

# Specification of Thermoelectric Module

## TEFC1-01212P

### Description

The 12 couples, 3.0/2.4 mm × 1.6mm size module which is made of selected high performance ingot to achieve superior cooling performance and greater delta T up to 74 °C, designed for superior cooling and heating up to 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

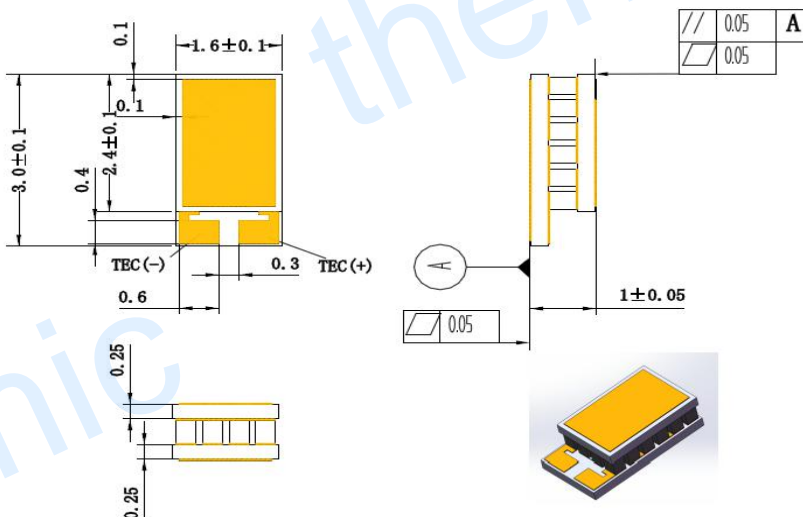
### Application

- 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)	74	83	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U <sub>max</sub> (Voltage)	1.58	1.70	Voltage applied to the module at DT <sub>max</sub>
I <sub>max</sub> (Amps)	1.2	1.2	DC current through the modules at DT <sub>max</sub>
Q <sub>Cmax</sub> (Watts)	1.19	1.28	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (Ohms)	0.99	1.07	The module resistance is tested under AC
Tolerance (%)	10%		For thermal and electricity parameters

### Geometric Characteristics Dimensions in millimeters



### Manufacturing Options

#### A. Solder:

1. T240: SbSn (T<sub>melt</sub>=240°C)
2. T280: AuSn (T<sub>melt</sub>=280°C)

#### B. Sealant:

NS: No sealing

#### C. Ceramics:

AlN : Aluminum Nitride

#### D. Ceramics Surface Options:

Hot side: Metalized (Au plating)

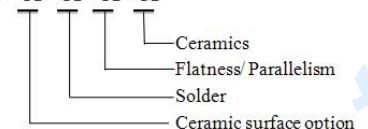
Cold side: Metalized (Au plating)

### Ordering Option

Suffix	Thickness H (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:1.0± 0.05	0: 0.05/0.05	No Wires

