

User Manual IPM-224_F

Version 1.0 - 13.09.2011

designed
and manufactured
in Germany

Product Family

K-Band Transceiver

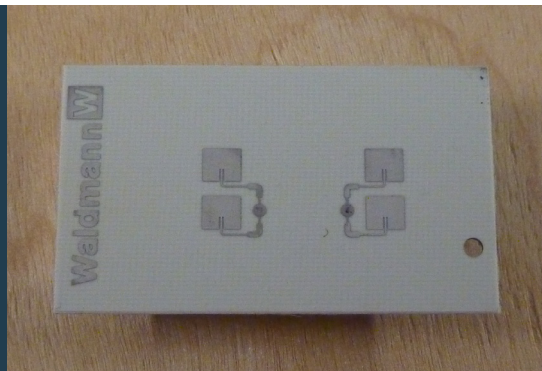
Applications

Lightning Applications

	Movement
	Velocity
	Direction
	Presence
	Distance
	Angle

Features:

- » radar-based motion detector
- » the IPM-224_F is designed for the US and Canadian market
- » advanced PHEMT-oscillator with low current consumption
- » IF-pre-amplifier, bandwidth limited for lowest noise performance
- » compact outline dimensions



Description

The IPM-224_F is a K-Band Transceiver with a split transmit and receive antenna.

This product is compliant to the restriction of hazardous substances (RoHS - European Union directive 2002/95/EG)

Certificates

InnoSenT GmbH has established and applies a quality system for: development, production and sales of radar sensors for industrial and automotive sensors.



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Electrical Characteristics

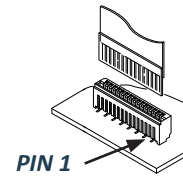
Parameter	Symbol	Min.	Typ.	Max.	Units	Comment
Oscillator						
transmit frequencies	f_{FCC}	24.075		24.175	GHz	IPM-224_F
temperature drift (frequency)	Δf		-1		MHz/°C	
output power (EIRP)	P_{out}	6	11	20	dBm	@ 25°C
Receiver						
IF-output	voltage offset	1.0	2.2	4.0	V	
IF-amplifier	bandwidth		DC - 10k		Hz	
	gain		20		dB	
signal level	S		29		mV	@ InnoSenT test setup
noise level	R		5	7	mV	@ InnoSenT test setup
S/N ratio	S/N		6			@ InnoSenT test setup
ESD stability		12			kV	according to DIN EN 6100-4-2
Antenna pattern						
full beam width @ -3dB	horizontal		70		°	azimuth
	vertical		70		°	elevation
full beam width @ -10dB	horizontal		135		°	azimuth
	vertical		135		°	elevation
side-lobe suppression	horizontal		10		dB	azimuth
	vertical		10		dB	elevation
Power supply						
supply voltage	V_{CC}	4.75	5.0	5.25	V	
supply current	I_{CC}		35	40	mA	IF-amp included
Environment						
operating temperature	T_{OP}	0	+23	+60	°C	
Mechanical Outlines						
outline dimensions	height		6.8			
	length		40.0		mm	
	width		23.5			

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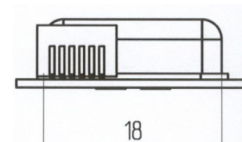
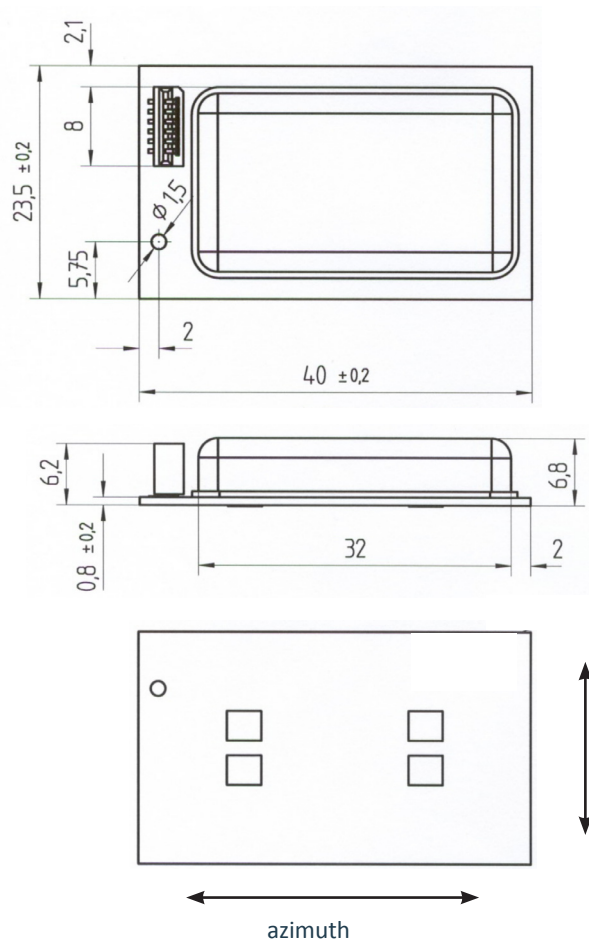
Interface

The sensor provides a 6 pin JST connector (06FMN-BMT-A-TF, SMD, vertical)

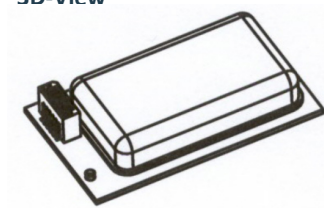


Pin #	Description	In / Out	Comment
1	not connected		
2	not connected		
3	V _{cc}	input	supply voltage
4	GND	input	analog ground
5	IF1	output	signal 1
6	not connected		

Mechanical Outlines



3D-View

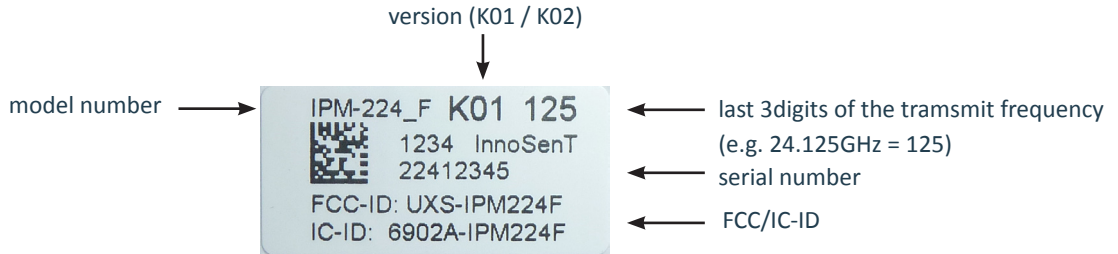


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Labeling

The adhesive label on the cover of the sensor provides the following information:



FCC approval

This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada.

Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Warning: Changes or modifications made to this equipment not expressly approved by InnoSenT GmbH may void the FCC authorization to operate this equipment.

Manufacturers of mobile or fixed devices incorporating IPM-224_F modules are authorized to use the FCC Grants and IC Certificates of the IPM-224_F modules for their own final products according to the conditions referenced in these documents. In this case, the FCC label of the module shall be visible from the outside, or the host device shall bear a second label stating contains FCC ID: UXS-IPM224F and contains IC: 6902A-IPM224F.

Approval

This Data Sheet contains the technical specifications of the described product. Changes of the specification must be in written form. All previous versions of this Data Sheet are no longer valid.

The technical specifications of this Data Sheet are approved by:



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