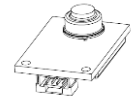


8x8 Thermopile Array Module

OTPA-8PM2-CI25

Revision Date: 2019/04/29 (Rev.05)



The OTPA-8PM2-CI25 is an 8x8 thermopile array module having a digital output through I2C interface for ease of infrared image processing. The application of OTPA-8PM2-CI25 includes occupancy sensing, gesture control, home security and smart appliance.

The OTPA-8PM2-CI25 is ideal for customers who require their products that can meet time to market with a moderate startup cost.

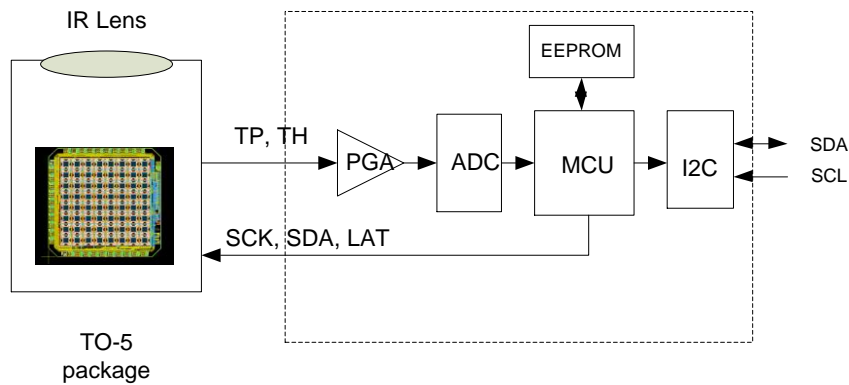
Features and Benefit

- Factory pre-calibrated
- Low cost and small footprint
- Integrated with infrared optics
- Output reading in °C unit directly

Application Examples

- Microwave oven
- Home appliances with temperature control
- Occupancy sensor for home security
- Gesture control for interactive appliance
- Intrusion detection

Functional Block Diagram



Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit	Remarks / Conditions
Storage temperature	T _{Storage}	-40		100	°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	4.5	5	5.5	V	-CI25 model
Operating current	I _D		2.4		mA	V _{DD} = 5.0 V
Sleep current	I _{Sleep}		0.13		mA	V _{DD} = 5.0 V
Wake up time	T _{Wake}		1		Sec.	
Data Communication						
Electrical interface			I2C			
Interface speed			100		KHz	
Slave address			10		hex	7 bits addressing
Physical Interface						
Physical connection interface			SM04B-GHS-TB(JST) connector			

Thermopile Array Characteristic

Parameter	Symbol	Min	Typ	Max	Unit	Remarks / Conditions
Effective number of pixels			64		pixels	8 x 8 = 64 pixels
NETD			0.18 0.16		°C	@2fps (default setting) @1fps
Frame rate			2		fps	
Field of view	FOV _X FOV _Y		48 48		degrees	

Thermometer Sensing Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Remarks / Conditions
Ambient Temperature Reading Characteristics						
Temperature range ^{*3}	T _{Amb_rge}	-20		85	°C	The ambient temperature display range can be up to 100°C.
Resolution of reading	T _{Amb_res}		0.01		°C	
Object Temperature Reading Characteristics						
Temperature range	T _{Obj_rge}	-20		120	°C	
Resolution of reading	T _{Obj_res}		0.1		°C	

Temperature Calibrated Range					
Object temperature accuracy ^{1,2}	T _{ACC}	--	±2.0	°C	T _{Amb} =25°C, T _{Obj} =80°C Distance to blackbody: 20cm Diameter of blackbody: 16cm Emissivity: 95%

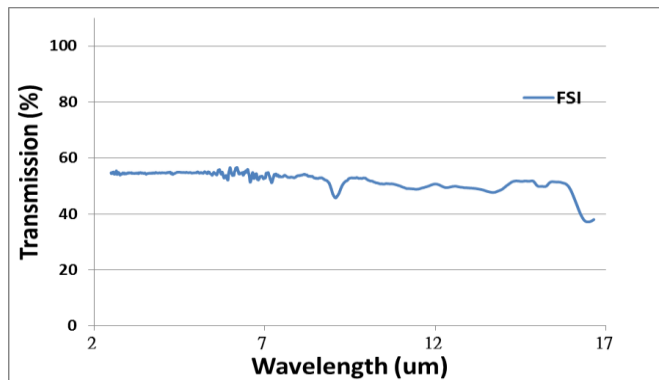
Note

- * 1: It is applicable to the sensor area of the center four pixels.
- * 2: The calibration distance can be customized to meet specific application.
- * 3: When ambient temperature is up to 100°C, the functionality is still workable. However, the object temperature accuracy is unreliable if the ambient temperature is over 85°C.