### Naming for the Module

TEFC1- 01212P - X - X - X - X



TEFC1- 01212P - TTAu - T240 - TF00 - AlN

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

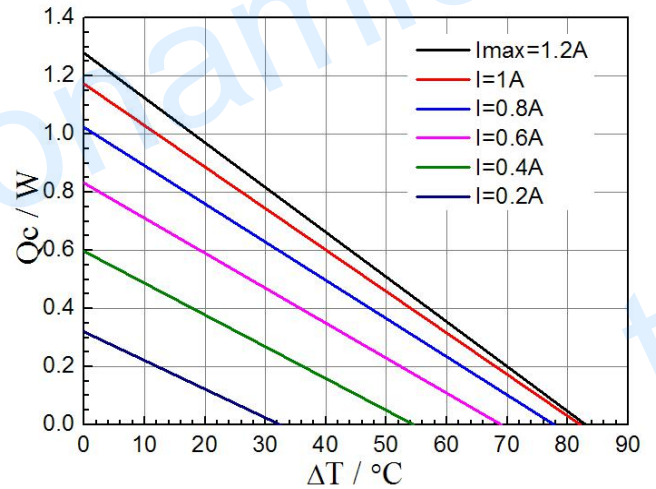
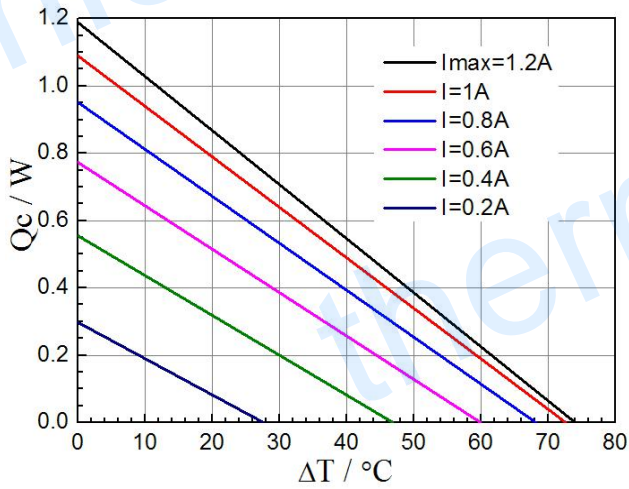
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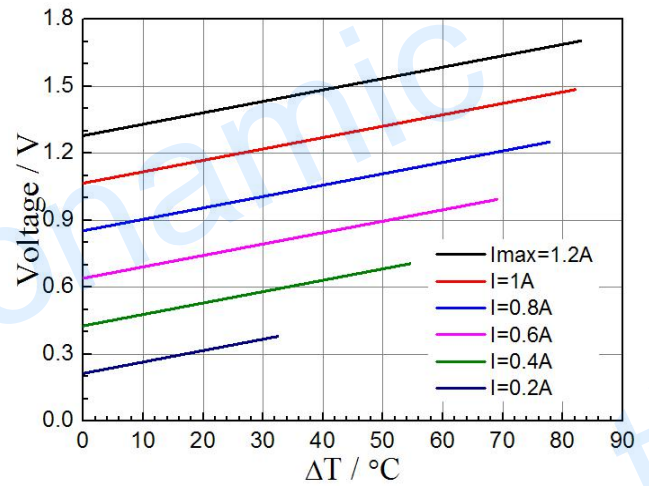
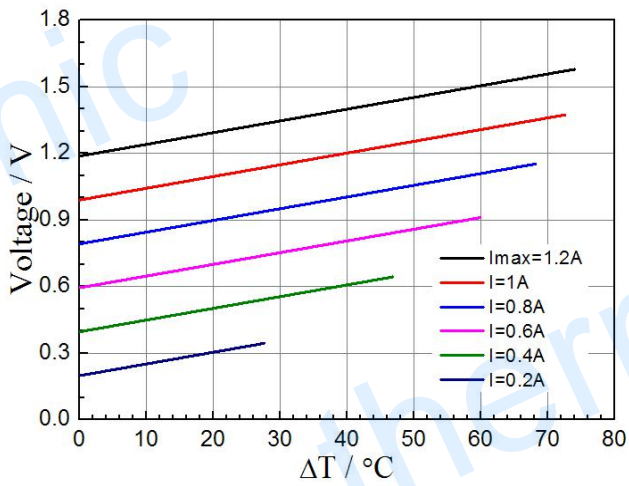
## TEFC1-01212P

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

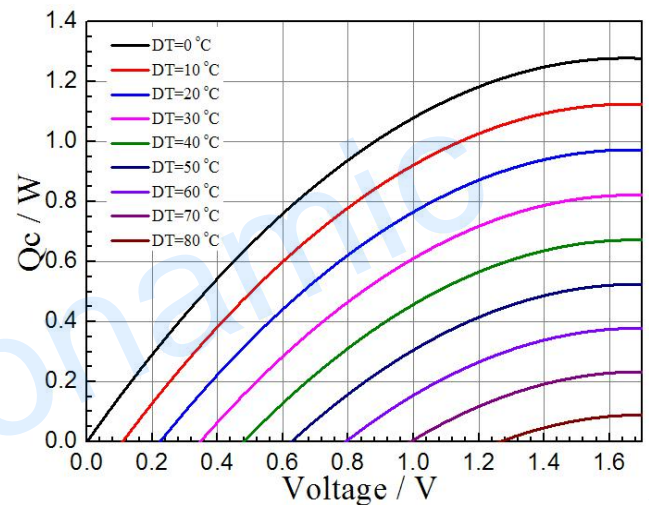
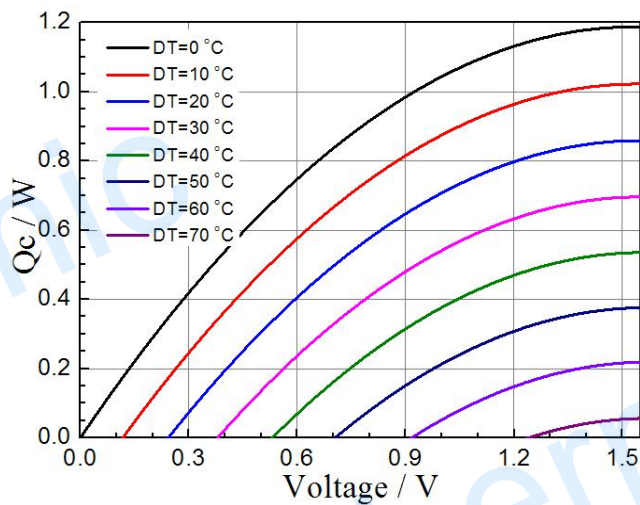
### Performance Curves at $T_h=50^\circ\text{C}$



