Specification of Thermoelectric Module

TEHC1-12710

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

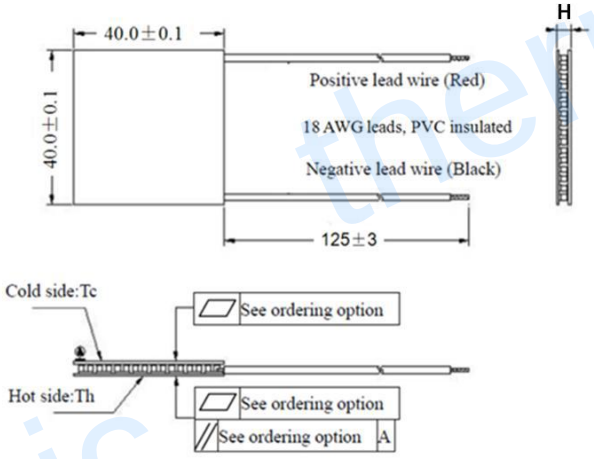
Application

- 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(ºC)	27	50	Hot side temperature at environment: dry air, N_2
DT_{max}(ºC)	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)	10.1	10.1	DC current through the modules at DT_{max}
Q_{Cmax}(Watts)	108.0	117.8	Cooling capacity at cold side of the module under DT=0 ºC
AC resistance(ohms)	1.25	1.38	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=138ºC)
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 (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 (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:3.6±0.1	0:0.05/0.05	125±3/Specify
TF	1:3.6±0.05	1:0.025/0.025	125±3/Specify
TF	2:3.6±0.025	2:0.015/0.015	125±3/Specify
Eg. TF01: Thickness 3.6±0.1(mm) and Flatness 0.025/0.025(mm)			

Naming for the Module

TEHC1-12710- X -X - X - X

- Ceramics
- Flatness/ Parallelism
- Sealant
- Solder

TEHC1-12710–T100 -NS –TF01 -AlO

T100: BiSn(Tmelt=138°C)

NS: No sealing

AlO: Alumina white 96%

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

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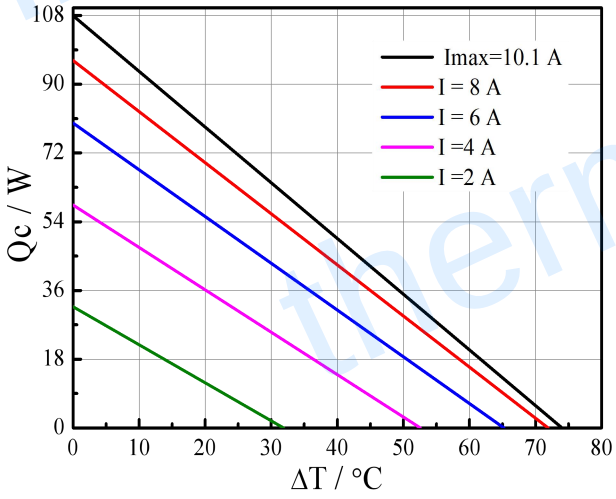
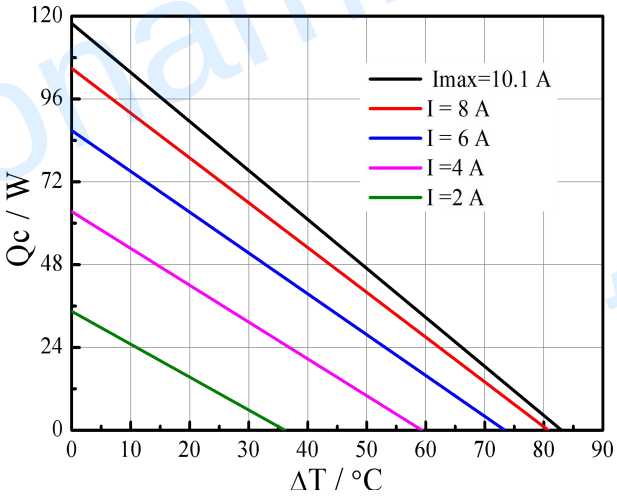
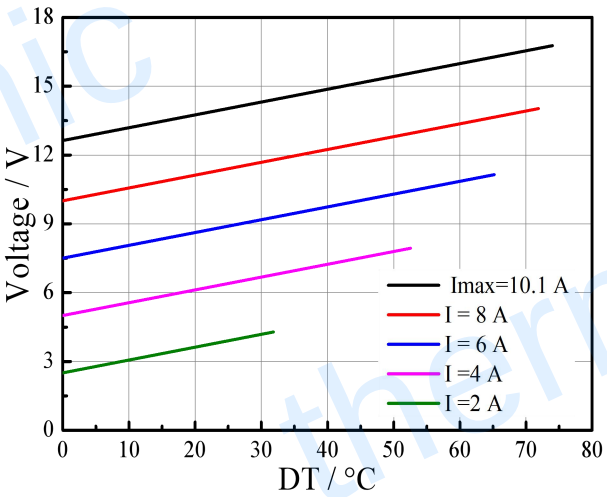
Performance Curves at Th=27 ºC