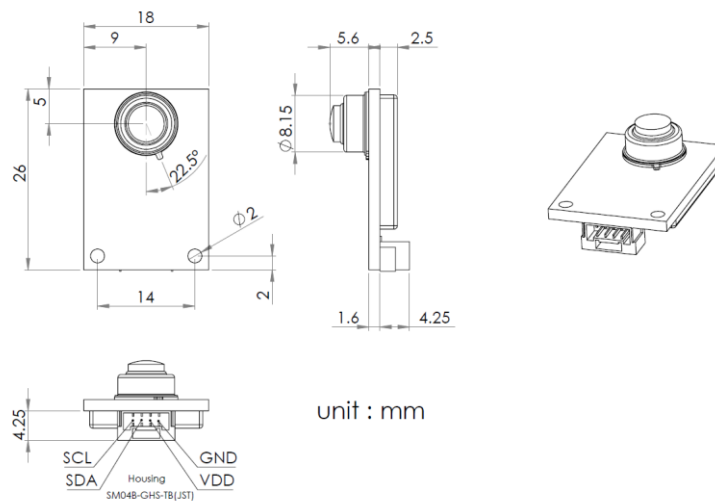
Data Communication

Please see application note “OTPA-AN-004 Data communication protocol for OTPA-8PM2” for more details.

Optical Characteristic

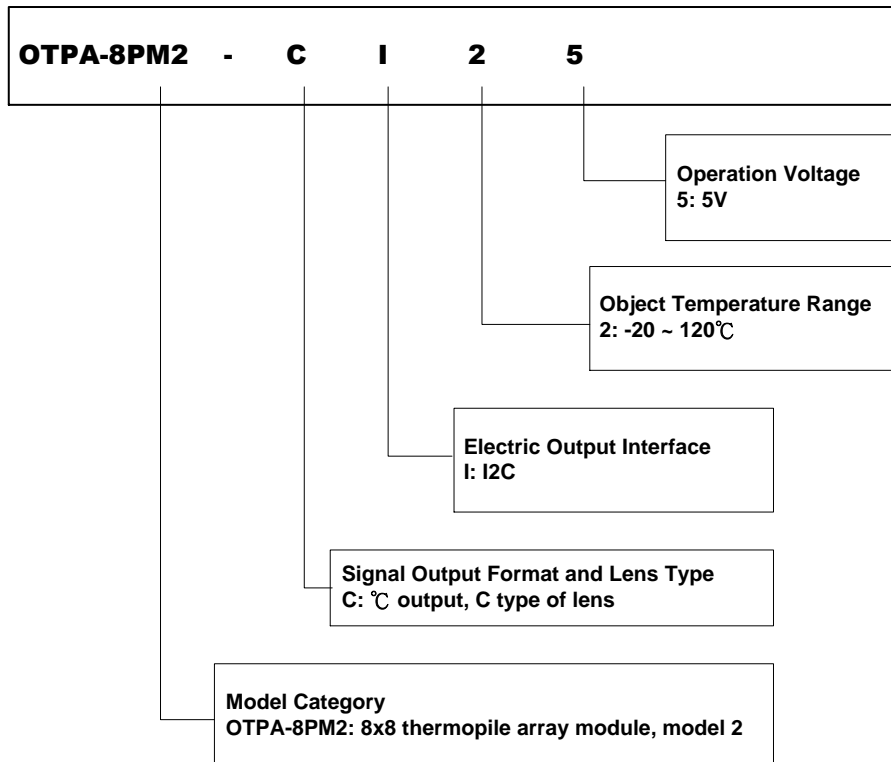


Mechanic Drawing and Pin Assignment



Ordering Information

OTPA model number example

-----
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.