

Specification of Thermoelectric Module

TEHC1-03114

Description

The 31 couples, 30 mm × 30 mm size single module which is made of our high performance ingot to achieve superior cooling performance and 74°C or larger delta Tmax, is designed for superior cooling and heating applications. Beyond the standard below, 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

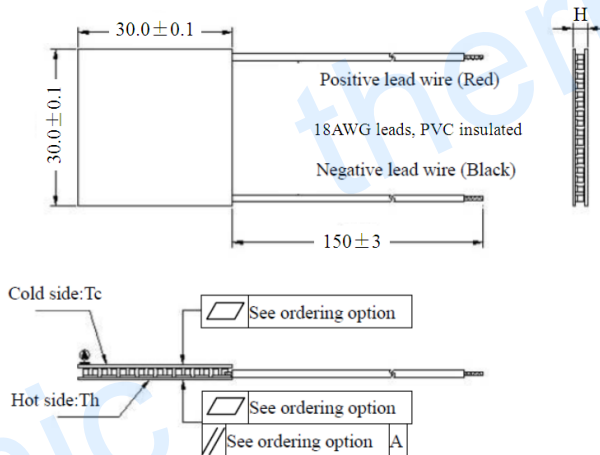
Application

- 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, N2 |
| DTmax (°C) | 74 | 83 | Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side |
| Umax (Voltage) | 4.09 | 4.4 | Voltage applied to the module at DTmax |
| Imax (Amps) | 14 | 14 | DC current through the modules at DTmax |
| QCmax (Watts) | 35.8 | 38.8 | Cooling capacity at cold side of the module under DT=0 °C |
| AC resistance (Ohms) | 0.20 | 0.22 | 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 (Melting Point=138°C)
2. T200: CuSn (Melting Point= 227 °C)

B. Sealant:

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

C. Ceramics:

1. Alumina (Al₂O₃, white 96%)(AlO)
2. Aluminum Nitride (AlN)

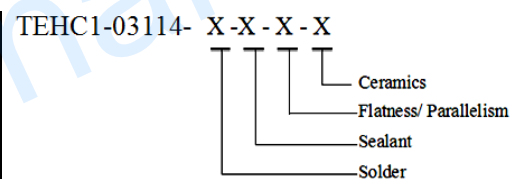
D. Ceramics Surface Options:

1. Blank ceramics (not metalized)
2. Metalized (Copper-Nickel plating)

Ordering Option

| Suffix | Thickness H / (mm) | Flatness/ Parallellism (mm) | Lead wire length (mm) Standard/Optional length |
|--------|--------------------|-----------------------------|--|
| TF | 0:4.4±0.10 | 0:0.05/0.05 | 150±3/Specify |
| TF | 1:4.4±0.05 | 1:0.025/0.025 | 150±3/Specify |
| TF | 2:4.4±0.025 | 2:0.015/0.015 | 150±3/Specify |

Naming for the Module



TEHC1-03114-T100-NS-TF01 -AlO

T100: BiSn(Tmelt=138°C)

NS: No sealing

AlO: Alumina white 96%

TF01: Thickness ± 0.1 (mm) and Flatness/Parallellism 0.025/0.025(mm)

Eg. TF01: Thickness 4.4±0.10(mm) and Flatness 0.025/0.025(mm)

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

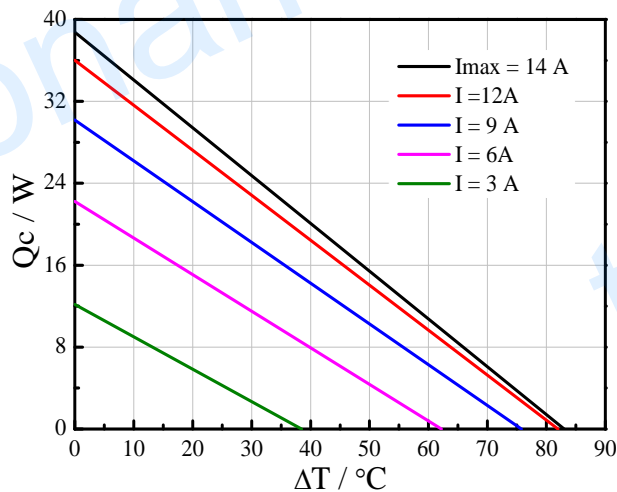
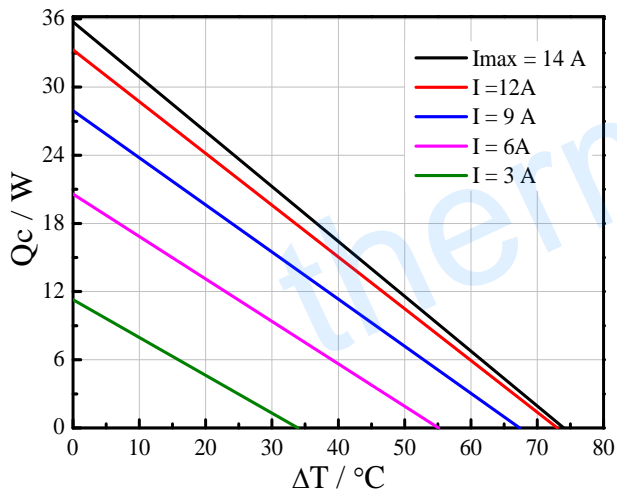
Tel: +86-791-88198288 Fax: +86-791-88198308 Email: sales@thermonamic.com.cn Web Site: www.thermonamic.com.cn

