internal memory Integrated QSPI Flash and PSRAM (size depending on version)
OPERATING TEMP. [°C]	-40 to +85	-30 to +85	-30 to +85	-40 to +85
EVALUATION KIT	ENW89819AYKF (EMK without Antenna)	ENWF9201AWEF (mSDIO Dongle) ENWF9201AYEF (SDIO Dongle Kit) ENWF9201AXEF (i.MX Kit)	ENWF9408AVEF (mSD Adapter) ENWF9408AZEFL (i.MX Kit)	ENW49D01AZKF (Board with 4 MB Flash, 2 MB RAM)


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The product portfolio covers all of today's latest communication protocols with ready-to-use modules for Bluetooth® Low Energy and Classic. Panasonic offers Bluetooth® Low Energy in combination with all important short range RF technologies: Wi-Fi® (2.4GHz & 5GHz), IEEE® 802.15.4 and NFC-A.

Engineered with design simplicity in mind, Panasonic's Wireless Solutions allow design engineers to quickly extend wireless communication into their feature set.

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PAN1762
Bluetooth® 5.1

The PAN1762 is a Panasonic Bluetooth® 5.1 Low Energy module based on the Nordic nRF52840 single-chip controller.

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