Specification of Thermoelectric Module

TEHC1-12703

Description

The 127 couples, 40 mm ×40 mm size single module which is made of our high performance ingot to achieve superior cooling performance and 74 ℃ 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

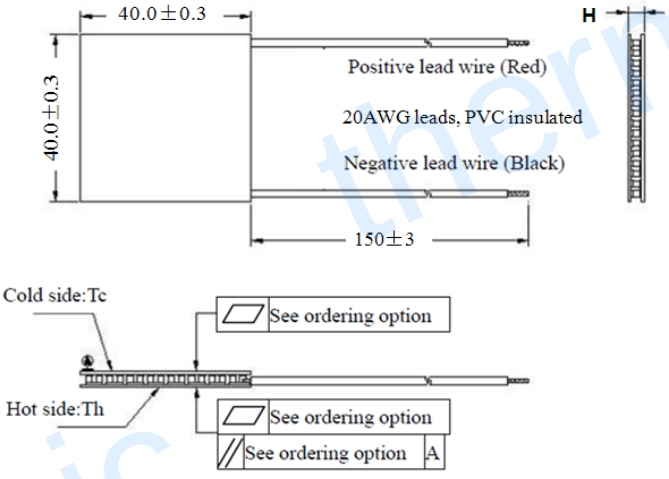
Application

- Food and beverage service refrigerator
- Portable cooler box for cars
- Temperature stabilizer
- Liquid cooling
- CPU cooler and scientific instrument
- Photonic and medical systems

Performance Specification Sheet

Th (℃)	27	50	Hot side temperature at environment: dry air, N_2
DT_{max} (℃)	74	83	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U_{max} (Voltage)	16.8	18.08	Voltage applied to the module at DT_{max}
I_{max} (Amps)	4.2	4.2	DC current through the modules at DT_{max}
Q_{Cmax} (Watts)	44.6	49.0	Cooling capacity at cold side of the module under DT=0 ℃
AC resistance (Ohms)	3.03	3.26	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 ℃)
2. T200: CuSn (Melting Point= 227 ℃)

B. Sealant:

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

C. Ceramics:

1. Alumina (Al_2O_3, white 96%)(AlO)
2. Aluminum Nitride (AlN)

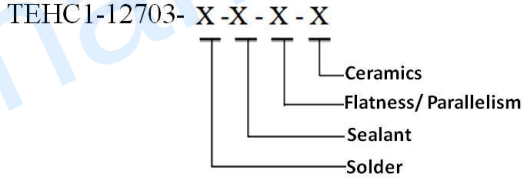
D. Ceramics Surface Options:

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

Ordering Option

Suffix	Thickness H / (mm)	Flatness/ Parallelism (mm)	Lead wire length (mm) Standard/Optional length
TF	0:4.2±0.1	0:0.05/0.05	150±3/Specify
TF	1:4.2±0.05	1:0.025/0.025	150±3/Specify
TF	2:4.2±0.025	2:0.015/0.015	150±3/Specify
Eg. TF01: Thickness 4.2±0.1(mm) and Flatness 0.025/0.025(mm)			

Naming for the Module



TEHC1-12703-T100-NS –TF01 -AlO

T100: BiSn (Tmelt=138°C)

NS: No sealing AlO: Alumina (Al2O3, white 96%)

