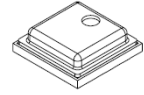


**Digital Infrared Temperature Sensor**
**OTI-502 T120**

Revision Date: 2019/08/26 (Rev.01)

**RoHS**  
COMPLIANT


The OTI-502 series products combine an object temperature detection sensor, an ambient temperature detection sensor and an application-specific circuit in a compact SMD package. The OTI-502 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

**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 <sub>Storage</sub>	-40		100	°C	
Operation temperature	T <sub>Operation</sub>	-20		85	°C	
Power supply	V <sub>Max</sub>			6.5	V	
I/O pin	V <sub>SCL</sub> V <sub>SDA</sub>	-0.3		6.5	V	
ESD (Human Body Mode)	ESD <sub>H</sub>			2	kV	
ESD (Machine Mode)	ESD <sub>M</sub>			200	V	

**Electrical and Mechanical Characteristic**

Parameter	Symbol	Min	Typ	Max	Unit	Remarks / Conditions
<b>Operating Conditions</b>						
Operating voltage	V <sub>D</sub>	3.2	3.3	3.4	V	
Supply current (operation)	I <sub>D</sub>	-	2.0	-	mA	V <sub>DD</sub> = 3.3 V
Supply current (sleep)	I <sub>Sleep</sub>	-	0.7	-	μA	V <sub>DD</sub> = 3.3 V
Wake up time	T <sub>Wake</sub>		1		Sec.	
<b>Data Communication</b>						
Electrical interface			I2C			
Interface speed			100		KHz	
Data refresh rate			2		Hz	
Slave address			10		hex	7 bits addressing

**Thermometer Sensing Characteristics**

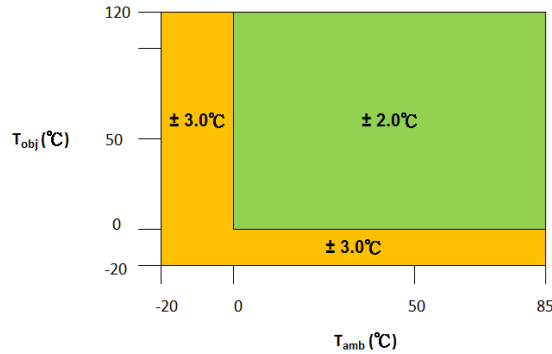
Parameter	Symbol	Min	Typ	Max	Unit	Remarks / Conditions
<b>T60</b>						
Ambient temperature range	T <sub>Amb</sub>	-20		85	°C	
Object temperature range	T <sub>Obj</sub>	-20		120	°C	
Resolution of T <sub>Amb</sub> reading	T <sub>Res_amb</sub>	-	0.01	-	°C	T <sub>Amb</sub> = 25°C
Accuracy of T <sub>Amb</sub> reading	T <sub>Acc_amb</sub>	-	0.4	-	°C	
Resolution of T <sub>Obj</sub> reading	T <sub>Res_obj</sub>	-	0.01	-	°C	T <sub>Amb</sub> = 25°C

