Specification of Thermoelectric Module

TEC1-12705

Description

The 127 couples, 40mm × 40mm size single module is made of our high performance ingots to achieve superior cooling performance at 70ºC or larger delta Tmax. Designed for superior cooling and heating applications. We can design and manufacture custom made module according to your requirements. Minimums apply, contact us for details.

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

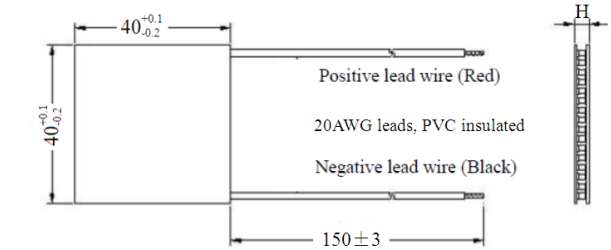
Application

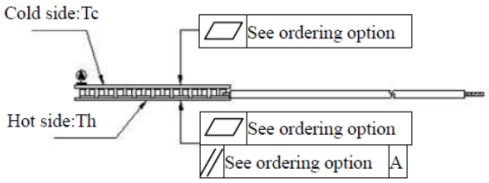
- Food and beverage service refrigerator
- Portable cooler box for cars
- Liquid cooling
- Temperature stabilizer
- CPU cooler and scientific instrument
- Photonic and medical systems

Performance Specification Sheet

Th (ºC)	27	50	Hot side temperature at environment: dry air, N_2
DT_{max} (ºC)	70	79	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U_{max} (Voltage)	16.0	17.2	Voltage applied to the module at DT_{max}
I_{max} (Amps)	5.4	5.4	DC current through the modules at DT_{max}
Q_{Cmax} (Watts)	54.1	59.1	Cooling capacity at cold side of the module under DT=0 ºC
AC resistance (Ohms)	2.0~2.5	2.2~2.7	The module resistance is tested under AC

Geometric Characteristics Dimensions in millimeters





Manufacturing Options

A. Solder:

1. T100: BiSn (Melting Point=138ºC)
2. T200: CuSn (Melting Point= 227 ºC)

B. Sealant:

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

C. Ceramics:

1. Alumina (Al_2O_3, white 96%)(AlO)
2. Aluminum Nitride (AlN)

D. Ceramics Surface Options:

1. Blank ceramics (not metalized)
2. Metalized (Copper-Nickel plating)

Flatness/ Parallelism Option

Suffix	Thickness H / (mm)	Flatness/ Parallelism (mm)	Lead wire length (mm) Standard/Optional length
TF	0:3.70±0.15	0:0.05/0.05	150±3/Specify
TF	1:3.70±0.10	1:0.025/0.025	150±3/Specify
TF	2:3.70±0.05	2:0.015/0.015	150±3/Specify
Eg. TF01: Thickness 3.70±0.15(mm) and Flatness 0.025/0.025(mm)			
If you need higher strict tolerance on thickness and flatness, please specify, we can cater for.			

Naming for the Module

TEC1- 12705- X - X - X - X

- Ceramics
- Flatness/ Parallelism
- Sealant
- Solder

TEC1- 12705- T100 -NS - TF02 - AlO

T100: Solder, BiSn (Melting Point=138 ºC)

NS: No sealing AlO: Alumina white 96%

TF02: Thickness ±0.15(mm) and Flatness/Parallelism 0.015/0.015(mm)

