

Specification of Thermoelectric Module

TEC1-19916

Description

The 199 couples, 40mm × 40mm size 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

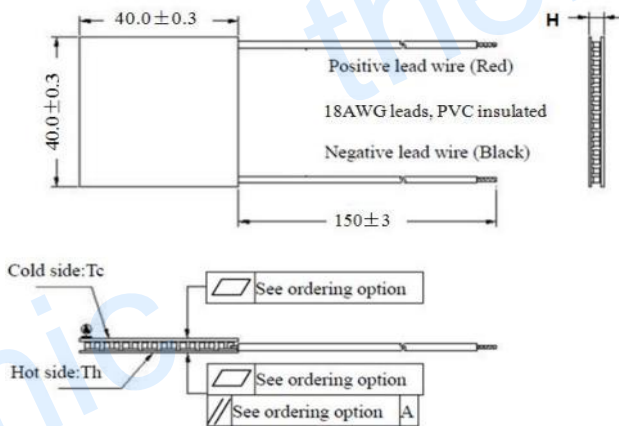
Application

- 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)	25.0	26.9	Voltage applied to the module at DT _{max}
I _{max} (amps)	14.2	14.2	DC current through the modules at DT _{max}
Q _{Cmax} (Watts)	222.9	243.5	Cooling capacity at cold side of the module under DT=0 °C
AC resistance(ohms)	1.35	1.45	The module resistance is tested under AC
Tolerance (%)	± 10		For thermal and electricity parameters

Geometric Characteristics Dimensions in millimeters



Ordering Option

Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:3.1±0.1	0:0.08/0.08	125±1/Specify
TF	1:3.1±0.03	1:0.03/0.03	125±1/Specify

Eg. TF01: Thickness 3.1 ± 0.1(mm) and Flatness 0.03 / 0.03 (mm)

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

other than above

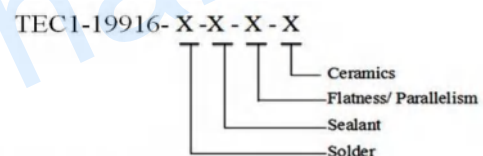
C. Ceramics:

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

D. Ceramics Surface Options:

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

Naming for the Module



TEC1-19916-T200-NS-TF01-AIO

T200: CuSn (T_{melt}=227°C)

NS: No sealing

AIO: Alumina white 96%

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

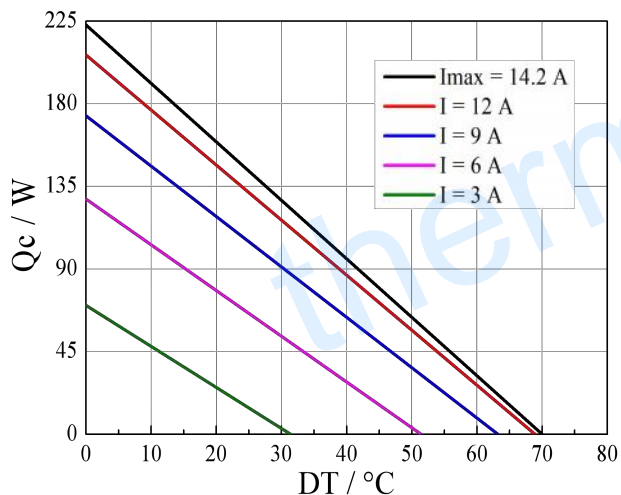
Creative technology with fine manufacturing processes provides you the reliable and quality products

