

Data Sheet

IPS-354

Version 1.7



The IPS-354 is a K-Band Transceiver with a split transmit and receive antenna.

FEATURES

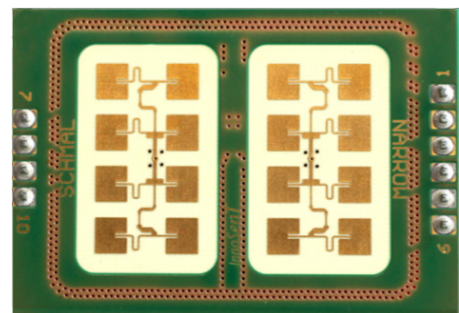
- radar-based motion detector working in the 24 GHz - ISM - Band
- split transmit and receive path for maximum gain
- IF-pre-amplifier, bandwidth limited for lowest noise performance
- stereo (dual channel) operation for direction of motion identification
- compact outline dimensions

APPLICATIONS

- Door Opener
- Industrial Applications

PRODUCT FAMILY

K-Band Transceiver



CERTIFICATES

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

See more information on our quality standards at:
<https://www.innosent.de/certifications/>

ADDITIONAL INFORMATION

This is an InnoSenT Standard Product. Changes will not be notified as long as there is no impact on form, fit or specified function of the product described within this data sheet.

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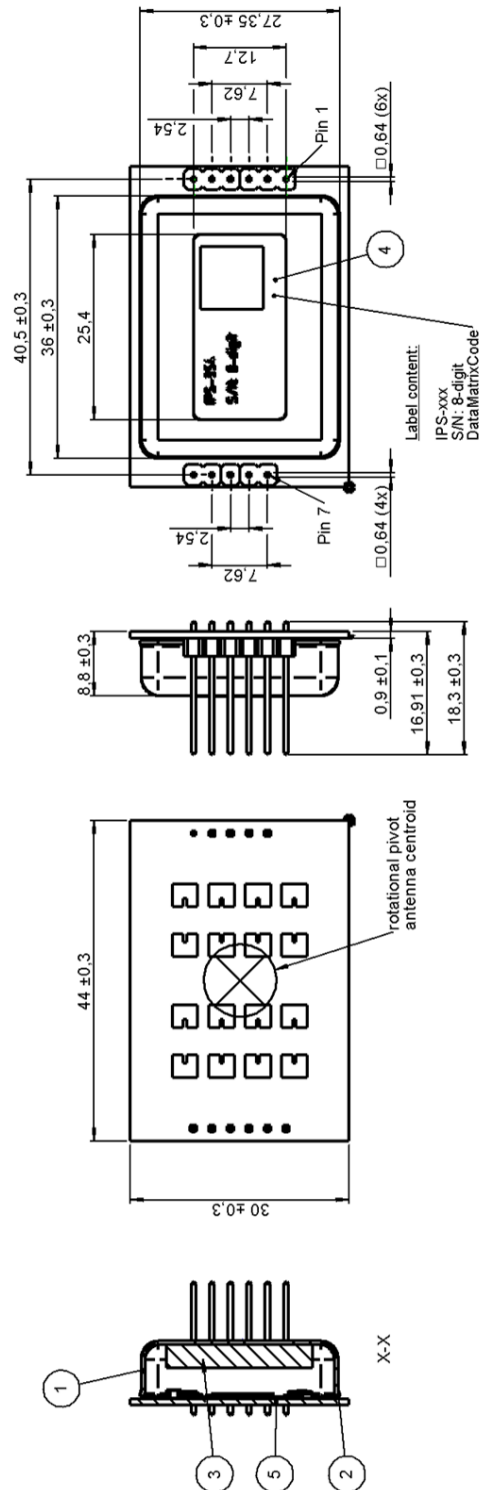
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1. PARAMETERS