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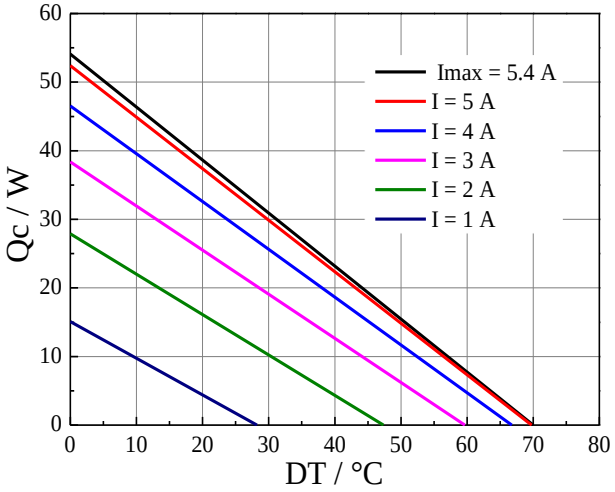
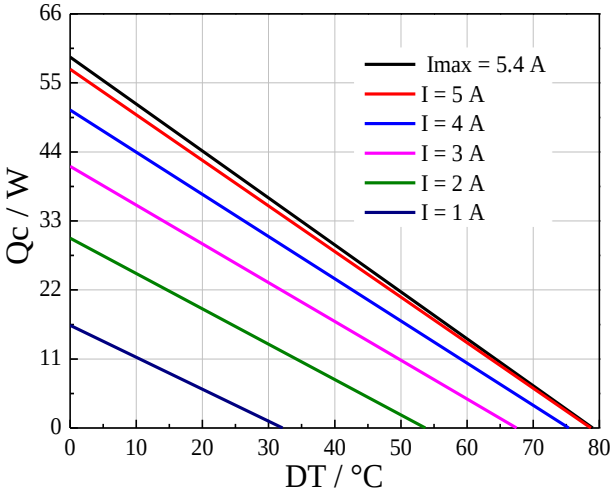
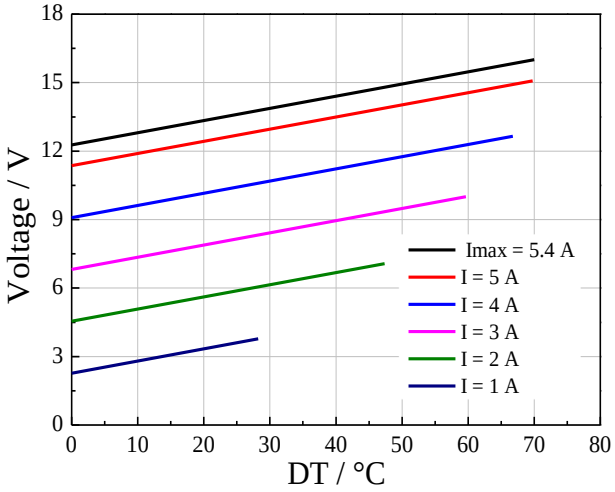
Performance Curves at Th=27 ºC

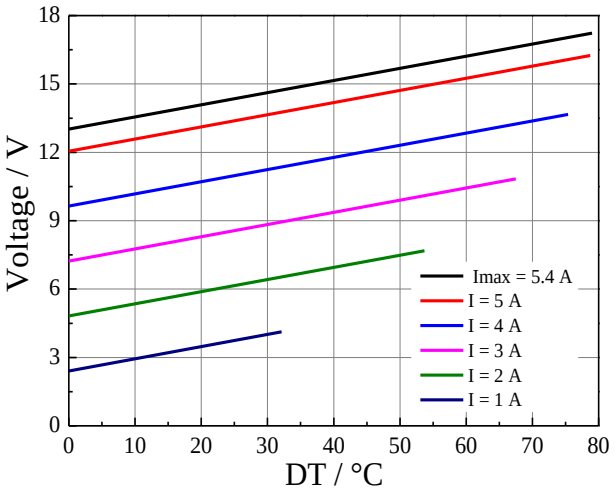


Performance Curves at Th=50 ºC

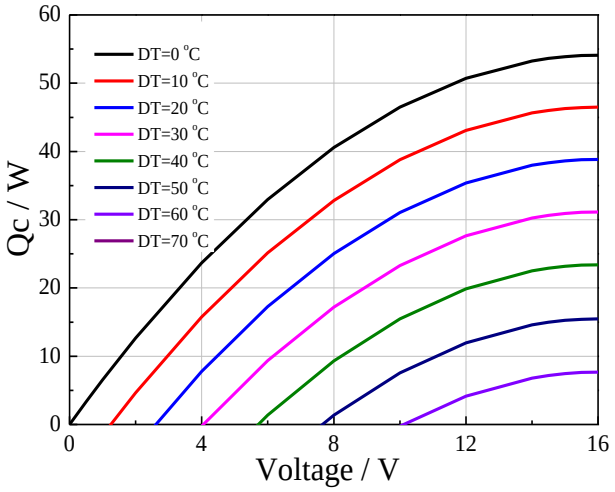


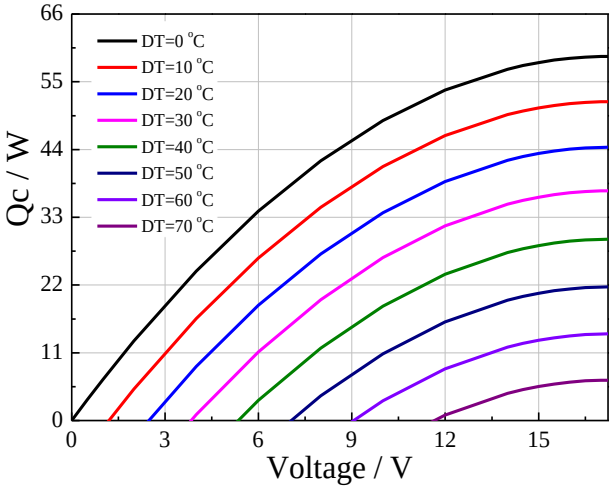
Standard Performance Graph Qc= f(DT)





