

# Specification of Thermoelectric Module

TEC1-12722S

## Description

The 127 couples, 55 mm × 55 mm size module 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 100/200 °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

- High effective cooling and efficiency.
- 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
- Sustain million thermal cycles with 70 °C temperature change range

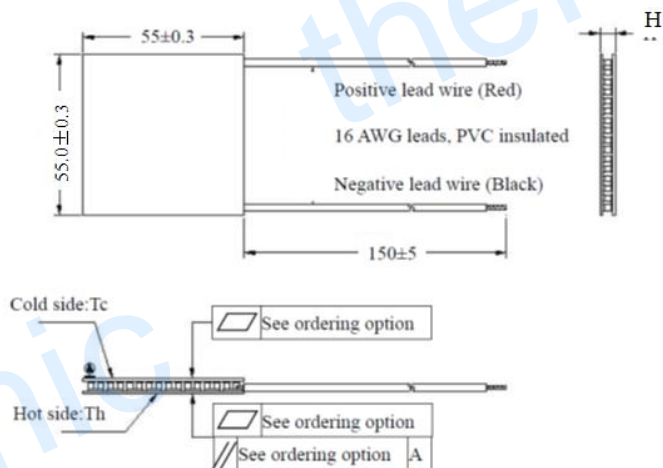
## Application

- Food and beverage service refrigerator
- Portable cooler box for cars
- Temperature stabilizer
- Liquid cooling
- 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)	16	17.2	Voltage applied to the module at DT <sub>max</sub>
I <sub>max</sub> (amps)	18.5	18.5	DC current through the modules at DT <sub>max</sub>
Q <sub>Cmax</sub> (Watts)	185.3	202.5	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (ohms)	0.68	0.74	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	0:3.3±0.13	0: 0.13/0.18	150 ± 5 / Specify
TF	1:3.3±0.1	1: 0.1/0.15	150 ± 5 / Specify
TF	2:3.3±0.08	2: 0.08/0.13	150 ± 5 / Specify

Eg. TF01: Thickness 3.3 ± 0.13 (mm) and Flatness 0.1/0.15 (mm)

## Manufacturing Options

### A. Solder:

1. T100: BiSn (T<sub>melt</sub>=138° C)
2. T200: CuSn (T<sub>melt</sub> = 227 ° C)

### B. Sealant:

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

other than above

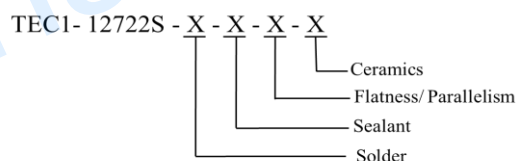
### C. Ceramics:

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

### D. Ceramics Surface Options:

1. Blank ceramics (not metalized)
2. Metalized (Au plating)

## Naming for the Module



TEC1- 12722S- T100 -NS - TF01 - AIO

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

NS: No sealing

AIO: Alumina white 96%

TF01: Thickness H±0.13(mm) and Flatness/Parallelism 0.1/0.15 (mm)

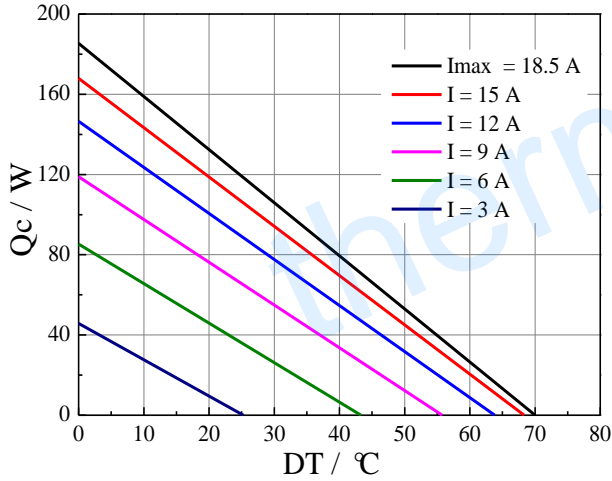
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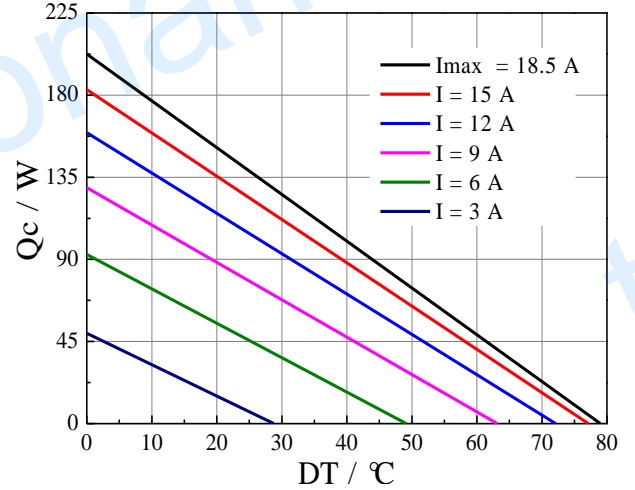
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## TEC1-12722S

