

# Data Sheet IVS-565

Version 1.4 - 11.03.2016

designed and manufactured in Germany

## PRODUCT FAMILY

K-Band Transceiver

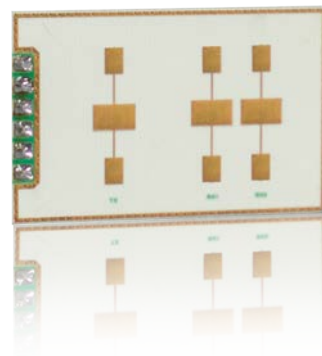
## APPLICATIONS

- Motion Detection
- Security Applications
- Industrial Applications

	Movement
	Velocity
	Direction
	Presence
	Distance
	Angle

## FEATURES:

- » K-Band VCO radar transceiver for FMCW/FSK applications
- » advanced PHEMT -oscillator with low current consumption
- » split transmit and receive path for maximum gain
- » two receiving antennas for monopulse operation
- » very small outline dimensions because of the integrated circuits



## DESCRIPTION

The IVS-565 is a K-Band VCO radar transceiver for FMCW/FSK modulation. It features an advanced PHEMT -oscillator for lowest power consumption. Ideal device for security applications.

## CERTIFICATES

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



## ADDITIONAL INFORMATION

InnoSenT Standard Product. Changes will not be notified as long as there is no influence on form, fit and within this datasheet specified function of the product.

## RoHS-INFO

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

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ELECTRICAL CHARACTERISTICS

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
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**Oscillator**

transmit frequencies		$f_t$	24.000		24.250	GHz
freq @ $V_{tune} = 2.5V$	@ 25°C	$f_{2.5V}$	24.100	24.125	24.150	GHz
varactor tuning voltage		$V_{tune}$	0.5		10	V
varactor input impedance	compare to schematic on page 4			10		kΩ
modulation input			0		150	kHz
tuning slope			40	50	100	MHz/V
frequency drift over temperature		$\Delta f_{temp}$		-1		MHz/°C
output power (EIRP)	@ 25°C	$P_{out}$		12		dBm
rise time of device					100	μSec

**Mixer**

type			Mono-Mixer			
principle			homodyne			
conversion loss				8		dB
noise figure				20		dB
IF-output		voltage offset	-300		300	mV

**Power supply**

supply voltage		$V_{CC_{oscillator}}$	4.75	5.0	5.25	V
		$V_{SS_{oscillator}}$	-3.4	-3.3	-3.2	V
supply current		$V_{CC_{oscillator}}$		35	50	mA
		$V_{SS_{oscillator}}$		1		mA

**Environment**

operating temperature		$T_{OP}$	-20		+60	°C
storage temperature		$T_{storage}$	-20		+70	°C

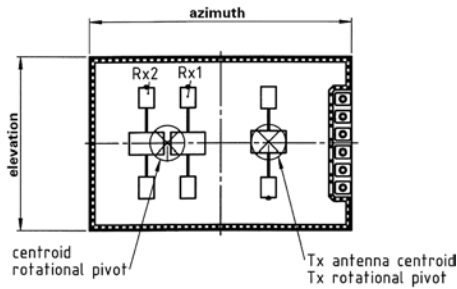
**Mechanical Outlines**

outline dimensions	compare to schematic on page 4	height length width	5.8(12.6) 38 25			mm
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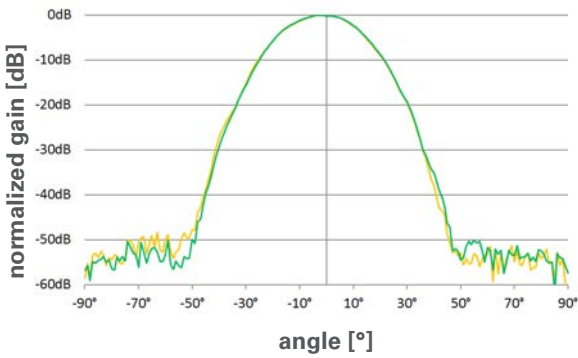
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ANTENNA ORIENTATION:

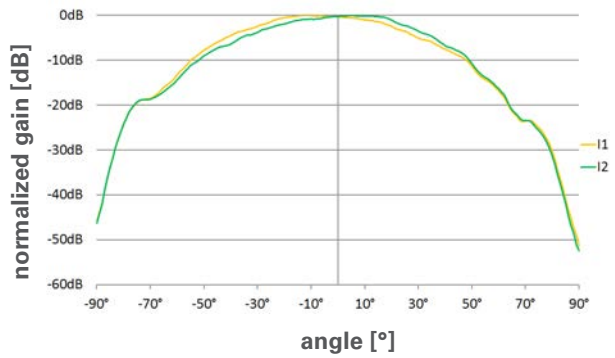


SYSTEM PATTERN

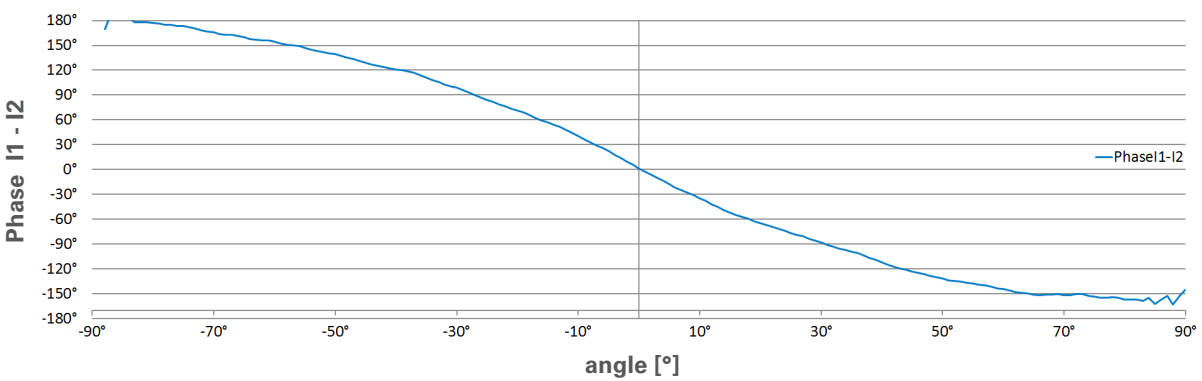
elevation



azimuth

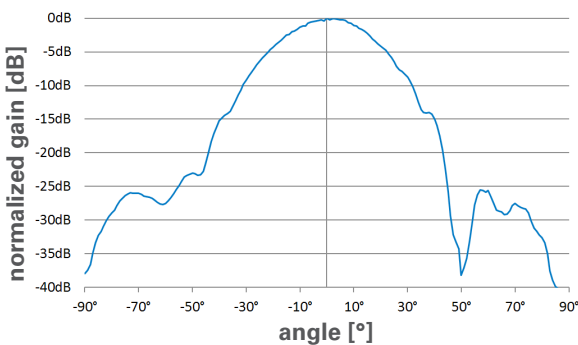


azimuth

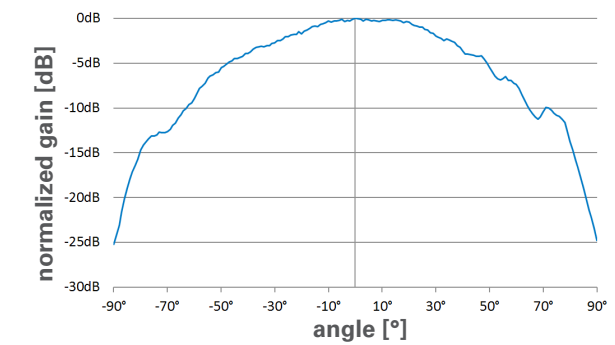


TX-ANTENNA PATTERN

elevation



azimuth

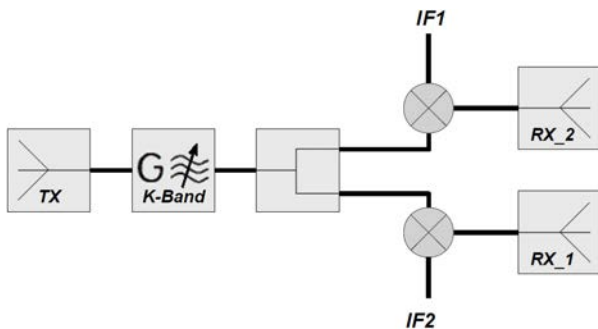


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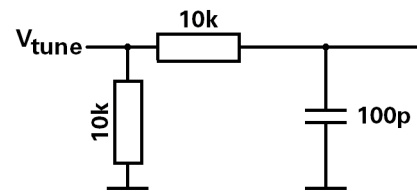
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PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
<b>system antenna pattern</b>						
system pattern (3dB width)	horizontal	azimuth		55		°
	vertical	elevation		27		°
side-lobe suppression	horizontal	azimuth		45		dB
	vertical	elevation		18		dB
squinting angle				0		°
antenna gain				8.5		dBi

