

MLX90617

Far infrared temperature sensor with a narrow wavelength filter
Product Abstract

General description

1.1. Features & benefits

- Factory calibrated in wide temperature range:
 - -0°C...+125°C for sensor temperature
 - 70°C...+250°C for object temperature.
- Single zone
- SMBus compatible digital interface
- Customizable PWM output for continuous reading in EMC difficult surroundings
- 5V supply voltage
- Industry standard TO39 package
- Factory calibrated
- Small size

1.2. Application examples

- Measuring the temperature of cooking pots through the ceramic glass of an induction cooker
- Safety monitoring during the cooking process
- Automated recipe cooking
- Automatically controlled pot temperature

Available support & tools

- Application note (available on request)
- Reference module design
- www.melexis.com/technical-inquiry

1.3. Description

The MLX90617 is a high-precision infrared thermometer designed for non-contact temperature measurements. It features a specific wavelength filter that enables it to detect infrared radiation from hot objects behind ceramic glass, making it suitable for applications like induction cooktops. This sensor integrates two Melexis-developed chips within a single TO-39 package: the MLX81101 infrared thermopile detector and the MLX90302 signal conditioning ASSP. It comes factory calibrated for a wide temperature range, measuring ambient temperatures from -0°C to +125°C and item temperatures from 70°C to 250°C. The MLX90617 achieves high accuracy and resolution thanks to its low-noise amplifier, 17-bit ADC, and powerful DSP.

The sensor outputs data via PWM or SMBus interfaces, with the default power-on-reset setting configured for SMBus. It measures the average temperature of all objects in its field of view and includes an optical band pass filter for detecting radiation transmitted through ceramic glass. The MLX90617 is calibrated for an emissivity of 1.0 but can be adjusted for emissivity values between 0.1 and 1.0 without requiring recalibration with a blackbody. However, the accuracy may be influenced by thermal conditions such as nearby heat sources or objects that alter the sensor package temperature. This makes understanding the application environment critical for optimal performance.



Figure 1: MLX90617

MLX90617

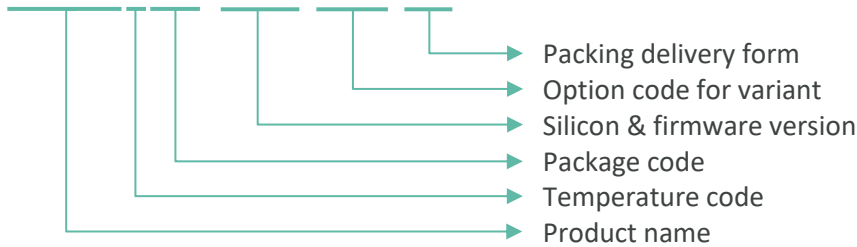
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Ordering information

Product code	Temperature	Package	Supply	TGC	FOV option	Packing
MLX90617KSF-ACC-000-TU	0 to 125 °C	TO-39	5 V	ON	35°	Tube

Table 1: Product codes

MLX90617KSF-ACC-000-TU



Application information

The MLX90617 is developed to conduct real-time measurements of the cookware temperature for induction cooker applications. The sensor module is installed in the induction cooker under the ceramic glass plate and can detect infrared radiation emitted by the bottom of the pot coming through the plate.

The sensor cannot measure the temperature of food inside the pot.

To enable the performance of the basic principle, the application uses two sensors, MLX90617 and a standard single pixel infrared temperature sensor MLX90614. For advanced measurement, it is recommended to add MLX75030 to the module.

The data from all sensors has to be processed by an external microcontroller to calculate the pot temperature by applying a special formula developed at Melexis.

Application features

- Complete solution for cookware temperature monitoring for induction cooktops without the need of a hole in the ceramic plate
- Safety enhancement during the cooking process
- Automated recipe cooking
- Precise glass temperature measurement and pot temperature calculation
- Market innovation leadership for induction cooker manufacturers