
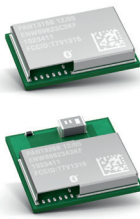







# Wireless Connectivity

## Product Leaflet

# Panasonic

							
<b>Series</b>	<b>PAN1315B/PAN1325B</b>	<b>PAN1316C/PAN1326C</b>	<b>PAN1026A</b>	<b>PAN1760</b>	<b>PAN1761</b>	<b>PAN1720 / PAN1721</b>	<b>PAN1740</b>
<b>Status</b>	Mass Production	Mass Production	Pre-Production	Mass Production	Mass Production	Mass Production	Mass Production
<b>Part Number</b>	ENW89829x3KF*	ENW89823x4KF*	ENW89837A5KF	ENW89847A1KF	ENW89848A1KF	ENW898xxxxKF*	ENW89846A1KF
<b>RF Category</b>	<b>Bluetooth® BR/EDR Bluetooth® v2.1 + EDR class 1.5</b>	<b>Bluetooth® Dual Mode Bluetooth® v4.2 class 1.5</b>	<b>Bluetooth® Dual Mode Bluetooth® v4.2 class 2</b>	<b>Bluetooth® Low Energy Bluetooth® v4.1</b>	<b>Bluetooth® Low Energy Bluetooth® v4.1 + NFC Tag Type 3</b>	<b>Bluetooth® Low Energy Bluetooth® v4.0</b>	<b>Bluetooth® Low Energy Bluetooth® v4.2</b>
<b>Software / Profile</b>	HCI	HCI	SPP and GATT	Embedded Profiles	Embedded Profiles	nBlue™ by BlueRadios Inc. / TI SW stack	Embedded Profiles
<b>Used ICs</b>	CC2560B	CC2564C	TC35661-551	TC35667-006	TC35670-006	CC2540 / CC2541	DA14580
<b>Size [mm]</b>	w/o antenna 9.0 x 6.5 x 1.8 w/ antenna 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	15.6 x 8.7 x 1.8 (NFC antenna pin)	15.6 x 8.7 x 1.8	9.0 x 9.5 x 1.8
<b>Rx Sensitivity [dBm]</b>	-93	-93	-89	-91	-90	-94	-93
<b>Tx Power (max.) [dBm]</b>	+10	+10	+4	+0	+0	+4 / 0	+0
<b>Power Supply [V]</b>	1.8 to 4.8	1.8 to 4.8	2.8 to 3.6	1.8 to 3.6	1.8 to 3.6	2.0 to 3.6	2.35 to 3.3
<b>Current Consumption (max.)</b>	Tx, EDR: 40mA Sleep Mode: 135µA	Tx, EDR: 40mA Sleep Mode: 135µA	ACL, DH1: 46mA Sleep Mode: <2mA	Tx 5.4mA Rx: 5.4mA Sleep Mode: <1µA	Tx: 5.5mA Rx: 5.5mA Sleep Mode: <0.1µA	Tx: 23mA @ -6dBm Rx: 18mA Sleep Mode: <1µA	Tx: 4.9mA Rx: 4.9mA Sleep Mode: <1µA
<b>Interfaces</b>	GPIO, PCM, UART	GPIO, PCM, UART	GPIO, UART	GPIO, UART, SPI, I <sup>2</sup> C, ADC	GPIO, UART, I <sup>2</sup> C, NFC Wake-Up, etc.	GPIO, UART, USB only PAN17x0* Series	GPIO, UART, SPI, I <sup>2</sup> C, 3-axis QD, ADC
<b>Microcontroller and Memory</b>			ARM 7	ARM 7, 32KB on-chip RAM, 64KB EEPROM	ARM 7, 32KB on-chip RAM, 64KB EEPROM, 1.5KB EEPROM NFC memory	8051 µC, 8KB RAM, 256KB Flash	ARM Cortex M0, 32KB OTP, 42KB SRAM / external non-volatile memory
<b>Specialty</b>			Compatible to Toshiba Bluetooth SDK for BLE-GATT			two internal crystal	two internal crystal
<b>Compatibility</b>	All CC256xx* based Bluetooth modules are footprint- and pin-compatible		All TC356xx based modules are footprint- and pin-compatible			PAN172x* Series is footprint compatible with PAN1026A, PAN1760 and PAN1761	
<b>Operating Temp. [°C]</b>	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-30 to +85	-40 to +85	-40 to +85
<b>Evaluation Kit</b>	EVAL_PAN1323 (EMK)	EVAL_PAN1323 (EMK)	ENW89837AxKF* (EMK)	ENW89847AVKF (EMK) ENW89847AUKF (Morpheus Board)	ENW89848AVKF (EMK)	ENW898xxAY2F* (BR KIT) ENW898xxAY1F* (TI KIT)	ENW89846AYKF (KIT) ENW89846AVKF (EMK)

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\* x is a parameter to be defined.







- 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.



