







Wireless Connectivity

Product Leaflet

Series	PAN13x0 Series	PAN1322 Series	PAN13x5B Series	PAN13x6B Series	PAN1026 Series	PAN1760 Series	PAN172x Series	PAN1740 Series
Status	Mass Production	Mass Production	Mass Production	Mass Production	Mass Production	Mass Production	Mass Production	Mass Production
Part Number*	ENW89814C2MF	ENW89841A3KF	ENW89829x3KF	ENW89823x3KF	ENW89837A3KF	ENW89847A1KF	ENW898xxxxKF	ENW89846A1KF
RF Category	Classic Bluetooth® Bluetooth® v2.1 + EDR class 2	Classic Bluetooth® Bluetooth® v2.1 + EDR class 2	Classic Bluetooth® Bluetooth® v2.1 + EDR class 1.5	Bluetooth® Smart Ready Bluetooth® v4.1 class 1.5	Bluetooth® Smart Ready Bluetooth® v4.0 class 2	Bluetooth® Smart Bluetooth® v4.1	Bluetooth® Smart Bluetooth® v4.0	Bluetooth® Smart Bluetooth® v4.1
Software / Profile	HCI	SPP	HCI	HCI	SPP + GATT	Embedded Profiles	nBlue™ by BlueRadios Inc./ TI SW stack	Embedded Profiles
Used ICs	PMB8763	PMB8754	CC2560B	CC2564B	TC35661-501	TC35667-006	CC2540/CC2541	DA14580
Size [mm] w/o antenna w/ antenna	11.6 x 8.7 x 1.8	15.6 x 8.7 x 1.8	9.0 x 6.5 x 1.8 9.0 x 9.5 x 1.8	9.0 x 6.5 x 1.8 9.0 x 9.5 x 1.8	15.6 x 8.7 x 1.8	15.6 x 8.7 x 1.8	11.6 x 8.7 x 1.8 15.6 x 8.7 x 1.8	9.0 x 9.5 x 1.8
Rx Sensitivity [dBm]	-86 @ BER 10 ⁻³	-86 @ BER 10 ⁻³	-93 @ BER 10 ⁻³	-93 @ BER 10 ⁻³	-88 @ BER 10 ⁻³	-91 @ BER 1%	-94 @ BER 1%	-93 @ BER 1%
Tx Power (max.) [dBm]	+4	+4	+10	+10	+4	+0	+4/0	+0
Power Supply [V]	2.9 to 4.1	2.9 to 4.1	1.8 to 4.8	1.8 to 4.8	1.8 or 3.3	1.8 to 3.6	2.0 to 3.6	2.35 to 3.3
Current Consumption	Tx, EDR: 40mA Sleep Mode: 80µA	Tx, EDR: 40mA Sleep Mode: 80µA	Tx, EDR: 40mA Sleep Mode: 135µA	Tx, EDR: 40mA Sleep Mode: 135µA	ACL, DH1: 46mA Sleep Mode: <100µA	Tx: 5.4mA Rx: 5.4mA Sleep Mode: <1µA	Tx: 23mA @ -6dBm Rx: 18mA Sleep Mode: <1µA	Tx: 4.9mA Rx: 4.9mA Sleep Mode: <1µA
Interfaces	GPIO, PCM, UART, JTAG	GPIO, UART, JTAG	GPIO, PCM, UART	GPIO, PCM, UART	GPIO, UART	GPIO, UART, SPI, I ² C, ADC	GPIO, UART, USB only PAN17x0 Series	GPIO, UART, SPI, I ² C, 3-axis QD, ADC
Memory						32kB on chip RAM 512kB EEPROM	256kb	32kb OTP/external non-volatile memory
Specialty					Same <i>Bluetooth</i> Low Energy software platform		2 internal crystal	2 internal crystal
Footprint-compatible to	PAN13x0/PAN1322/PAN172x Series		All CC256x based <i>Bluetooth</i> modules are footprint- and pin-compatible		PAN1760 Series	PAN1026 Series	PAN13x0/PAN1322/ PAN172x Series	
Operating Temp. [°C]	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85
Evaluation Kit*	n/a	ENW89841AYKF (KIT)	EVAL_PAN1323 (EMK)		ENW89837AVKF (EMK)	ENW89847AVKF (EMK)	ENW898xxAY2F (BR KIT) ENW898xxAY1F (TI KIT)	ENW89846AYKF (KIT) ENW89846AVKF (EMK)

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Series	PAN235x Series	PAN237x Series	PAN4561H Series	PAN90x0** Series	PAN93x0 Series	PAN90x5** Series
						
