User Manual

VitaSense 1.5

60-64GHz

30.06.2023 v0.2

Doc. No.: WI-00000
Ver No.: 01
Ver Date: 00-MMM-2014

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Introduction

This document describes the RF system “VitaSense” for occupancy detection in vehicles. It covers sensors that are identified FCC ID: NSZVITA015 on the label.

Abbreviations

FMCW	Frequency Modulated Continuous Wave
MMIC	Monolithic Microwave Integrated Circuit
CAN	Controller Area Network
RF	Radio Frequency

General system description

VitaSense is a RF system for the primary use to detect persons left in vehicles but may also detect pets and other living beings. VItaSense provides this information to the vehicle’s warning systems. The VitaSense sensor is operating using the frequency modulated continuous wave radar concept (FMCW) and does not transmit any data. The VitaSense sensor is connected to a vehicle CAN bus.

Hardware

VitaSense sensor

The system transmits a frequency modulated signal, a low-power electromagnetic wave, that is then reflected by occupants or objects in the vehicle’s interior. As, due to their movement, occupants modify these reflected signals differently, the system can discriminate between them and inanimate objects.

RF-Transceiver

The MMIC is a system based on FMCW radar technology and it is operating in the 60 GHz to 64 GHz band.

Data Interface

The VitaSense sensor is connected to the vehicle via the CAN bus.

Connectors

The sensor connector mates with 4-pin female connector of the vehicle. The pin assignment of the mail connector (sensor side) is shown in Table 1 "Connector pinout".

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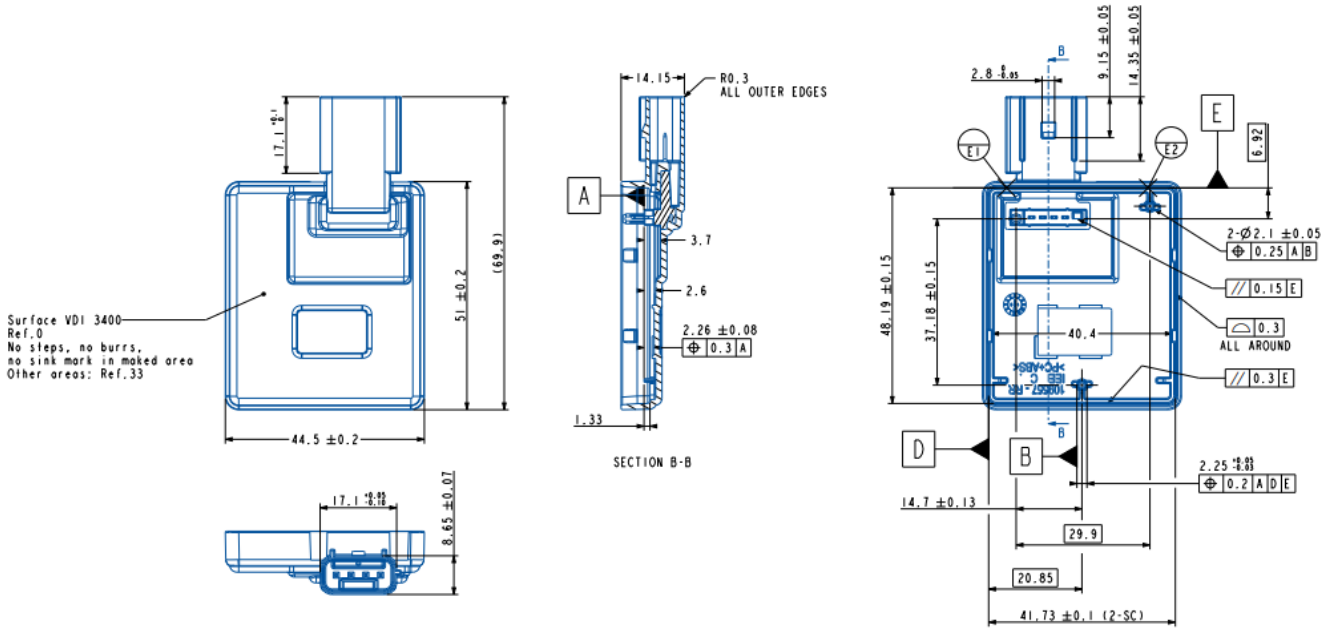
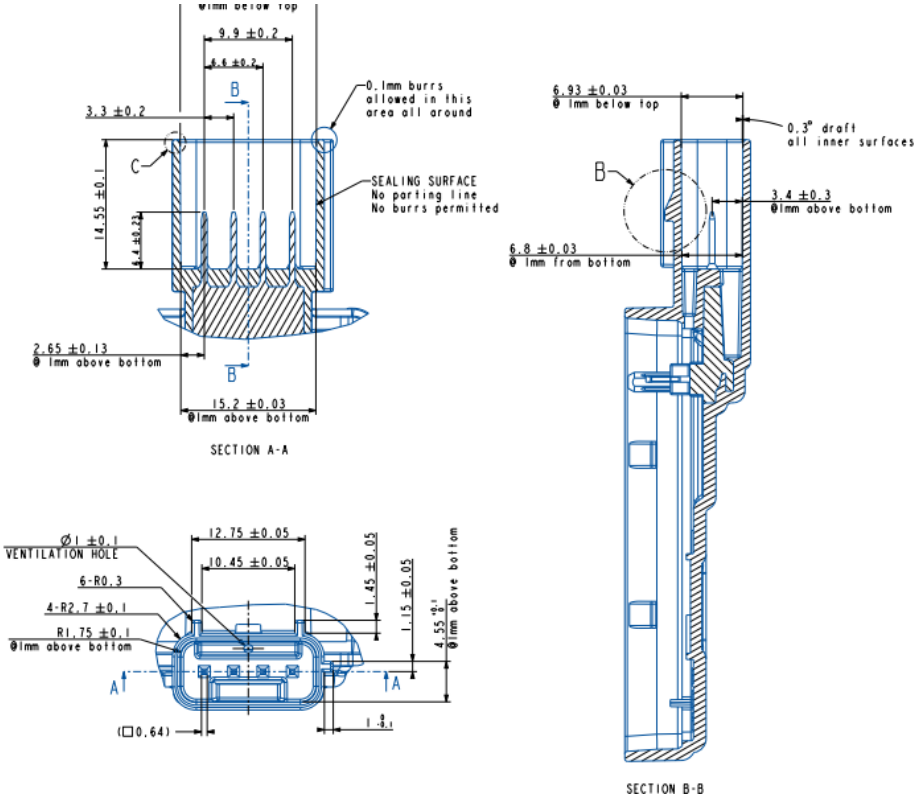


Figure 1 "Dimensions of the VitaSense sensor module"



Pin	
1	GND
2	CAN LOW
3	CAN HIGH
4	+V_Batt

Table 1 "Connector pinout"

Figure 2 "Connector dimensions"

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System integration and use cases

The VitaSense sensor is designed to be installed hidden behind the vehicle's headliner or behind other RF-suitable encapsulation or housing, with the antenna pointed at the observation area of interest in the vehicle's interior.

Declaration of conformity

Declaration of conformity for USA (FCC ID: NSZVITA015)

This device complies with Part 15 of the FCC rules. 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.

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

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