

# Specification of Thermoelectric Module

## TEFC1-01720

### Description

The 17 couples, 6.2 mm × 6.2 mm size single 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 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

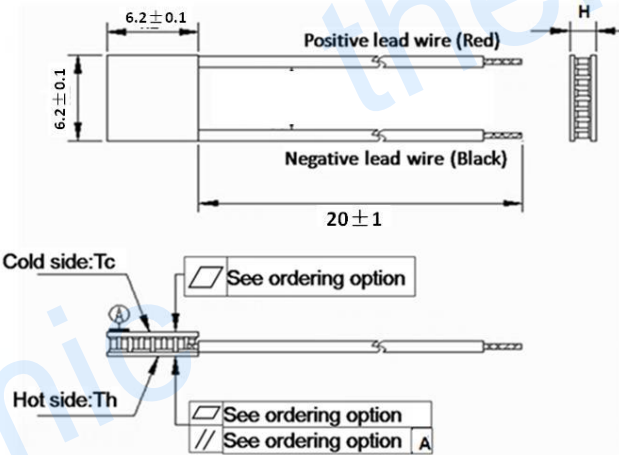
### Application

- 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)	2.16	2.35	Voltage applied to the module at DT <sub>max</sub>
I <sub>max</sub> (amps)	2.17	2.17	DC current through the modules at DT <sub>max</sub>
Q <sub>Cmax</sub> (Watts)	2.90	3.12	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (ohms)	0.75	0.83	The module resistance is tested under AC
Tolerance (%)	10%		For thermal and electricity parameters

### Geometric Characteristics Dimensions in millimeters



### Ordering Option

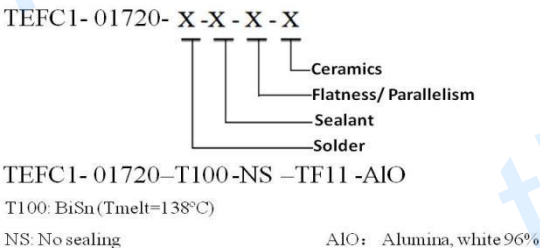
Suffix	Thickness H (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:2.2±0.1	0:0.03/0.03	20±1/Specify
TF	1:2.2±0.03	1:0.015/0.015	20±1/Specify

Eg. TF11: Thickness 2.2± 0.03 (mm) and Flatness 0.015 / 0.015 (mm)

### Manufacturing Options

- |   |                                     |
|---|-------------------------------------|
| <b>A. Solder:</b>                                       | <b>B. Sealant:</b>                  |
| 1. T100: BiSn (T <sub>melt</sub> =138°C)                | 1. NS: No sealing (Standard)        |
| 2. T200: CuAgSn (T <sub>melt</sub> = 217°C)             | 2. SS: Silicone sealant             |
| 3. T240: SbSn (T <sub>melt</sub> = 240°C)               | 3. EPS: Epoxy sealant               |
| <b>C. Ceramics:</b>                                     | <b>D. Ceramics Surface Options:</b> |
| 1. Alumina (Al <sub>2</sub> O <sub>3</sub> , white 96%) | 1. Blank ceramics (not metalized)   |
| 2. Aluminum Nitride (AlN)                               | 2. Metalized                        |

### Naming for the Module

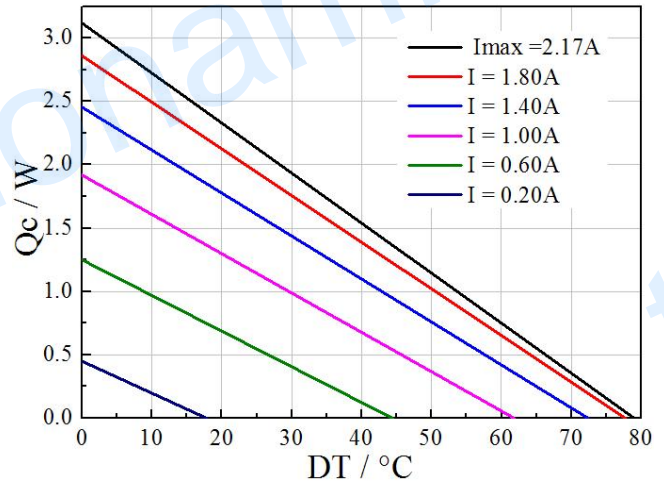
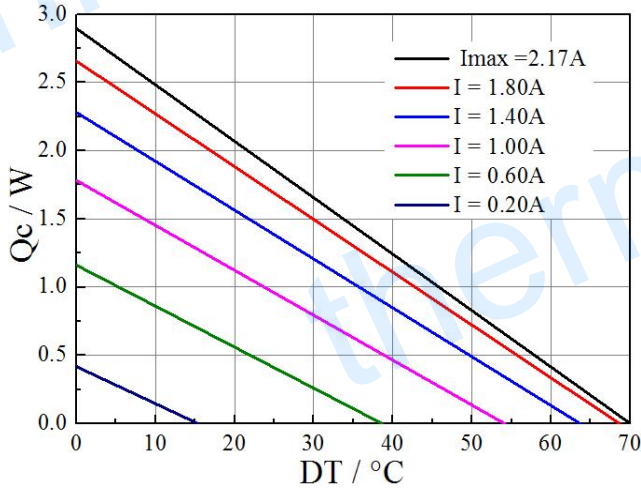


