

Specification of Thermoelectric Module

TEFC1-03120

Description

The 31 couples, 8.3 mm × 8.3 mm size single module which is made of selected high performance ingot to achieve superior cooling performance and greater delta T up to 70 °C, designed for superior cooling and heating up to 100 °C applications. If higher operation or processing temperature is required, please specify, 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

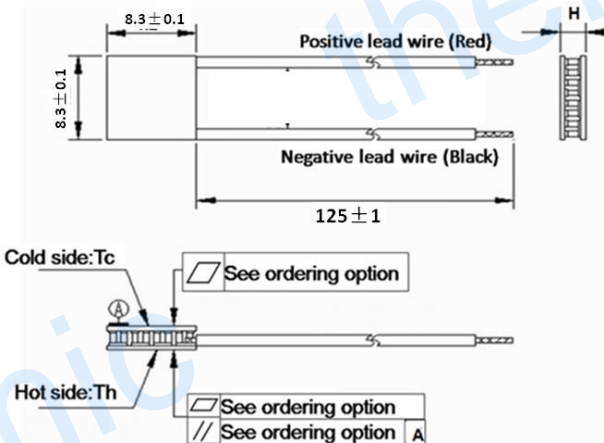
Application

- 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 (°C)	27	50	Hot side temperature at environment: dry air, N ₂
DT _{max} (°C)	70	79	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U _{max} (Voltage)	3.94	4.30	Voltage applied to the module at DT _{max}
I _{max} (amps)	2.37	2.37	DC current through the modules at DT _{max}
Q _{Cmax} (Watts)	5.77	6.21	Cooling capacity at cold side of the module under DT=0 °C
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 (T_{melt}=138°C)
2. T200: CuSn (T_{melt} = 227 °C)

B. Sealant:

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

X:

- : Standard ceramic surface without metallizing
- M1: Cold Side metallizing
- M2: Hot Side metallizing
- M3: Both Sides metallizing

C. Ceramics:

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

D. Ceramics Surface Options:

1. Blank ceramics (not metallized)
2. Metallized (Au/Ni plating)

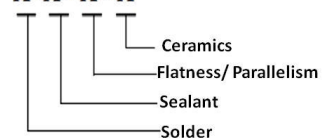
Ordering Option

Suffix	Thickness H (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:2.2±0.1	0: 0.015/0.015	125 ± 1/Specify
TF	1:2.2±0.05	1: 0.01/0.01	125 ± 1/Specify
TF	2:2.2±0.025	2: 0.008/0.008	125 ± 1/Specify

Eg. TF11: Thickness (Without plating) 2.2± 0.1 (mm) and Flatness 0.01 / 0.01 (mm)

Naming for the Module

TEFC1-03120X- X -X - X - X



TEFC1-03120M3-T100-NS-TF01-AIO-Ni

T100: BiSn (T_{melt}=138°C)

NS: No sealing

AIO: Alumina (Al₂O₃, white 96%)

TF01: Thickness(Without plating) ± 0.1(mm) and Flatness 0.01/0.01(mm)

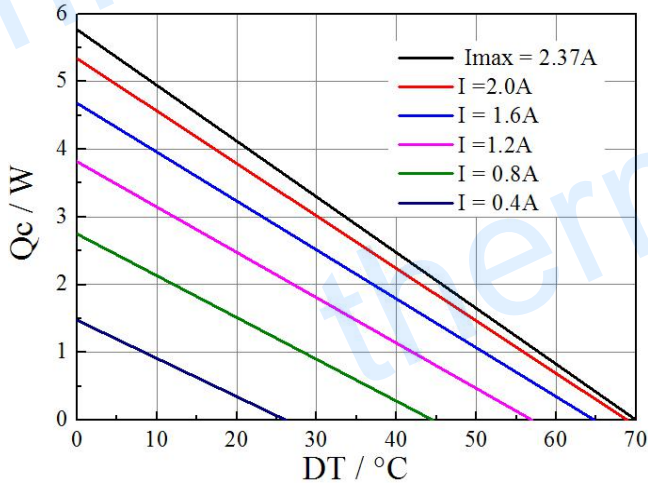
Creative technology with fine manufacturing processes provides you the reliable and quality products

