

# Specification of Thermoelectric Module

TEC3-71-31-17-03

## Description

The TEC3-71-31-17-03 is a multistage module designed for greater temperature differential cooling, good for cooling and heating up to 100 °C applications. It is a 71-31-17-03 couples module in size of 15mm × 15mm (top) / 30mm × 30mm (bottom). If higher operation or processing temperature is required, please specify, we can design and manufacture according to your special requirements.

## Features

- High Temperature Differential
- 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

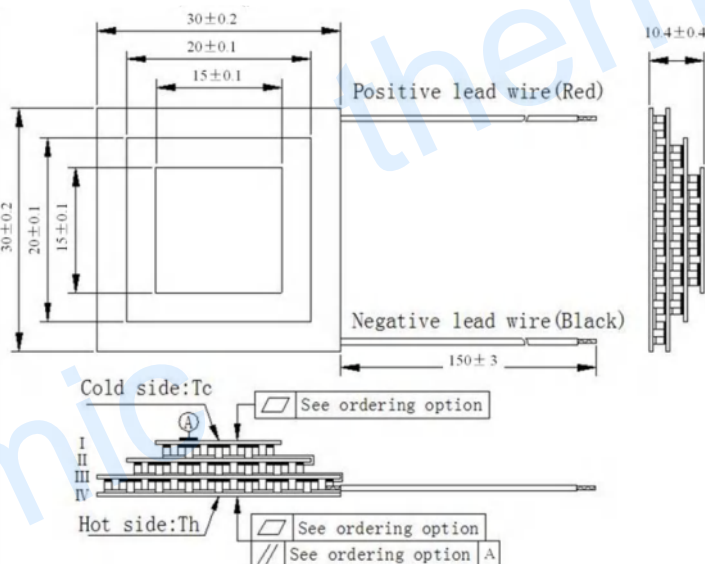
## Application

- Infrared (IR) Sensors
- CCD Sensor
- Gas Analyzers
- Calibration Equipment
- CPU cooler and scientific instrument
- Photonic and medical systems
- Guidance Systems

## Performance Specification Sheet

Th (°C)	27	50	Hot side temperature at environment: dry air, N <sub>2</sub>
DT <sub>max</sub> (°C)	102	114	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U <sub>max</sub> (Voltage)	8.2	9.2	Voltage applied to the module at DT <sub>max</sub>
I <sub>max</sub> (Amps)	3.5	3.5	DC current through the modules at DT <sub>max</sub>
Q <sub>Cmax</sub> (Watts)	7.0	7.7	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (Ohms)	2.1	2.3	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 (T<sub>melt</sub>=138°C)
2. T200: CuAgSn (T<sub>melt</sub> = 217°C)
3. T240: SbSn (T<sub>melt</sub> = 240°C)

### C. Ceramics:

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

### B. Sealant:

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

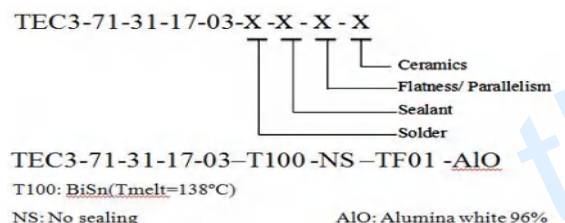
### D. Ceramics Surface Options:

1. Blank ceramics (not metalized)
2. Metalized

## Ordering Option

Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0: 10.4 ± 0.3	0: 0.07/0.07	150 ±3/Specify
TF	1: 10.4 ± 0.15	1: 0.025/0.025	150 ±3/Specify
Eg. TF01: Thickness 10.4 ± 0.30 (mm) and Flatness 0.025/0.025			

## Naming for the Module



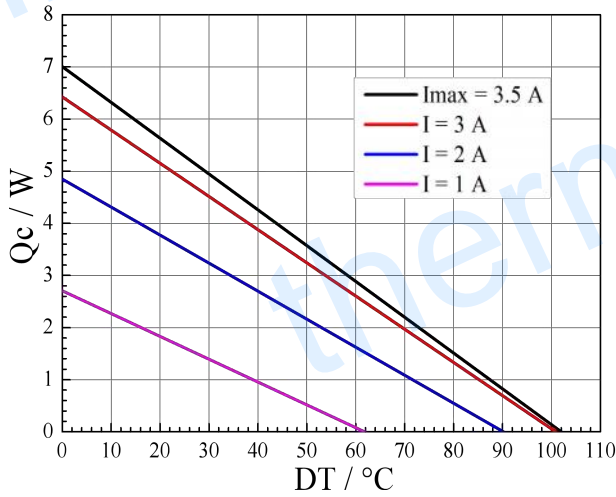
Creative technology with fine manufacturing processes provides you the reliable and quality products

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)

