

Specification of Thermoelectric Module

TEFC1-04902

Description

The 49 couples, 6.28 mm × 6.28 mm size ingot 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 /200 °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

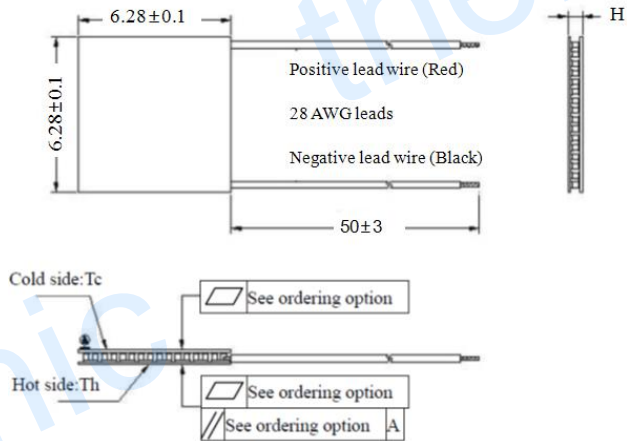
Application

- 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)	6.05	6.54	Voltage applied to the module at DT _{max}
I _{max} (amps)	0.20	0.20	DC current through the modules at DT _{max}
Q _{Cmax} (Watts)	0.79	0.85	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (ohms)	23	24.7	The module resistance is tested under AC
Tolerance (%)	10%		For thermal and electricity parameters

Geometric Characteristics Dimensions in millimeters



Manufacturing Options

- | | |
|---|---|
| <p>A. Solder:</p> <ol style="list-style-type: none"> 1. T100: BiSn (T_{mel}=138°C) 2. T200: CuSn (T_{mel}=227°C) <p>B. Sealant:</p> <ol style="list-style-type: none"> 1. NS: No sealing (Standard) 2. SS: Silicone sealant 3. EPS: Epoxy sealant 4. Customer specify sealing | <p>C. Ceramics:</p> <ol style="list-style-type: none"> 1. Alumina (Al₂O₃, white 96%) 2. Aluminum Nitride (AlN) <p>D. Ceramics Surface Options:</p> <ol style="list-style-type: none"> 1. Blank ceramics (not metallized) 2. Metallized (Cu plating) |
|---|---|

Ordering Option

Suffix	Thickness H (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:3.1±0.10	0:0.03/0.03	50±3/Specify
TF	1: 3.1±0.05	1:0.02/0.02	50±3/Specify
TF	2: 3.1±0.03	2:0.01/0.01	50±3/Specify

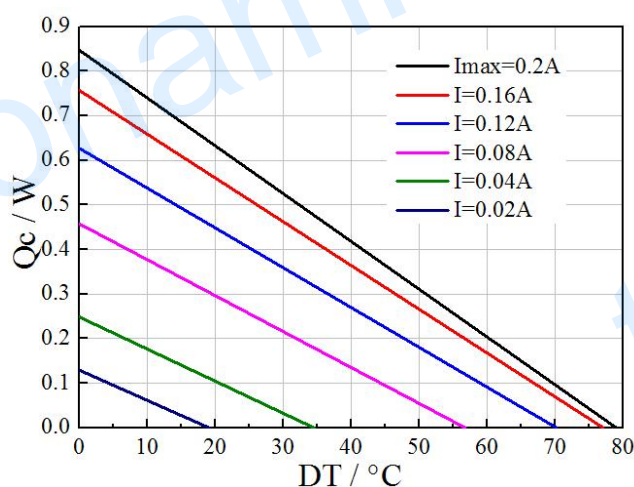
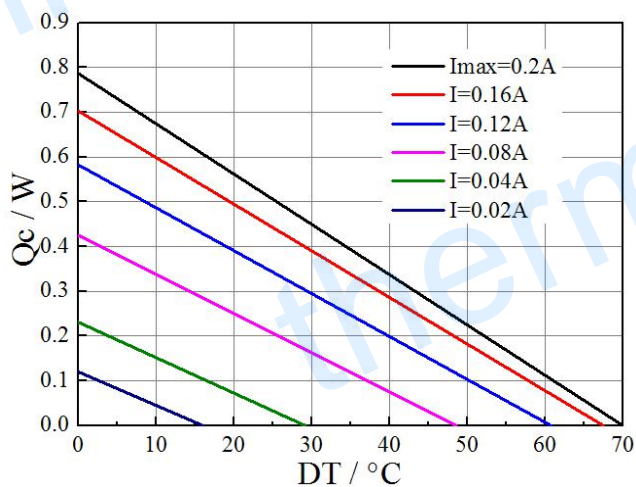
Eg. TF01: Thickness 3.1± 0.10 (mm) and Flatness 0.02 / 0.02(mm)