Standard Performance Graph V= f(ΔT)





Standard Performance Graph Qc= f(V)

Specification of Thermoelectric Module

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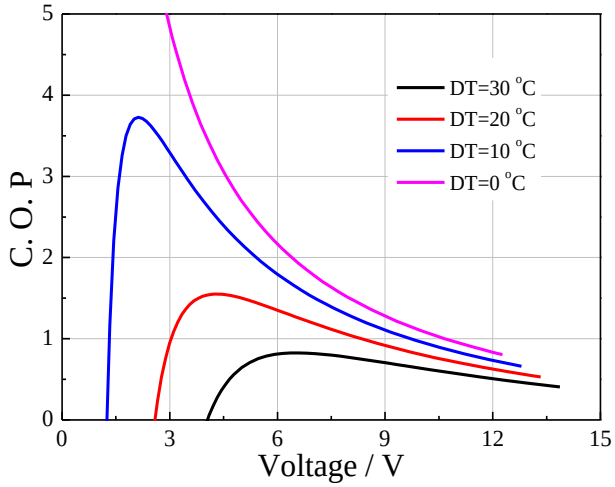
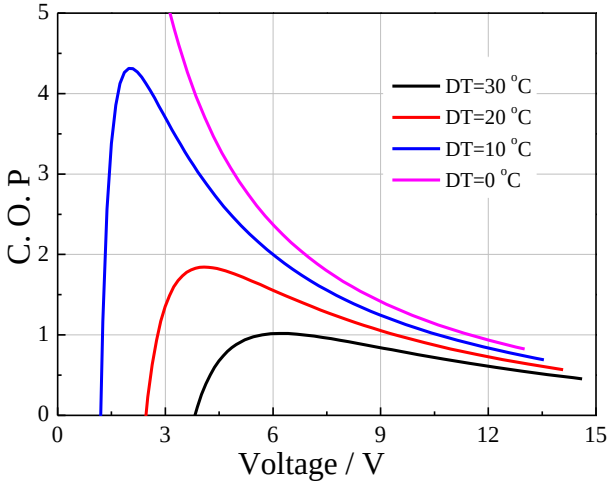
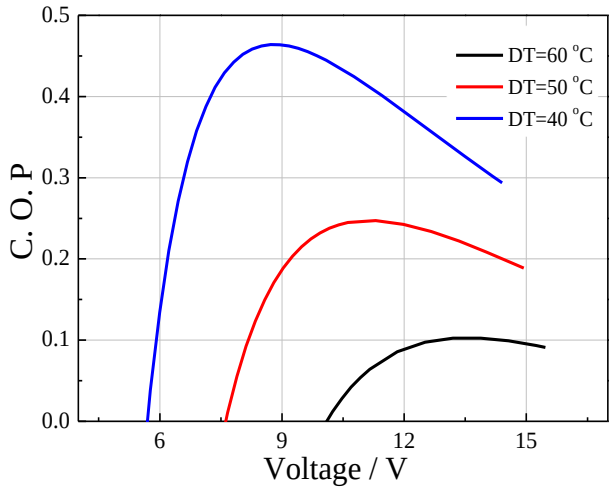
Performance Curves at Th=27 °C

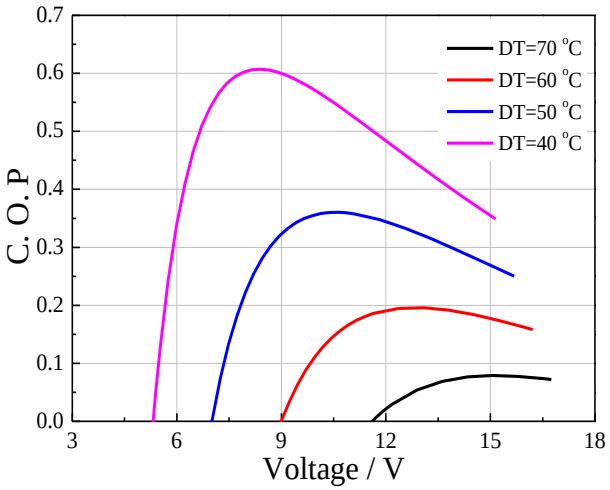


Performance Curves at Th=50 °C



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 Qc/Input power (V × I).

Operation Cautions

- Cold side of the module applied on the object being cooled
- Hot side of the module mounted on a heat sink
- Operation below I_{max} or V_{max}
- Apply only DC voltage