PARAMETER	CONDITIONS	SYMBOL	MIN	TYPICAL	MAX	UNIT
Transmitter						
Transmit frequencies	frequency band for US and EU	$f_{\text{IPS-354}}$	24.150		24.250	GHz
Oscillator temperature drift (frequency)	-30 °C ... + 60 °C			- 400		kHz/°C
Output power (EIRP)		P_{out}		11.7	12.7	dBm
Transmitter turn on time				10		µs
Antenna gain		G_A		12		dBi
Receiver						
Antenna gain		G_A		12		dBi
Conversion gain		G_c	22	27	35	dB
IF-Bandwidth (-3dB)		B	DC		60	kHz
IF output impedance		Z_{IF}		100		Ω
IF-signal amplitude (RMS)	(RCS = 0.5 m², distance 10 m)	I_F		200		µV
Noise level (RMS)	100 Hz ... 60 kHz	$N_{1/2}$		35		µV
IF voltage offset		$I_{\text{DC-offset}}$	1	2.5	4	V
[I/Q] imbalance amplitude			-3		+3	dB
IQ-phase			60	90	120	°
Supply voltage		V_{cc}	4.25	5.0	5.75	V
Supply current—active	enable = low	I_{cc}		48	60	mA
Supply current—inactive	enable = high	$I_{\text{cc,off}}$		200	500	µA
Environment						
Operating temperature		T_{OP}	-30		+60	°C
Storage temperature		T_{STG}	-30		+60	°C
Mechanical Outlines						
Outline dimensions	compare drawing	Height Length Width		8.3 (19) 44.0 30.0		mm

2. MECHANICAL DRAWING

i Note: All dimensions in mm



3. INTERFACE

The sensor provides a 2.54 mm grid, single row pin header (square pin  0.635 mm).

PIN	DESCRIPTION	IN/OUT	COMMENT
1	d.n.c.		Do not connect
2	Enable	Input	Active low, the enable pin is used to switch off the power supply of the transceiver Enable on: 0 – 0.8 V Enable off: 2.8 – 3.3 V
3	V _{cc}	Input	Supply voltage, 5 V +/- 15 %
4	GND	Input	Analog ground
5	IF1	Output	Signal I (nphase)
6	IF12	Output	Signal Q (uadrature)
7	d.n.c.		Do not connect
8	d.n.c.		Do not connect
9	GND	Output	Analog ground
10	d.n.c.		Do not connect