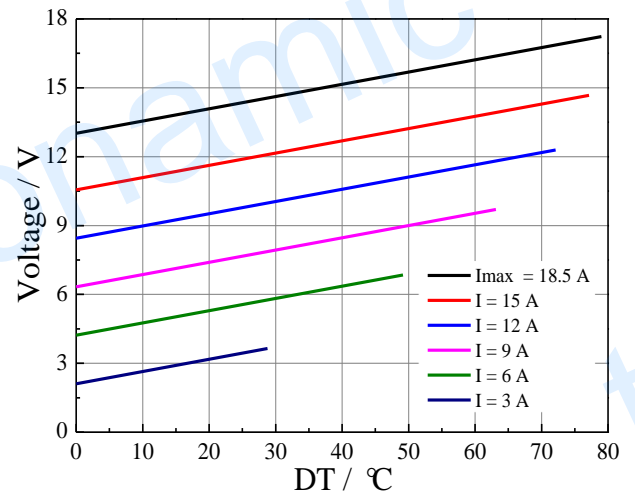
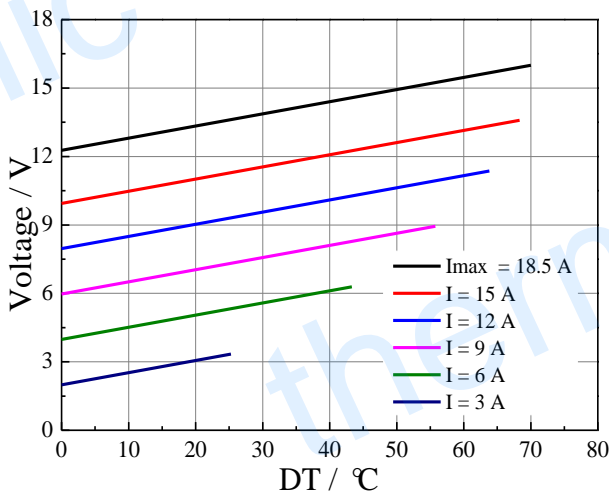
### Performance Curves at $T_h=27\text{ }^\circ\text{C}$



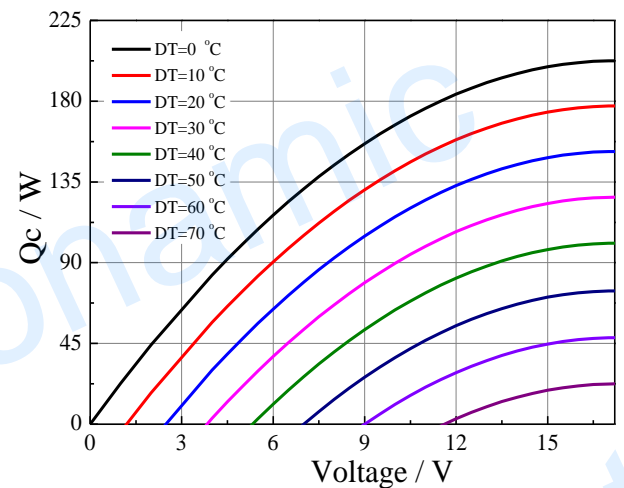
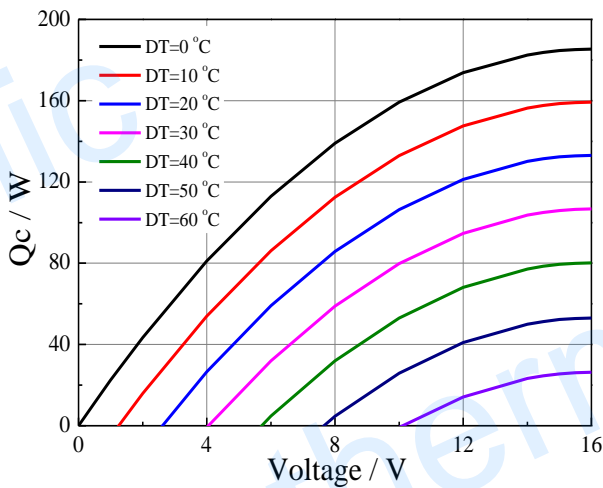
### Performance Curves at $T_h=50\text{ }^\circ\text{C}$