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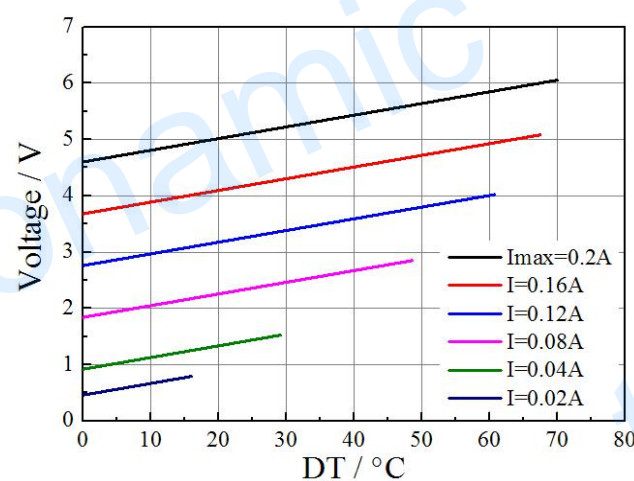
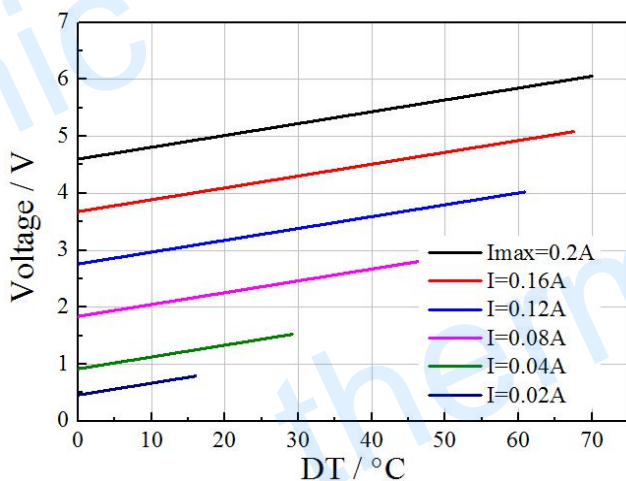
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Performance Curves at Th=27 °C

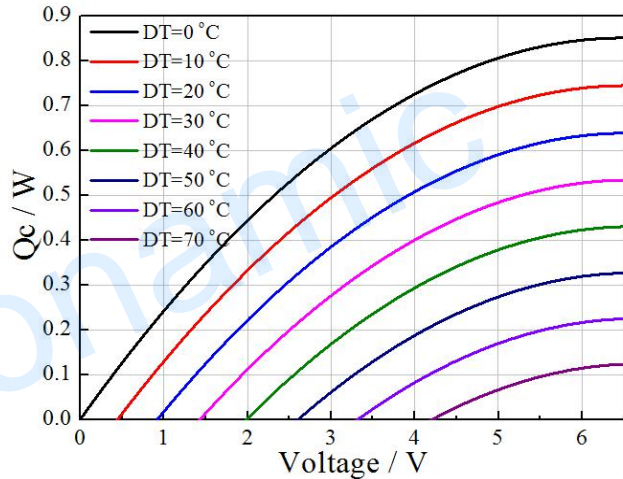
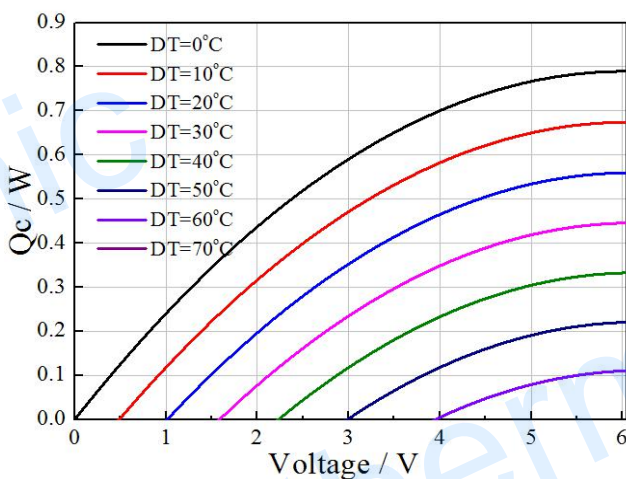
Performance Curves at Th=50 °C



