Panasonic
INDUSTRY

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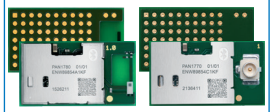
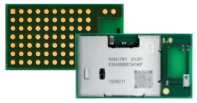
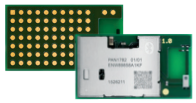
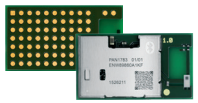
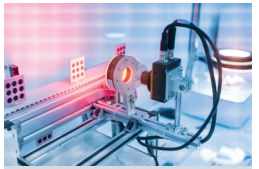
Wireless Connectivity

Product Leaflet

	Bluetooth® Low Energy	Bluetooth® LE & IEEE® 802.15.4			
				NEW 	COMING SOON 
SERIES	**PAN1740A**	**PAN1780 / PAN1770**	**PAN1781**	**PAN1782**	**PAN1783(A)**
STATUS	Mass Production	Mass Production	Mass Production	Mass Production	In Development
PART NUMBER	ENW89852A1KF	ENW89854A1KF (PAN1780) ENW89854A3KF (PAN1780AT) ENW89854C1KF (PAN1770) ENW89854C2KF (PAN1770 APP)	ENW89857A1KF	ENW89858A1KF	ENW89860A1KF (Chip Antenna) ENW89860C1KF (Bottom Pad)
RF CATEGORY	**Bluetooth® 5.0**	**Bluetooth® 5.3, IEEE® 802.15.4 & NFC-A**	**Bluetooth® 5.3, IEEE® 802.15.4**	**Bluetooth® 5.3, IEEE® 802.15.4 & NFC-A**	**Bluetooth® 5.3, IEEE® 802.15.4 & NFC-A**
SOFTWARE & DRIVERS	SDK by Dialog	nRF Connect SDK	nRF Connect SDK	nRF Connect SDK	nRF Connect SDK
INTEGRATED CIRCUIT	DA14585	nRF52840	nRF52820	nRF52833	nRF5340
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	-97 @ 1Mb/s -103 @ 125kb/s
TX POWER (MAX.) [DBM]	+0	+8 (Chip Antenna)	+8	+8	+3 (Chip Antenna)
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: 3.4mA @ 0dBm Rx: 2.7mA
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: 0.9µA
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, 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	Dual ARM® Cortex®-M33 512kB RAM, 1MB Flash 64kB RAM, 256kB 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 (PAN1780 EVB) ENW89854AVKF (PAN1780AT EVB) ENW89854CXKF (PAN1770 EVB) ENW89854CZKF (PAN1770APP EVB)	ENW89857AXKF (Board)	ENW89858AXKF (Board)	ENW89860AXKF (Board)

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

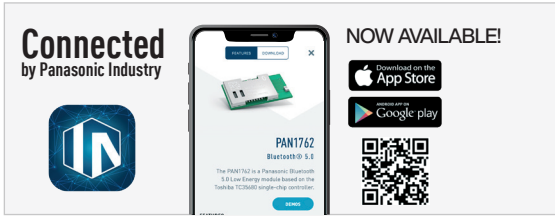
Product Leaflet

	Bluetooth® Dual Mode	Wi-Fi® & Bluetooth® LE			Wi-Fi®
				COMING SOON 	
SERIES	**PAN13x6C/2**	**PAN9026**	**PAN9028**	**PAN9019(A)**	**PAN9520**
STATUS	Mass Production	Mass Production	Mass Production	In Development	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)	ENWF9501C1KF (PAN9019) ENWF9511C1KF(PAN9019A)	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® 4 Radio 2.4 GHz & 5.0 GHz 802.11 a/b/g/n & Bluetooth® 5.0 (BR, EDR, LE)**	**Wi-Fi® 5 Radio 2.4 GHz & 5.0 GHz 802.11 a/b/g/n/ac & Bluetooth® 5.2 (BR, EDR, LE)**	**Wi-Fi® 6 Radio 2.4 GHz & 5.0 GHz 802.11 a/b/g/n/ac/ax & Bluetooth® 5.2 (BR, EDR, LE) only PAN9019A: & 802.15.4**	**Wi-Fi® 4 Embedded 802.11 b/g/n**
SOFTWARE & DRIVERS	HCI Bluetooth Stack for MSP432 or STM32 Bluetooth Service Pack with Init Script	Linux & i.MX RT Support	Linux, Android, i.MX RT Support	Linux, Android, i.MX RT Support	ESP-IDF by Espressif Arduino IDE
INTEGRATED CIRCUIT	CC2564C	88W8977	88W8987	IW611 (PAN9019) IW612 (PAN9019A)	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	15.3 x 12.0 x 2.5	24.0 x 13.0 x 3.1
RX SENSITIVITY [DBM]	-90	-98 @ 1M-DSSS	-98 @ 1M-DSSS	-98 dBm @ 1M 802.11b	-97 @ IEEE 802.11b
TX POWER (MAX.)[DBM]	+10 (Chip Antenna) +11.5 (no Antenna)	+17 @ IEEE 802.11b	+16 @ IEEE 802.11b	+17@ IEEE 802.11ax	+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	1.8V and 3.3V	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:192mA @802.11ax, 5GHz Rx:180mA @802.11ax, 5GHz	Tx: 190mA, 3.3V @ 19.5 dBm Rx: 63mA, 3.3V @ 1 Mb/s
SLEEP MODE CURRENT	Deep Sleep Mode: 105 µA	Power Down Mode: 150µA	Power Down Mode: 150µA	Power Down Mode: 190uA	Deep sleep mode <100 µA
INTERFACES	GPIO, UART, PCM	SDIO 3.0, HS UART, PCM	GPIO, SDIO 3.0, HS UART, PCM	SDIO 3.0, HS UART, SPI	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	-40 to +85
EVALUATION KIT	ENW89819AYKF (EMK without Antenna)	ENWF9201AWEF (mSDIO Dongle) ENWF9201AYEF (SDIO Dongle Kit) ENWF9201AXEF (i.MX Kit)	ENWF9408AVEF (mSD Adapter) ENWF9408AMEF (M.2 EVB)	ENWF9501CMKF (PAN9019 M2E EVD) ENWF9511CMKF (PAN9019A M2E EVD)	ENW49D01AZKF (Board with 4 MB Flash, 2 MB RAM)

Panasonic Wireless Connectivity solutions encompass a wide range of technologies, with a focus on helping design engineers increase their product's speed-to-market.

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.



Design and specification are subject to change without notice.

> Ask Panasonic for technical specification before purchase and/or use.

> If there is any doubt regarding the safety of this product, kindly inform Panasonic immediately for technical consultation.

> Qualification of all products: CE, FCC, IC, Bluetooth® QDID if applicable.

> Different software/profile options available.

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https://industry.panasonic.eu

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