

# Specification of Thermoelectric Module

TEC3-49-16-6-06

## Description

The TEC3-49-16-6-06 is a multistage module designed for greater temperature differential cooling, good for cooling and heating up to 200 °C applications. It is a 49-16-6 couples module in size of 8mm ×14mm (top)/36mm ×36mm (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

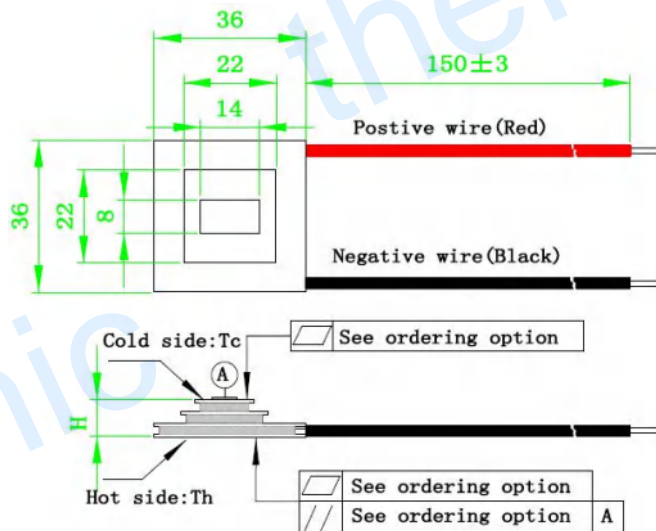
## Application

- 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)	115.7	129.3	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U <sub>max</sub> (Voltage)	5.6	6.1	Voltage applied to the module at DT <sub>max</sub>
I <sub>max</sub> (Amps)	6.5	6.5	DC current through the modules at DT <sub>max</sub>
Q <sub>Cmax</sub> (Watts)	5.4	5.8	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (Ohms)	0.93	1.00	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: CuAgSn (Tmelt = 217°C)
3. T240: SbSn (Tmelt = 240°C)

### B. Sealant:

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

### 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

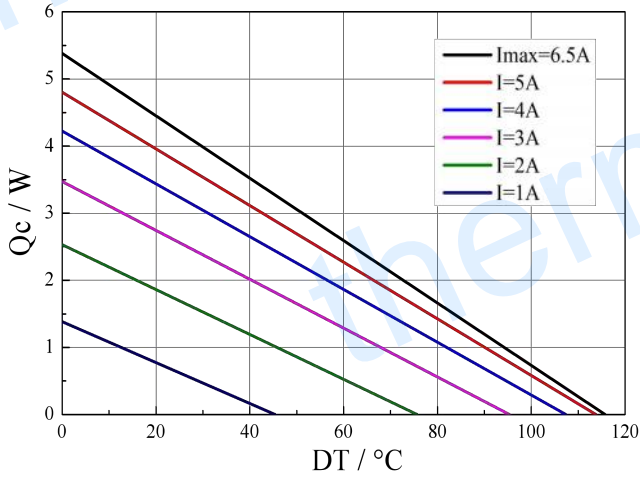
## Ordering Option

Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0: 16± 0.3	0: 0.08/0.08	150±3/Specify

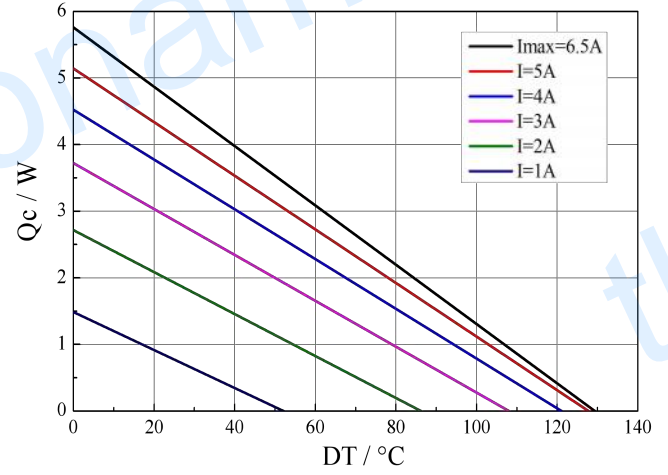
# Specification of Thermoelectric Module

