Specification of Thermoelectric Module

TES1-03139

Description

The 31 couples, 15mm x15mm size module is a single stage module which is made of our high performance ingot to achieve superior cooling performance and 70℃ 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

● 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 (ºC)	27	50	Hot side temperature at environment: dry air, N_2
DT_{max} (ºC)	70	79	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U_{max} (Voltage)	3.9	4.1	Voltage applied to the module at DT_{max}
I_{max} (Amps)	4.7	4.7	DC current through the modules at DT_{max}
Q_{Cmax} (Watts)	11.4	12.6	Cooling capacity at cold side of the module under DT=0 ºC
AC resistance (Ohms)	0.69	0.77	The module resistance is tested under AC
Tolerance (%)	± 10		For thermal and electricity parameters

Geometric Characteristics Dimensions in millimeters
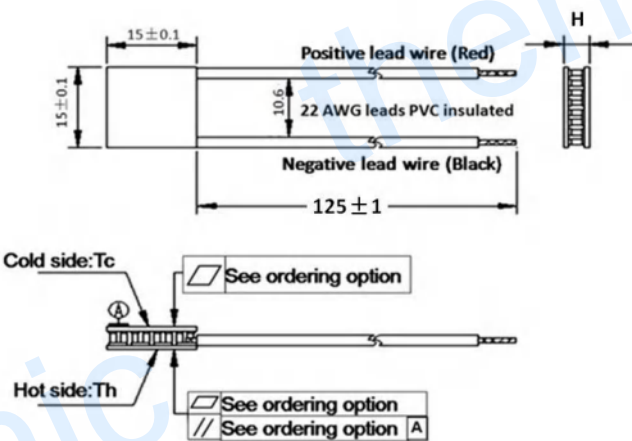
Manufacturing Options

A. Solder:

1. T100: BiSn (Tmelt=138ºC)

2. T200: CuAgSn (Tmelt = 217°C)

3. T240: SbSn (Tmelt = 240°C)

C. Ceramics:

1. Alumina (Al_2O_3, white 96%)

2. Aluminum Nitride (AlN)

B. Sealant:

1. NS: No sealing (Standard)

2. SS: Silicone sealant

3. EPS: Epoxy sealant

D. Ceramics Surface Options:

1. Blank ceramics (not metalized)

2. Metalized

Ordering Option

Suffix	Thickness H (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:3.2± 0.1	0: 0.05/0.05	125±1/Specify
TF	1:3.2 ± 0.03	1: 0.02/0.02	125±1/Specify

Eg. TF01: Thickness 3.2± 0.1 (mm) and Flatness 0.02 /0.02 (mm)

Naming for the Module

TES1-03139- X -X - X - X

- Ceramics
- Flatness/ Parallelism
- Sealant
- Solder
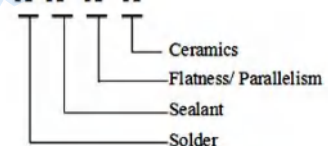
TES1-03139–T100 -NS –TF01 -AlO

T100: BiSn(Tmelt=138ºC)

NS: No sealing

AlO: Alumina white 96%

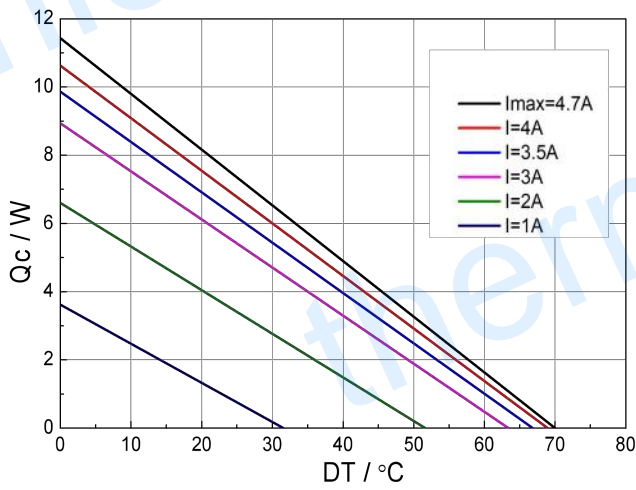TF01: Thickness ±0.1 (mm) and Flatness/Parallelism 0.025/0.025(mm)