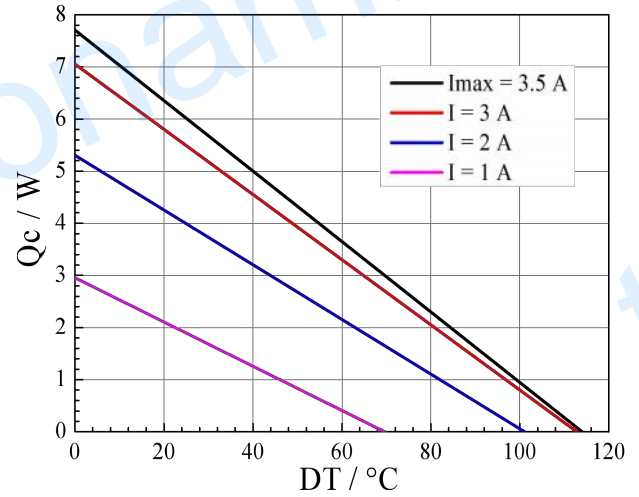
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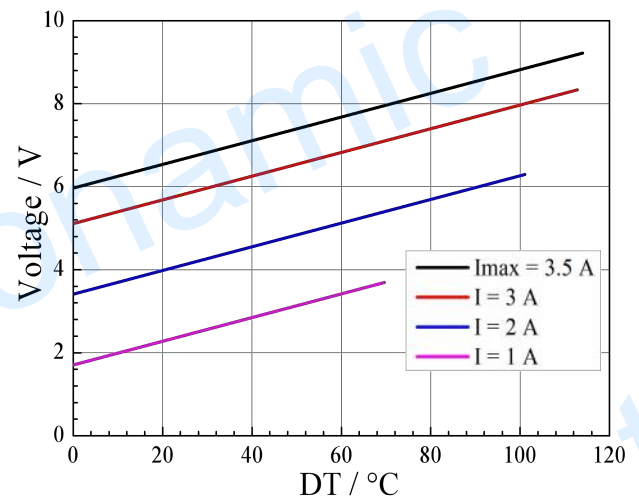
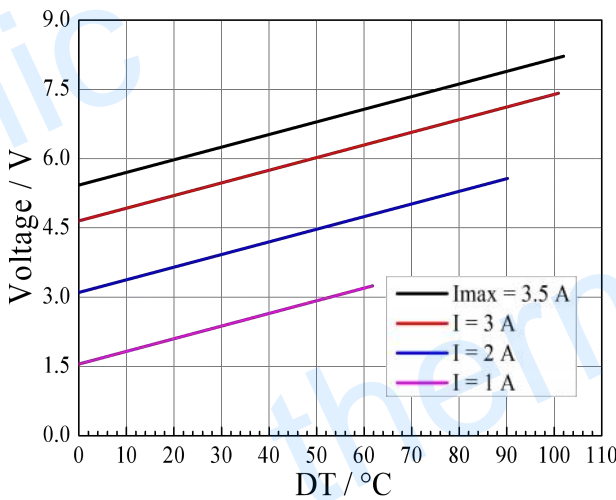
Performance Curves at  $T_h=27^\circ\text{C}$



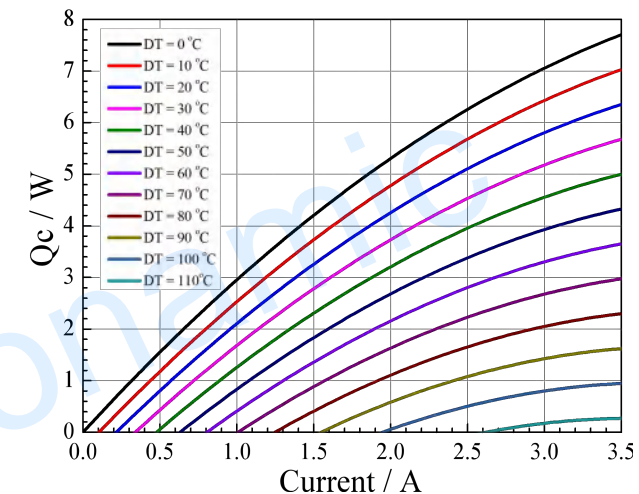
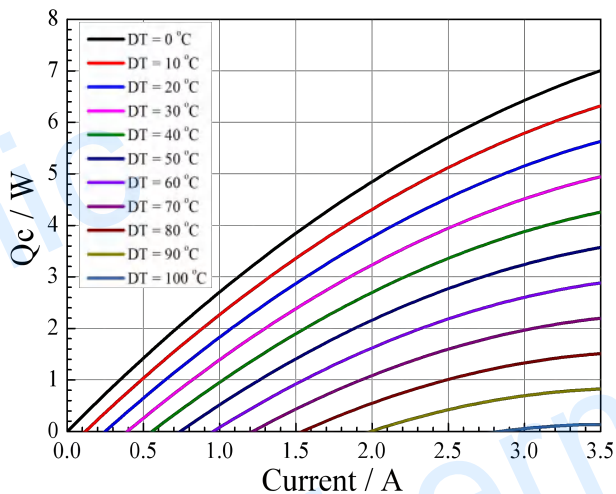
Performance Curves at  $T_h=50^\circ\text{C}$



