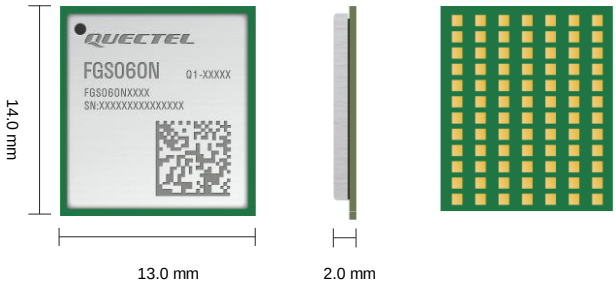
Quectel FGS060N

Wi-Fi 6 & Bluetooth 5.2 Module
Comply with Thread Protocol



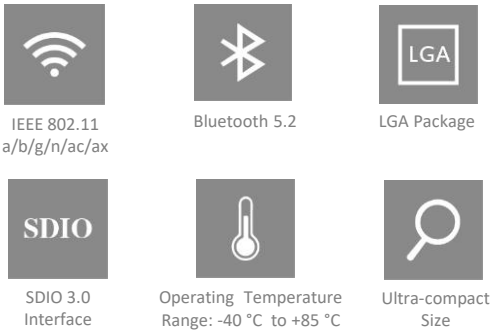
FGS060N is a high-performance Wi-Fi 6 and Bluetooth 5.2 module in LGA package launched by Quectel, complying with Thread protocol. Under the IEEE 802.11ax standard protocol, it supports MCS 0–MCS 11 rates in an 80 MHz bandwidth with 1024QAM supported. The module is designed with a reliable SDIO 3.0 interface to provide WLAN capability.

With an ultra-compact size of 14.0 mm × 13.0 mm × 2.0 mm, FGS060N optimizes the size and cost for end-products, which fully meets the demands of size-sensitive applications.

Surface-mount Technology (SMT) makes FGS060N an ideal solution for durable and rugged designs. The low profile and small size of LGA package ensure that the module can be easily embedded into size-constrained applications and provide reliable connectivity with these applications. The advanced package, integrated shielding cover and the laser-engraved label with better heat dissipation and indelible markings allow for large-scale automated manufacturing that has strict requirements on cost and efficiency. Coupled with its compact size and wide operating temperature range, FGS060N is suitable for a variety of smart home and industrial applications.

Key Features

- 2.4 GHz/ 5 GHz Wi-Fi bands, Bluetooth 5.2 and Thread protocol
- SDIO 3.0 interface that supports higher data transmission rate and enables lower power consumption
- Faster time-to-market: simple design minimizes design-in time and development efforts
- Wide operating temperature range: -40 °C to +85 °C



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Wi-Fi 6 & Bluetooth 5.2	FGS060N
WLAN Protocol	IEEE 802.11 a/b/g/n/ac/ax
Wi-Fi Frequency Band	2.4 GHz/ 5 GHz
Wi-Fi Antenna	1 × 1
Wi-Fi Modulation Mode	DSSS/ OFDM/ DBPSK/ DQPSK/ CCK/ BPSK/ QPSK/ 16QAM/ 64QAM/ 256QAM/ 1024QAM/ OFDMA
Encryption Mode	WPA2/ WPA3
Wi-Fi Operating Mode	AP/ STA
Thread Protocol	IEEE 802.15.4
Bluetooth Protocol	Bluetooth 5.2
Dimensions	14.0 mm × 13.0 mm × 2.0 mm
Weight	Approx. 0.7 g
Temperature Range	
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-45 °C to +95 °C
Physical Rate (Max.)	
802.11a	54 Mbps
802.11b	11 Mbps
802.11g	54 Mbps
802.11n	150 Mbps
802.11ac	433.3 Mbps
802.11ax	600.4 Mbps
Interfaces	
SPI	× 1 (for Thread)
SDIO 3.0	× 1 (for Wi-Fi)
UART	× 1 (for Bluetooth)
Wi-Fi/Bluetooth Antenna	× 1
Electrical Features	
Power Supply Voltage	VBAT_3V3: 3.14–3.46 V, Typ. 3.3 V VBAT_1V8: 1.71–1.89 V, Typ. 1.8 V
I/O Power Supply Voltage	VDDIO: • 3.14–3.46 V, Typ. 3.3 V • 1.71–1.89 V, Typ. 1.8 V
VDDIO_RF Power Supply	VDDIO_RF: • 3.14–3.46 V, Typ. 3.3 V
SDIO_VDD Power Supply	SDIO_VDD: • 3.14–3.46 V, Typ. 3.3 V • 1.71–1.89 V, Typ. 1.8 V
Power Consumption	Max. current at Tx mode: • 276 mA @ 3.3 V • 246 mA @ 1.8 V
Certifications	
Regulatory	**Europe:** CE **America:** FCC **Canada:** IC **Australia/New Zealand:** RCM