Standard Performance Graph  $Q_c = f(DT)$



Standard Performance Graph  $V = f(DT)$



Standard Performance Graph  $Q_c = f(V)$

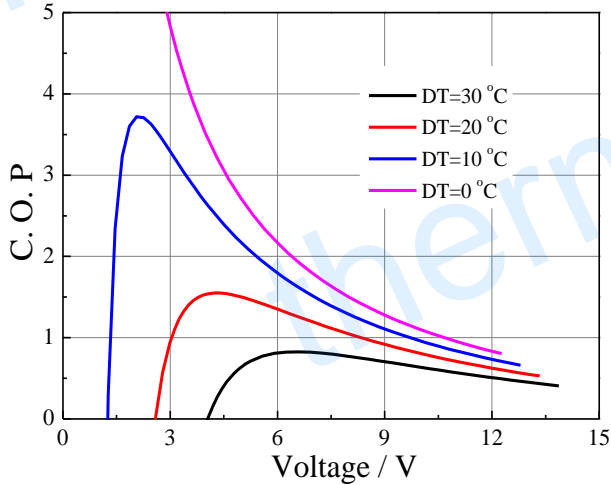
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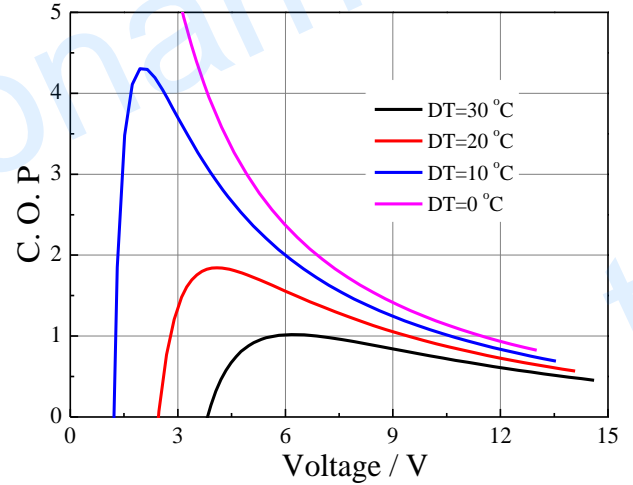
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### TEC1-12722S

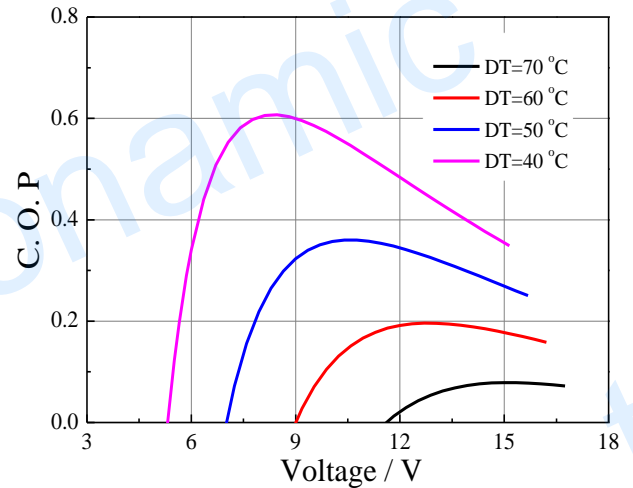
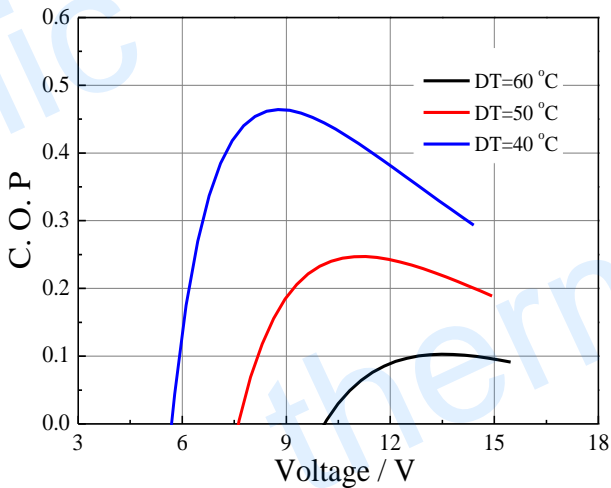
#### Performance Curves at Th=27 °C



#### 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

- 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.