

Specification of Thermoelectric Module

TEC1-031035

Description

The 31 couples, 20 mm × 20 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

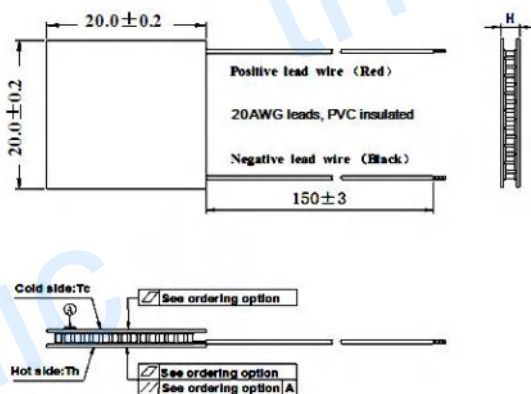
Application

- 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)	3.81	4.11	Voltage applied to the module at DT _{max}
I _{max} (amps)	3.8	3.8	DC current through the modules at DT _{max}
Q _{Cmax} (Watts)	9.5	10.2	Cooling capacity at cold side of the module under DT=0 °C
AC resistance(ohms)	0.76	0.82	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=138°C)
2. T200: CuSn (Tmelt = 227 °C)

B. Sealant:

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

other than above

C. Ceramics:

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

D. Ceramics Surface Options:

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

Ordering Option

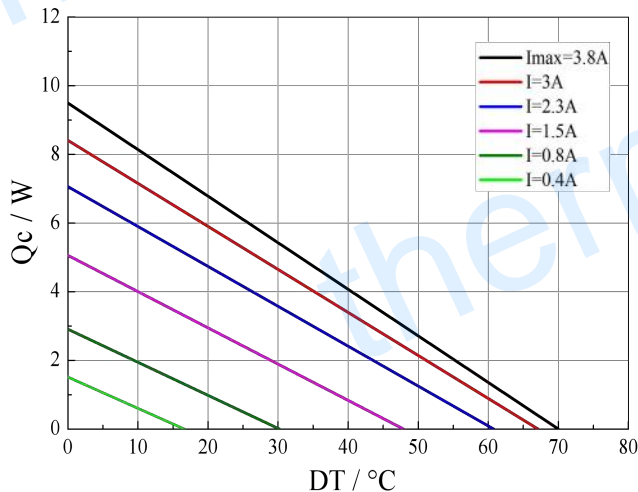
Suffix	Thickness H (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:4.7 ± 0.1	0: 0.08/0.08	150±3/Specify
TF	1:4.7 ± 0.05	1: 0.05/0.05	150±3/Specify
TF	2:4.7± 0.03	2: 0.03/0.03	150±3/Specify

Eg. TF01: Thickness 4.7 ± 0.1 (mm) and Flatness 0.025/0.025 (mm)