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Wi-Fi 6 & Bluetooth 5.2		FGS060N	
Wi-Fi Performance			
		Receiver Sensitivity	**Transmit Power**
2.4 GHz	**802.11b/1 Mbps**	-96 dBm ±2 dB	16 dBm ±2 dB
	802.11b/11 Mbps	-87 dBm ±2 dB	16 dBm ±2 dB
	802.11g/6 Mbps	-90 dBm ±2 dB	16 dBm ±2 dB
	802.11g/54 Mbps	-74 dBm ±2 dB	14 dBm ±2 dB
	802.11n/HT20 MCS 0	-90 dBm ±2 dB	14 dBm ±2 dB
	802.11n/HT20 MCS 7	-71 dBm ±2 dB	14 dBm ±2 dB
	802.11n/HT40 MCS 0	-87 dBm ±2 dB	14 dBm ±2 dB
	802.11n/HT40 MCS 7	-69 dBm ±2 dB	14 dBm ±2 dB
	802.11ax/HE20 MCS 0	-90 dBm ±2 dB	14 dBm ±2 dB
	802.11ax/HE20 MCS 11	-61 dBm ±2 dB	8 dBm ±2 dB
	802.11ax/HE40 MCS 0	-87 dBm ±2 dB	14 dBm ±2 dB
	802.11ax/HE40 MCS 11	-59 dBm ±2 dB	8 dBm ±2 dB
5 GHz	**802.11a/6 Mbps**	-90 dBm ±2 dB	15 dBm ±2 dB
	802.11a/54 Mbps	-74 dBm ±2 dB	15 dBm ±2 dB
	802.11n/HT20 MCS 0	-90 dBm ±2 dB	14 dBm ±2 dB
	802.11n/HT20 MCS 7	-71 dBm ±2 dB	14 dBm ±2 dB
	802.11n/HT40 MCS 0	-87 dBm ±2 dB	14 dBm ±2 dB
	802.11n/HT40 MCS 7	-69 dBm ±2 dB	14 dBm ±2 dB
	802.11ac/VHT20 MCS 0	-90 dBm ±2 dB	14 dBm ±2 dB
	802.11ac/VHT20 MCS 8	-68 dBm ±2 dB	13 dBm ±2 dB
	802.11ac/VHT40 MCS 0	-87 dBm ±2 dB	14 dBm ±2 dB
	802.11ac/VHT40 MCS 9	-64 dBm ±2 dB	12 dBm ±2 dB
	802.11ac/VHT80 MCS 0	-83 dBm ±2 dB	14 dBm ±2 dB
	802.11ac/VHT80 MCS 9	-60 dBm ±2 dB	11 dBm ±2 dB
	802.11ax/HE20 MCS 0	-91 dBm ±2 dB	14 dBm ±2 dB
	802.11ax/HE20 MCS 11	-62 dBm ±2 dB	7 dBm ±2 dB
	802.11ax/HE40 MCS 0	-88 dBm ±2 dB	14 dBm ±2 dB
	802.11ax/HE40 MCS 11	-59 dBm ±2 dB	7 dBm ±2 dB
	802.11ax/HE80 MCS 0	-84 dBm ±2 dB	14 dBm ±2 dB
	802.11ax/HE80 MCS 11	-57 dBm ±2 dB	7 dBm ±2 dB
Bluetooth Performance			
		Receiver Sensitivity	**Transmit Power**
BR		-92 dBm ±2 dB	3 dBm ±2 dB
EDR (π/4-DQPSK)		-93 dBm ±2 dB	0 dBm ±2 dB
EDR (8-DPSK)		-88 dBm ±2 dB	0 dBm ±2 dB
BLE (1 Mbps)		-96 dBm ±2 dB	3 dBm ±2 dB
Thread Performance			
		Receiver Sensitivity	**Transmit Power**
Thread		-99 dBm ±2 dB	4.5 dBm ±2 dB (2405 MHz and 2440 MHz) 0 dBm ±2 dB (2480 MHz)

Model	Ordering Code	Antenna	DBS	Coexistence with Cellular Module	Development Board (Only for Debugging)
FGS060N	FGS060NABMD	One antenna	-	-	FGS060NABM2

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