Standard Performance Graph $Q_c = f(DT)$



Standard Performance Graph $V = f(DT)$

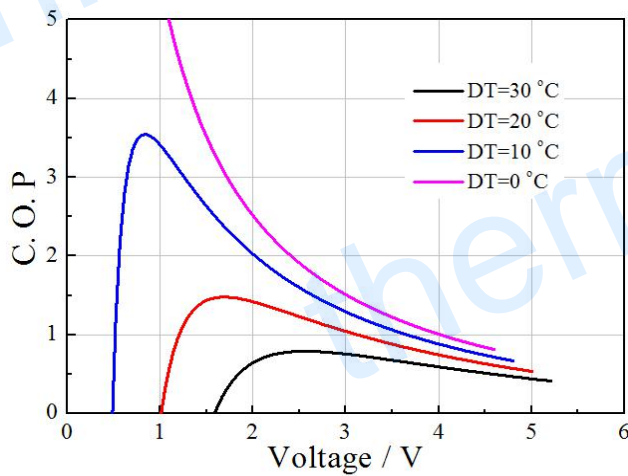


Standard Performance Graph $Q_c = f(V)$

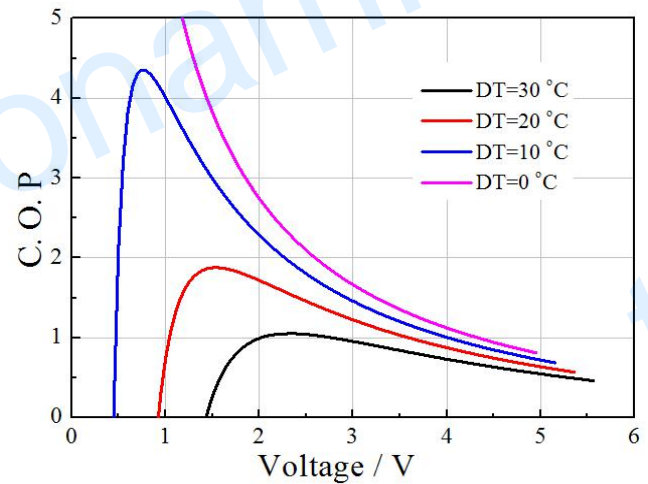
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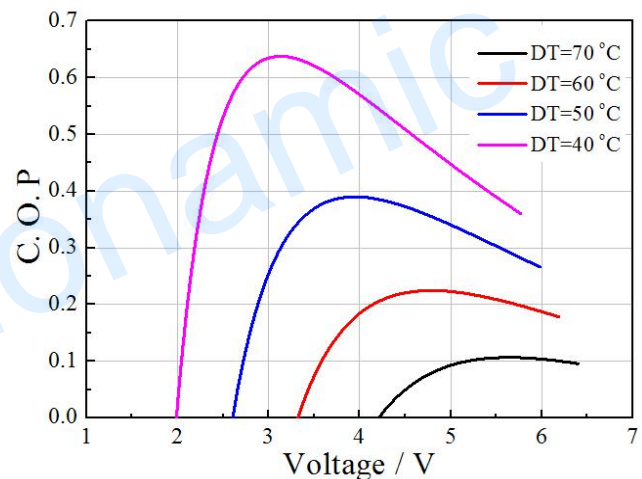
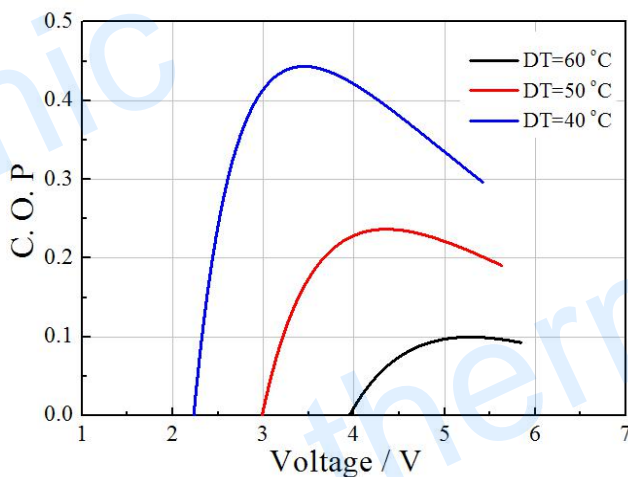
Performance Curves at Th=27 °C



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.