

Technical Description

2,4 GHz Radar Sensor IPS-149

Description of Block Diagram

Components:

VCO: A commercially available MMIC-Oscillator for the 2.4GHz ISM-band. The frequency is set by a resistor network. Temperature compensation is implemented using a NTC-resistor.

Filter: Low pass filtering is done by two 3dB-couplers, which are realized with lumped components (capacitors and inductors). There is an option for inserting an additional ceramic filter for further reduction of harmonics.

The AD8302 is an integrated RF-Gain and Phase Detector, which is able to measure amplitude and phase difference of two incoming RF signals.

Phase and amplitude are adjusted for optimum dynamic range.

The antenna is a single patch on a microwave substrate.

Principle of function:

The impedance of the antenna varies depending on the amount of water/ice on top of it.

The reflection coefficient is measured in amplitude and phase by comparing the reflected wave with the transmitted one.

The output voltages U_a and U_p are proportional to the amplitude resp. to the phase difference.