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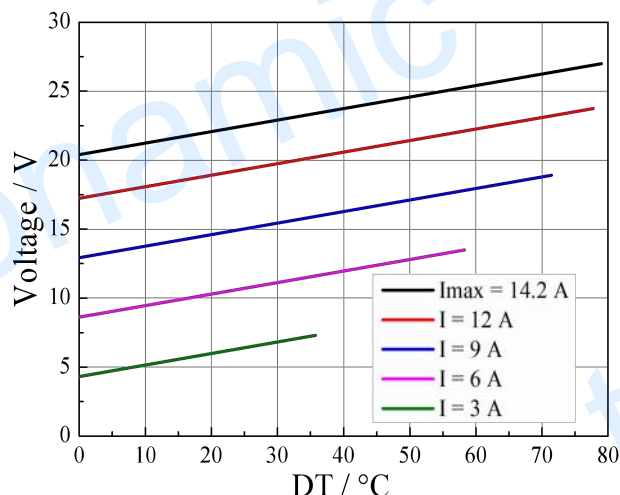
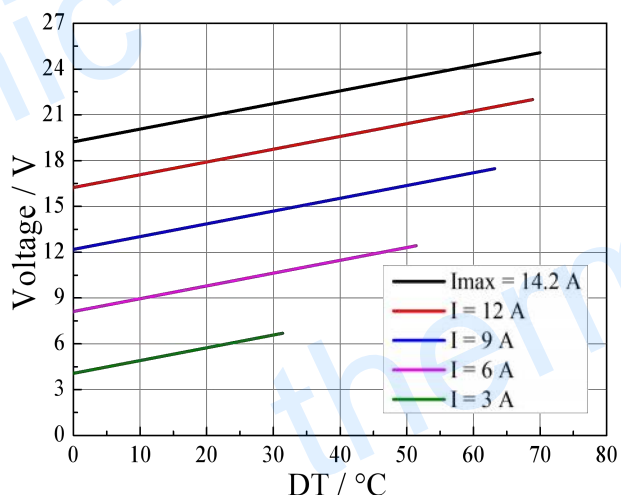
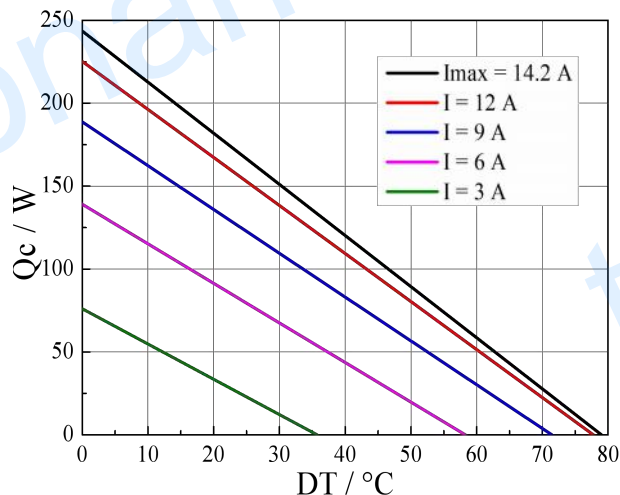
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Performance Curves at Th=27 °C

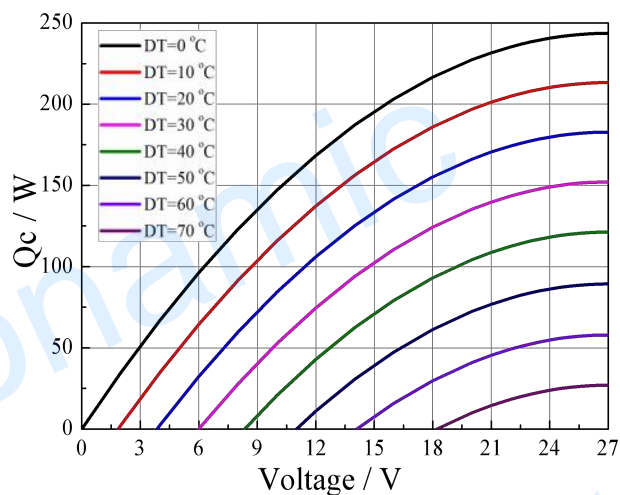
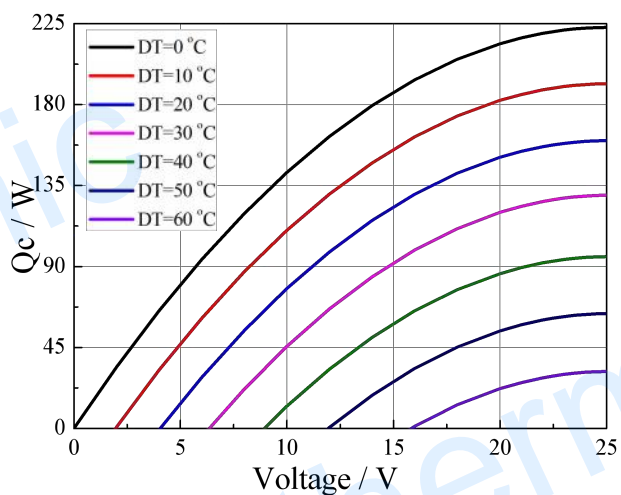


