

MEMS Non-Contact Thermal Sensor for Contactless Measurement

- Achieves the world's highest level^{*2} of SNR^{*1} by combining the in-house designed and manufactured ASIC and MEMS
- Direct temperature value output allows easy software design
- Variation of the number of elements (1 to 1024) and the temperature range (-40 to 200°C)

*1. SNR: Signal-to-Noise Ratio. Compares the level of a signal to the level of background noise.

*2. According to OMRON's research as of February 2021, except for D6T-32L-01A.

RoHS Compliant



Refer to *Safety Precautions* on page 18.



Ordering Information

Thermal Sensors

Element type	Model	Shape
1×1	D6T-1A-01	
	D6T-1A-02	
1×8	D6T-8L-09	
	D6T-8L-09H	
4×4	D6T-44L-06	
	D6T-44L-06H	
32×32	D6T-32L-01A	

Accessories (Sold separately)

Type	Model
Cable Harness	D6T-HARNESS-02

Others

MEMS thermal sensors can be connected to OMRON sensor evaluation boards.

The below 3 types of platform are applicable. Evaluation can be performed easily by connecting thermal sensor, evaluation board, and harness to the platform.

Platform	Evaluation Board	Harness for connection (Evaluation Board - D6T)	Sample Source Code
For Raspberry Pi ^{*1}	2JCIE-EV01-RP1	2JCIE-HARNESS-01	https://github.com/omron-devhub/d6t-2jcieev01-raspberrypi
For Arduino ^{*2}	2JCIE-EV01-AR1	2JCIE-HARNESS-01	https://github.com/omron-devhub/d6t-2jcieev01-arduino
For ESP32 Feather ^{*3}	2JCIE-EV01-FT1	2JCIE-HARNESS-01	https://github.com/omron-devhub/d6t-2jcieev01-arduino

For details of evaluation boards and sample source codes, refer to the following website.

(<https://components.omron.com/sensor/evaluation-board/2jcie>)

*1. Raspberry Pi is a registered trademark of the Raspberry Pi Foundation.

*2. Arduino is a registered trademark of Arduino LLC and Arduino SRL.

*3. Feather is a registered trademark of Adafruit Industries LLC.

Model Number Legend

D6T-□-□ □
(1) (2) (3)

(1) Number of elements

1A : 1 (1 × 1)

8L : 8 (1 × 8)

44L : 16 (4 × 4)

32L : 1024 (32 × 32)

(2) Viewing angle

01 : X direction, Y direction=58.0°

02 : X direction, Y direction=26.5°

09 : X direction=54.5°, Y direction=5.5°

06 : X direction=44.2°, Y direction=45.7°

01A : X direction, Y direction=90°

(3) Special Functions

H : High-temperature type

Non-display : Standard sensor

Ratings, Specifications, and Functions

Ratings

Item	Model	D6T-1A-01	D6T-1A-02	D6T-8L-09	D6T-8L-09H	D6T-44L-06	D6T-44L-06H	D6T-32L-01A
Power supply voltage		4.5 to 5.5 VDC						
Storage temperature range		-20 to 80°C	-40 to 80°C	-20 to 80°C (with no icing or condensation)		-10 to 60°C		-20 to 80°C
Operating temperature range		0 to 60°C	-40 to 80°C	0 to 60°C (with no icing or condensation)		0 to 50°C		-10 to 70°C
Storage humidity range		95% max.	95% max.	95% max. (with no icing or condensation)		85% max.		95% max.
Operating humidity range		20% to 95%	20% to 95%	20% to 95% (with no icing or condensation)		20% to 85%		20% to 95%

Characteristics

Item	Model	D6T-1A-01	D6T-1A-02	D6T-8L-09	D6T-8L-09H	D6T-44L-06	D6T-44L-06H	D6T-32L-01A
View angle *1	X direction	58.0°	26.5°	54.5°			44.2°	90°
	Y direction	58.0°	26.5°	5.5°			45.7°	90°
Object temperature output accuracy *2	Accuracy 1	±1.5°C max. Measurement conditions: Vcc = 5.0 V (1) Tx = 25°C, Ta = 25°C (2) Tx = 45°C, Ta = 25°C (3) Tx = 45°C, Ta = 45°C						Within ±3.0°C Measurement conditions: Vcc = 5.0 V Tx = 25°C, Ta = 25°C Central 16x16-pixel area
Current consumption		3.5 mA typical		5 mA typical				19 mA typical

Functions

Item	Model	D6T-1A-01	D6T-1A-02	D6T-8L-09	D6T-8L-09H	D6T-44L-06	D6T-44L-06H	D6T-32L-01A
Object temperature detection range *2		5 to 50°C	-40 to 80°C	5 to 50°C	5 to 200°C	5 to 50°C	5 to 200°C	0 to 200°C
Ambient temperature detection range *2		5 to 45°C	-40 to 80°C	5 to 45°C	5 to 45°C	5 to 45°C	5 to 45°C	0 to 80°C
Output specifications	Digital values that correspond to the object temperature (Tx) and reference temperature (Ta) are output from a serial communications port.							
Output form (Object temperature detection)	Binary code (10 times the detected temperature (°C))				Binary code (5 times the detected temperature (°C))	Binary code (10 times the detected temperature (°C))		
Output form (Reference temperature inside the sensor)	Binary code (10 times the detected temperature (°C))							
Communications form	I2C compliant							
Temperature resolution (NETD) *3	0.02°C (Data update cycle 100 msec)	0.06°C (Data update cycle 100 msec)	0.03°C (Data update cycle 250 msec)	0.03°C (Data update cycle 250 msec)	0.06°C (Data update cycle 300 msec)	0.06°C (Data update cycle 300 msec)	0.33°C *4 (Data update cycle 200 msec)	

*1. Refer to *Field of View Characteristics*.
*2. Refer to *Object Temperature Detection Range*.
*3. Reference data
*4. Taken to be the average value of the central 4 pixels.