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

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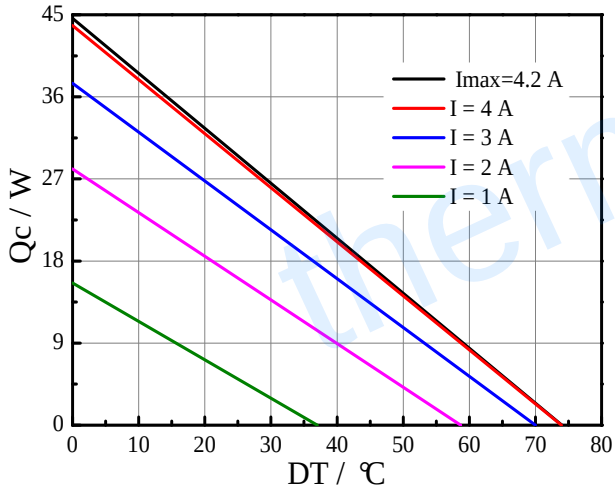
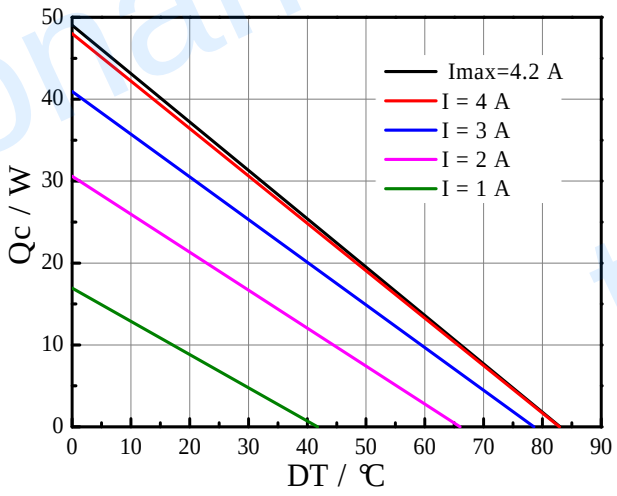
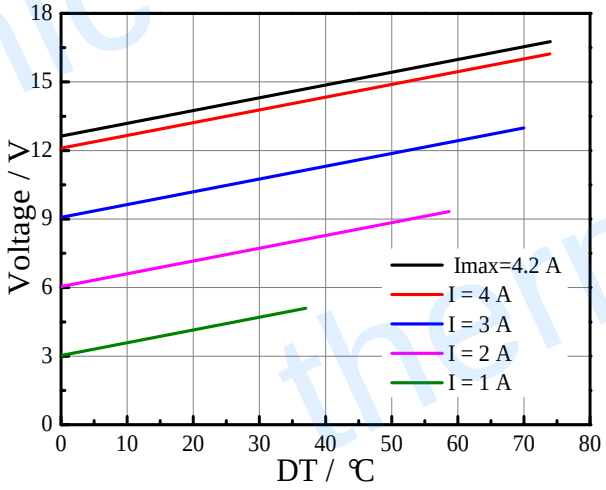
Performance Curves at Th=27 ℃

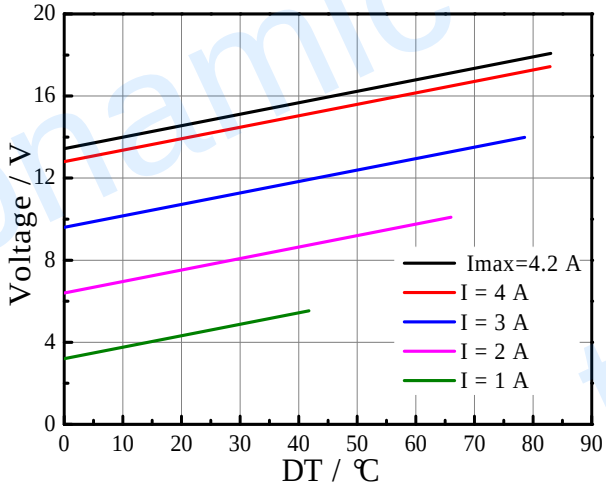


Performance Curves at Th=50 ℃

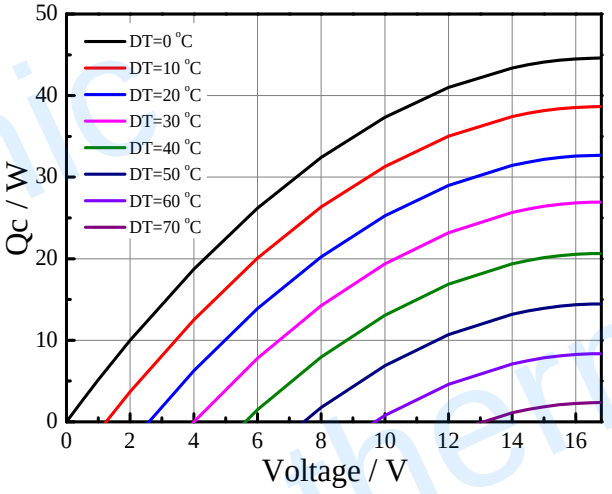


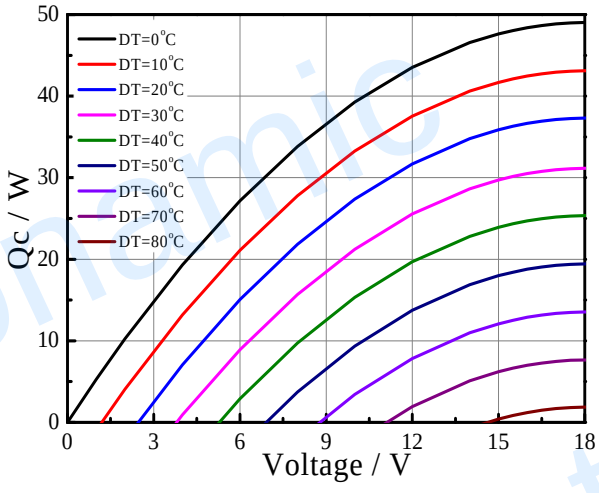
Standard Performance Graph Qc= f(DT)





