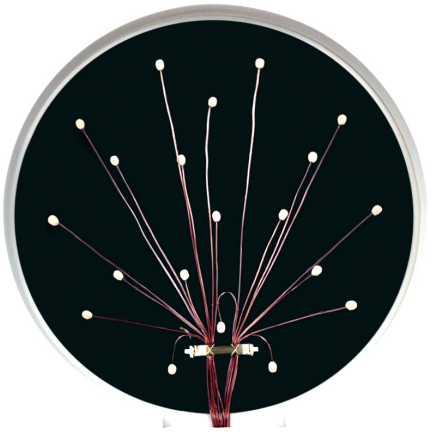
THERMOWAY



Wafer Temperature Sensor & Temperature Monitoring System

Thermocouple Wafer

RTD Wafer

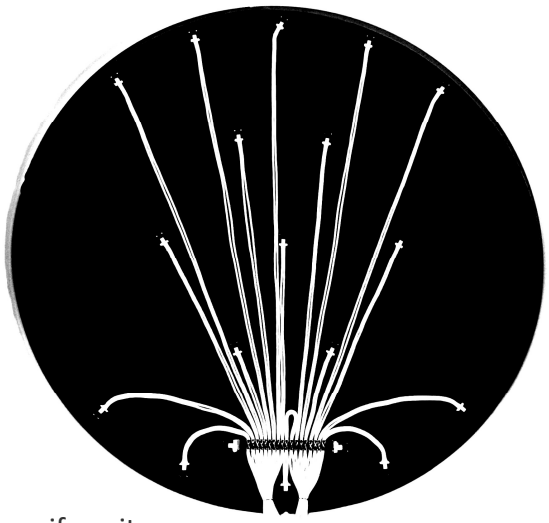
Temperature Monitoring System

Thermoway Industrial Co., Ltd.

www.thermoway.com

Thermocouple Wafer

THERMOWAY TC Wafer is used in semiconductor manufacturing processes to provide real-time process monitoring and environmental temperature control at each stage of the process, such as etching, photolithography, CVD, PVD, testing, front-end and back-end packaging, etc. We provide highly customized products, through sophisticated technology and complete customer support services, so we can meet the various needs of users.



☑ Temperature range：-100°C~1300°C
☑ High-level accuracy and reusability
☑ Strong thermal shock resistance
☑ Sturdy junction
☑ Certified calibration report
☑ Calibration service and maintenance consultation

Application

- Measure the temperature stable time and temperature uniformity
- Calibrate the accuracy of temperature setting
- Assess the impact of load capacity
- Measure the temperature distribution of wafer
- Inspect the thermal stress from the center to the edge of the wafer

Specification

Wafer Material	Silicon, Sapphire, SiC
Wafer Size	2” to 12”, and customized dimension
Sensor Type	K,R,S,T, PL II
Insulation Material	PFA, Teflon, Glass Fiber, Ceramics Fiber, Quartz Micro Tube

Operating Temperature

* we provide extra high accuracy wire

Type	Wire Diameter	Working Temperature	Accuracy
*R/S	0.127mm	0 to 1200°C	±0.6 or 0.1%
	0.254mm	0 to 1300°C	±0.6 or 0.1%
*K	0.127mm	-40 to 700°C	±1.1 or 0.4%
	0.254mm	-40 to 700°C	±1.1 or 0.4%
T	0.127mm	-100 to 400°C	±0.5 or 0.1%
T	0.254mm	-100 to 400°C	±0.5 or 0.1%
PL II	0.254mm	0 to 1200°C	±1.1 or 0.4%

1/2 Special

Extra High Accuracy Wire: K-Type & R-Type

More accurate measurement:

