Use case brief

Motion sensing enabled by XENSIV™ radar IC

Infineon's smart radar IC solves the drawbacks of PIR motion sensors

Only turning on an application such as lighting when there is someone in a room is the smart way to save energy. Traditionally this is done with a Passive Infrared (PIR) sensor that detects the infrared radiation (IR) emitted by the human body, turning this into a voltage which, when it exceeds a threshold limit, turns on the light. Conversely turning it off when IR is no longer detected because the person has left. However, there are a few drawbacks to this. Its sensitivity drops significantly, when the ambient temperature is close to human body temperature, other heat sources can confuse it as well as direct exposure to sunlight. Furthermore, IR penetrating power is relatively poor and thus easily blocked by other objects such as office furniture, plants, clothes racks or just a thin film of dirt on the PIR lens, which requires regular maintenance.

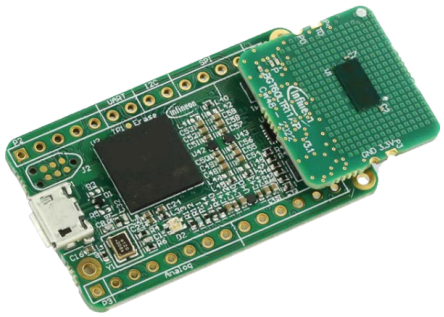
The XENSIV™ 60 GHz radar sensor solves all these problems to provide an accurate, easy-to-integrate motion sensor for your application. It sends out an RF signal and detects its echo from moving objects in the room. The signal is processed inside the chip itself to provide a direct output once a person has been detected within its pre-set range, which can be greater than for PIR-based solutions and much more sensitive towards smaller and slower movements. The signal hold time after target detection can also be adjusted.

With its range of up to 7 m and even beyond for large movements, the chip enables motion sensing for almost every indoor application such as lighting systems, home appliances, IP camera systems and other smart home devices such as thermostats or smart home assistants. In its default autonomous mode, the chip consumes less than 5 mW and can even be reduced to less than 2 mW. Thus it can be used inside many electric devices in order to turn them on or wake them up from an energy saving mode based on the movement of a nearby person.

The 60 GHz sensor is unaffected by the temperature challenges of PIR and has good penetration of non-conductive materials so the signals are not blocked. The latter also means that the solution can be discretely concealed as there is no need for the dome that a PIR requires, making motion sensing completely anonymous. The BGT60LTR11AIP is a completely autonomous 60 GHz radar sensor with Antennas in Package (AIP). No external microcontroller is required nor knowledge of RF or antenna design, making it a simple-to-implement, much smarter and powerful choice compared to a PIR sensor.

Use case's and product's benefits for your application

- Discrete as no PIR dome
- Greater detection range than PIR
- Tiny, fully integrated, motion sensing solution
- Includes antennas
- Easy to design in
- Very low power consumption
- No camera so no privacy issues and no complex video processing



Click here for full details on our BGT60LTR11AIP demo board

Lighting | Screen | Home appliance | Surveillance camera

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