TEC3-49-16-6-06

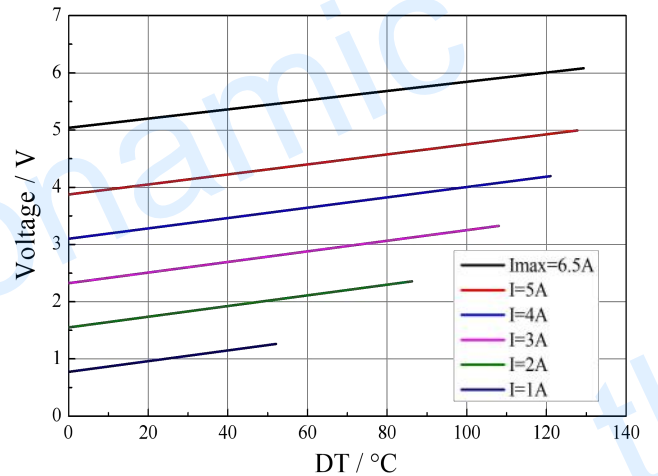
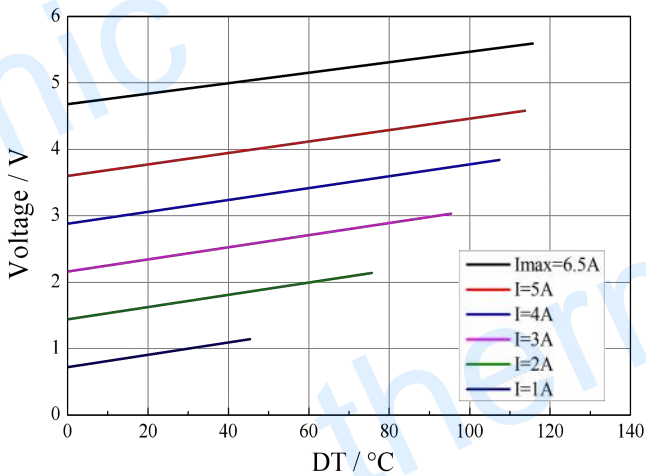
## Performance Curves at $T_h=27^\circ\text{C}$



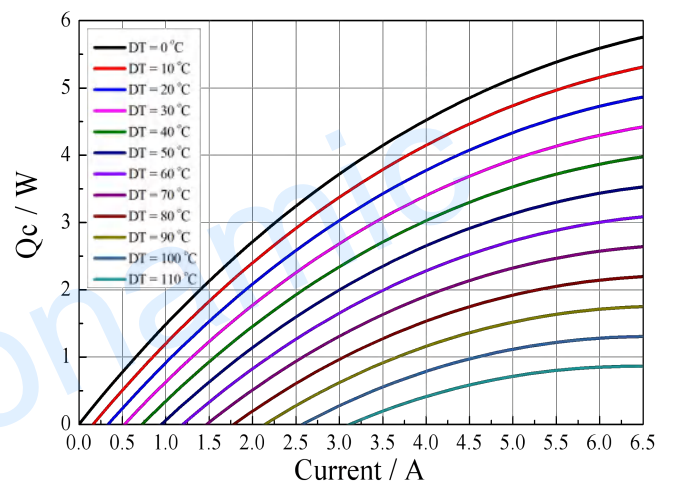
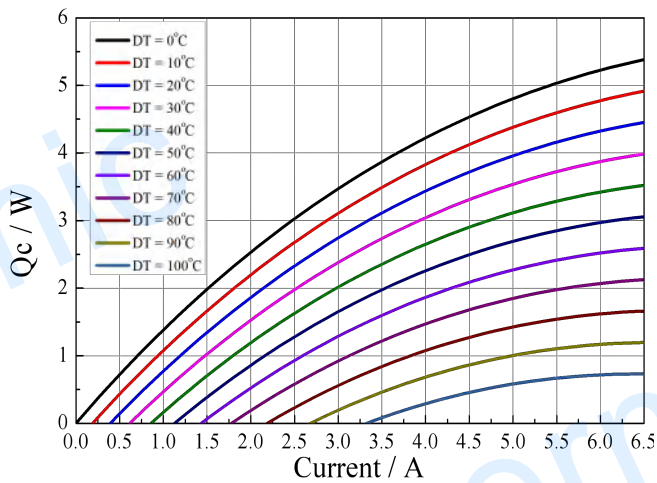
## Performance Curves at $T_h=50^\circ\text{C}$



