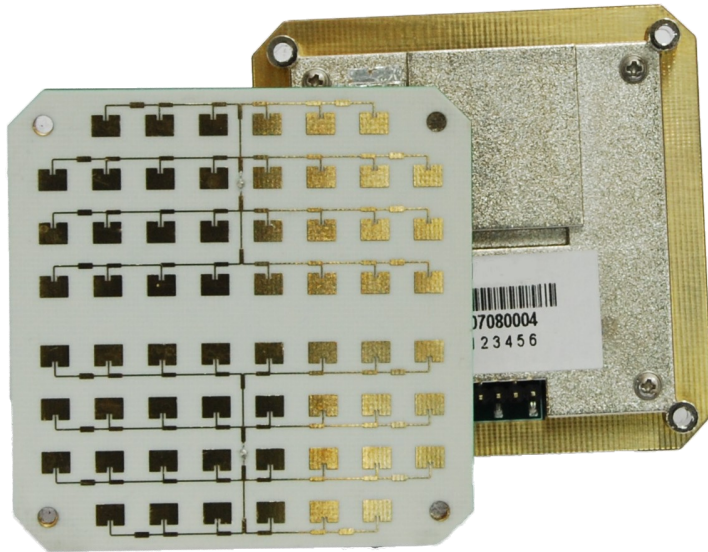


DF990

FMCW K-band Microwave Sensor



Features:

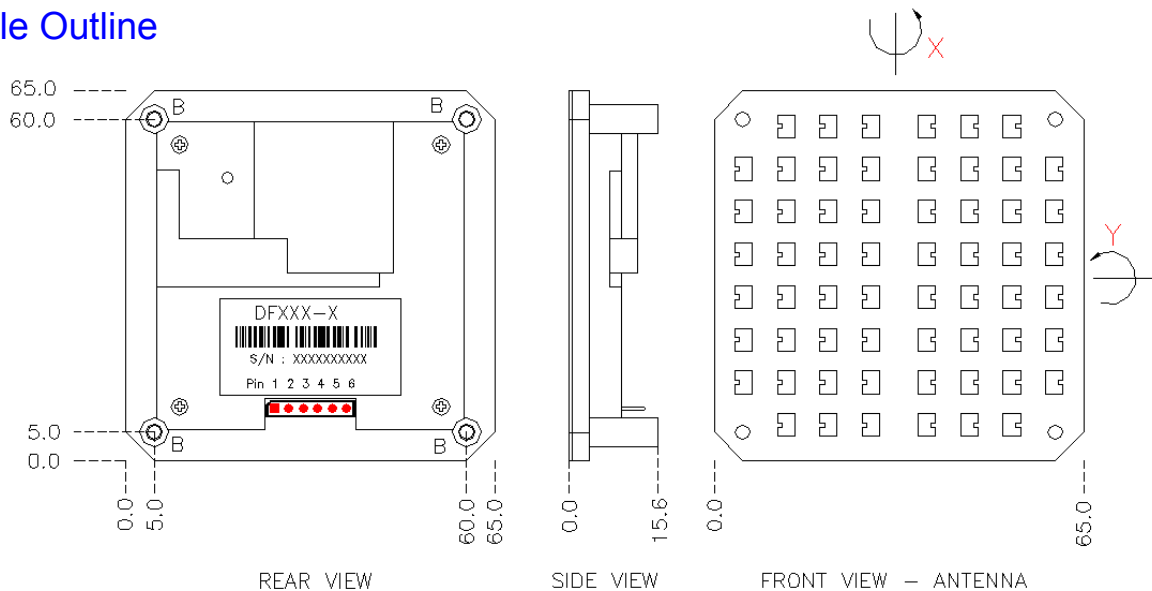
- FMCW function
- Low current consumption
- Flat profile & lightweight
- I and Q channels

Applications:

- Motion detection
- Traffic counting
- Speed measurement
- Distance measurement

The DF990 microwave sensor is a K-band bi-static FMCW transceiver. It consists of a low noise amplifier (LNA) and IF amplifiers for increased sensitivity. With I-Q channels and voltage controlled oscillator, it has the capability to measure distance and discriminate motion directions. It is suitable for traffic applications such as traffic counters and speed detectors.

Module Outline



Pin	Name	Description
1	$\bar{E}N$	Active low enable pin
2	V_{IN}	+5 V _{DC}
3	GND	Ground
4	I	Channel I
5	Q	Channel Q
6	V_T	Tuning voltage

Note 1: DF990 complies with EN 300 440.

Note 2: DF990 complies with FCC part 15.245.

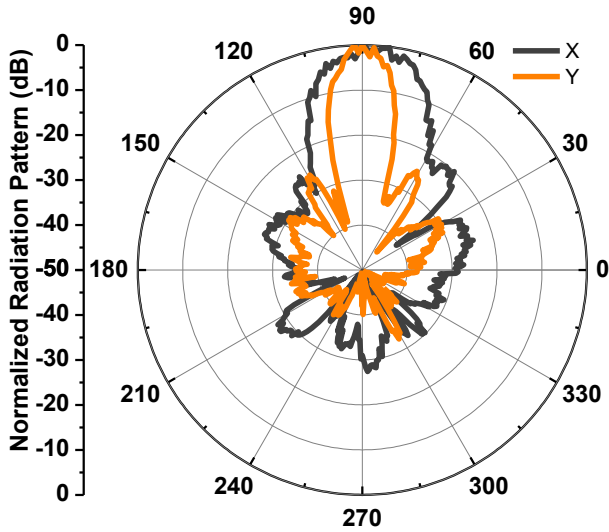
Note 3: Built-in voltage regulator ensures performance of the sensor is independent of voltage supply.

I. All dimensions are in mm.

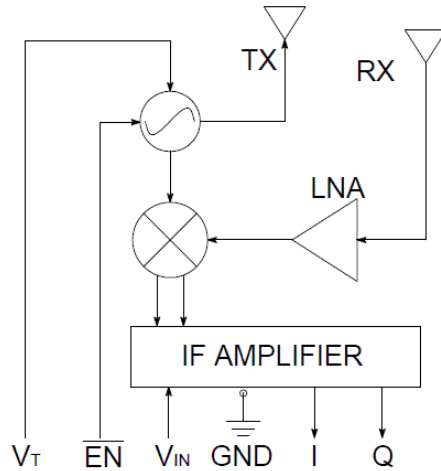
II. Mounting hole (B) is compatible with M3 self-tapping screw or M2 screw with nut.



Antenna Beam Pattern



Block Diagram



Technical Specifications

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

Parameter	Remarks	Min	Typical	Max	Units
Operating Conditions					
Supply voltage, V_{IN}		3.6	5	9	V_{DC}
Current consumption	\overline{EN} (on/off)		45/1	60/2	mA
Operating temperature		-40		80	°C
Tuning voltage, V_T		1		12	V_{DC}
Modulation frequency			20K		Hz
Transmitter					
Operating frequency			24.00-24.25		GHz
Tuning slope			30		MHz/V
Radiated power (EIRP)			20		dBm
Spurious emission				-30	dBm
Receiver					
I&Q amplitude balance			0.5	3	dB
I&Q phase difference		70	90	110	°
IF amplifier gain			28		dB
IF amplifier bandwidth			180-150k		Hz
Antenna					
Antenna beam-width (3 dB) - X			24		°
Antenna beam-width (3 dB) - Y			12		°
Antenna sidelobe rejection			19		dB
Physical Properties					
Dimensions			65.0×65.0×15.6		mm
Weight			40		g