4. LABEL DESCRIPTION

IPS-354

S/N: 12345678

IC: 6902A-IPS354

FCC ID: UXS-IPS354

InnoSenT




Model Name

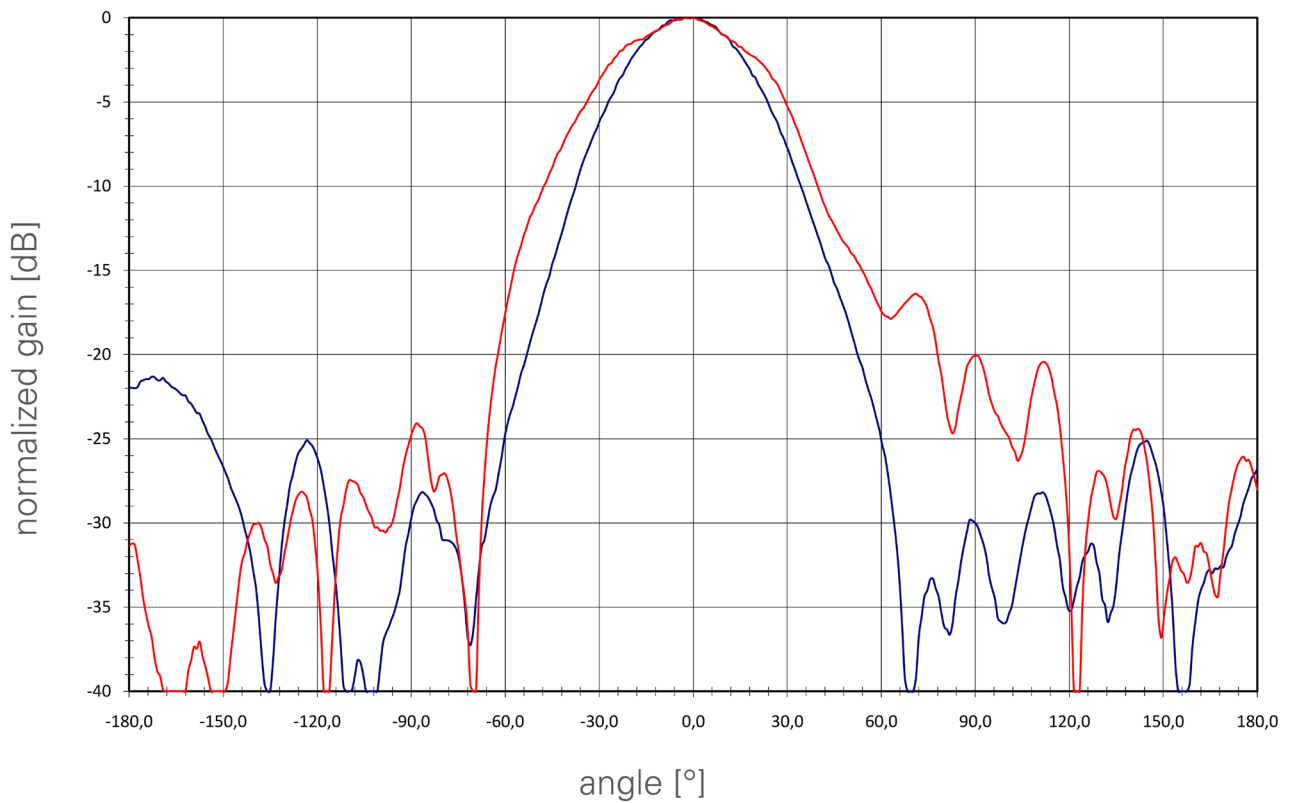
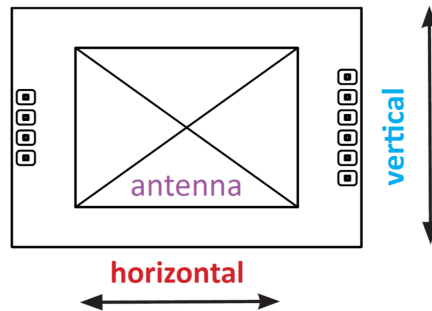
Unique Serial Number

ISED ID

FCC ID

5. ANTENNA PATTERN

Antenna orientation:



PARAMETER	SYMBOL	TYPICAL	UNITS
Full beam width @ -3 dB	Horizontal	45	°
	Vertical	38	°
Side-lobe suppression	Horizontal	15	dB
	Vertical	20	dB

6. FCC & ISED COMPLIANCE

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s) and complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage.
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

FCC §15.21

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

FCC §15.105

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

RF Exposure

This equipment complies with FCC and ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

Ce transmetteur ne doit pas être placé au même endroit ou utilisé simultanément avec un autre transmetteur ou antenne.

7. DISPOSAL



The device is to be disposed of according to the European Community Directive 2012/19/EU on waste electrical and electronic equipment. Devices must not be disposed of with consumer waste.

For environmentally compatible recycling and disposal of the device, please contact a certified waste management company or send the device back to InnoSenT GmbH.

8. ROHS-INFO

This product is compliant to the restriction of hazardous substances (RoHS - European Union directive 2011/65/EU).

9. ESD-INFORMATION



This InnoSenT sensor is sensitive to damage from ESD. Normal precautions as usually applied to CMOS devices are sufficient when handling the device. Touching the signal output pins has to be avoided at any time before soldering or plugging the device into a motherboard.

10. NOTICE

The sensor uses Hydrocarbon based material which may change its dielectric properties when used in an oxidative environment. This may vary based on temperature. Therefore InnoSenT recommends evaluating this influence within the specific environment.

11. 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.

VERSION	DATE	COMMENT
1.7	2025-04-10	Updated Label Description and ISED Complicane
1.6	2021-06-01	Changes in electrical characteristics
1.5	2020-07-30	New Layout
1.4	2019-12-13	Update mechanical design
1.3	2019-06-12	Added electrical characteristics
1.2	2019-05-06	Transfer to Publisher
1.1	2019-02-19	Small changes in PIN description
1.0	2018-12-05	Initial release



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