Standard Performance Graph  $Q_c = f(DT)$



Standard Performance Graph  $V = f(DT)$

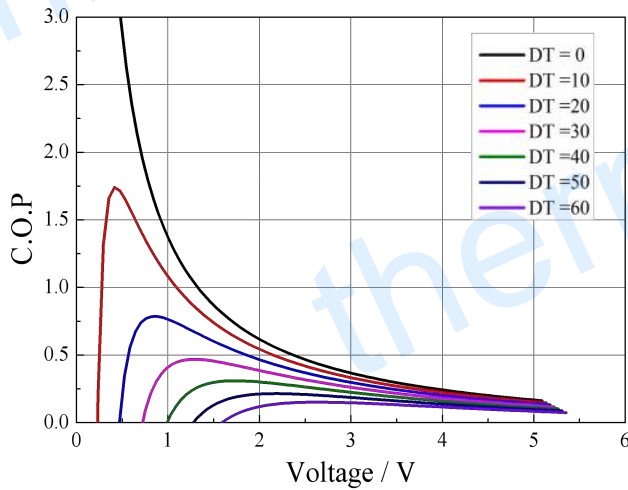


Standard Performance Graph  $Q_c = f(I)$

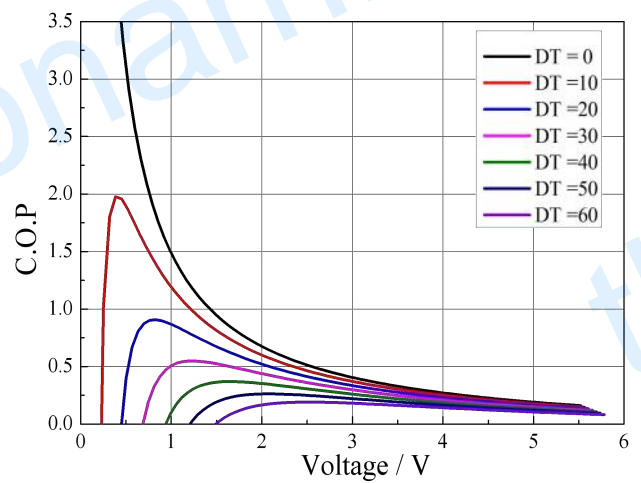
# Specification of Thermoelectric Module

TEC3-49-16-6-06

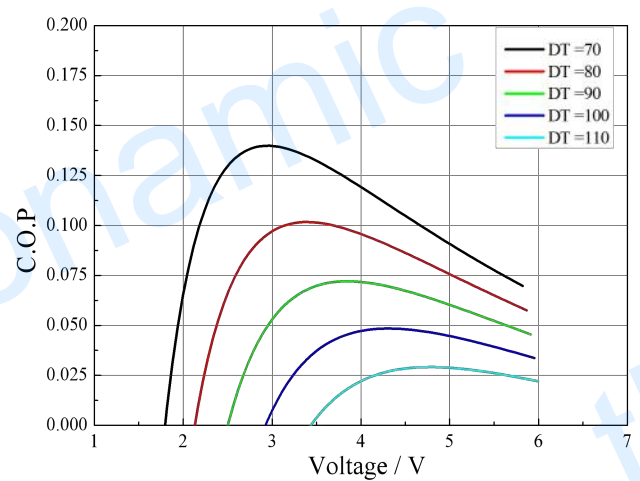
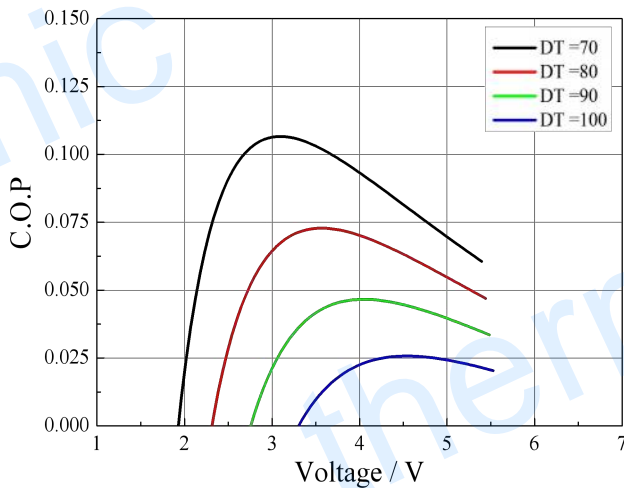
## Performance Curves at Th=27 °C



## Performance Curves at Th=50 °C



Standard Performance Graph COP = f(V) of DT ranged from 0 to 60 °C



Standard Performance Graph COP = f(V) of DT ranged from 70 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
- Storage module below 100 °C
- Operation below  $I_{max}$  or  $V_{max}$
- Work under DC

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