Standard Performance Graph  $Q_c = f(DT)$



Standard Performance Graph  $V = f(DT)$

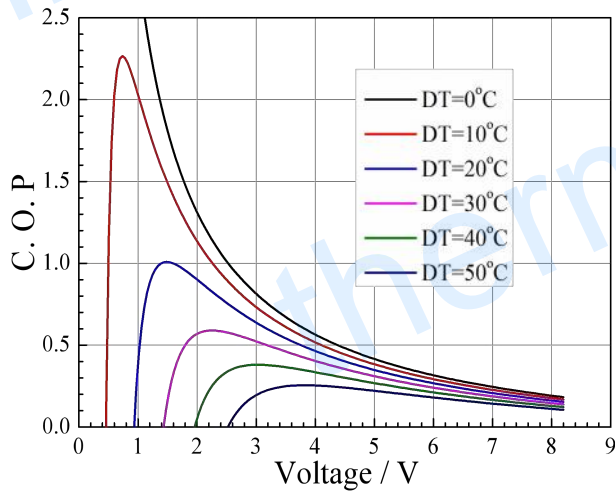


Standard Performance Graph  $Q_c = f(I)$

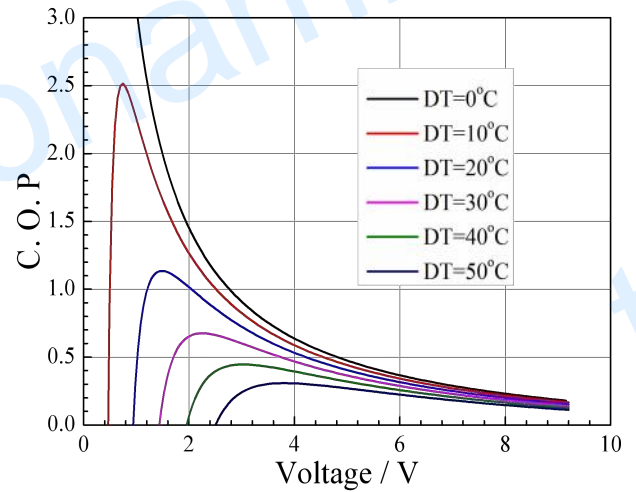
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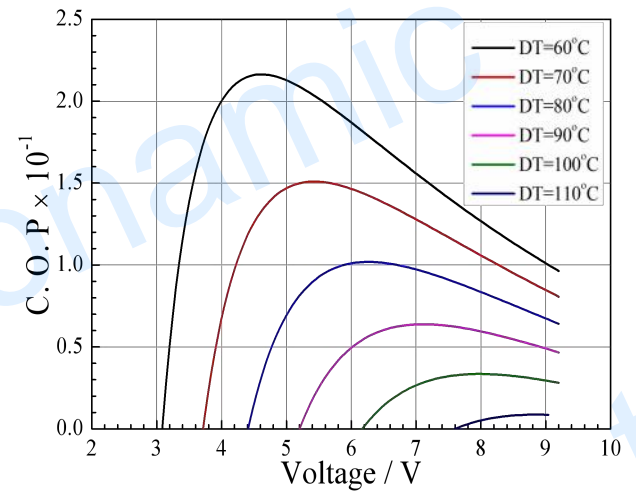
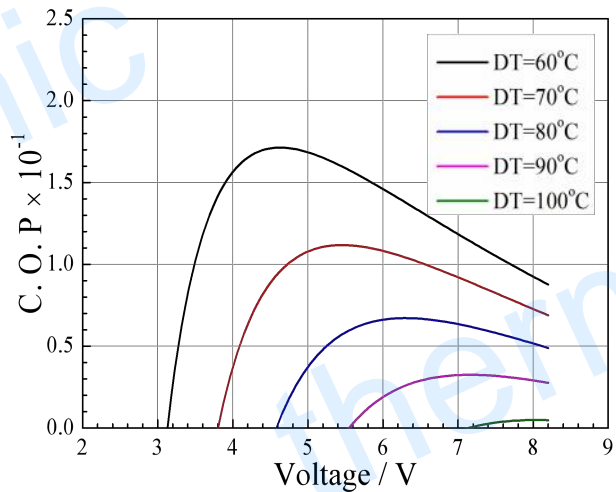
## Performance Curves at Th=27 °C



## Performance Curves at Th=50 °C



Standard Performance Graph COP = f(V) of DT ranged from 0 to 50 °C



Standard Performance Graph COP = f(V) of DT ranged from 60 to 100/110 °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 or storage module below 100 °C
- Operation below  $I_{max}$  or  $V_{max}$
- Work under DC

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