## INFRARED SENSOR

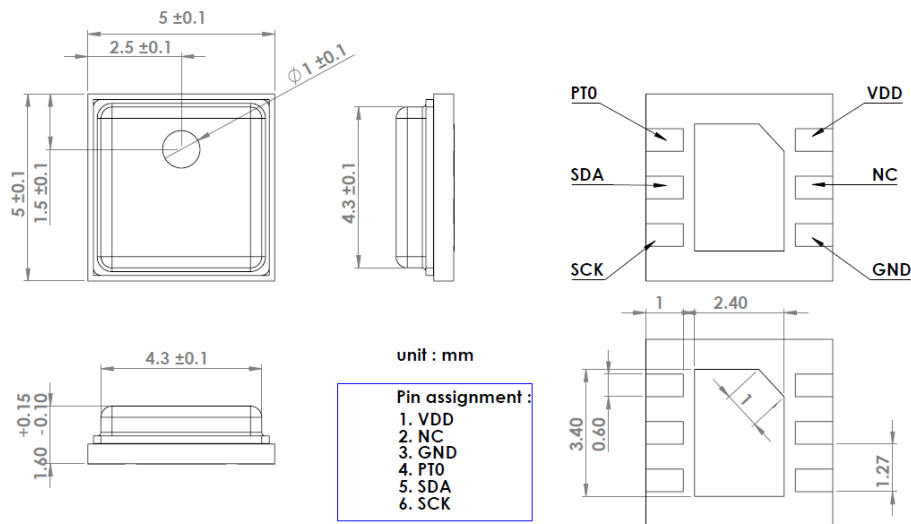
OTI- 502 series

Accuracy of T <sub>Obj</sub> reading	T <sub>Acc_obj</sub>	--	±2.0	±3.0	°C	Please see performance graph below.
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### Performance Graph of T120 model



### Mechanical Drawing



### Pin Assignment

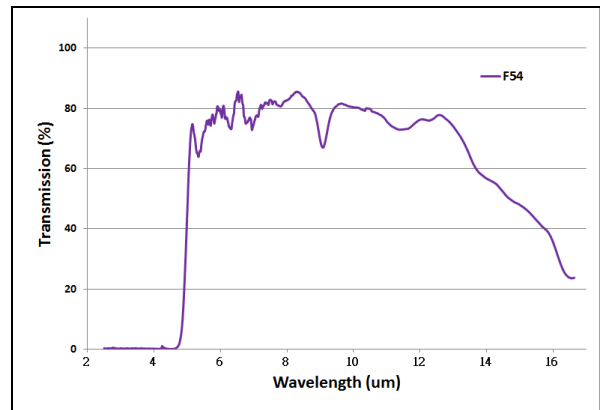
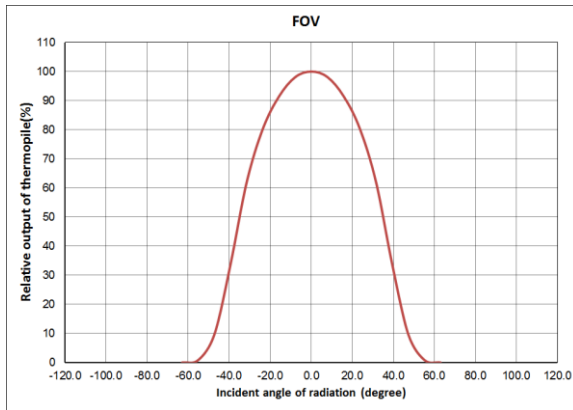
Pin #	Name	Direction	Description
1	VDD	POWER	Power
2	NC	n/a	No connection
3	GND	GND	Ground
4	PT0	Out	Reserved for alert output
5	SDA	In/Out	I <sup>2</sup> C data line
6	SCK	In	I <sup>2</sup> C clock line

### Optical Characteristics

## INFRARED SENSOR

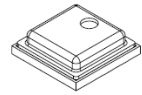
OTI- 502 series

Parameter	Symbol	Min	Typ	Max	Unit	Remarks / Conditions
Field of view	FOV	-	70	-	°	@50% target signal
Cut on wavelength		4.7	5.0	5.3	μm	@25°C, 50% transmittance



### Ordering Information

- OTI-502 T120      Object temperature detection range: -20°C ~ 120°C



### RoHS & Halogen Free Compliance

The OTI-502 T120 is RoHS compliant and meets the requirements of the current EU RoHS Directive 2011/65/EU & Directive (EU) 2015/863. Moreover, the OTI-502 T120 also meets the requirements of Halogen Free (IEC 61249-2-21). For more details, please contact our QA Department.

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### Liability Policy

The contents of this document are subject to change without notice. Customers are advised to consult with Oriental System Technology sales representatives before ordering.

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.