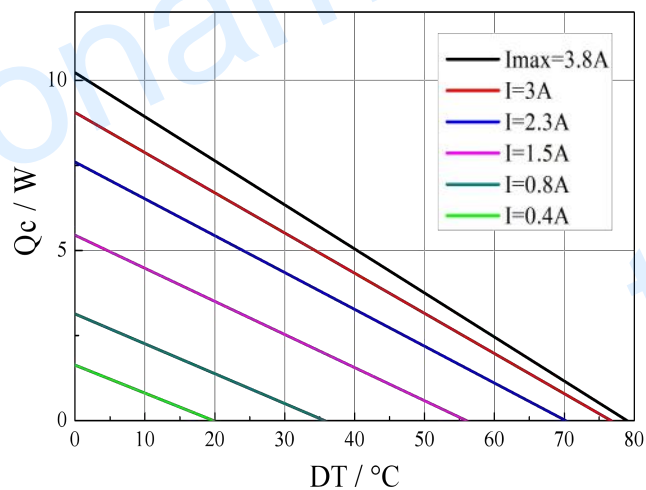
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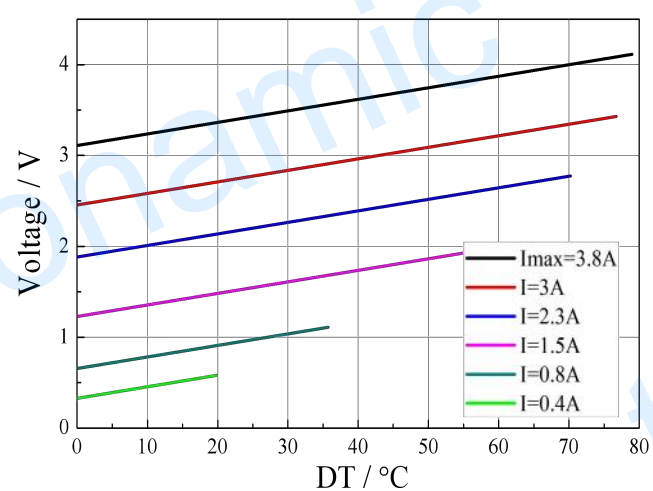
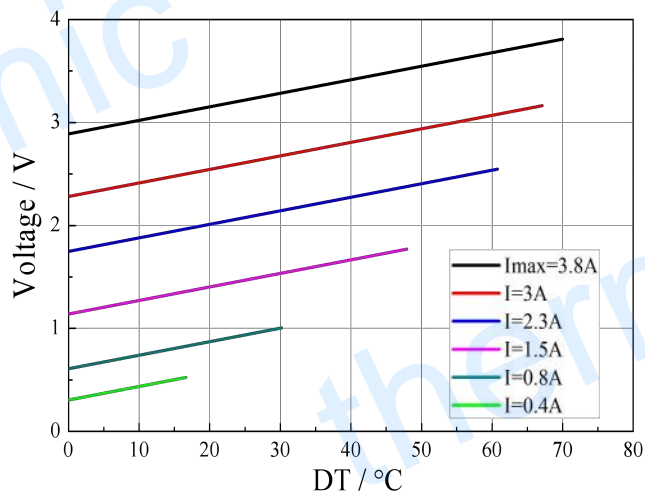
Performance Curves at $T_h=27^\circ\text{C}$



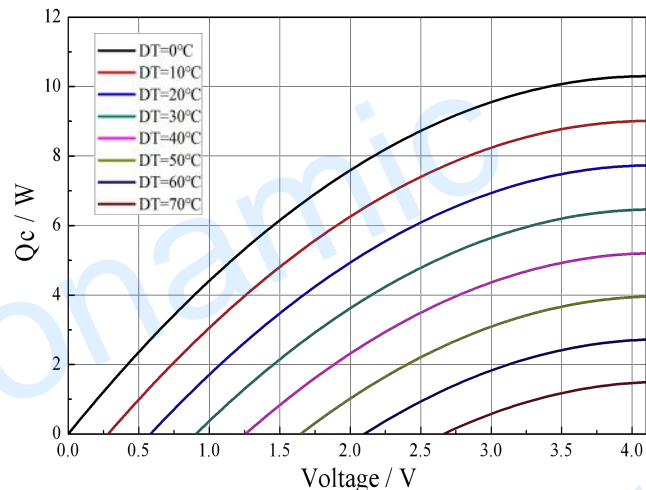
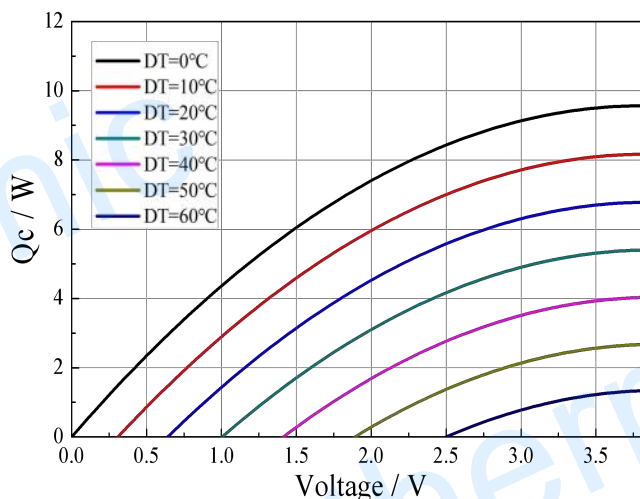
Performance Curves at $T_h=50^\circ\text{C}$