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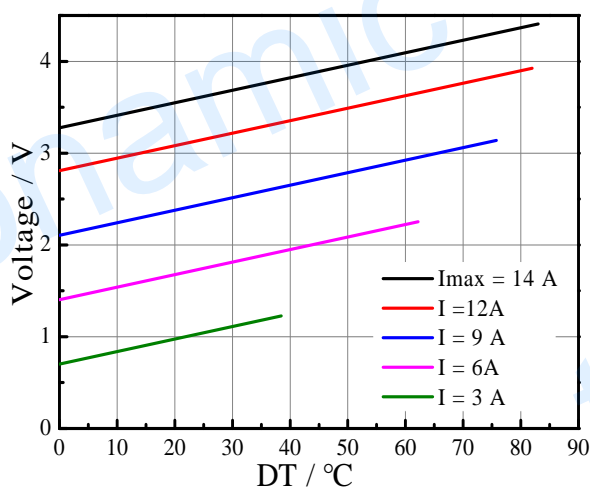
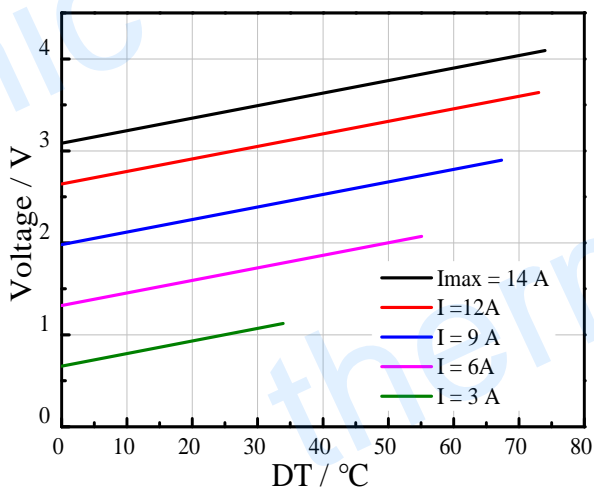
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Performance Curves at Th=27 °C

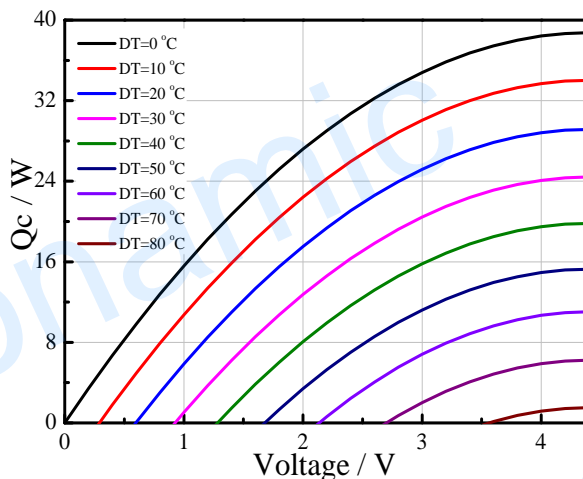
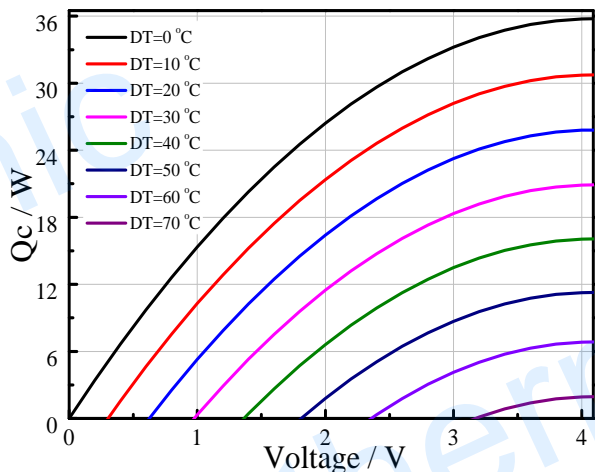
Performance Curves at Th=50 °C