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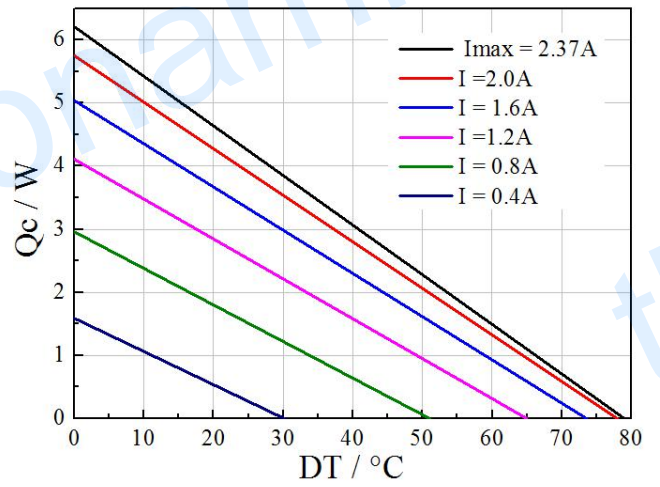
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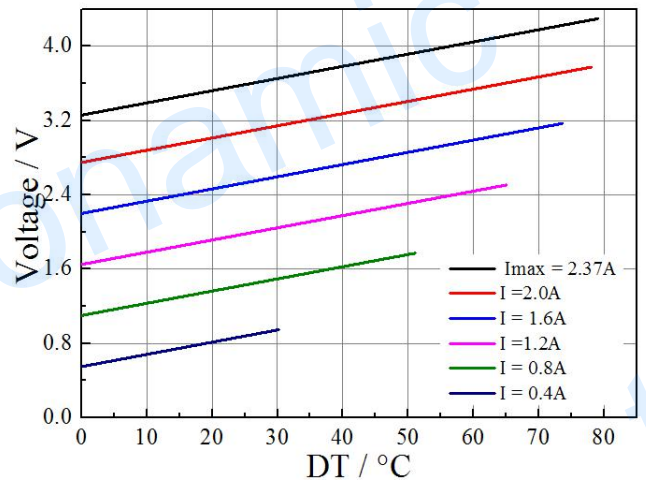
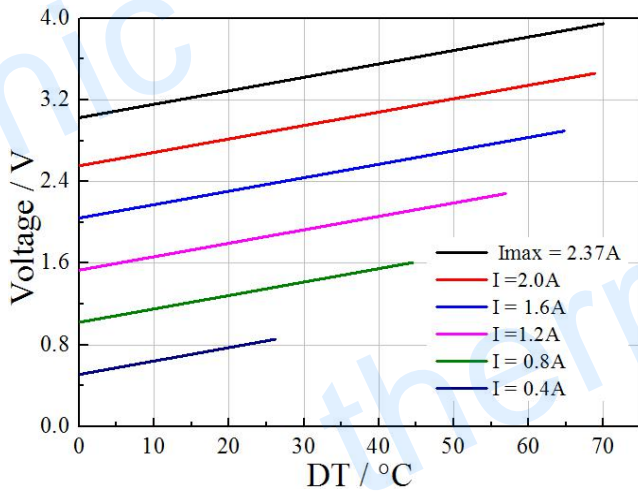
Performance Curves at Th=27 °C



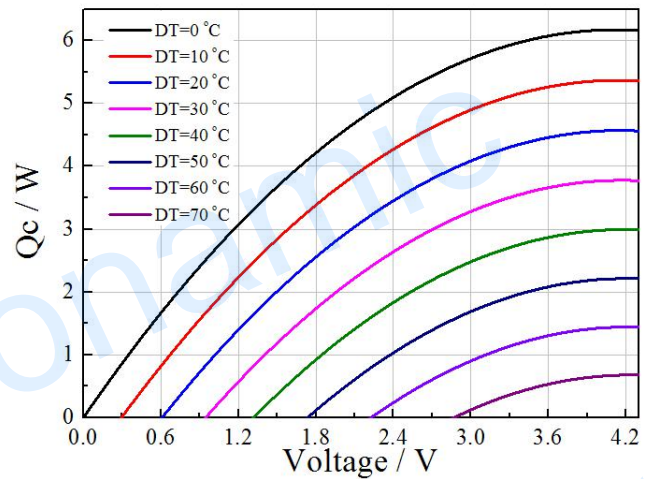
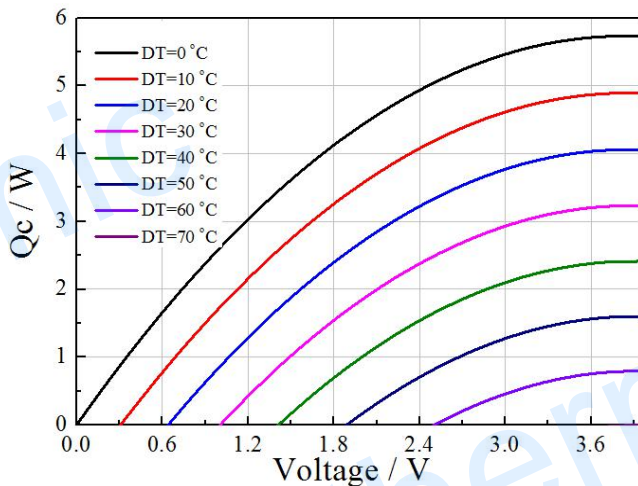
Performance Curves at Th=50 °C