# Specification of Thermoelectric Module

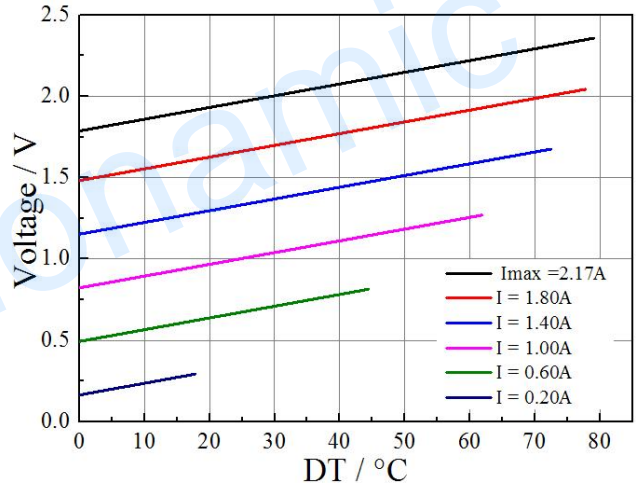
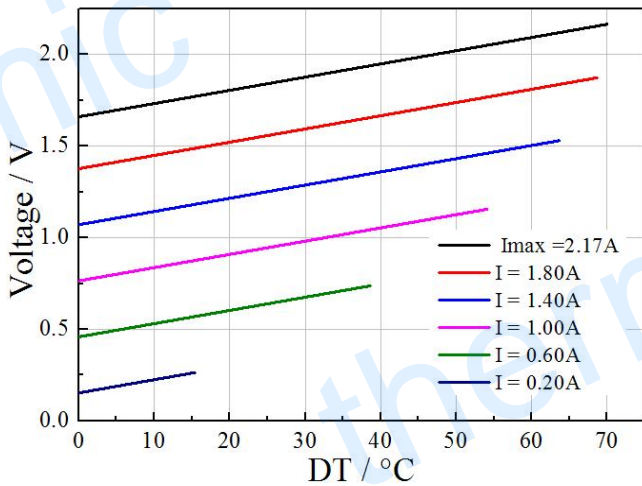
TEFC1-01720

## Performance Curves at Th=27 °C

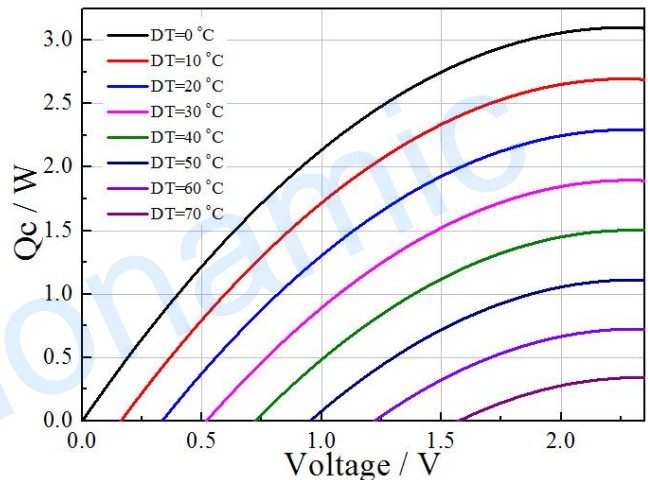
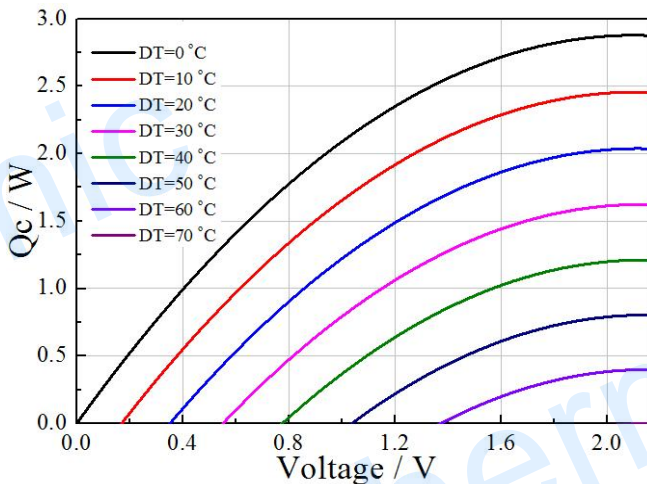
## Performance Curves at Th=50 °C



