Specification of Thermoelectric Module

TEHC1-127018

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
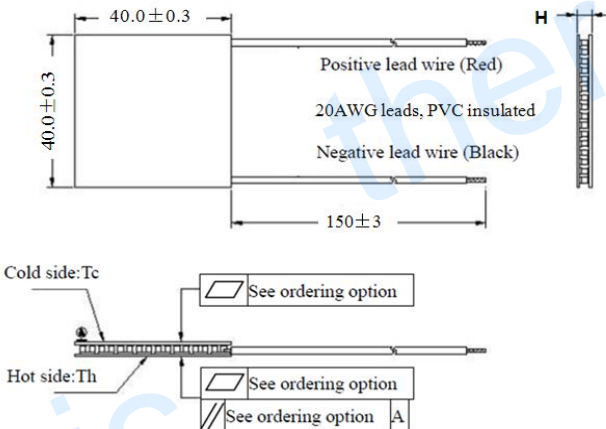- Exceptionally reliable in quality, high performance

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	18.2	Voltage applied to the module at DT_{max}
I_{max}(amps)	3.03	3.03	DC current through the modules at DT_{max}
Q_{Cmax}(Watts)	31.7	34.1	Cooling capacity at cold side of the module under DT=0 ºC
AC resistance(ohms)	4.2	4.5	The module resistance is tested under AC
Tolerance (%)	± 10		For thermal and electricity parameters

Geometric Characteristics Dimensions in millimeters

40.0±0.3

40.0±0.3

H

Positive lead wire (Red)

20AWG leads, PVC insulated

Negative lead wire (Black)

150±3

Cold side:Tc

See ordering option

Hot side:Th

See ordering option

See ordering option A

Manufacturing Options

A. Solder:

1. T100: BiSn (Tmelt=138ºC)

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_2O_3, white 96%)

2. Aluminum Nitride (AlN)

D. Ceramics Surface Options:

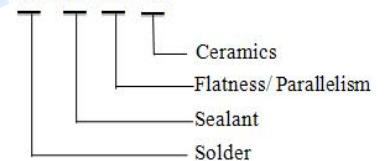1. Blank ceramics (not metalized)

2. Metalized

Ordering Option

Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:4.8±0.1	0:0.08/0.08	150±3/Specify
TF	1:4.8±0.03	1:0.03/0.03	150±3/Specify
Eg. TF01: Thickness 4.8±0.1(mm) and Flatness 0.03/0.03(mm)			

Naming for the Module

TEHC1- 127018- X - X - X - X

Ceramics
Flatness/ Parallelism
Sealant
Solder

TEHC1- 127018- T100 -SS - TF01- AlO
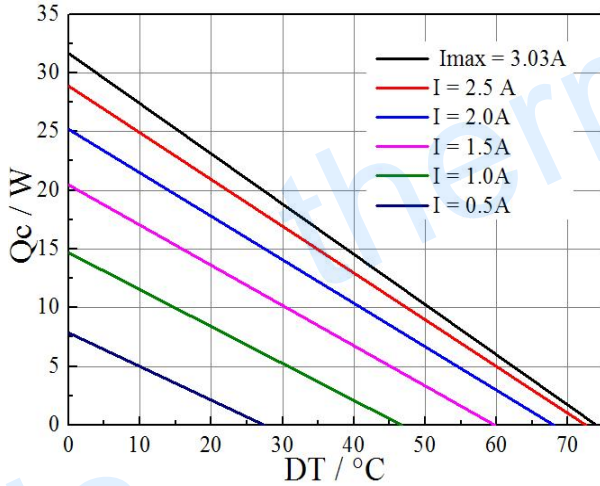
T100: Solder, BiSn (Melting Point=138 ℃)