Specification of Thermoelectric Module

TES1-03139

Performance Curves at Th=27 ºC

Performance Curves at Th=50 ºC
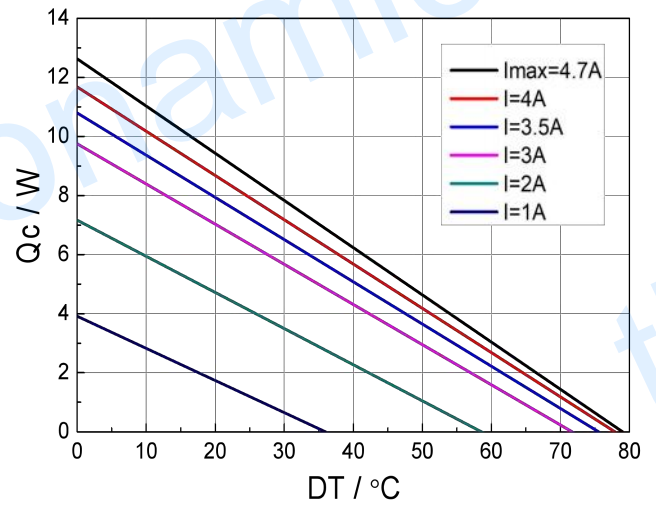
Standard Performance Graph Qc= f(DT)
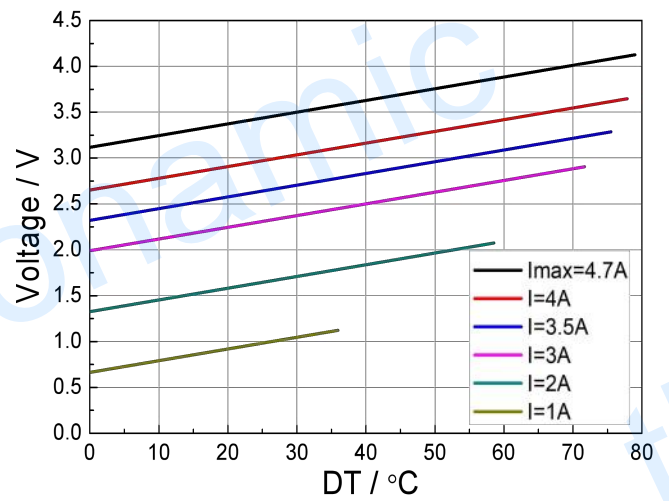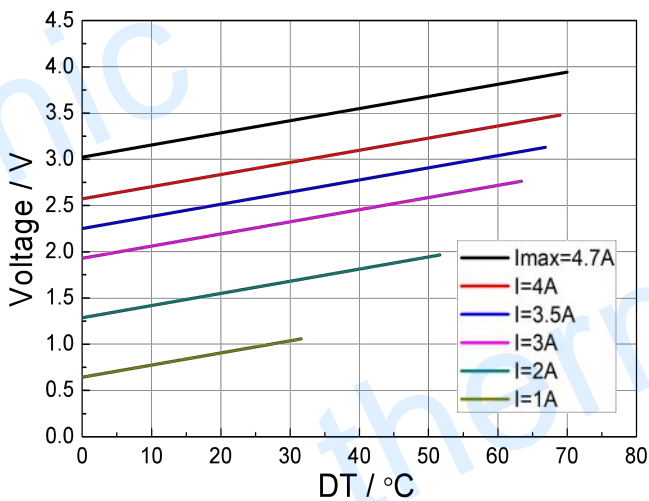
Standard Performance Graph V= f(DT)

