# **Specification of Thermoelectric Module TEC1-24108P**

# **Description**

The 241 couples, 54.4 mm × 54.4/57.0 mm size module which is made of selected high performance ingot to achieve superior cooling performance and greater delta T up to 70 °C, designed for superior cooling and heating up to 100 °C /200°C applications. If higher operation or processing temperature is required, please specify, we can design and manufacture the custom made module according to your special requirements.

### **Features**

- No moving parts, no noise, and solid-state
- Compact structure, small in size, light in weight
- Environmental friendly
- RoHS compliant
- Precise temperature control
- Exceptionally reliable in quality, high performance

# Application

- Food and beverage service refrigerator
- Portable cooler box for cars
- Liquid cooling
- Temperature stabilizer
- CPU cooler and scientific instrument
- Photonic and medical systems

# **Performance Specification Sheet**

Th(°C)	27	50	Hot side temperature at environment: dry air, N <sub>2</sub>	
DT <sub>max</sub> (°C)	70	79	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side	
U <sub>max</sub> (Voltage)	30.0	32.4	Voltage applied to the module at DT <sub>max</sub>	
I <sub>max(</sub> amps)	8.3	8.3	DC current through the modules at DT <sub>max</sub>	
Q <sub>Cmax</sub> (Watts)	159.7	172.0	Cooling capacity at cold side of the module under DT=0 °C	
AC resistance(ohms)	2.75	2.95	The module resistance is tested under AC	
Tolerance (%)	± 10		For thermal and electricity parameters	

# Geometric Characteristics Dimensions in millimeters

# Positive lead wire (Red) 18 AWG leads, PVC insulated Negative lead wire (Black) Negative lead wire (Black) See ordering option See ordering option See ordering option

# Manufacturing Options C. Ceramics:

## A. Solder:

- 1. T100: BiSn (Tmelt=138°C)
- 2. T200: CuSn (Tmelt = 227 °C)

### **B. Sealant:**

1. NS: No sealing (Standard)

4. Customer specify sealing

- 2. SS: Silicone sealant
- 3. EPS: Epoxy sealant
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- 2. Aluminum Nitride (AlN)
- **D.** Ceramics Surface Options:

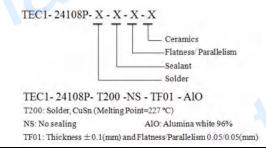
1. Alumina (Al<sub>2</sub>O<sub>3</sub>, white 96%)

- 1. Blank ceramics (not metallized)
- 2. Metallized (Au plating)

# **Ordering Option**

CCC	Thickness	Flatness/	Lead wire length(mm)		
Suffix	(mm)	Parallelism (mm)	Standard/Optional length		
TF	0:3.4±0.1	0:0.08/0.08	125±3/Specify		
TF	1:3.4±0.08	1:0.05/0.05	125±3/Specify		
TF	2:3.4±0.05	2:0.03/0.03	125±3/Specify		
Eg. TF01: Thickness $3.4 \pm 0.1$ (mm) and Flatness $0.05 / 0.05$ (mm)					

# **Naming for the Module**

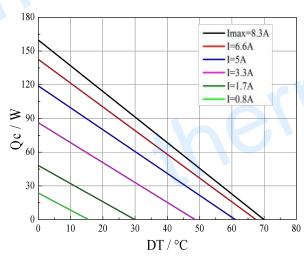


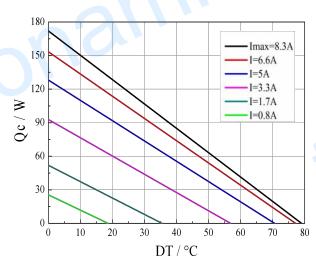
# **Specification of Thermoelectric Module**

# **TEC1-24108P**

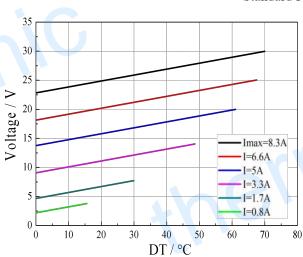
## Performance Curves at Th=27 °C

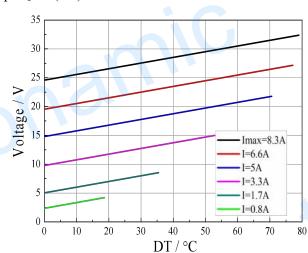
# Performance Curves at Th=50 °C



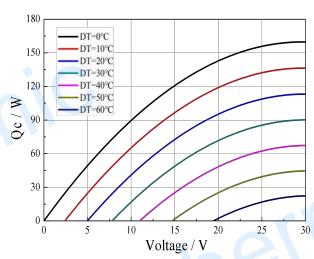


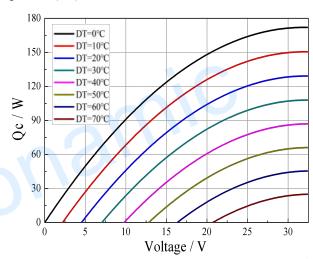
Standard Performance Graph Qc= f(DT)





Standard Performance Graph  $V = f(\Delta T)$ 





Standard Performance Graph Qc = f(V)

# **Specification of Thermoelectric Module**

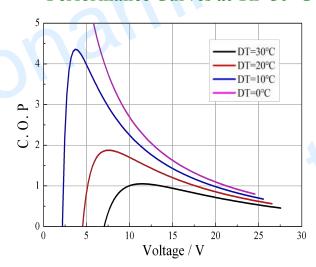
# **TEC1-24108P**

## Performance Curves at Th=27 °C

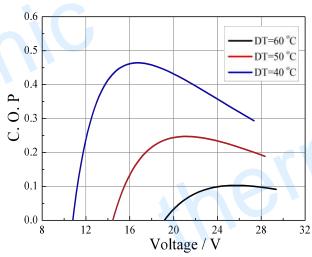
# 5 DT=30°C DT=20°C DT=10°C DT=0°C

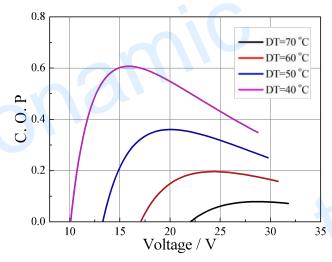
Voltage / V

# Performance Curves at Th=50 °C



Standard Performance Graph COP = f(V) of  $\Delta T$  ranged from 0 to 30 °C





Standard Performance Graph COP = f(V) of  $\Delta T$  ranged from 40 to 60/70 °C

Remark: The coefficient of performance (COP) is the cooling power Qc/Input power (V × I).

# **Operation Cautions**

- Attach the cold side of module to the object to be cooled
- Attach the hot side of module to a heat radiator for heat dissipating.
- Operation or storage module below 100 °C
- Operation below I<sub>max</sub> or V<sub>max</sub>
- Work under DC