MAgilSense

HB181

FMCW X-band Microwave Sensor



Features:

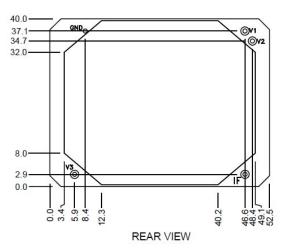
- FMCW function
- Low current consumption
- Small and flat profile
- CW and pulse mode

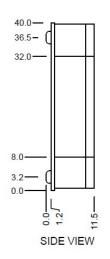
Applications:

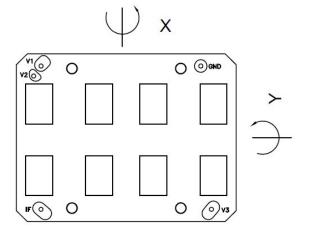
- Motion detection
- Distance measurement
- Lighting control
- Security alarm
- Automatic door control

The HB181 microwave sensor is an X-band bi-static FMCW transceiver. It consists of one voltage tuned dielectric resonator oscillator (VT-DRO), a single balanced mixer and a pair of 2×2 antenna arrays. It is suitable for FMCW or FSK ranging motion detectors.

Module Outline







FRONT VIEW - ANTENNA

All dimensions are in mm.

Name	Description	Diameter	Plated Thru	
GND	Ground	1mm	Yes	
V1	+5 V _{DC}	1mm	Yes	
V2	NC	1mm	Yes	
V3	Tuning voltage	1mm	Yes	
IF	IF output	1mm	Yes	

Note 1: Complies with EN 300 440.

Note 2: Complies with FCC Part 15.245.

Note 3: The tuning voltage V3 should be from 0.5 to 5 $V_{\text{DC}},$ with a load less than 1k Ohm.

Note 4: <u>CAUTION</u>: <u>ELECTROSTATIC SENSITIVE DEVICE</u>. Observe precautions for handling and storage.

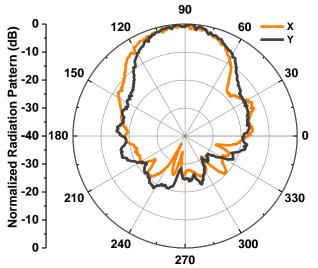




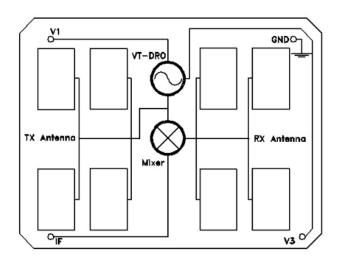




Antenna Beam Pattern



Block Diagram



Technical Specifications

Unless noted otherwise, the specifications are measured in CW mode, V1 = +5 V_{DC} and 12k ohm load at +25°C.

Parameter	Remarks	Min	Typical	Max	Units			
Operating Conditions								
Supply voltage, V1		4.75	5	5.25	V_{DC}			
Tuning voltage, V3		0.5		5	V_{DC}			
Current consumption			30	40	mA			
Operating temperature		-15		55	°C			
Recommended Pulse Scheme			-					
Pulse frequency	Pulse mode		2		KHz			
Duty cycle	Pulse mode		2		%			
Transmitter								
Operating frequency		10.522		10.527	GHz			
Tuning slope			-1		MHz/V			
Radiated power (EIRP)		16	18	20	dBm			
Spurious emission				-30	dBm			
Settling time			3	6	μSec			
Antenna								
Antenna beam-width (3 dB) - X			40		٥			
Antenna beam-width (3 dB) - Y			40		٥			
Physical Properties								
Dimensions			52.5 × 40 × 11.5		mm			
Weight		_	20	_	g			

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