Standard Performance Graph  $Q_c = f(DT)$



Standard Performance Graph  $V = f(DT)$

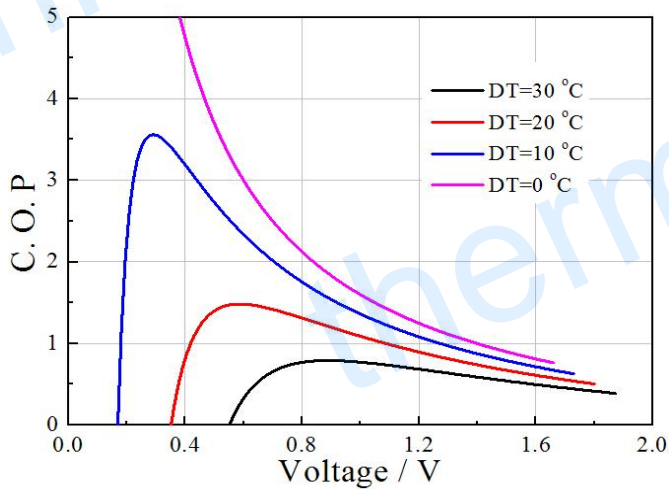


Standard Performance Graph  $Q_c = f(V)$

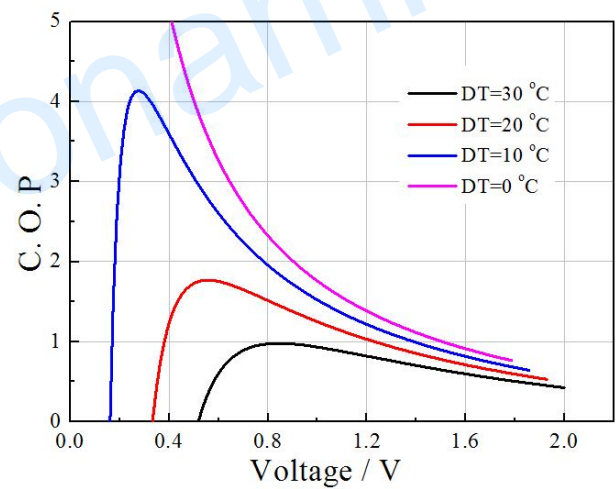
## Specification of Thermoelectric Module

TEFC1-01712

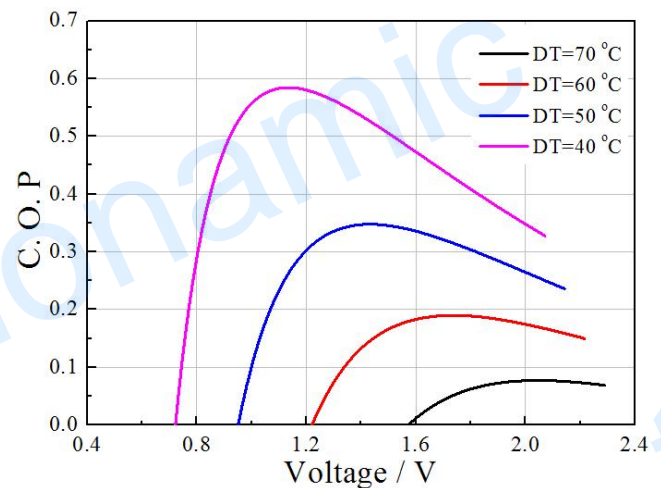
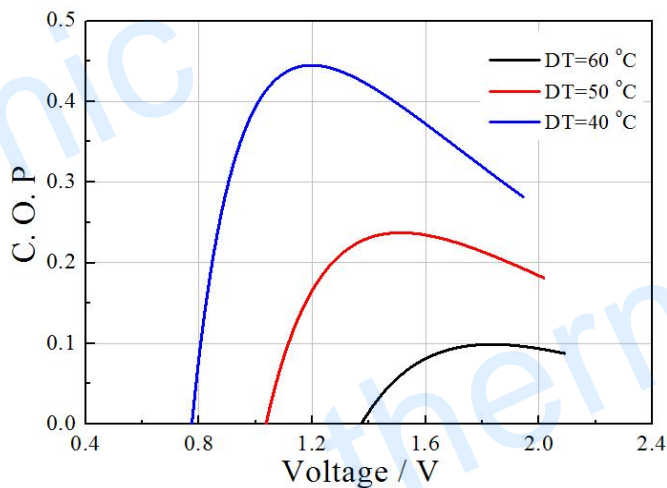
### Performance Curves at Th=27 °C



### 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 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 below  $I_{max}$  or  $V_{max}$
- Work under DC

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