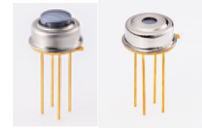


INFRARED SENSOR

OTI- 301 series

Digital Infrared Temperature Sensor OTI-301 T420

Revision Date: 2019/09/20 (Rev.02)



The OTI-301 series products combine an object temperature detection sensor, an ambient temperature detection sensor and an application-specific circuit in a compact TO-5 package. The OTI-301 series products are factory calibrated sensors with digital I2C output so the users can develop their own non-contact thermometer to accelerate time to market.

Features and Benefit

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

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 | |
| Operation temperature | T _{Operation} | -20 | | 85 | °C | |
| 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 | 3.2 | 3.3 | 3.4 | V | |
| Supply current (operation) | I _D | - | 2.0 | - | mA | V _{DD} = 3.3 V |
| Supply current (sleep) | I _{Sleep} | - | 0.7 | - | μA | V _{DD} = 3.3 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 |

Thermometer Sensing Characteristics

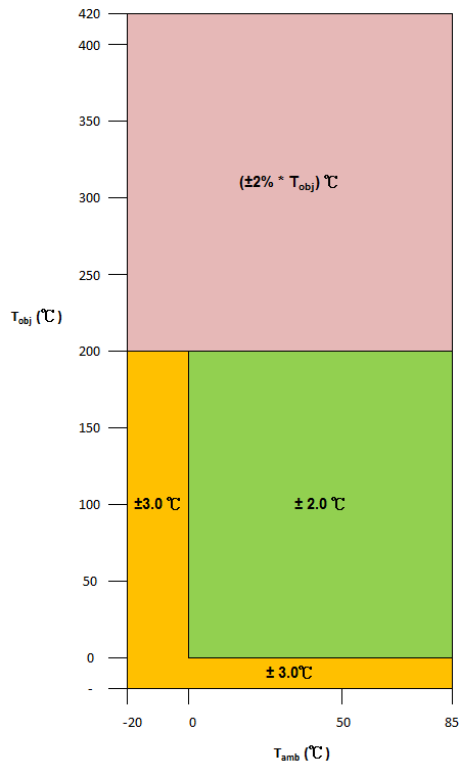
| Parameter | Symbol | Min | Typ | Max | Unit | Remarks / Conditions |
|--|----------------------|-----|------|-----|------|---|
| T420 | | | | | | |
| Ambient temperature range | T _{Amb} | -20 | | 85 | °C | The ambient temperature display range can be up to 100°C. |
| Object temperature range | T _{Obj} | -20 | | 420 | °C | |
| Resolution of T _{Amb} reading | T _{Res_amb} | - | 0.01 | - | °C | T _{Amb} = 25°C |

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| | | | | | | |
|--|----------------------|----|------|------------|----|-------------------------------------|
| Resolution of T _{obj} reading | T _{Res_obj} | - | 0.01 | - | °C | T _{Amb} = 25°C |
| Accuracy of TObj reading *1 | TAcc | -- | ±2.0 | ±2% * Tobj | °C | Please see performance graph below. |

Performance Graph of T420 model

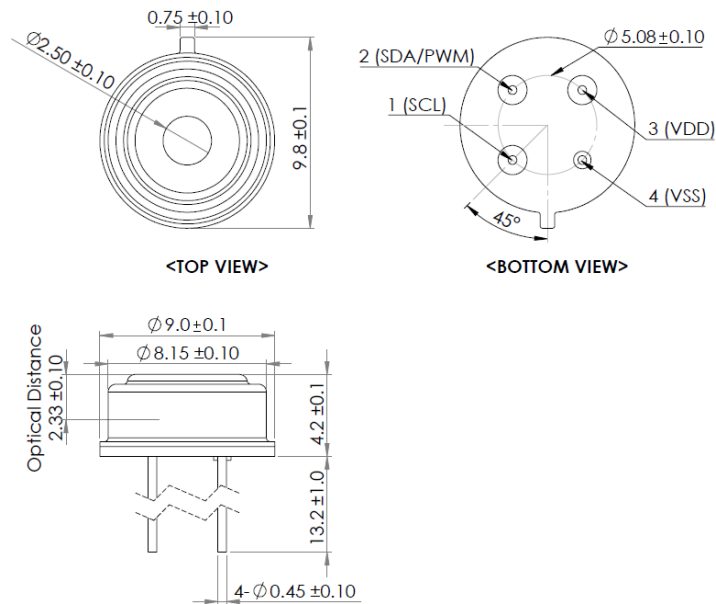


Note:

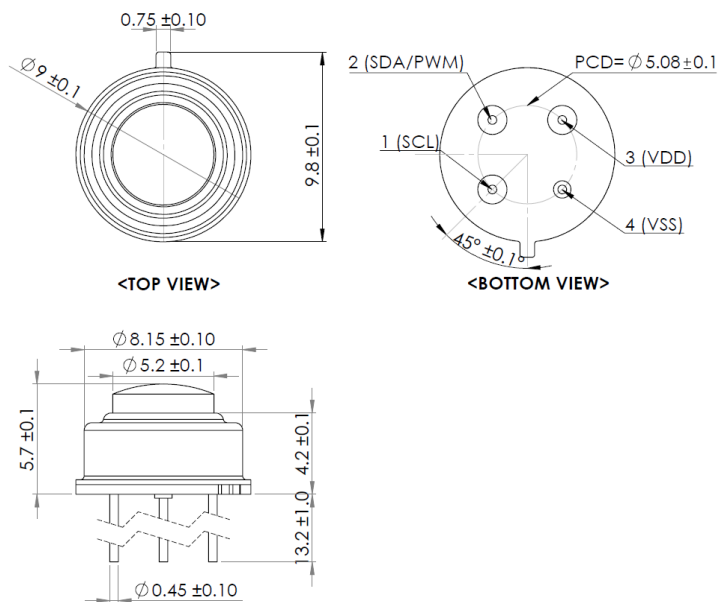
- All accuracy specifications apply under settled isothermal conditions only. Furthermore, the accuracy is only valid if the object fills the FOV of the sensor completely
- Test condition
 - Distance from sensor to blackbody: 3 cm
 - Blackbody size: 15 cm in diameter
 - Blackbody emissivity: 0.95

Mechanical Drawing

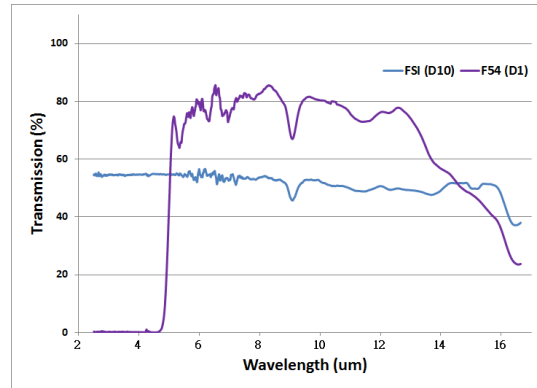
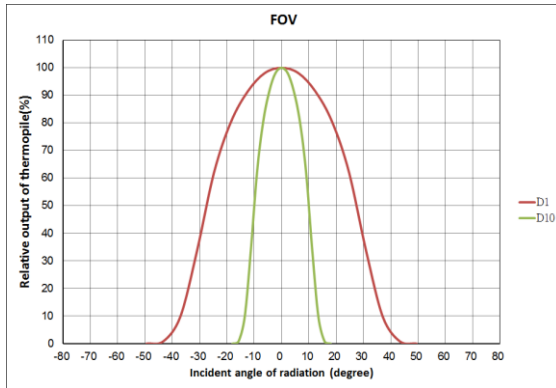
- D1 model



- D10 model



Optical Characteristics



Ordering Information

- OTI-301 T420 D1 FOV 55°

- OTI-301 T420 D10 FOV 20°



Liability Policy

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Customers considering the use of Oriental System Technology thermopile devices in special applications where failure or abnormal operation may directly affect human lives or cause physical injury or property damage, or where extremely high levels of reliability are demanded, are requested to consult with Oriental System Technology sales representatives before such use. The company will not be responsible for damage arising from such use without prior approval.