
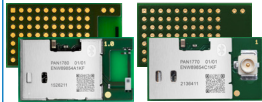
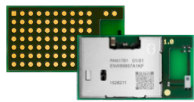
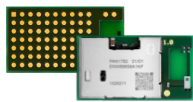
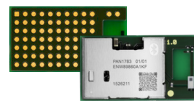

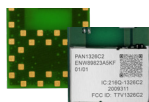




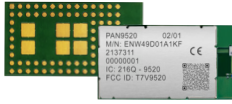


Wireless Connectivity | Product Leaflet

	Bluetooth® Low Energy	Bluetooth® LE & IEEE® 802.15.4					Bluetooth® Dual Mode
							
SERIES	PAN1740A	PAN1780 / PAN1770	PAN1781	PAN1782	PAN1783(A)	PAN B511-1x	PAN13x6C/2
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	Bluetooth® 5.4, IEEE® 802.15.4	Bluetooth® 5.1 Dual Mode (BR, EDR, Bluetooth® LE)
FREQUENCY [GHz]	2.4	2.4	2.4	2.4	2.4	2.4	2.4
INTEGRATED CIRCUIT	DA14585	nRF52840	nRF52820	nRF52833	nRF5340	nRF54L15	CC2564C
HOST MODE	Hosted or standalone	Hosted or standalone	Hosted or standalone	Hosted or standalone	Hosted or standalone	Hosted or Embedded	Hosted
MICROCONTROLLERS AND MEMORY	ARM® Cortex®-M0 64kB OTP, 96kB SRAM	ARM® Cortex®-M4F 1MB Flash, 256kB RAM	ARM® Cortex®-M4 256kB Flash, 32kB RAM	ARM® Cortex®-M4 512kB Flash, 128kB RAM	Dual ARM® Cortex®-M33 App: 1MB Flash, 512kB RAM, Network: 256kB Flash, 64kB RAM	ARM® Cortex®-M33 1.5MB Flash, 256kB RAM Opt: 4MB flash memory	-
SOFTWARE & DRIVERS	SmartSnippets™ Studio	nRF Connect SDK / AT: nBlue™	nRF Connect SDK	nRF Connect SDK	nRF Connect SDK	nRF Connect SDK	HCI
CERTIFIED ANTENNA	Integrated chip	Integrated chip / Terminal (via U.FL)	Integrated chip	Integrated chip	Integrated chip	Integrated chip	Integrated chip
REGULATORY CERTIFICATIONS	CE RED, FCC, ISED	CE RED, FCC, ISED, MIC, KCC, RCM, SRRC PAN1770/80AT: CE RED, FCC, ISED	CE RED, FCC, ISED, MIC, KCC, RCM, SRRC	CE RED, FCC, ISED	CE RED, FCC, ISED*	CE RED, FCC, ISED, MIC*	CE RED, FCC, ISED
SIZE [mm]	90 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	ca. 10.4 x 9.6	9.0 x 9.5 x 1.8 (w/ Ant); 9.0 x 6.5 x 1.8 (w/o Ant)
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	-	-90
Tx POWER (MAX.) [dBm]	+0	+8 (Chip Antenna)	+8	+8	+3 (Chip Antenna)	-	+10 (Chip Antenna) +11.5 (no 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	-	1.7 to 4.8
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	-	Tx: 40mA, 3.3V @ 8dBm Rx: 20mA, 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: 0.9µA	-	Deep Sleep Mode: 105 µA
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	-	GPIO, UART, PCM
OPERATING TEMP. [°C]	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85
PART NUMBER	ENW89852A1KF	ENW89854A1KF (PAN1780) ENW89854A3KF (PAN1780AT) ENW89854C1KF (PAN1770)	ENW89857A1KF	ENW89858A1KF	ENW89860A1KF (Chip Antenna) ENW89860C1KF (Bottom Pad)	ENW89861A1KF (PAN B511-1C) ENW89861C1KF (PAN B511-1B)	ENW89823A5KF (Chip Antenna) ENW89823C4KF (Bottom Pad)
EVALUATION KIT	ENW89852AXKF (Dongle) ENW89852AWKF (Dongle Kit)	ENW89854AUKF (PAN1780 EVB) ENW89854AVKF (PAN1780AT EVB) ENW89854CXKF (PAN1770 EVB)	ENW89857AXKF (EVB)	ENW89858AXKF (EVB)	ENW89860AXKF (EVB)	-	ENW89823AXKF (PAN1326C2 EVB) ENW89823CXKF (PAN1316C EVB)
STATUS	Mass Production	Mass Production	Mass Production	Mass Production	In Development	In Development	Mass Production