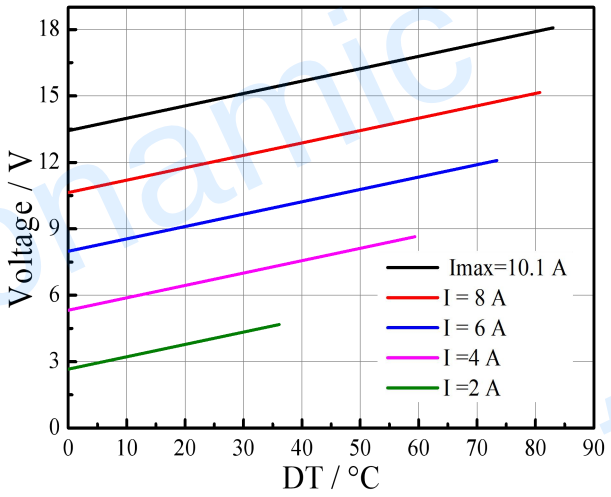


Performance Curves at Th=50 ºC

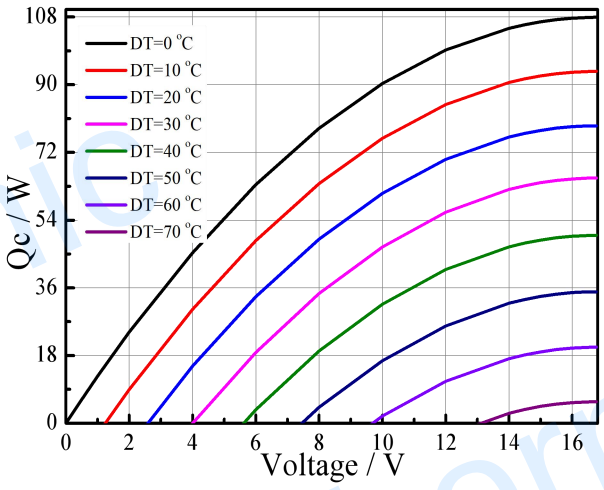


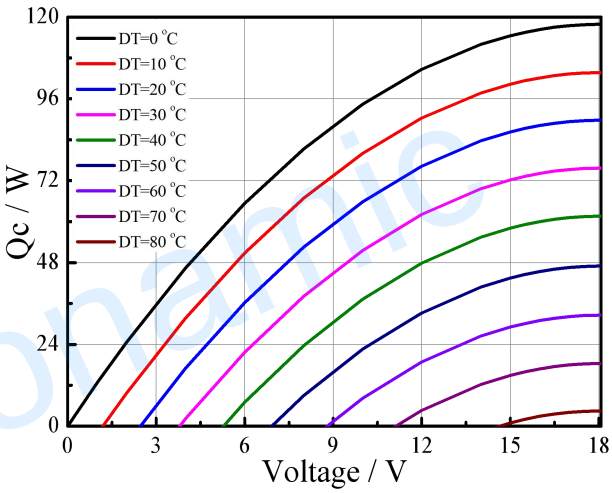
Standard Performance Graph Qc= f(DT)





Standard Performance Graph V= f(ΔT)





Standard Performance Graph Qc= f(V)

