

INFRARED SENSING MODULE

OTM-420 series

Infrared Temperature Sensing Module

OTM-420

Revision Date: 2019/05/24 (Rev.02)

The OTM-420 is an infrared thermopile sensor with a thermistor for ambient temperature compensation and with an ASIC for digital signal processing. The OTM-420 senses the thermal radiation emitted by objects and converts this to high resolution digits of temperature reading.

Features and Benefit

- Factory pre-calibrated
- Output reading in °C unit directly
- Customizable PWM output
- Easy to integrate

Application Examples

- High precision non-contact temperature measurement
- Home appliance with temperature control

Absolute Maximum Ratings

| Parameter | Symbol | Min | Typ | Max | Unit | Remarks / Conditions |
|-----------------------|--------------------------------------|------|-----|-----|------|-------------------------------------|
| Storage temperature | T _{Storage} | -40 | | 100 | °C | Avoid storage in humid environment. |
| Power supply | V _{Max} | | | 6.5 | V | |
| I/O pin | V _{SCL} V _{SDA} | -0.3 | | 6.5 | V | |
| ESD (Human Body Mode) | ESD _H | | | 2 | kV | |
| ESD (Machine Mode) | ESD _M | | | 200 | V | |

Electrical and Mechanical Characteristic

| Parameter | Symbol | Min | Typ | Max | Unit | Remarks / Conditions |
|-------------------------------|--------------------|-----|--------------------------|-----|------|----------------------|
| Operating Conditions | | | | | | |
| Operating voltage | V _D | 4.5 | 5.0 | 5.5 | V | |
| Operating current | I _D | - | 2.0 | - | mA | VDD = 5.0 V |
| Sleep current | I _{Sleep} | - | 50 | - | μA | VDD = 5.0 V |
| Wake up time | T _{Wake} | | 1 | | Sec. | |
| Data Communication | | | | | | |
| Electrical interface | | | I2C | | | |
| Interface speed | | | 100 | | KHz | |
| Data refresh rate | | | 2 | | Hz | |
| Slave address | | | 10 | | hex | 7 bits addressing |
| Physical Interface | | | | | | |
| Physical connection interface | | | 292250-4 (AMP) connector | | | |

Thermometer Characteristics

| Parameter | Symbol | Min | Typ | Max | Unit | Remarks / Conditions |
|--|----------------------|-----|------|-----|------|---|
| Ambient temperature range *1 | T _{Amb} | -20 | | 85 | °C | The ambient temperature display range can be up to 100°C. |
| Object temperature range | T _{Obj} | -20 | | 420 | °C | |
| Resolution of T _{Amb} reading | T _{Res_amb} | - | 0.01 | - | °C | T _{Amb} = 25°C |
| Resolution of T _{Obj} reading | T _{Res_obj} | - | 0.01 | - | °C | T _{Amb} = 25°C |

INFRARED SENSING MODULE

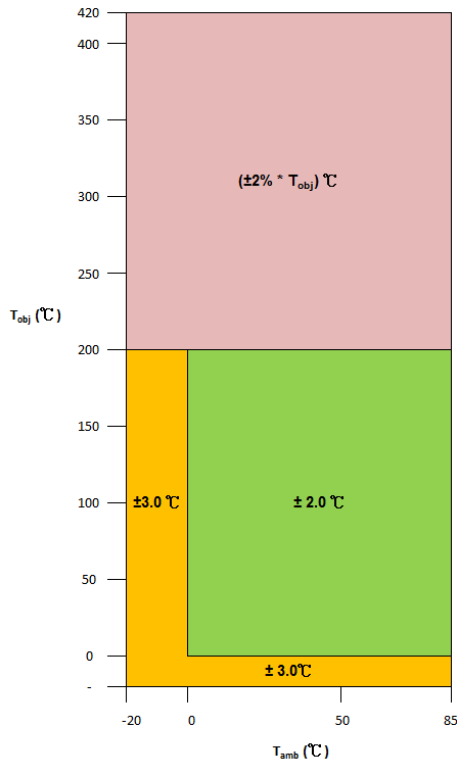
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| | | | | | | |
|-----------------------------------|-----------|----|-----------|---------------------|-------------|-------------------------------------|
| Accuracy of T_{Obj} reading **1 | T_{Acc} | -- | ± 2.0 | $\pm 2\% * T_{obj}$ | $^{\circ}C$ | Please see performance graph below. |
|-----------------------------------|-----------|----|-----------|---------------------|-------------|-------------------------------------|

Note

* 1: When ambient temperature is up to 100°C, the functionality is still workable. However, if the ambient temperature is over 85°C, the object temperature accuracy is not guaranteed.