*Planned

Wireless Connectivity | Product Leaflet

	Wi-Fi® & Bluetooth® LE				Wi-Fi®
			NEW	COMING SOON	
					
SERIES	PAN9026	PAN9028	PAN9019(A)	PAN W601-1x	PAN9520
RF CATEGORY	Wi-Fi® 4 (802.11 a/b/g/n) & Bluetooth® 5.0 (BR, EDR, LE)	Wi-Fi® 5 (802.11 a/b/g/n/ac) & Bluetooth® 5.2 (BR, EDR, LE)	Wi-Fi® 6 (802.11 a/b/g/n/ac/ax) & Bluetooth® 5.3 (BR, EDR, LE) (& IEEE® 802.15.4)	Wi-Fi® 6E (802.11 a/b/g/n/ac/ax) & Bluetooth® 5.3 (BR, EDR, LE)	Wi-Fi® 4 (802.11 b/g/n)
FREQUENCY [GHz]	2.4 & 5	2.4 & 5	2.4 & 5	2.4, 5 & 6	2.4
INTEGRATED CIRCUIT	88W8977	88W8987	IW611 (PAN9019) / IW612 (PAN9019A)	SYN43711	ESP32-S2
HOST MODE	Hosted	Hosted	Hosted	Hosted	Hosted or Embedded
MICROCONTROLLERS AND MEMORY	-	-	-	-	Xtensa® 32-bit LX7 320 kB SRAM, 128 kB ROM Opt: QSPI Flash and PSRAM
SOFTWARE & DRIVERS	Linux / i.MX RT Support	Linux / Android / i.MX RT Support	Linux / Android / i.MX RT Support	Linux / Android / selected MCUs	ESP-IDF by Espressif Arduino DIE
CERTIFIED ANTENNA	Integrated chip	Integrated chip / Terminal (via bottom pad)	Via bottom pad: chip / (Flex)PCB / Terminal	Integrated chip	Integrated chip
REGULATORY CERTIFICATIONS	CE RED, FCC, ISED	CE RED, FCC, ISED	CE RED, FCC, ISED, MIC, RCM*	CE RED, FCC, ISED, MIC*	CE RED, FCC, ISED
SIZE [mm]	17.5 x 10.0 x 2.6	24.0 x 12.0 x 2.8	15.3 x 12.0 x 2.5	14.0 x 9.8	24.0 x 13.0 x 3.1
RX SENSITIVITY [dBm]	-98 @ 1M-DSSS	-98 @ 1M-DSSS	-98 @ 1M 802.11b	-98 @ 1M 802.11ax	-97 @ IEEE 802.11b
TX POWER (MAX.) [dBm]	+17 @ IEEE 802.11b	+16 @ IEEE 802.11b	+17 @ IEEE 802.11ax	+17 @ IEEE 802.11ax	+19.8 @ IEEE 802.11b
POWER SUPPLY [V]	1.8 to 3.3	3.3 with PMIC (88PG823) 1.1, 1.8, 2.2, 3.3 without PMIC	1.8 and 3.3	1.8, 3.3 - 5	3.0 to 3.6
CURRENT CONSUMPTION	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: 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	Power Down Mode: 150µA	Power Down Mode: 150µA	Power Down Mode: 190µA	Power Down Mode: 190µA	Deep sleep mode <100 µA
INTERFACES	SDIO 3.0, HS UART, PCM	GPIO, SDIO 3.0, HS UART, PCM	SDIO 3.0, HS UART, SPI, I ² S/PCM	PCIe2, UART, I2S, SDIO3	GPIO, UART, SPI, I2C, I2S, RMT, PWM, USB, LCD, ADC & DAC
OPERATING TEMP. [°C]	-30 to +85	-30 to +85	-40 to +85	-40 to +85	-40 to +85
PART NUMBER	ENWF9202A1EF (EU) ENWF9201A1EF (US) ENWF9203A1EF (CA) ENWF9208A1EF (Multi-region)	ENWF9408A1EF (with PMIC) ENWF9408A2EF (without PMIC)	ENWF9501C1KF (PAN9019) ENWF9511C1KF (PAN9019A)	ENWF9521C1KF	ENW49D01A1KF (4MB Flash / 2MB RAM) ENW49D02A1KF (1MB Flash)
EVALUATION KIT	ENWF9201AWEF (mSDIO Dongle) ENWF9201AYEF (SDIO Dongle Kit)	ENWF9408AVEF (mSD Dongle) ENWF9408AMEF (M.2 EVB)	ENWF9501CMKF (PAN9019 M2E EVD) ENWF9511CMKF (PAN9019A M2E EVD)	M.2 KeyE EVD	ENW49D01AZKF (EVB 4 MB Flash, 2 MB RAM)
STATUS	Mass Production	Mass Production	Mass Production	In Development	Mass Production

*Planned

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