BLOCK DIAGRAMM



VARACTOR INPUT



INTERFACE

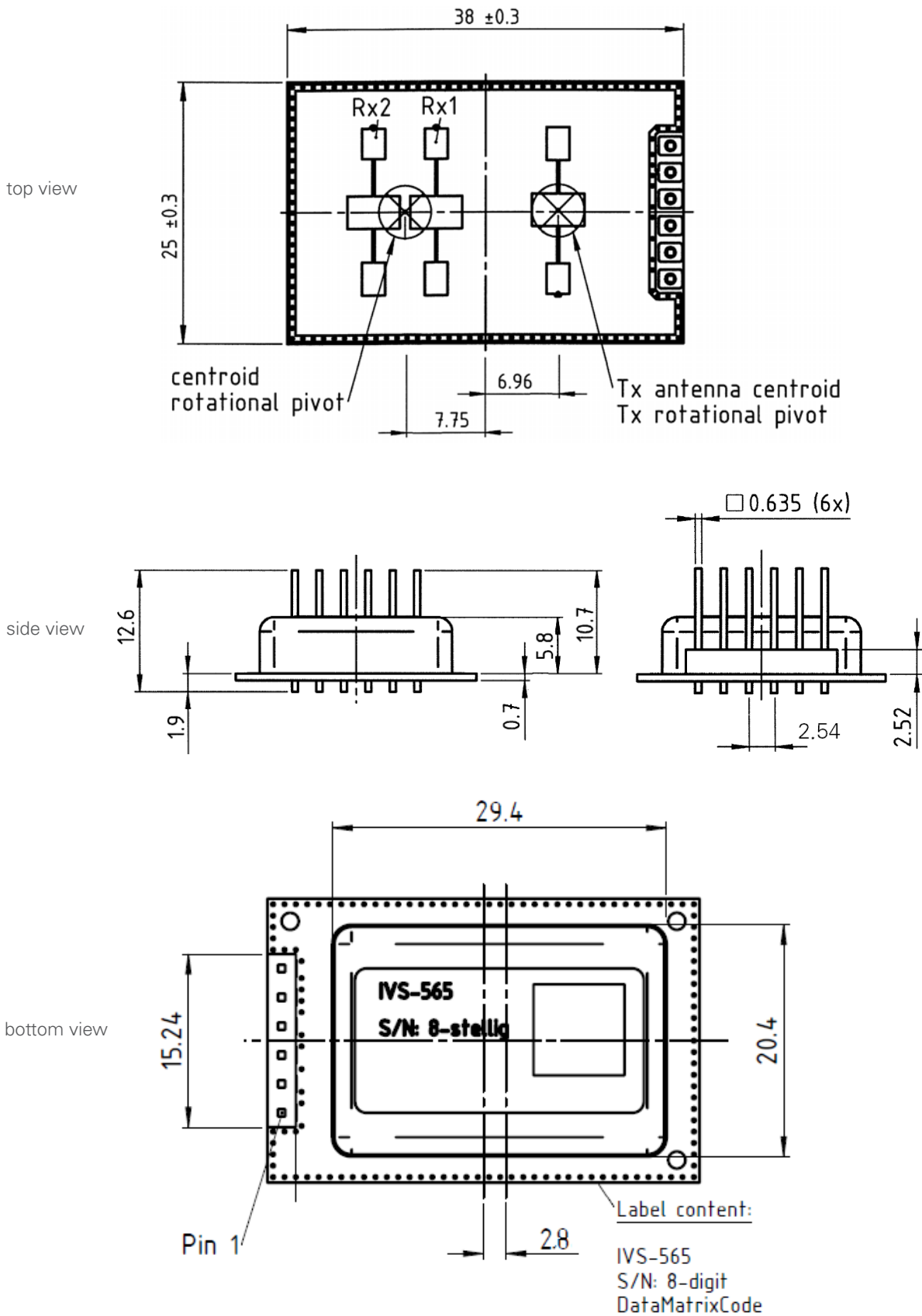
The sensor provides a 2.54mm grid, single row pin header (square pin 0.635mm)

PIN #	DESCRIPTION	IN / OUT	COMMENT
1	$V_{tune}$	input	
2	GND	input	
3	$V_{SS\_oscillator}$	input	Power supply oscillator (negativ)
4	$V_{CC\_oscillator}$	input	Power supply oscillator (positiv)
5	Signal I2	output	Signal Inphase
6	Signal I1	output	Signal Inphase

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MECHANICAL OUTLINES



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## 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.

## APPROVAL

This Data Sheet contains the technical specifications of the described product. All previous versions of this Data Sheet are no longer valid.

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.

VERSION	DATE	COMMENT
1.0	24.04.2014	initial release
1.1	17.07.2014	update RoHS information
1.2	07.05.2015	update Oscillator information
1.3	15.02.2016	small changes
1.4	11.03.2016	small changes

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