SS: Silicone sealing   AlO: Alumina white 96%

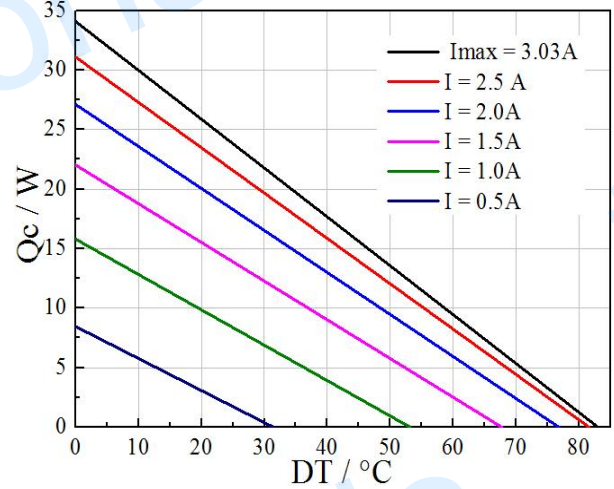# Specification of Thermoelectric Module
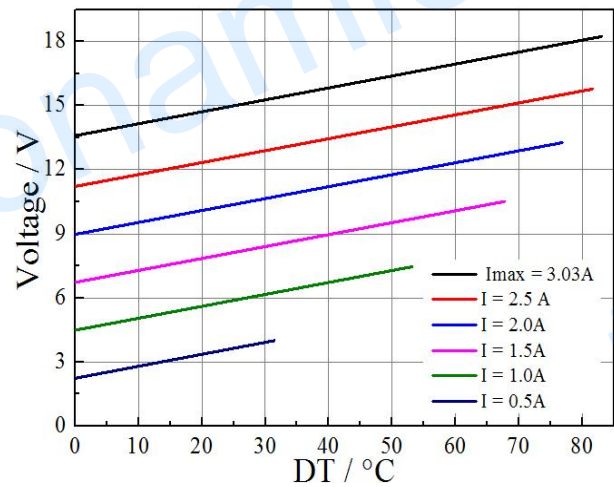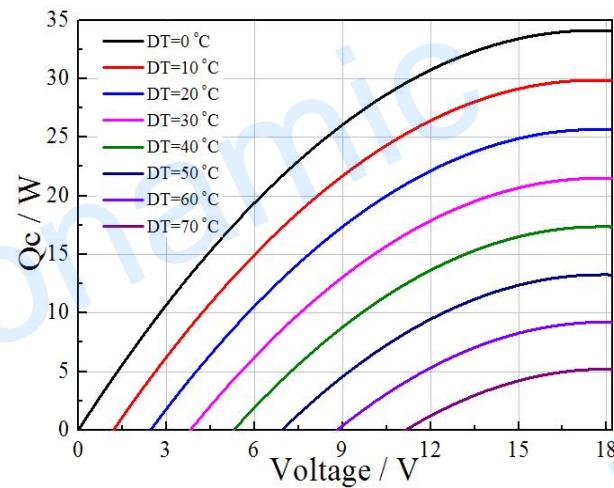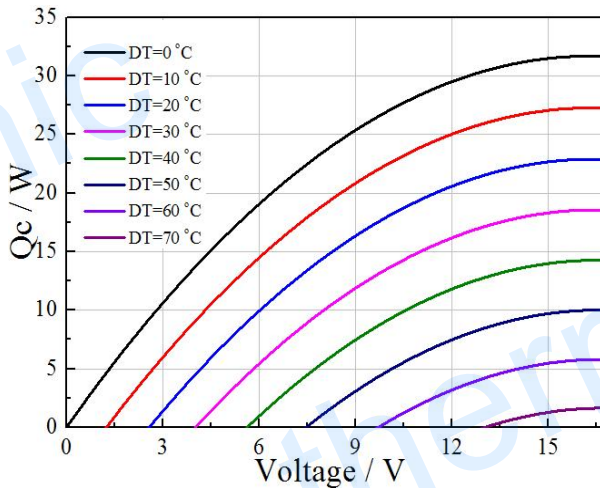
TEHC1-127018

Performance Curves at Th=27 ºC

Performance Curves at Th=50 ºC

Standard Performance Graph Qc= f(DT)
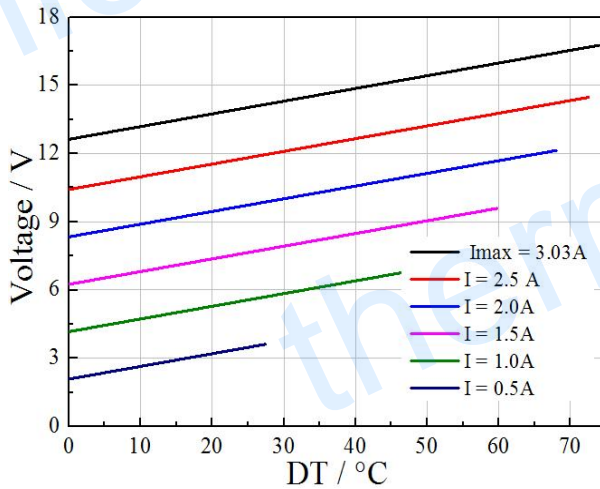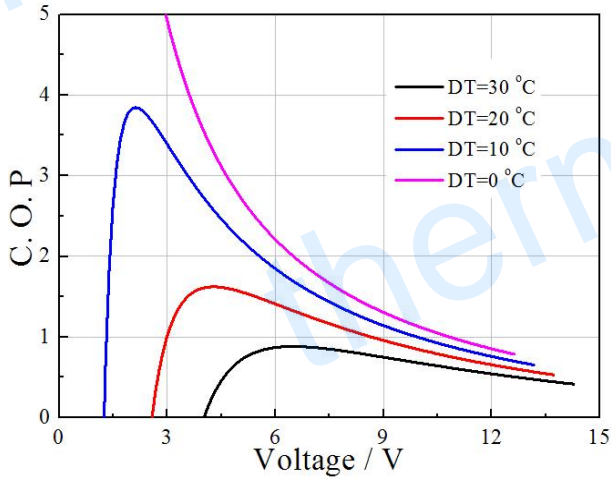

