

BLE + UWB Combo module

Geoplan MU500

- Smart
- UWB
- Security



BLE + UWB Combo module

01. INTRODUCTION

- ▶ The UWB+BLE Combo module is based on NXP's SR150 Ultra Wideband (UWB) transceiver, QN9090 BLE MCU and SE051 IOT Secure element.
- ▶ It integrates all logic circuitry, power management, and clock circuitry in one module.
- ▶ It supports a total of 4-RF ports (3 Receive Ports and 1 Transmit Port).
- ▶ Module is compliant to IEEE 802.15.4 HRP and Bluetooth LE 5.0.

02. KEY FEATURES

Mechanic Info.			
Size	23mm x 16mm x 2.0mm		
Package	Surface mount Type with Metal shield can		
Weight	1.8 g		
ANT Type	External Antenna		
Power		Performance	
Supply Voltage	Typ. 3.3V (2.7V ~ 3.6V)		
Current	RX Mode Max. 250mA	TX Mode Max. 85mA	
Operating Temperature		Performance	
Minimum Temp.	-30 °C		
Highest Temp.	85 °C		
Main IC	SR150 ARM@ Cortex-M33	QN9090 ARM@ Cortex-M4	
Memory	RAM 152KB		Flash (Internal 640KB, External 2MB)
Wireless	UWB(Ch.5/Ch.9) 6.24GHz ~ 8.24GHz	BLE5.0 2.4GHz	
Wired	UART	I2C	



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03. ELECTRICAL CHARACTERISTICS

3-1 Absolute Maximum Ratings

Parameter	Min.	Max.	Unit	
Storage Temp.	TBD	TBD	°C	
Supply Voltage	VDD3V3	2.7	3.6	V
	VDDIO	2.7	3.6	V

3-2 Absolute Maximum Ratings

Parameter	Min.	Typ.	Max.	Unit	
Operating Temp.	-30	+25	+85	°C	
Supply Voltage	VDD3V3	2.7	3.3	3.6	V
	VDDIO	2.7	3.3	3.6	V
Current Consumption	Sleep Mode	-	-	60	uA
	Idle Mode	-	30	-	mA
	TX Mode	-	-	85	mA
	RX Mode	-	-	250	mA

04. RF CHARACTERISTICS

► T = 25°C, VDD3V3, VDDIO = 3.3V

4-1 UWB Characteristics

Parameter	Condition	Min.	Typ.	Max.	Unit
Frequency Range		6.24	-	8.24	GHz
Data Rate	Supported	0.85	6.8	31.2	Mbps
TX Output Power	Power Density	-	-	-41.3	dBm/MHz
RF Sensitivity	6.8Mbps Data rate	-	-93	-	dBm

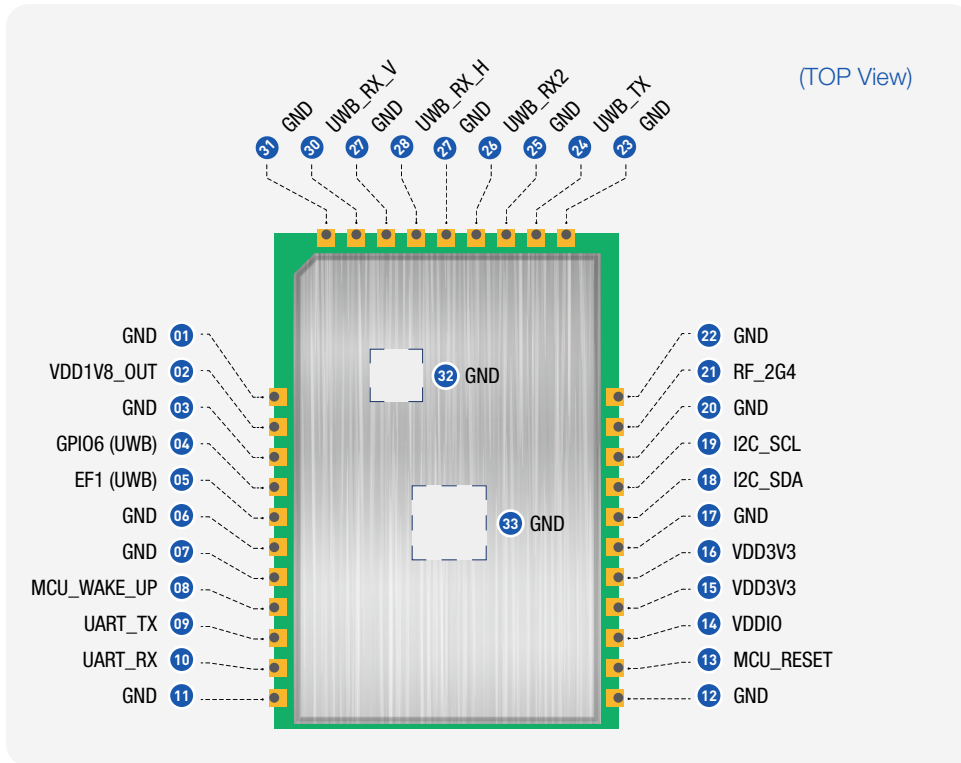
4-2 BLE Characteristics

Parameter	Condition	Min.	Typ.	Max.	Unit
Frequency Range		2.4	-	2.485	GHz
TX Output Power	1Mbps	-	11	-	dBm
	2Mbps	-	11	-	dBm
RF Sensitivity	1Mbps (0.1% BER)	-	-97	-	dBm
	2Mbps (0.1% BER)	-	-93	-	dBm

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05. MODULE PIN DESCRIPTION

5-1 Pin Assignment



5-2 Pin Assignment

No.	Pin Name	Type	Pin Description
1, 3, 6, 7, 11, 12, 17, 20, 22, 23, 25, 27, 29, 31, 32, 33	GND	-	Ground
2	VDD1V8_OUT	P	1.8V Power Out by internal Power Switch
4	GPIO6 (UWB)	O	Fast speed IO for antenna external switching
5	EF1 (UWB)	O	Fast speed IO for antenna external switching
8	MCU_WAKE_UP	I	Module Wake Up Signal (Internal Pull-Up)
9	UART_TX	O	UART transmit data output (Internal Pull-Up)
10	UART_RX	I	UART receive data input
13	MCU_RESET	I	MCU Reset (Internal Pull-Up)
14	VDDIO	P	Supply Voltage for IO (3.0V ~ 3.6V)
15,16	VDD3V3	P	Supply Voltage for RF/Digital (3.0V ~ 3.6V)
18	I2C_SDA	I/O	I2C-bus master/slave SDA input/output (Internal Pull-Up)
19	I2C_SCL	I/O	I2C-bus master/slave SDA input/output (Internal Pull-Up)
21	RF_2G4	R	BLE RF port
24	UWB_TX	R	UWB transmit port
26	UWB_RX2	R	UWB Receive port2 with LNA
28	UWB_RX_H	R	UWB receive port1 switched by internal SPDT
30	UWB_RX_V	R	UWB receive port1 switched by internal SPDT