Tolerance/standard: ASTM E230 1/2 Special

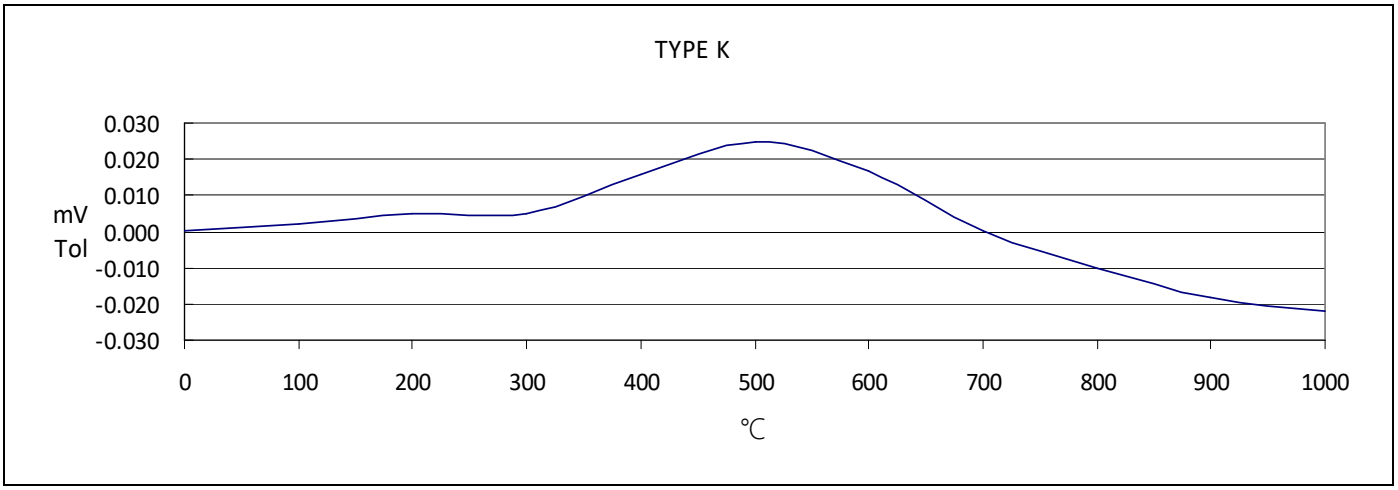
Inspection data:

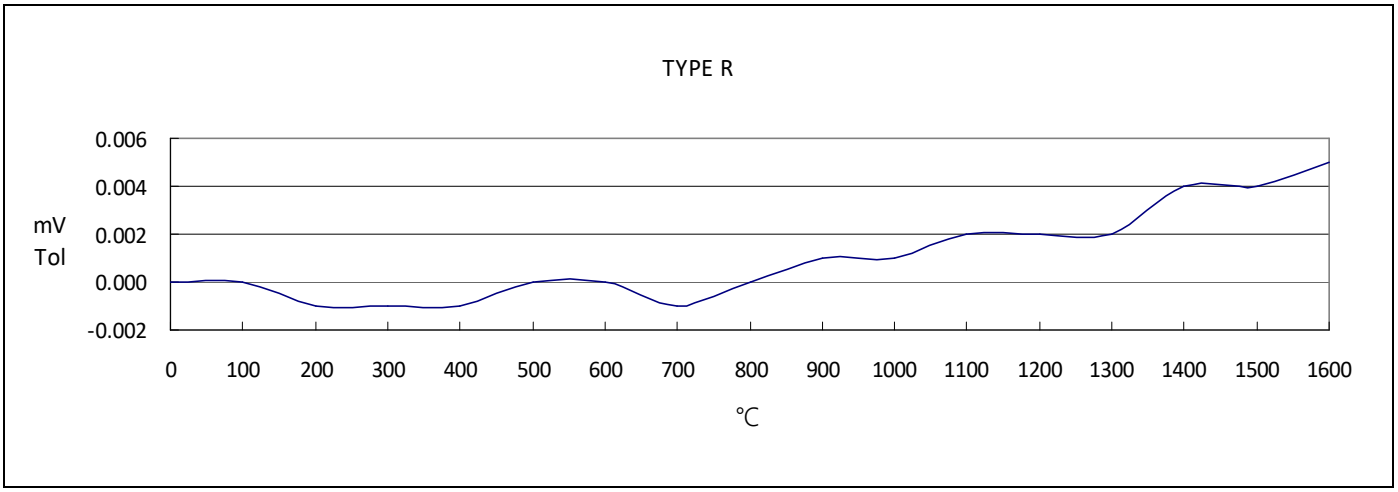
K-Type	Temperature ℃									
	100	200	300	400	500	600	700	800	900	1000
(A)	4.098	8.143	12.214	16.413	20.669	24.922	29.129	33.265	37.308	41.254
(B)	0.05	0.13	0.12	0.38	0.59	0.40	0.00	-0.24	-0.45	-0.56

(A) thermal EMF of type K [mV] ; (B) deviation of thermal EMF[℃]

R-Type	Temperature ℃															
	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
(C)	647	1468	2400	3407	4471	5583	6742	7950	9206	10507	11852	13231	14632	16045	17457	18856
(D)	0.00	-0.10	0.10	-0.10	0.00	0.00	-0.10	0.00	0.10	0.10	0.20	0.20	0.20	0.40	0.40	0.50