# Wireless Connectivity

## Product Leaflet

# Panasonic

						
<b>Series</b>	<b>PAN2355/PAN2357</b>	<b>PAN4561H</b>	<b>PAN9310/PAN9320</b>	<b>PAN9010/PAN9020</b>	<b>PAN9026</b>	<b>PAN9045/PAN9055</b>
<b>Status</b>	Mass Production	Mass Production	Mass Production	Mass Production	Pre-Production	Pre-Production
<b>Part Number</b>	ENW5961xN3xx*	ENWC9A22xxEF*	ENW49A02x3EF (EU) ENW49A01x3EF (FCC)	ENW49801x1JF* (USB) ENW49802x1JF* (SDIO)	ENWF9201A1EF* (SDIO)	ENWF9101x1JF* (commercial grade) ENWF9101x1EF* (extended grade)
<b>RF Category</b>	<b>ISM Transceiver</b>	<b>Mesh Networking (ZigBee® ready)</b>	<b>Wi-Fi Embedded 802.11 b/g/n</b>	<b>Wi-Fi Radio 802.11 b/g/n</b>	<b>Combo Radio Wi-Fi 802.11 a/b/g/n (2.4 GHz &amp; 5.0 GHz) + Bluetooth® Dual Mode BLE v4.2 class 1</b>	<b>Combo Radio Wi-Fi 802.11 b/g/n (2.4 GHz) (MIMO 2x2) + Bluetooth® Dual Mode BLE v4.0 class 1</b>
<b>Software / Profile</b>	n/a	SNAP® by Synapse Wireless Inc.	Full Embedded	Linux / Android Driver	Linux / Android Driver	Linux / Android Driver
<b>Used ICs</b>	CC1101	MC13213 + CC2591	88MC200 + 88W8782	88W8782	88W8977	88W8797
<b>Size [mm]</b>	8.0 x 8.2 x 1.9	35.0 x 15.0 x 3.8	29.0 x 13.5 x 2.66	22.75 x 13.5 x 2.42	17.5 x 10.0 x 2.6	26.0 x 13.5 x 2.4
<b>Antenna Options</b>	w/o antenna	w/ ceramic antenna or U.FL connector or bottom pad	w/ 50 Ohm bottom pad / w/ antenna	w/ 50 Ohm bottom pad / w/ antenna	w/ antenna	w/o antenna / w/ two antennas
<b>Rx Sensitivity [dBm]</b>	-112 @ 1.2k GFSK -104 @ 38.4k GFSK -95 @ 250k GFSK -89 @ 500k 4FSK	-98 @ 250 kbps	-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 -89 @ 11M-CCK -91 @ 6M-BPSK -76 @ 54M-OFDM -73 @ 65M-MCS7	-98 @ 1M-DSSS -88 @ 11M-CCK -93 @ 6M-BPSK -76 @ 54M-OFDM -74 @ 65M-MCS7
<b>Tx Power (max.) [dBm]</b>	+10	+18.5	+18 @ 11b	+18 @ 11b	+17 @ 11b	+18 @ 11b
<b>Power Supply [V]</b>	1.8 to 3.6	2.7 to 3.4	3.0 to 3.6	3.0 to 3.6	1.8 to 3.3	3.0 to 3.6
<b>Current Consumption (max.)</b>	Tx: 36 mA Rx: 18 mA Sleep Mode: <1 µA	Tx: 210 mA Rx: 48 mA Off Mode: 2 µA	Tx: 430mA @ 11Mbps Rx: 150mA @ 11Mbps Off Mode: 27mA	Tx: 400mA @ 11Mbps Rx: 105mA @ 11Mbps Power Down: 200µA	Tx: 490mA @ 11Mbps Rx: 70mA @ 11Mbps Power Down: tbd	Tx: 580mA @ 300Mbps Rx: 310mA @ 300Mbps Sleep Mode: tbd
<b>Interfaces</b>	GPIO, SPI	GPIO, UART, I2C	2 x UART	USB 2.0 or SDIO	SDIO 3.0, HS UART	USB 2.0, SDIO 3.0, HS UART
<b>Microcontroller and Memory</b>			ARM Cortex M3 1MB Flash			
<b>Specialty</b>			Coexistence Interface for external co-located 2.4 GHz Radios		Coexistence interface for arbitration of co-located WLAN, Bluetooth or Mobile Wireless System (e.g. LTE)	Coexistence with cellular and other 2.4 GHz on-chip Radios
<b>Compatibility</b>						
<b>Operating Temp. [°C]</b>	-40 to +85	-40 to +85	-30 to +70	0 to +70	-30 to +85	0 to +70 (commercial grade) -30 to +85 (extended grade)
<b>Evaluation Kit</b>	n/a	PAN4561Hx*-ETU + RF Module USB Adapter	ENW49A01AYEF (EMK)	ENW49802AYJF (KIT)	ENWF9201AZEF (ETU) ENWF9201AYEF (KIT)	ENWF9101AYEF (KIT)