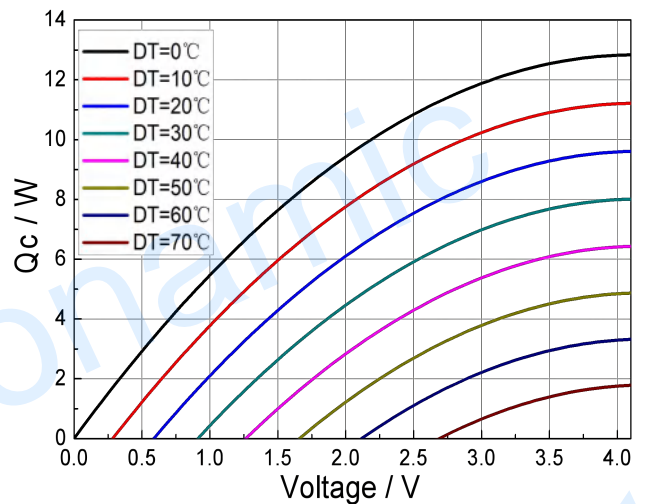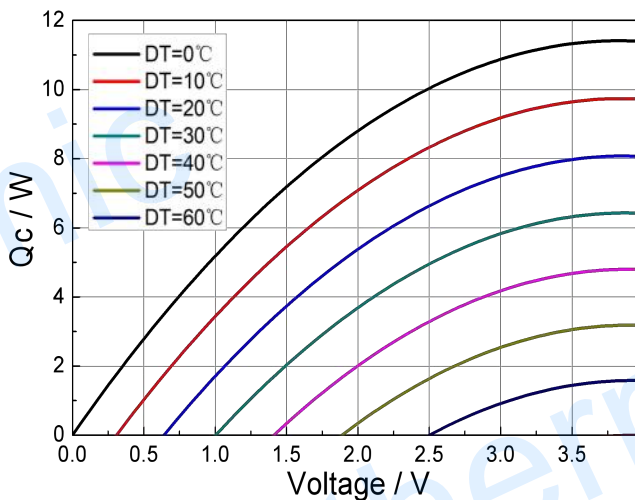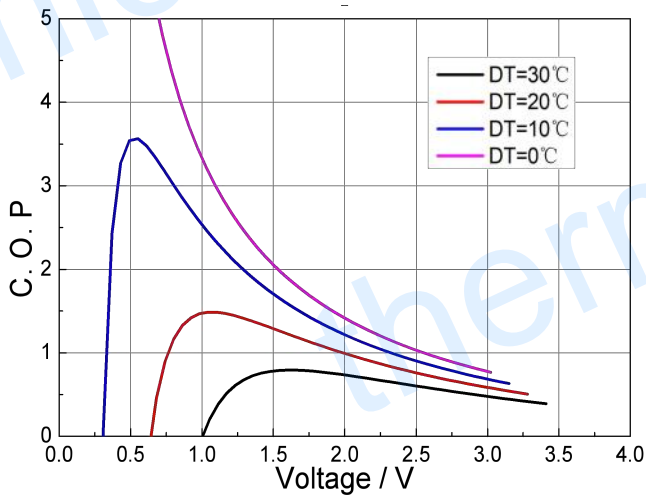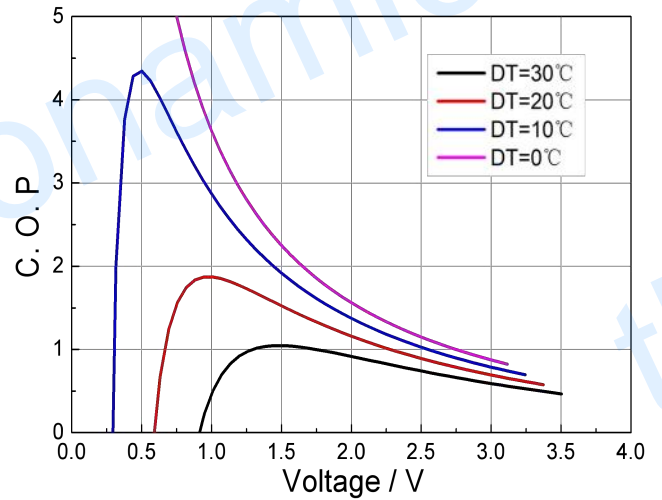Standard Performance Graph Qc= f(V)

Specification of Thermoelectric Module
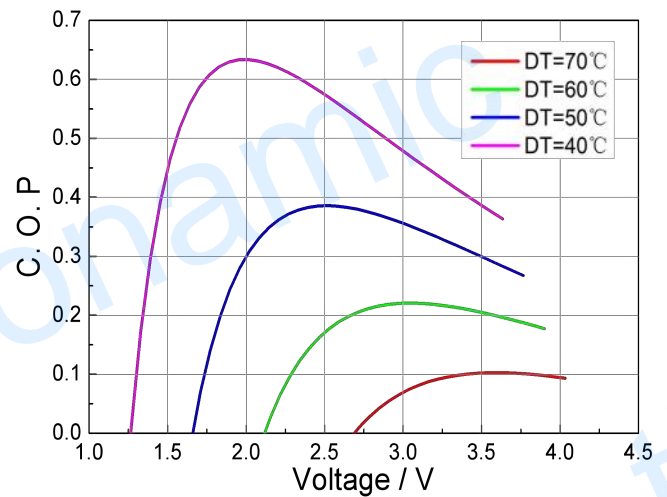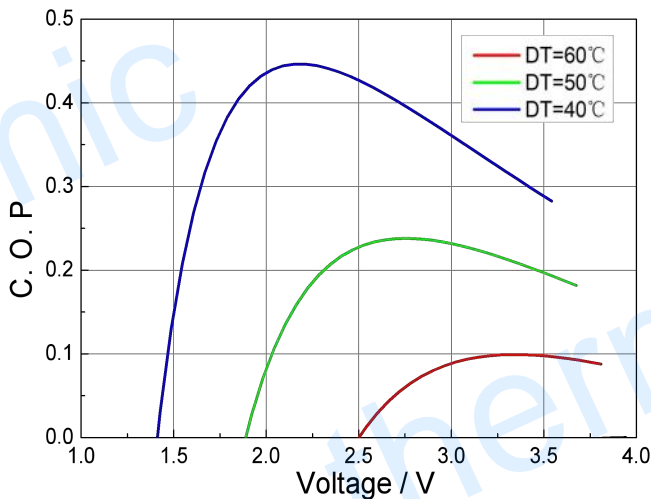
TES1-03139

Performance Curves at Th=27 ºC

Performance Curves at Th=50 ºC

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 Caution

● 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

Note: All specifications subject to change without notice.