Status	Mass Production	Engineering Sample	Mass Production	Mass Production	Mass Production	Pre-Production
Part Number*	ENW5961xN3xx	ENW59637C1xF	ENWC9A22xxEF	ENW49801x1JF (USB) ENW49802x1JF (SDIO)	ENW49A01x3EF (FCC) ENW49A02x3EF (EU)	ENWF9101x1JF (commercial grade) ENWF9101x1EF (extended grade)
RF Category	ISM Transceiver	ISM Transceiver	Mesh Networking (ZigBee® ready)	Wi-Fi Radio 802.11 b/g/n	Wi-Fi Embedded 802.11 b/g/n	Combo Radio Wi-Fi 802.11 b/g/n (MIMO 2x2) + Bluetooth® Smart Ready Bluetooth v4.0 class 1.5
Software / Profile	n/a	n/a	SNAP® by Synapse Wireless Inc.	Linux / Android Driver	Full Embedded	Linux / Android Driver
Used ICs	CC1101	CC1200	MC13213 + CC2591	88W8782	88MC200 + 88W8782	88W8797
Size [mm]	8.0 x 8.2 x 1.9	13.8 x 11.8 x 1.9	35.0 x 15.0 x 3.8	22.75 x 13.5 x 2.42	29.0 x 13.5 x 2.66	26.0 x 13.5 x 2.40
Antenna Options	w/o antenna	w/o antenna	w/ ceramic antenna / U.FL connector / bottom pad	w/ antenna / w/ 50 Ohm bottom pad	w/ antenna / w/ 50 Ohm bottom pad	w/o antenna / w/ 2 antenna
Rx Sensitivity [dBm]	-112 @ 1.2k-GFSK -104 @ 38.4k-GFSK -95 @ 250k-GFSK -89 @ 500k-4FSK	-123 @ 1.2k-2FSK -110 @ 50k-2GFSK -97 @ 500k-2GFSK -97 @ 1M-4GFSK	-98 @ 250kbps	-98 @ 1M-DSSS -88 @ 11M-CCK -93 @ 6M-BPSK -76 @ 54M-OFDM -74 @ 65M-MCS7	-98 @ 1M-DSSS -88 @ 11M-CCK -93 @ 6M-BPSK -76 @ 54M-OFDM -74 @ 65M-MCS7	-98 @ 1M-DSSS -88 @ 11M-CCK -93 @ 6M-BPSK -76 @ 54M-OFDM -74 @ 65M-MCS7
Tx Power (max.) [dBm]	+10	+15	+18.5	+18 @ 11b	+18 @ 11b	+18 @ 11b
Power Supply [V]	1.8 to 3.6	2.0 to 3.6	2.7 to 3.4	3.0 to 3.6	3.0 to 3.6	3.0 to 3.6
Current Consumption	Tx: 36mA Rx: 18mA Sleep Mode: <1µA	Tx: 54mA Rx: 2mA to 23mA Sleep Mode: <1µA	Tx: 210mA Rx: 48mA Off Mode: 2µA	Tx: 400mA @ 11Mbps Rx: 105mA @ 11Mbps Sleep Mode: 200µA	Tx: 430mA @ 11Mbps Rx: 150mA @ 11Mbps Off Mode: 27mA	Tx: 580mA @ 300Mbps Rx: 310mA @ 300Mbps Sleep Mode: tbd
Centre Frequency [MHz]	433/868/915	169/433/868/915/955	2,400	2,400	2,400	2,400
Interfaces	GPIO, SPI	GPIO, SPI	GPIO, UART, I ² C	USB2.0 or SDIO	GPIO, QSPI, 2x UART, JTAG	USB2.0, SDIO3.0, HS UART
Speciality				Coexistence interface for external co-located 2.4GHz radios		Coexistence with cellular and other 2.4GHz on-chip radios
Operating Temp. [°C]	-40 to +85	-40 to +85	-40 to +85	0 to +70	-30 to +70	0 to +70 (commercial grade) -30 to +85 (extended grade)
Evaluation Kit*	n/a	n/a	ENWC9A30x4EF + RF Module USB Adapter	ENW49802AYJF (KIT)	ENW49A01AYEF (EMK)	ENWF9101AYEF (KIT)

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* x is a parameter to be defined.

** Annual Volume Requirement of 100k. Please engage with Panasonic sales team and wireless team to determine if this module is suitable for your applications. Panasonic reserves the right to support or to not support requests based on corporate policy that includes export control and application restrictions or other requirements.