

# Specification of Thermoelectric Module

## TEC1-01703

### Description

The 17 couples, 15mm x 15mm size module is a single stage module which is made of our high performance ingot to achieve superior cooling performance and 70°C or larger delta T max, is designed for superior cooling and heating applications. Beyond the standard below, 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

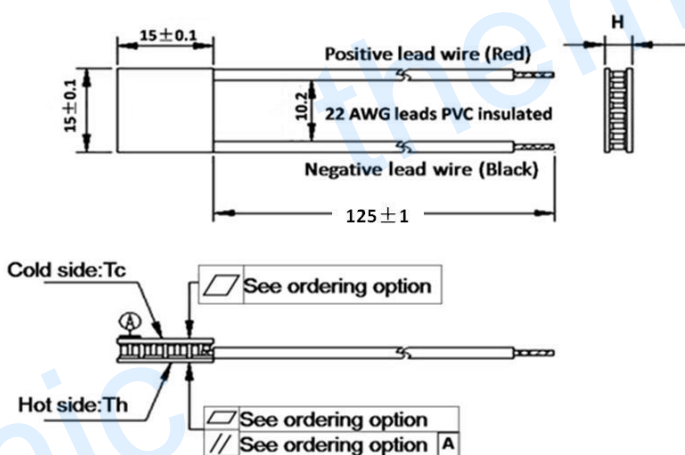
### Application

- 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)	2.16	2.31	Voltage applied to the module at DT <sub>max</sub>
I <sub>max</sub> (Amps)	4.07	4.07	DC current through the modules at DT <sub>max</sub>
Q <sub>Cmax</sub> (Watts)	5.45	5.91	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (Ohms)	0.40	0.43	The module resistance is tested under AC
Tolerance (%)	± 10		For thermal and electricity parameters

### Geometric Characteristics Dimensions in millimeters



### Manufacturing Options

#### A. Solder:

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

#### B. Sealant:

1. NS: No sealing (Standard)
2. SS: Silicone sealant
3. EPS: Epoxy sealant
4. Customer specify sealing

#### C. Ceramics:

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

#### D. Ceramics Surface Options:

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

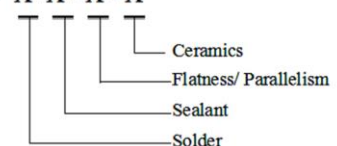
### Ordering Option

Suffix	Thickness H (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:4.7±0.1	0: 0.05/0.05	125±1/Specify
TF	1:4.7±0.05	1: 0.025/0.025	125±1/Specify
TF	2:4.7±0.025	2: 0.015/0.015	125±1/Specify

Ex. TF01: Thickness 4.7±0.1 (mm) and Flatness 0.025/0.025 (mm)

### Naming for the Module

TEC1-01703- X -X - X - X



TEC1-01703 -T100 -NS -TF00 -AIO

T100: Solder; BiSn (Melting Point=138°C)

NS: No sealing

AIO: Alumina white 96%

TF01: Thickness ±0.1(mm) and Flatness/Parallelism 0.025/0.025 (mm)

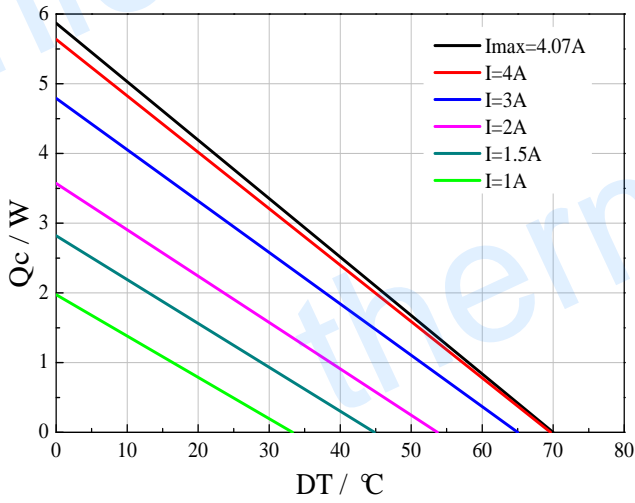
Creative technology with fine manufacturing processes provides you the reliable and quality products

Tel: +86-791-88198288 Fax: +86-791-88198308 Email: [sales@thermonamic.com.cn](mailto:sales@thermonamic.com.cn) Web Site: [www.thermonamic.com.cn](http://www.thermonamic.com.cn)

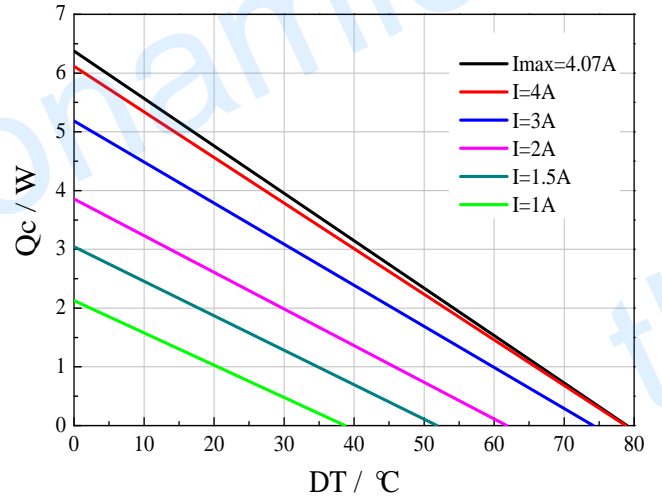
# Specification of Thermoelectric Module

