

Specification of Thermoelectric Module

TEC1-24104-ID125OD165

Description

The 241 couples, inner $\phi=125\text{mm}$ / outer $\phi=165\text{mm}$ size module is a single stage module which is made of our high performance ingot to achieve superior cooling performance and 70°C or larger ΔT_{max} , 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

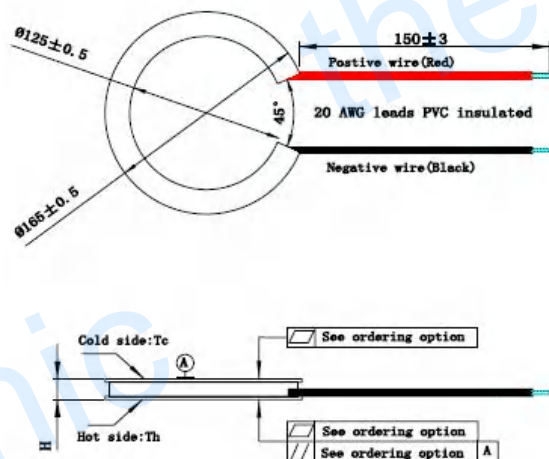
Application

- 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 ($^\circ\text{C}$)	27	50	Hot side temperature at environment: dry air, N ₂
DT _{max} ($^\circ\text{C}$)	70	79	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U _{max} (Voltage)	29.8	32.2	Voltage applied to the module at DT _{max}
I _{max} (Amps)	3.9	3.9	DC current through the modules at DT _{max}
Q _{Cmax} (Watts)	75.5	81.2	Cooling capacity at cold side of the module under DT=0 $^\circ\text{C}$
AC resistance (Ohms)	5.80	6.25	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_{mel}=138 $^\circ\text{C}$)

B. Sealant:

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

C. Ceramics:

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

D. Ceramics Surface Options:

1. Blank ceramics (not metalized)
2. Metalized (Cu plating)

Ordering Option

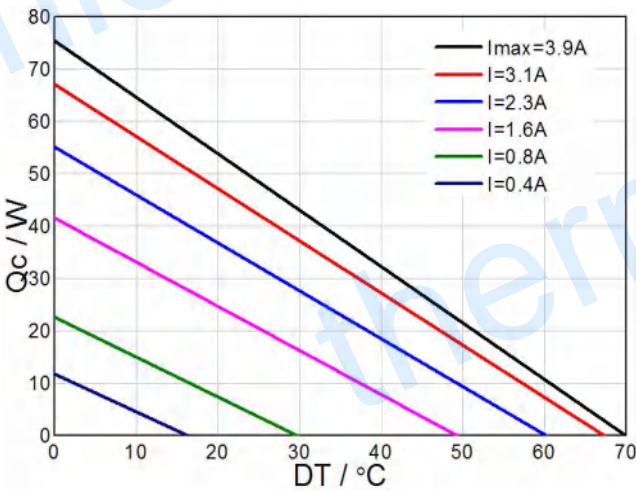
Suffix	Thickness H (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:4.7 ± 0.2	0: 0.10/0.10	150±3/Specify
TF	1:4.7 ± 0.1	1: 0.05/0.05	150±3/Specify

Eg. TF00: Thickness 4.7 ± 0.2 (mm) and Flatness 0.10/0.10 (mm)