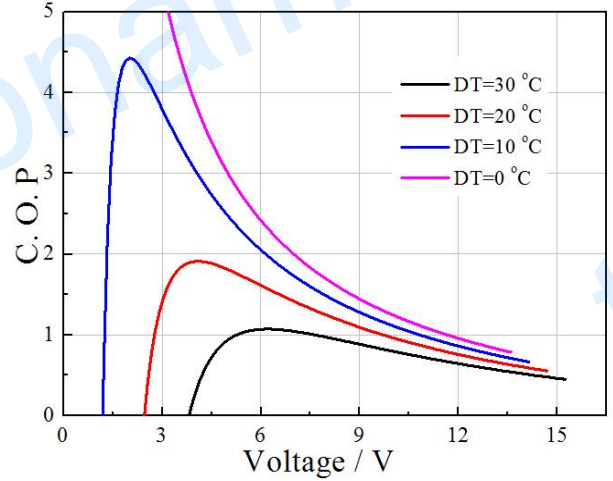Standard Performance Graph V= f(ΔT)

Standard Performance Graph Qc= f(V)
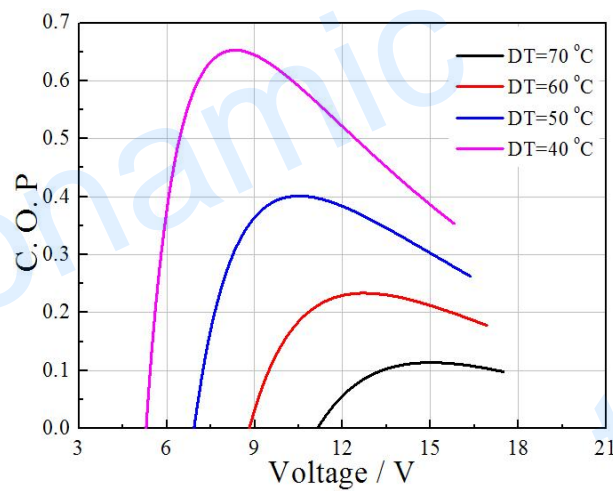
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Performance Curves at Th=27 ºC

Performance Curves at Th=50 ºC

Standard Performance Graph COP = f(V) of ΔT ranged from 0 to 30 ˚C
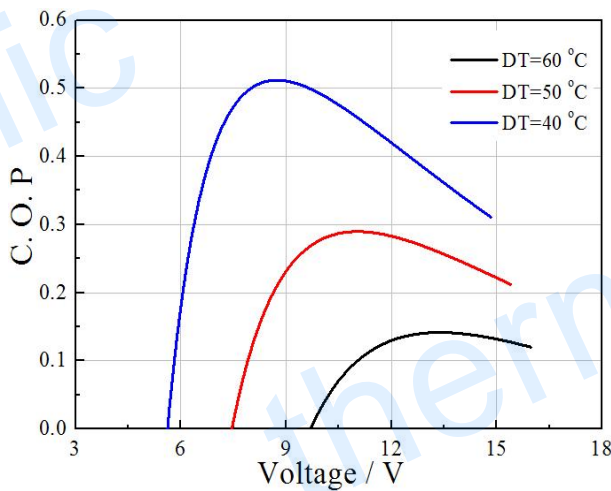
Standard Performance Graph COP = f(V) of ΔT ranged from 40 to 60/70 ˚C

Remark: The coefficient of performance (COP) is the cooling power 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 below Imax or Vmax

● Operation or storage module below 100 ºC

● Work under DC