Standard Performance Graph $Q_c = f(DT)$



Standard Performance Graph $V = f(\Delta T)$

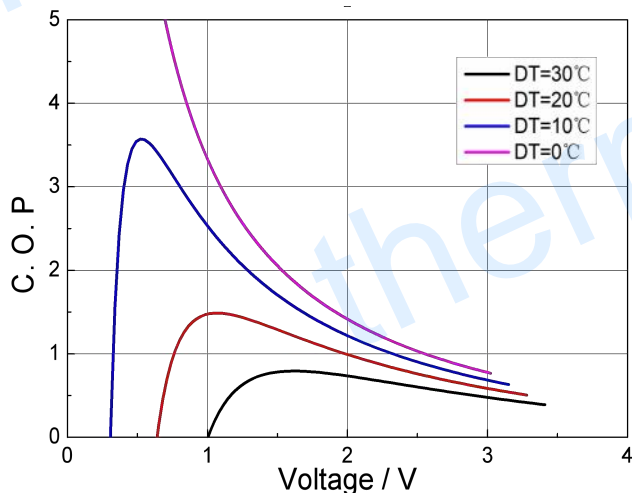


Standard Performance Graph $Q_c = f(V)$

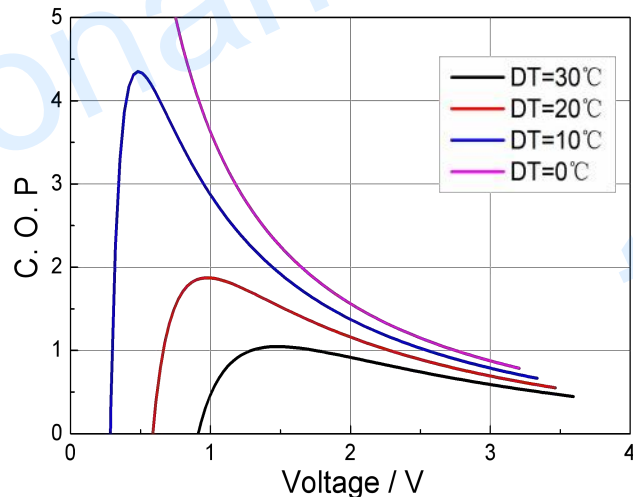
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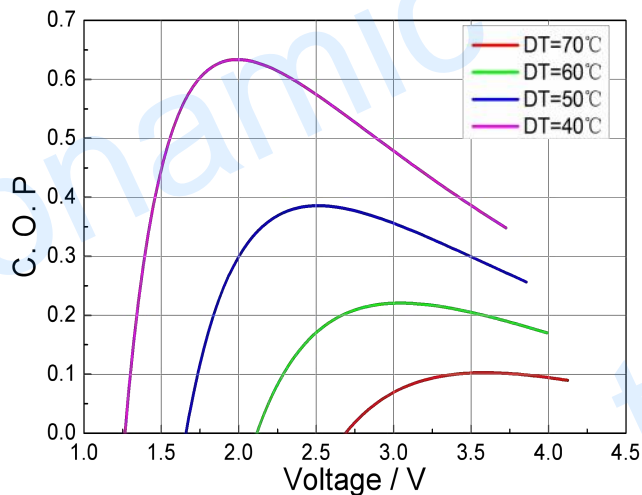
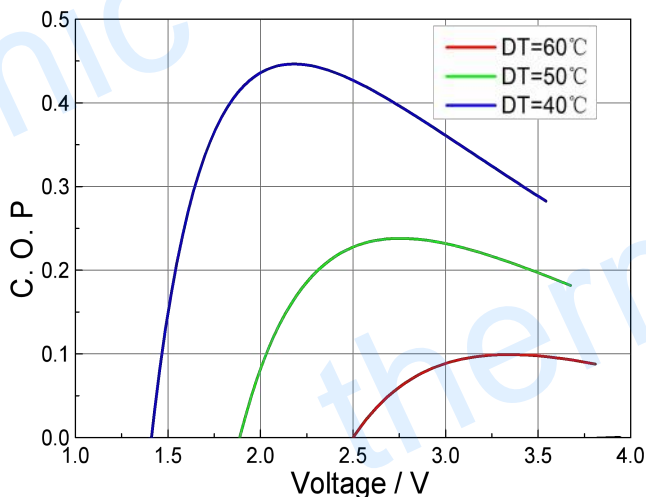
Performance Curves at $T_h=27^\circ\text{C}$



Performance Curves at $T_h=50^\circ\text{C}$



Standard Performance Graph $\text{COP} = f(V)$ of ΔT ranged from 0 to 30°C



Standard Performance Graph $\text{COP} = f(V)$ of ΔT ranged from 40 to $60/70^\circ\text{C}$

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.