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



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

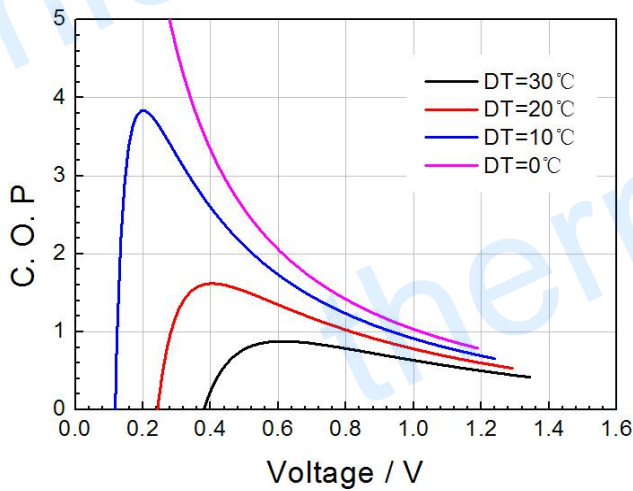


Standard Performance Graph  $Q_c = f(V)$

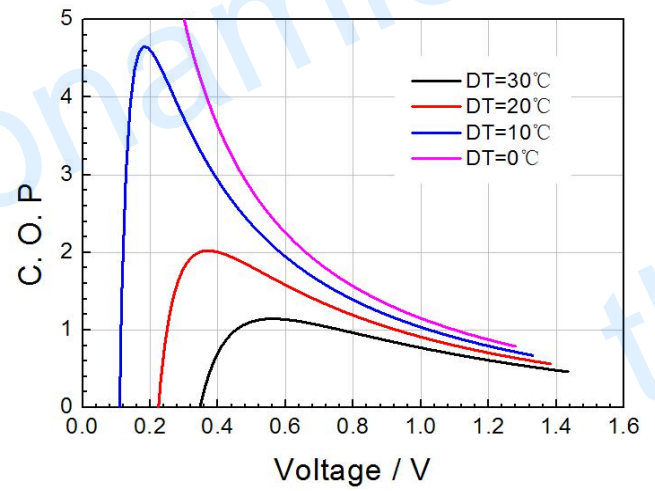
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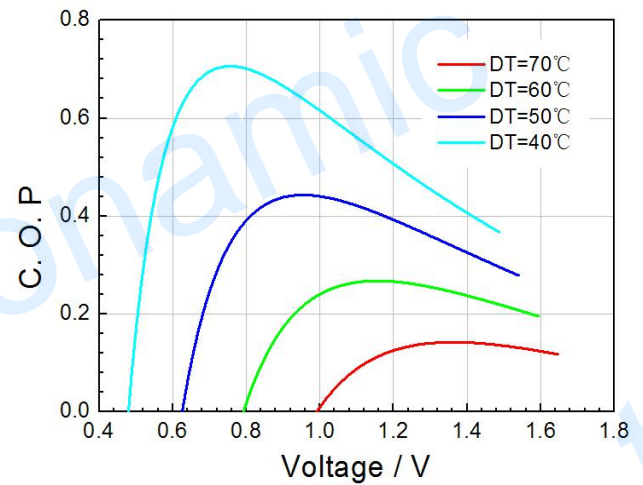
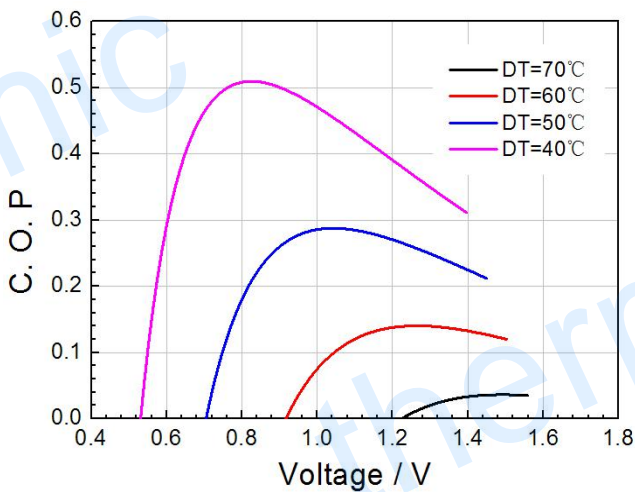
#### Performance Curves at Th=27 °C



#### 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

- 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.