TEC1-01703

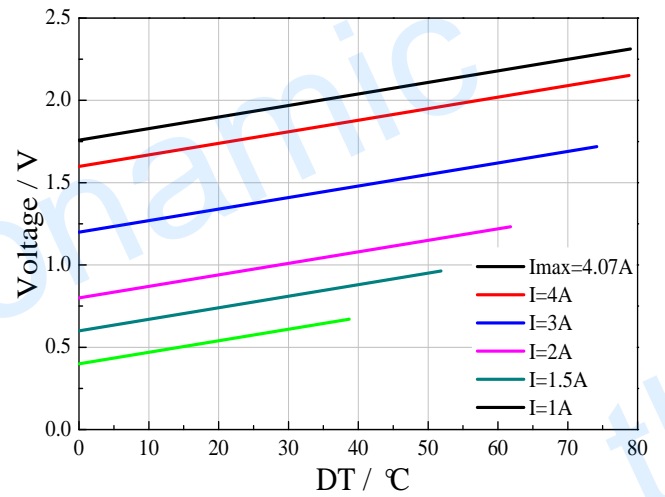
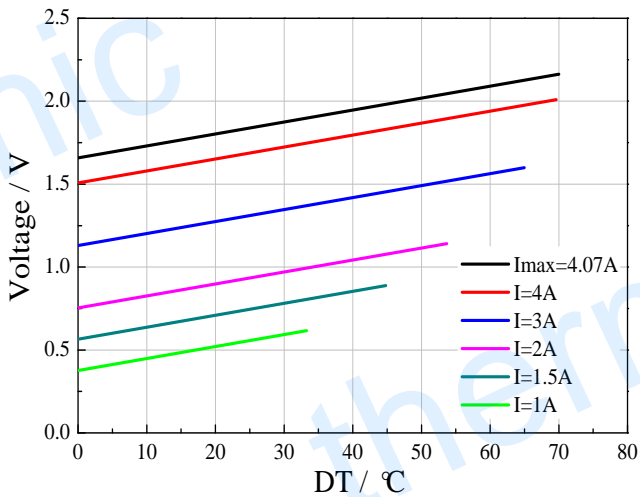
Performance Curves at  $T_h=27\text{ }^\circ\text{C}$



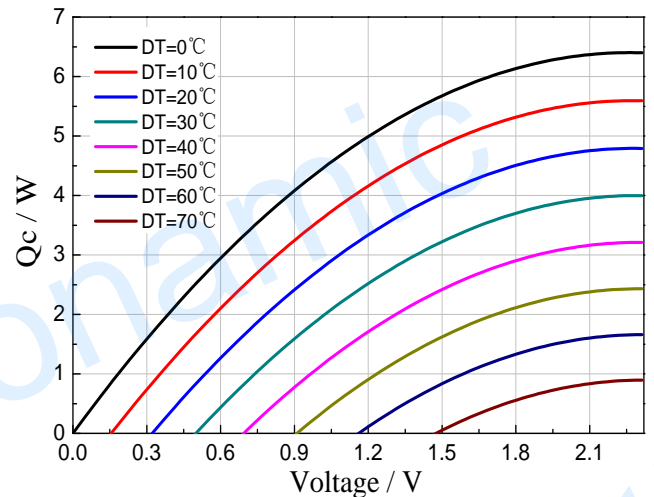
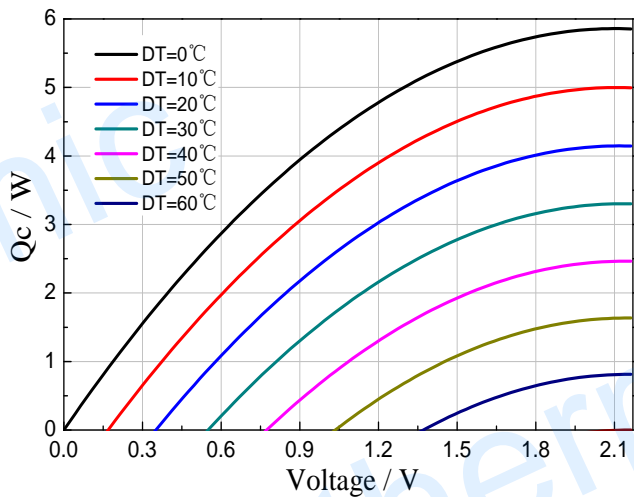
Performance Curves at  $T_h=50\text{ }^\circ\text{C}$