Standard Performance Graph $Q_c = f(DT)$



Standard Performance Graph $V = f(DT)$

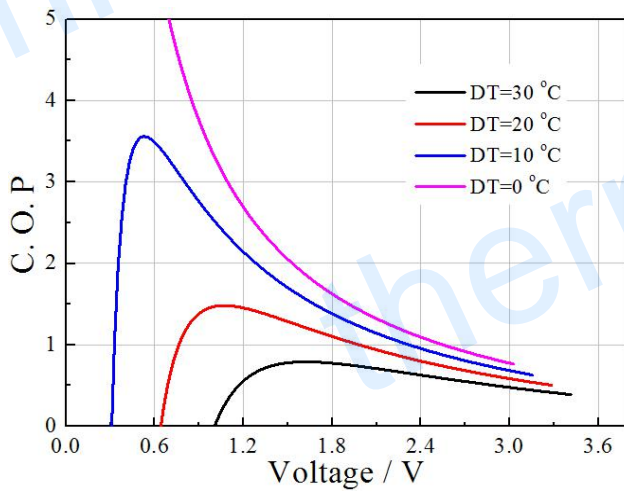


Standard Performance Graph $Q_c = f(V)$

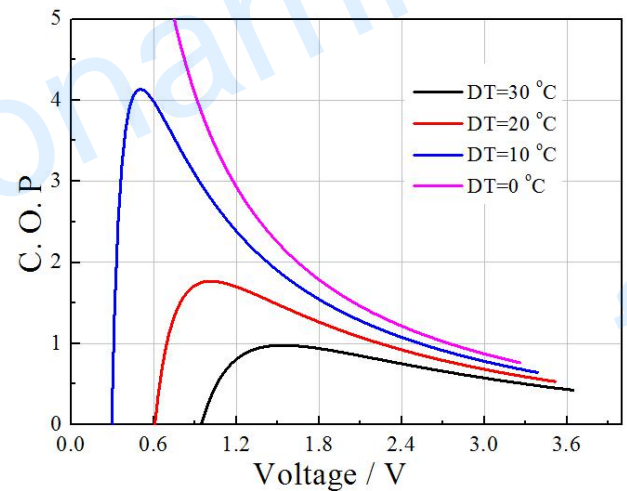
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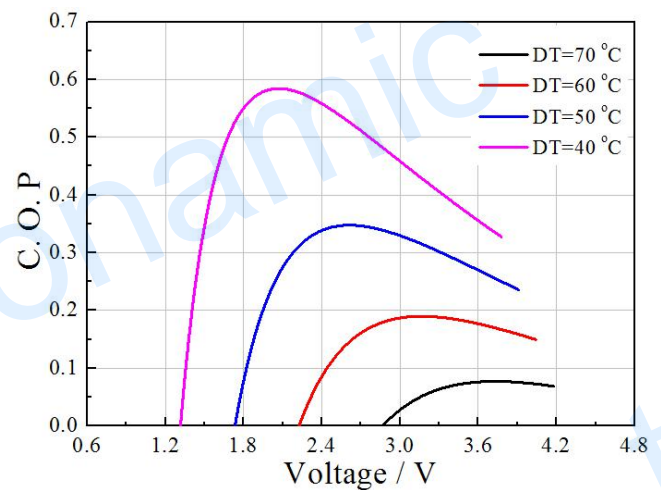
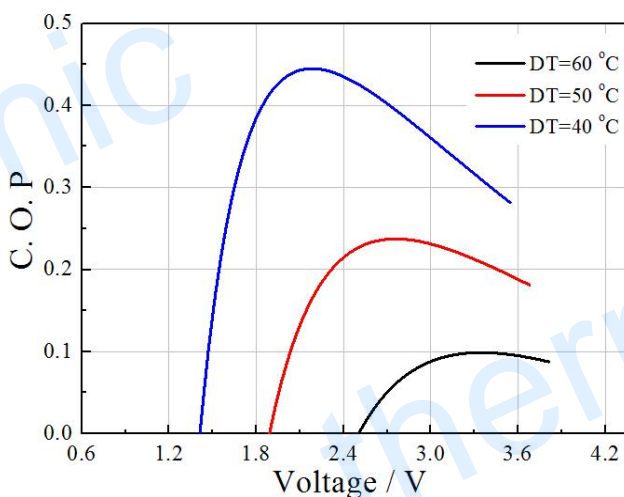
Performance Curves at Th=27 °C



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

- 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.