Specification of Thermoelectric Module

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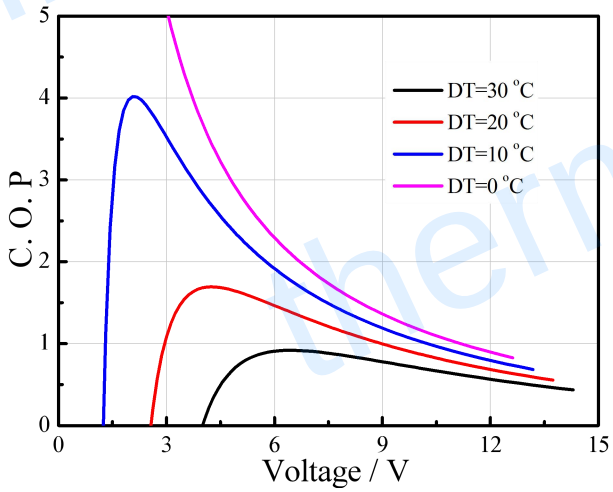
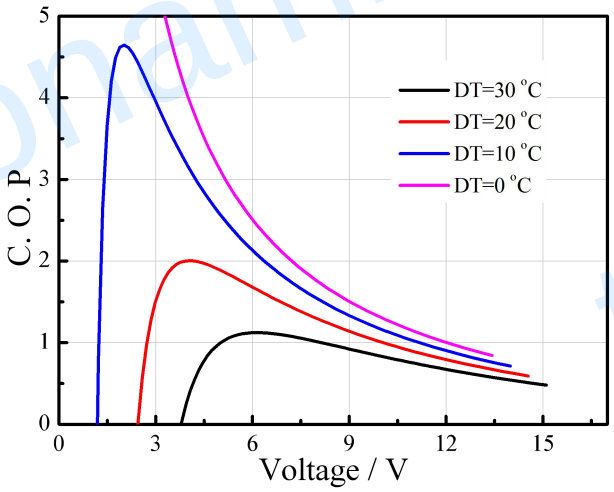
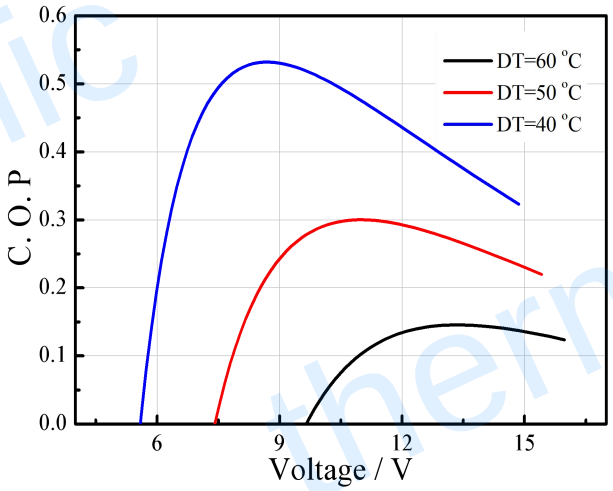
Performance Curves at Th=27 ºC

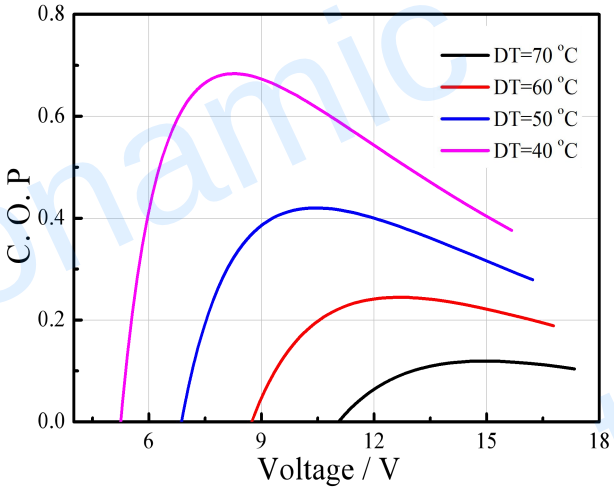


Performance Curves at Th=50 ºC



Standard Performance Graph COP = f(V) of ΔT ranged from 0 to 30 ˚C





Standard Performance Graph COP = f(V) of ΔT 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 Imax or Vmax
- Operation or storage module below 100 ºC
- Work under DC