Standard Performance Graph $Q_c = f(DT)$

Performance Curves at Th=50 °C



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

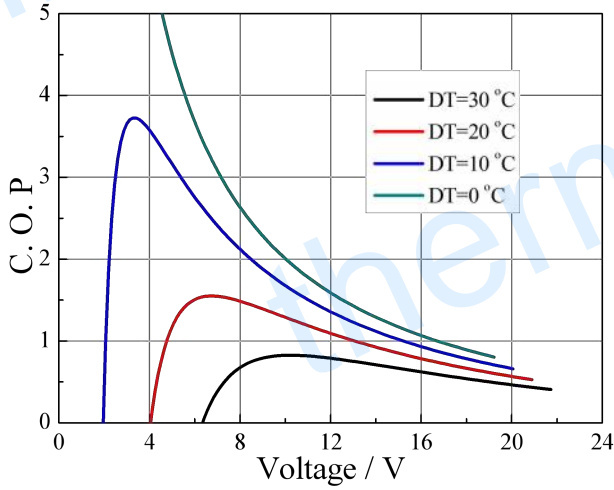


Standard Performance Graph $Q_c = f(V)$

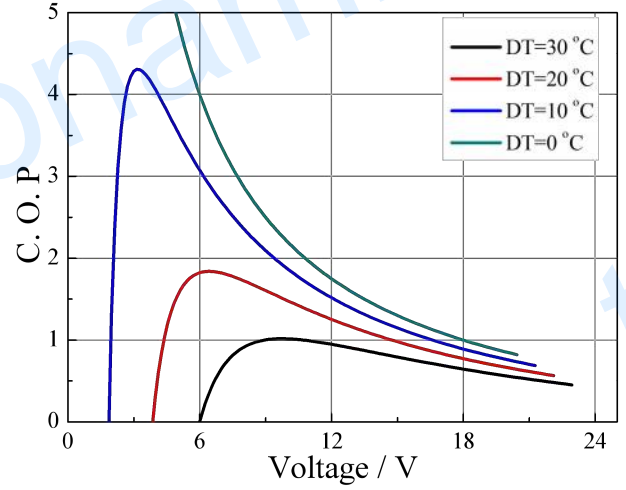
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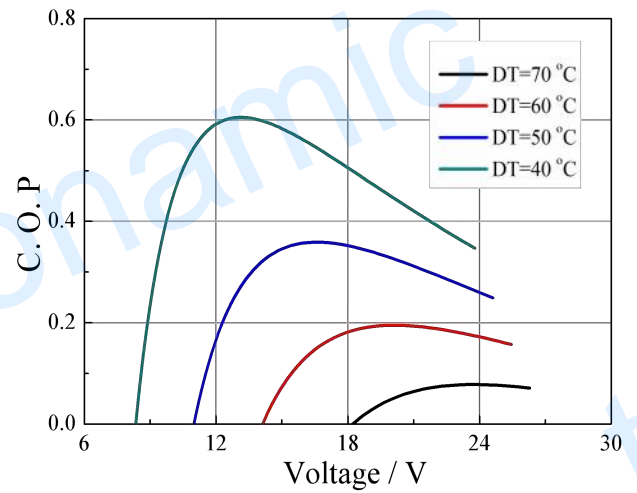
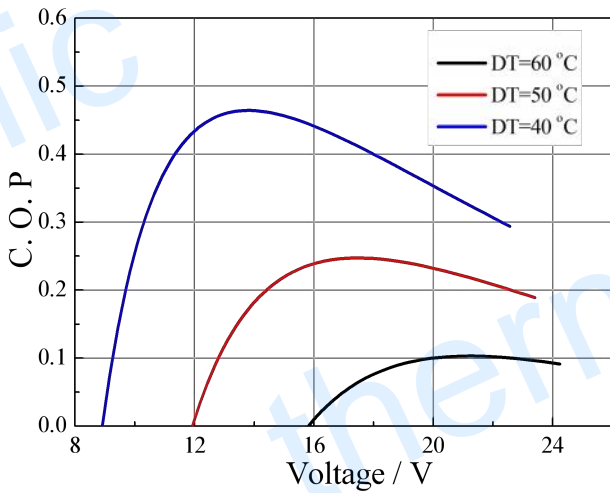
Performance Curves at Th=27 °C



Performance Curves at Th=50 °C



Standard Performance Graph COP = f(V) of ΔT ranged from 0 to 30 °C



Standard Performance Graph COP = f(V) of ΔT 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.
- Storage module below 100 °C
- Operation below I_{max} or V_{max}
- Work under DC