(C) thermal EMF of type R [mV] ; (D) deviation of thermal EMF[℃]

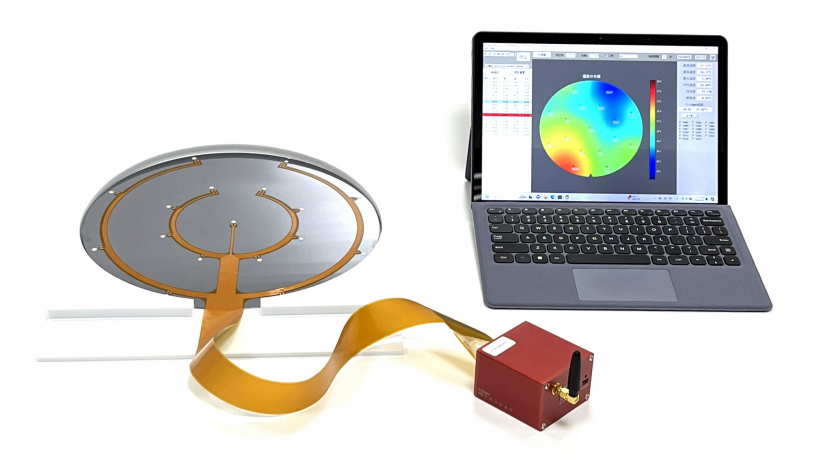




Temperature Monitoring System

If you need an integrated temperature monitoring system, we can provide you the solution.

THERMOWAY Temperature monitoring system **WaferBLE** connects to the data collector **TW-DC2301** through Bluetooth wireless communication to transmit real-time temperature data to the system. It can display and store records immediately, and provide various statistic data to assist the user in analyzing and statistics.



I. High Accuracy Data Collector

Data Collector **TW-DC2301** can instantly transfer the data to the system, offering the ultimate in resolution (0.01 °C) and accuracy(0.01°C). Along with temperature it can also be used to measure resistance and voltage.

Specifications:

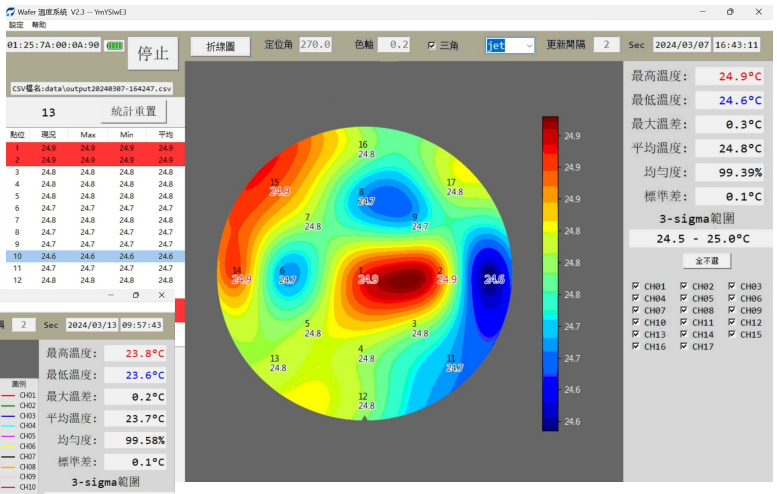
Model for TC Wafer: RTD Wafer:	TW-DC2301-TR TW-DC2301-RR
Number of Channels:	1 ~ 34 CH
Measurement of Accuracy:	±0.01°C
Temperature Range:	-200°C ~ 1700°C (Full Range 0.01°C)
Fastest Sampling Rate:	<=10HZ/CH
Communication:	modBus -RTU, Bluetooth
Sensor Connection:	THD0518-68CL
Digital Output:	4-20mA
Power Connection:	Mini USB Connector
Power Supply:	90~250VAC 50/60HZ
Operation Temperature:	-40°C ~70°C, Humidity <=95%RH
Dimensions:	L: 106 x W: 35 x H: 84mm
Safety Standard:	ROHS / REACH / CE