Standard Performance Graph  $Q_c = f(DT)$



Standard Performance Graph  $V = f(DT)$

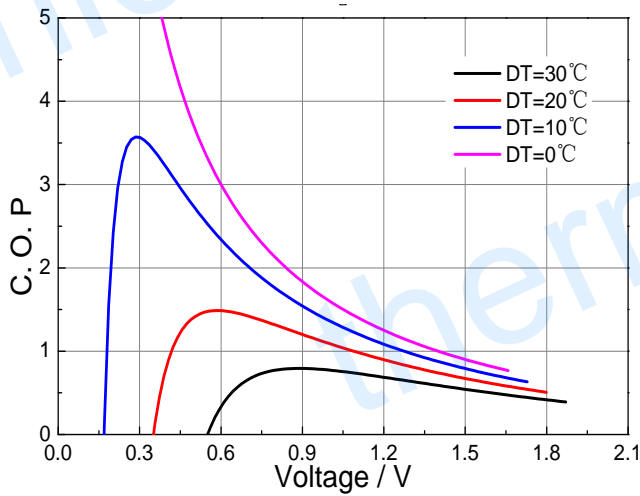


Standard Performance Graph  $Q_c = f(V)$

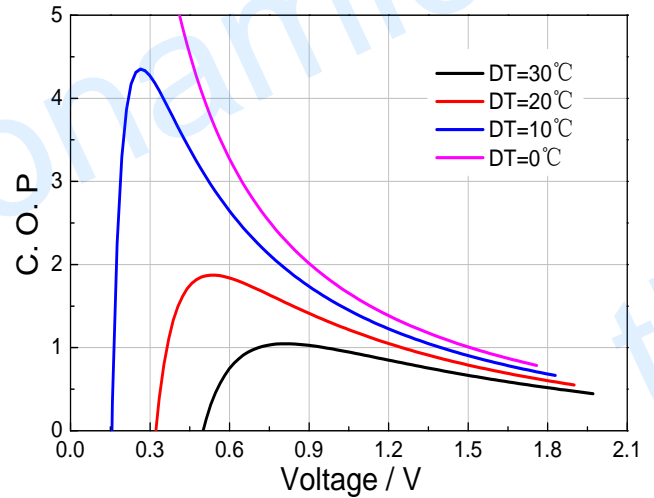
# Specification of Thermoelectric Module

TEC1-01703

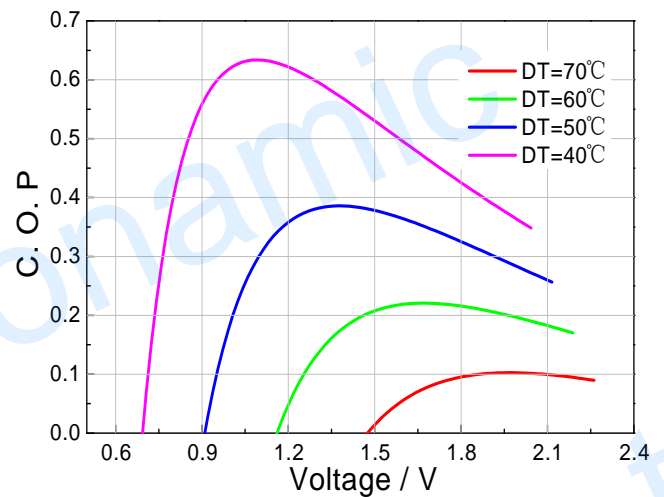
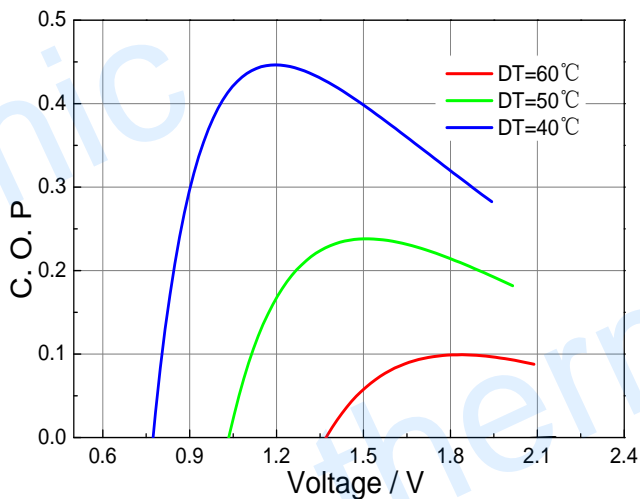
## Performance Curves at Th=27 °C



## Performance Curves at Th=50 °C



Standard Performance Graph COP = f(V) of DT ranged from 0 to 30 °C



Standard Performance Graph COP = f(V) of DT ranged from 40 to 60/70 °C

**Remark:** The coefficient of performance (COP) is the cooling power  $Q_c$ /Input power ( $V \times I$ ).

## Operation Caution

- Cold side of the module stucked on the object being cooled
- Hot side of the module mounted on a heat radiator
- Operation below  $I_{max}$  or  $V_{max}$
- Work under DC

**Note:** All specifications subject to change without notice.