Standard Performance Graph V= f(DT)





Standard Performance Graph Qc= f(V)

Specification of Thermoelectric Module

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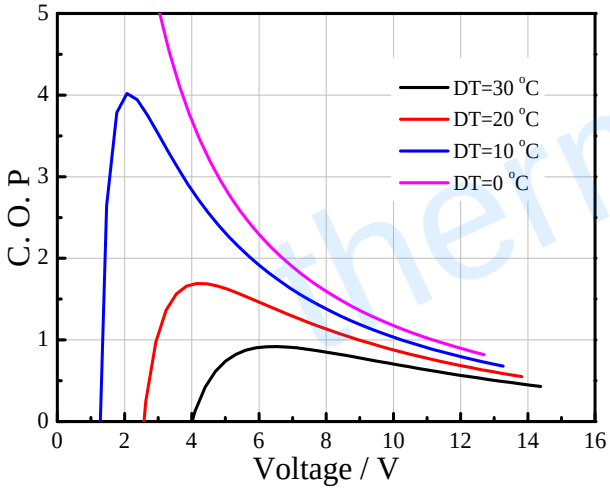
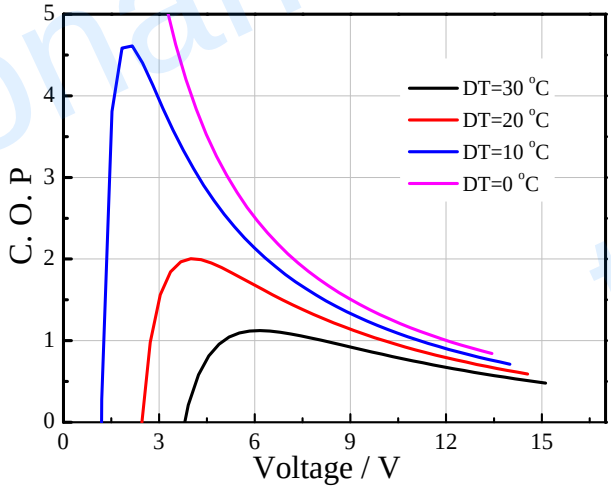
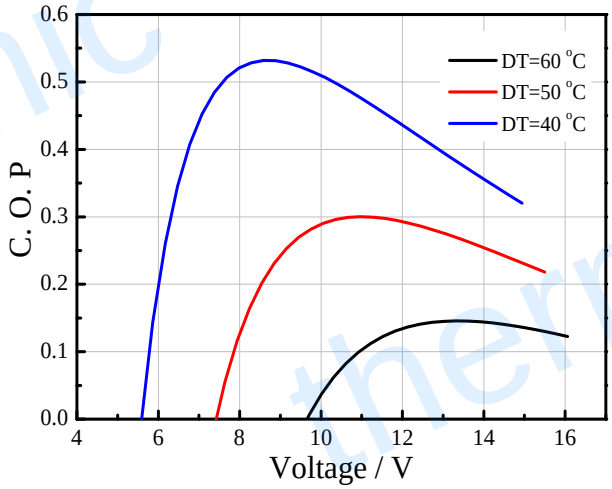
Performance Curves at Th=27 ℃

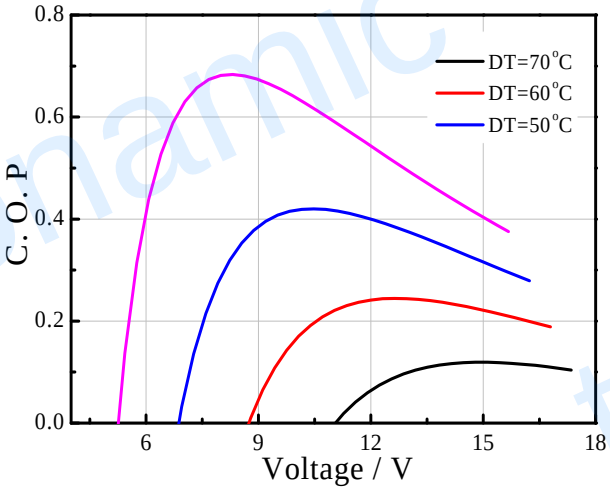


Performance Curves at Th=50 ℃



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 Qc/Input power (V ×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 below I_{max} or V_{max}
- Work under DC