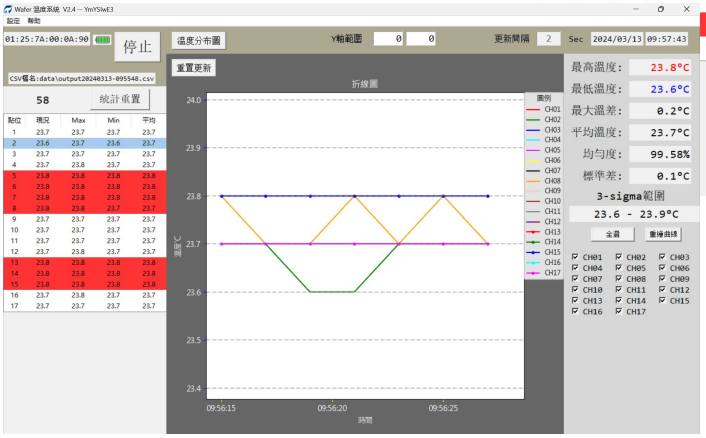
II. Temperature Monitoring and Analysis

WaferBLE can help you:

☑ Retrieve, report, analyze, and visualize data
☑ Embeddable results for real-time analytics and reporting
☑ Support data exploration and collaboration, enabling people of all skill levels to look rapidly at data from multiple perspectives
☑ Ideal tool for helping users improve the production efficiency of chip factories, and the yield rate of chip output
☑ With graphical analysis tools such as heat map and line chart, can help users easily understand the current status of process

- Quickly start operation
- User-friendly interface
- Real-time data analysis and record





- Multiple forms of expression
- Graphics and data Output
- Support multiple languages

III. Tablet

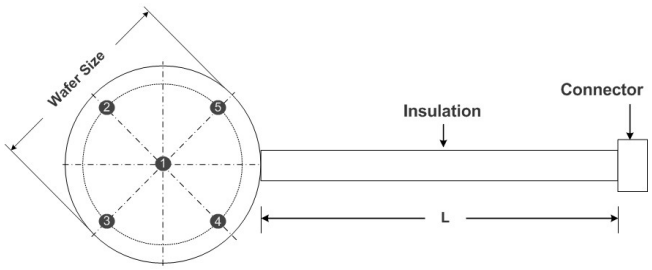
THERMOWAY provide configured tablet computer with pre-set system parameters for users, and they can operate directly after booting.

Microsoft Surface Pro 9, preloaded with Windows 11

Display:	Screen: 13” PixelSense™ Flow Display Resolution：2880 X 1920 (267 PPI)
Battery:	Surface Pro 9 (Intel/Wifi): Up to 15.5 hours of typical device usage
Dimensions:	L*W*H: 287*209*9.3mm, 879g
Network and connectivity:	Surface Pro 9 (Intel/Wifi): Wi-Fi 6E: 802.11ax compatible Bluetooth® Wireless 5.1 technology

Order your TC Wafer

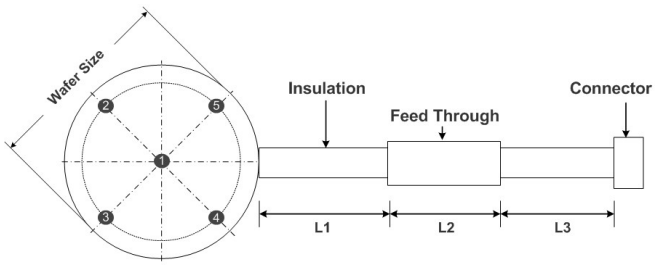
Model: SX-41



Order your wafer:

1. Wafer material and size (specify from 2” to 12”)
2. Working temperature range
3. Thermocouple type (choose K, T, R, S, PL II)
4. Number of measuring points
5. Length of L
6. Thermocouple wire diameter
7. Insulation material
8. Connector type (choose Miniature connector, U-Shape or D-Sub)
9. Calibration requirement

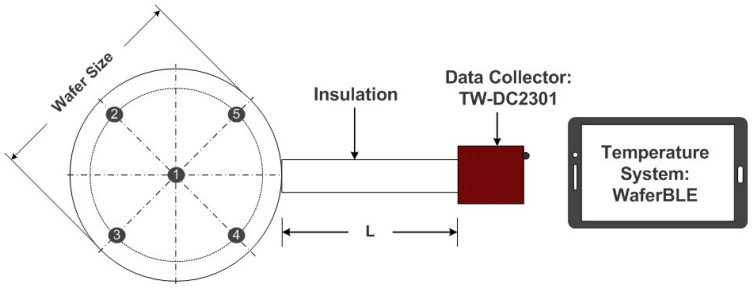
Model: SX-51



Order your wafer:

1. Wafer material and size (specify from 2” to 12”)
2. Working temperature range
3. Thermocouple type (choose K, T, R, S, PL II)
4. Number of measuring points
5. Length of L1, L2 and L3
6. Thermocouple wire diameter
7. Insulation material of L1 and L3
8. Connector type (choose Miniature connector, U-Shape or D-Sub)
9. Calibration requirement

Model: SX-41-BLE



Order your wafer:

1. Wafer material and size (specify from 2” to 12”)
2. Working temperature range
3. Thermocouple type (choose K, T, R, S, PL II)
4. Number of measuring points
5. Length of L
6. Thermocouple wire diameter
7. Insulation material: Polyimide coated copper
8. Calibration requirement

High Accuracy RTD Wafer

THERMOWAY RTD Wafer is designed for processes requiring high precision temperature measurements, such as photolithography, photoresist track system, wafer probers, and many other types for fabrication equipment.

Through the sophisticated integrated design of THERMOWAY team, it brings high accuracy and stability.

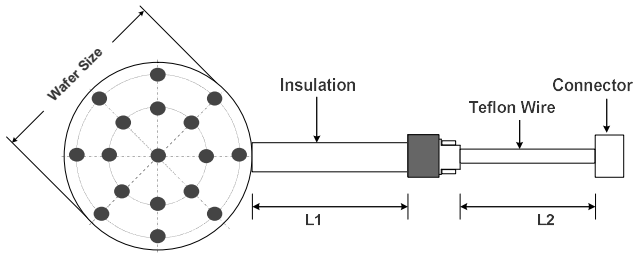
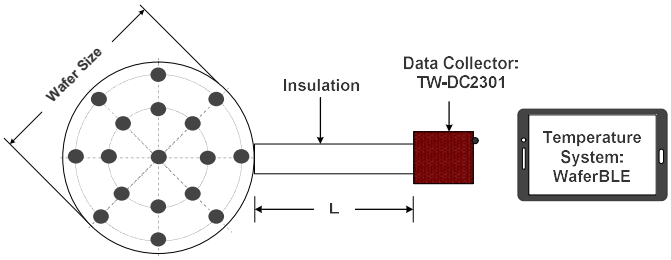
Application

- Measuring and recording wafer temperature of the process cycle: loading, heat-up, steady state, cool-down, and unloading.
- Improving wafer temperature control and uniformity, maintaining narrower process temperature windows.
- Managing production processes that have tight thermal performance specifications or providing inputs to SPC systems.
- Optimizing wafer processes during hardware or process development.
- Testing and benchmarking wafer fab equipment during final qualif ication, fab start-up, and requalification of repaired or upgraded systems.

Specification

Temperature Range:	-80°C to 260°C
Wafer Size:	6”, 8”, 12”
Element Type:	Thin Film Platinum
Element Resistance:	100Ω, 1000 Ω nominal at 0°C
Resistance Alpha Value:	0.00385
Max. Measurement Current:	200 μA
Accuracy with Calibration Correction:	±0.1°C absolute accuracy, ±0.03°C sensor to sensor accuracy Also available in customized high accuracy ±0.05°C at 0°C
Resolution:	0.01°C
Type of Connection:	4-wire resistance measurement with common current source return
Lead Materials:	Polyimide coated copper
Cable Construction:	Polyimide film flat cable section transitioning to a silicon rubber round flex cable.
Connection:	Bare wire, Miniature connector, U-Shape, or D-Sub

Order your RTD WAFER

Model: SX-42	Model: SX-42-BLE
	
Order your wafer: 1. Wafer size (choose: 6” 8” 12”) 2. Working Temperature Range 3. Element Resistance: (PT100, PT1000) 4. Number of Measuring Points 5. Type of Connection Wire: 4-wire 6. Length of L1: basic length: 500mm; customizable 7. Length of L2: 500~1000mm; customizable 8. Connector Type: Bare wire, Miniature connector, U-Shape or D-Sub 9. Calibration Requirement	Order your wafer: 1. Wafer size (choose: 6” 8” 12”) 2. Working Temperature Range 3. Element Resistance: (PT100, PT1000) 4. Number of Measuring Points: (1 to 17 points) 5. Type of Connection Wire: 4-wire 6. Length of L: basic length: 500mm; customizable 7. Calibration Requirement

Contact us
Thermoway Industrial Co., Ltd.
Taipei Headquater
7F, No.147 Tatung Rd. Sec. 2, Shijr, Taipei 22183, Taiwan
tel: +886-(0)2-8692-6689
email: info@thermoway.com