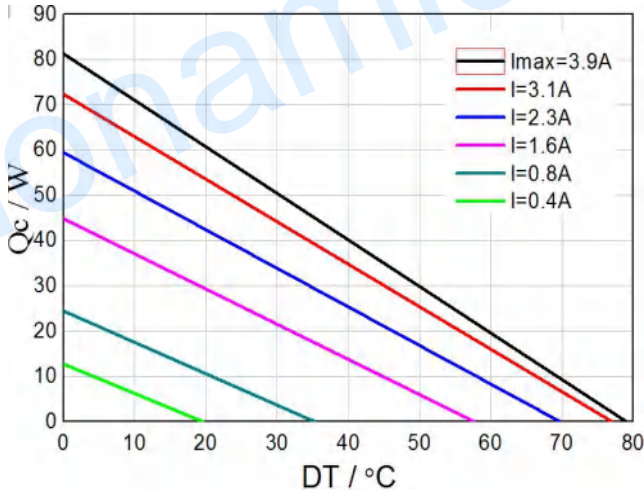
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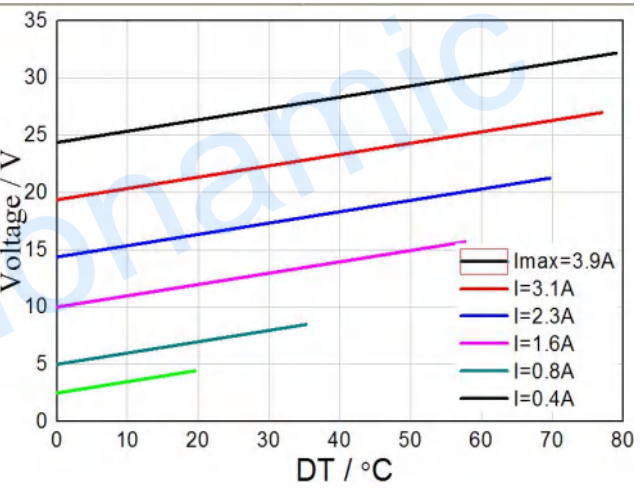
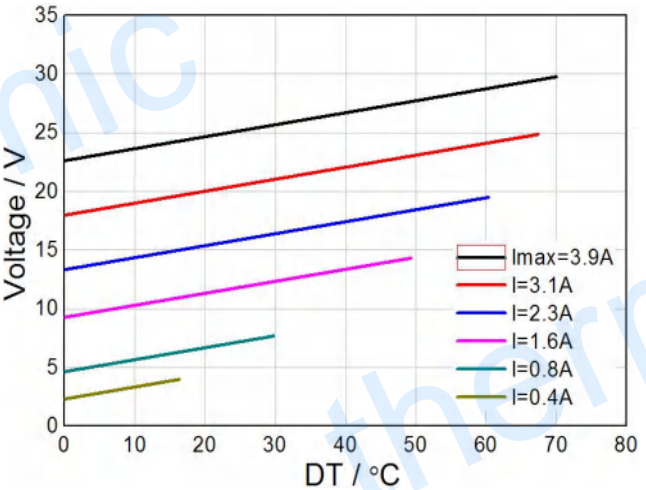
Performance Curves at Th=27 °C



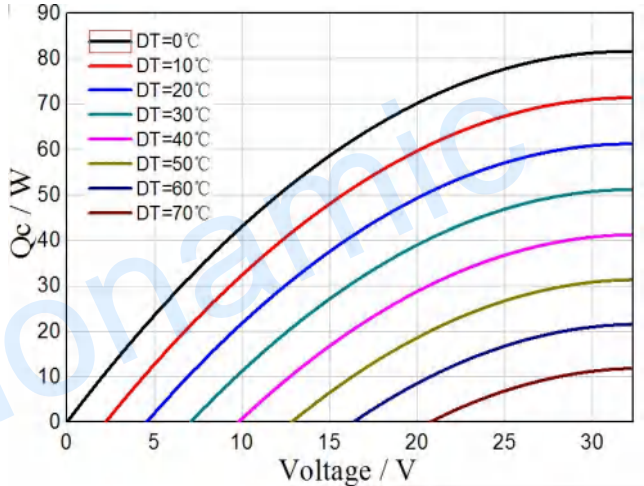
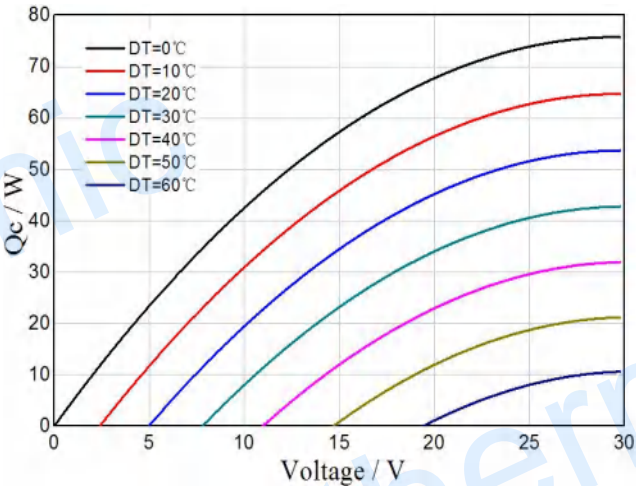
Performance Curves at Th=50 °C



Standard Performance Graph Qc= f(DT)