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



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

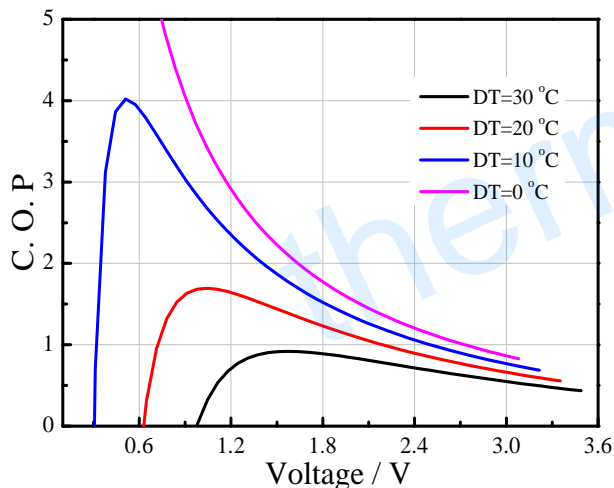


Standard Performance Graph $Q_c = f(V)$

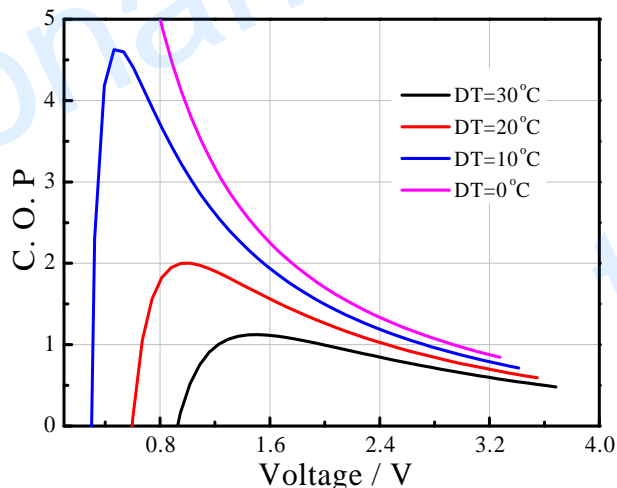
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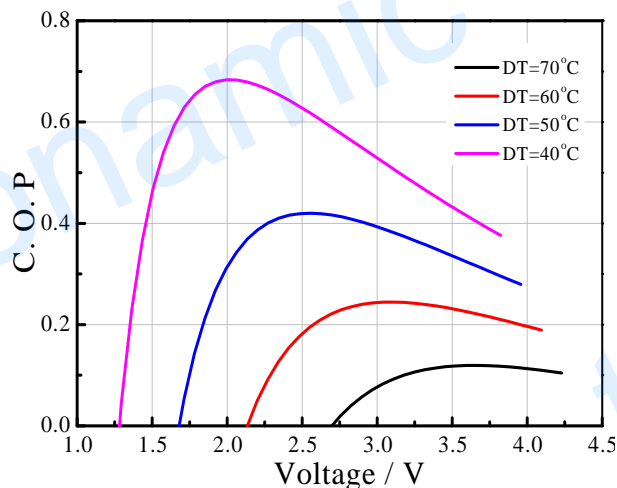
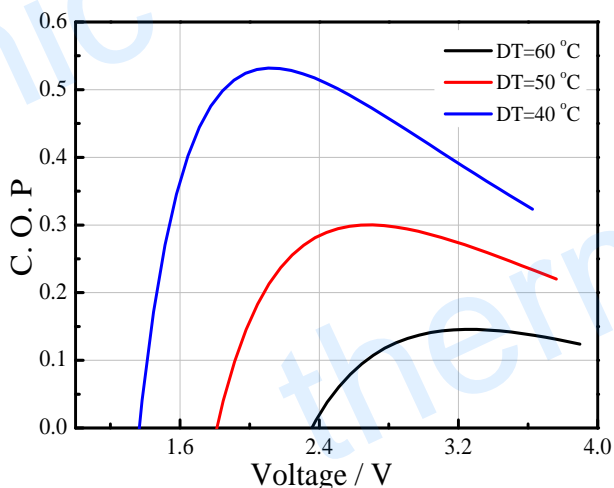
Performance Curves at Th=27 °C



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 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