Performance Graph



Note:

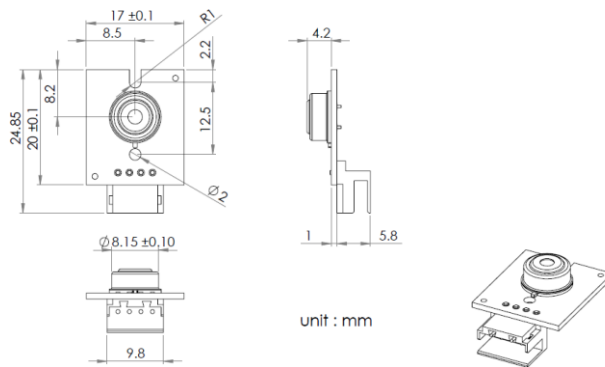
1. All accuracy specifications apply under settled isothermal conditions only. Furthermore, the accuracy is only valid if the object fills the FOV of the sensor completely
2. Test condition
 - Distance from sensor to blackbody: 3 cm
 - Blackbody size: 15 cm in diameter
 - Blackbody emissivity: 0.95

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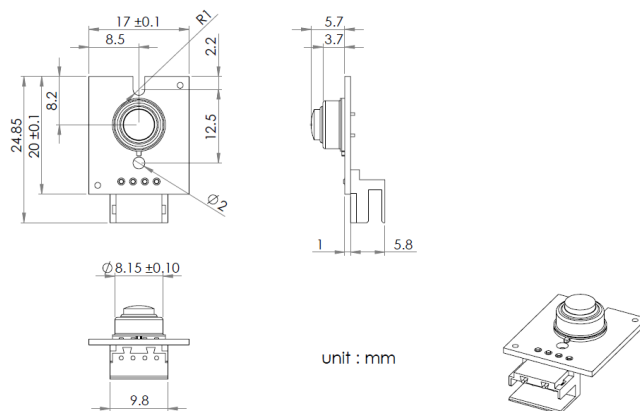
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Mechanical Drawing

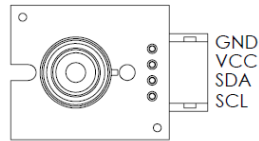
- D1 model



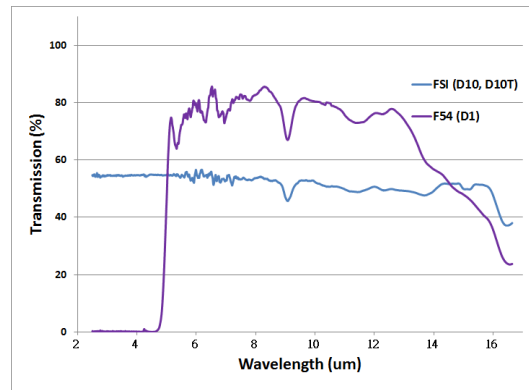
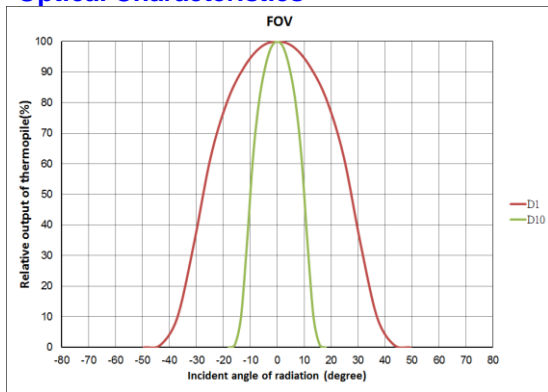
- D10 model



Connector Pin Assignment



Optical Characteristics



Ordering Information

- OTM-420 D1 FOV 55°, for general purpose application
- OTM-420 D10 FOV 20°, for general purpose application

Liability Policy

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