Standard Performance Graph V= f(DT)

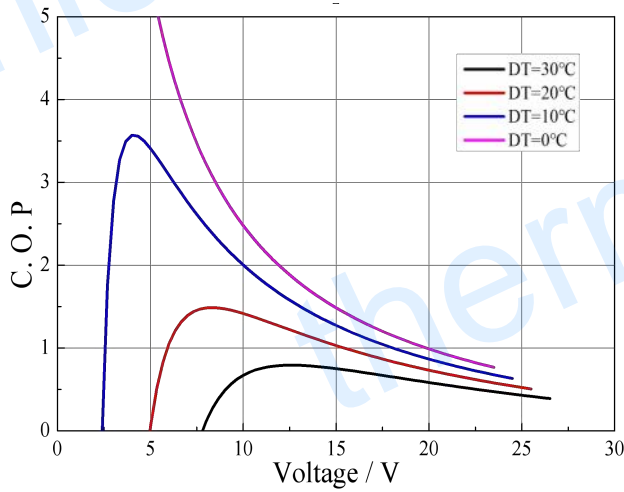


Standard Performance Graph Qc= f(V)

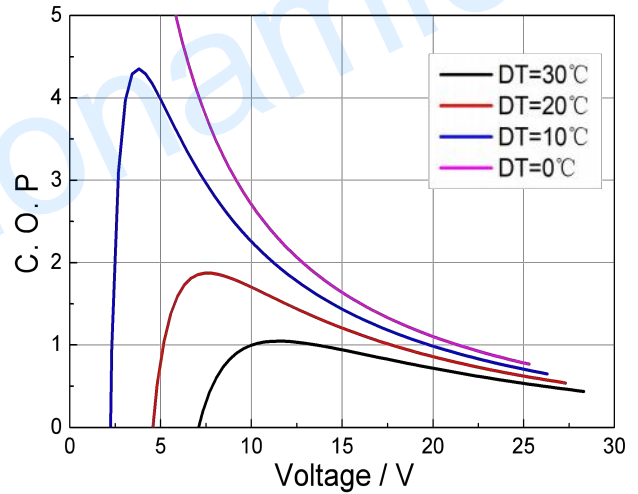
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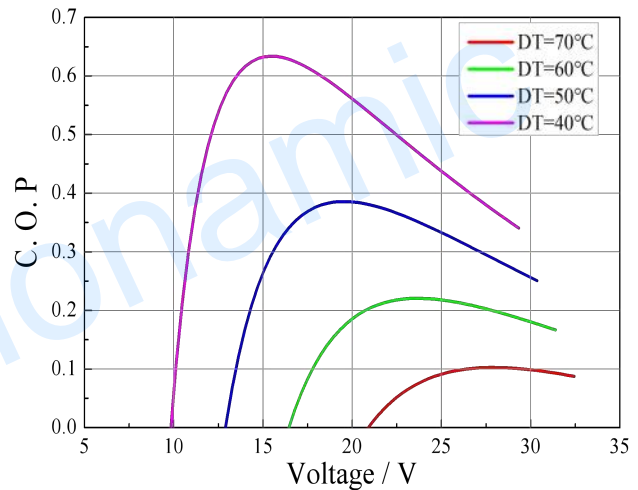
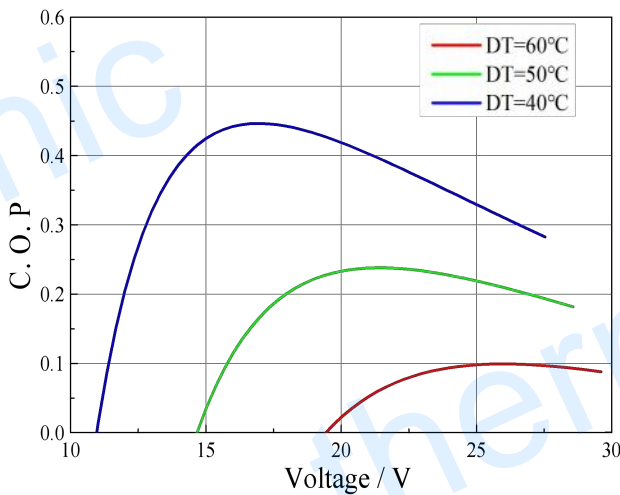
Performance Curves at $T_h=27\text{ }^\circ\text{C}$



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



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 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.