Datasheet

Synapse RF Engine - ZigBee Radio Board (RFE)

Not Amplified - Standard Range

- ✔ SNAP self-forming wireless network software preinstalled
- ✔ Communicate using simple serial AT commands
- ✔ Coordinator or End Device versions
- ✔ Embedded F antenna
- ✔ 10dB receive amplifier standard
- ✔ Consumes as little as 47 µA in operation
- ✔ Eight 10-bit A/D (or digital I/O) plus 5 digital I/O pins
- ✔ Serial interface (logic levels or RS232 levels)
- ✔ 16K, 32K or 60K flash memory available
- ✔ FCC certified all 16 channels

The Synapse RF Engine™ is an all-in-one solution to your embedded wireless control and monitoring network needs. Just plug it in and send and receive data through the built in serial port. The RF Engine will take the serial data and send it over a self-forming wireless network using the ZigBee® physical layer (802.15.4)

The RF Engine contains a microcontroller, a ZigBee modem, the SNAP network software as well as amplifiers, matching networks and is FCC certified. With this "engine" handling the RF hardware and software, **you can focus on your application, not the network**.

Synapse offers RF Engines in numerous configurations and can customize one to meet your needs.

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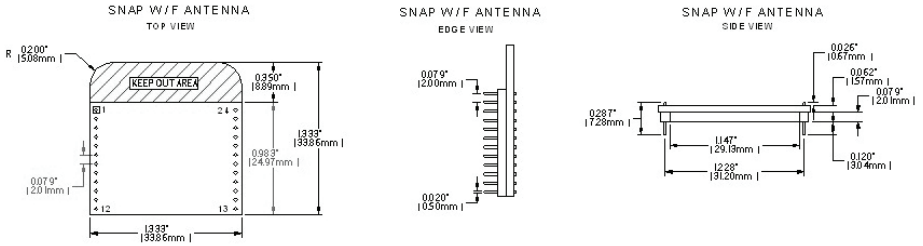
Physical Dimensions:



Specifications:

Performance	Indoor Range	up to 200 ft.
	Outdoor LOS Range	up to 1000 ft.
	Transmit Power Output	0 dBm
	RF Data Rate	250,000 bps
	Receiver Sensitivity	-102 dBm (1% PER)
Power Requirements	Supply Voltage	2.7 - 3.4 V
	Transmit Current (Typ)	40mA
	Idle/Receive Current (Typ)	50mA
	Average Current	47 µA @ 30 sec. wakeup cycle
General	Frequency	ISM 2.4 GHz
	Spreading Method	Direct Sequence
	Modulation	O-QPSK
	Dimensions	1.333" x 1.333"
	Operating Temperature	-40 to 85 deg C.
	Antenna Options	Integrated F
Networking	Topology	SNAP
	Number of Channels	16
Available I/O	UARTS with HW Flow Control	2 Ports - 8 total I/O
	GPIO	11 total; 8 can be analog in with 10-bit ADC
Agency Approvals	FCC Part 15.247	Yes
	Industry Canada (IC)	Yes

Part Selection:

Part No.	Antenna	Flash Memory	A/D	ZigBee Mode
RF100E85	F type	32KB	10 bit	End Device

Pinout:

Pin No.	Name	Direction	Description
1	GND	-	Power Supply/Return
2	GPIO0_TPM1CH2	Bidirectional	GPI/O, or Timer1 Channel 2
3	GPIO1_KBI0	Bidirectional	GPI/O, Keyboard In
4	GPIO2_KBI1	Bidirectional	GPI/O, Keyboard In
5	GPIO3_RX_UART0	Input	UART0 Data In
6	GPIO4_TX_UART0	Output	UART0 Data Out
7	GPIO5_KBI4_CTS0	Bidirectional	GPI/O, Keyboard In, or UART0 CTS
8	GPIO6_KBI5_RTS0	Bidirectional	GPI/O, Keyboard In, or UART0 RTS
9	GPIO7_RX_UART1	Input	UART1 Data In
10	GPIO8_TX_UART1	Output	UART1 Data Out
11	GPIO9_KBI6_CTS1	Bidirectional	GPI/O, Keyboard In, or UART1_CTS
12	GPIO10_KBI7_RTS1	Bidirectional	GPI/O, Keyboard In, or UART1_RTS
13	GPIO11_AD7	Bidirectional	GPI/O, or Analog In
14	GPIO12_AD6	Bidirectional	GPI/O, or Analog In
15	GPIO13_AD5	Bidirectional	GPI/O, or Analog In
16	GPIO14_AD4	Bidirectional	GPI/O, or Analog In
17	GPIO11_AD3	Bidirectional	GPI/O, or Analog In
18	GPIO12_AD2	Bidirectional	GPI/O, or Analog In
19	GPIO13_AD1	Bidirectional	GPI/O, or Analog In
20	GPIO14_AD0	Bidirectional	GPI/O, or Analog In
21	VCC	-	Power Supply
22	Reserved	-	-
23	RESET_L	Input	Module Reset, Active Low
24	GND	-	Power Supply/Return

All specifications are subject to change without notice.

ZigBee Alliance
Wireless Control That Simply Works

430-0103.01A

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