Specification of Thermoelectric Module

TEC1-12703

Description

The 127 couples, 40 mm × 40 mm size single module which is made of our high performance ingot to achieve superior cooling performance and 70℃ or larger delta T 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

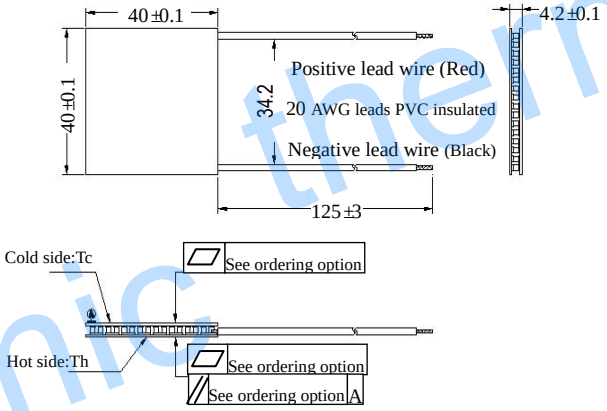
Application

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

Peformance Specification Sheet

Th(℃)	27	50	Hot side temperature at environment: dry air, N2
DTmax(℃)	70	79	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
Umax(Voltage)	15.8	17.2	Voltage applied to the module at DTmax
Imax(amps)	4	4	DC current through the modules at DTmax
QCmax(Watts)	39.8	43.8	Cooling capacity at cold side of the module under DT=0 ℃
AC resistance(ohms)	2.8~3.2	3.2~3.5	The module resistance is tested under AC

Geometric Characteristics Dimensions in millimeters



Manufacturing Options

A. Solder:

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

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	0:4.2±0.1	0:0.05/0.05	125±3/Specify
TF	1:4.2±0.05	1:0.025/0.025	125±3/Specify
TF	2:4.2±0.03	2:0.015/0.015	125±3/Specify
Eg. TF01: Thickness 4.2±0.1(mm) and Flatness 0.025/0.025(mm)			

Naming for the Module

TEC1- 12703 X -X - X - X

- Ceramics
- Flatness/ Parallelism
- Sealant
- Solder

TEC1-12703- T100 -NS - TF02 - AlO

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

NS: No sealing AlO: Alumina white 96%

TF02: Thickness ±0.1(mm) and Flatness/Parallelism 0.015/0.015(mm)

Tel: +86-791-88198288 Fax: +86-791-88198308 Email: info@thermonamic.com Web Site: www.thermonamic.com

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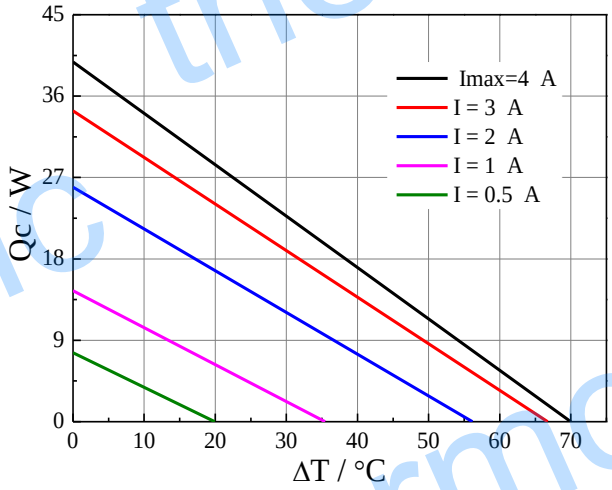
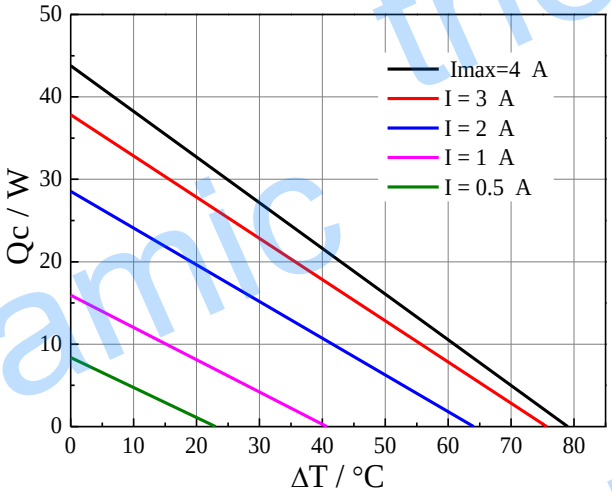
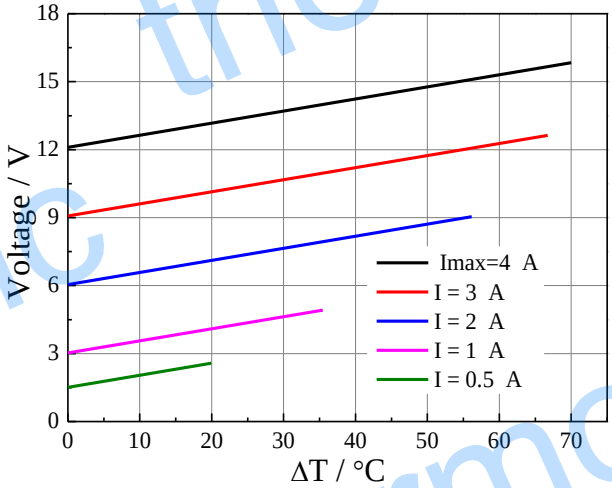
Performance Curves at Th=27 ℃

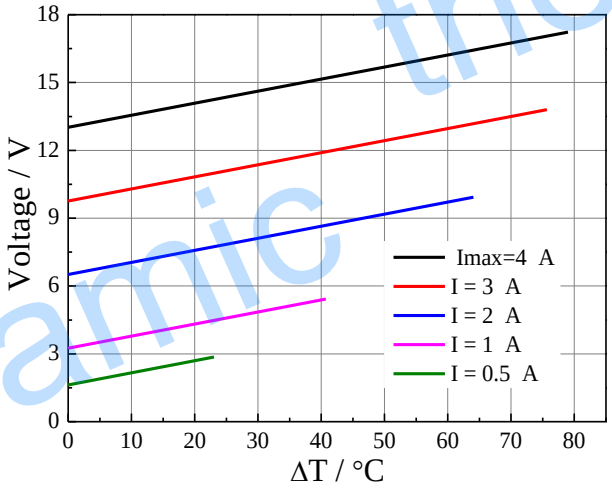


Performance Curves at Th=50 ℃

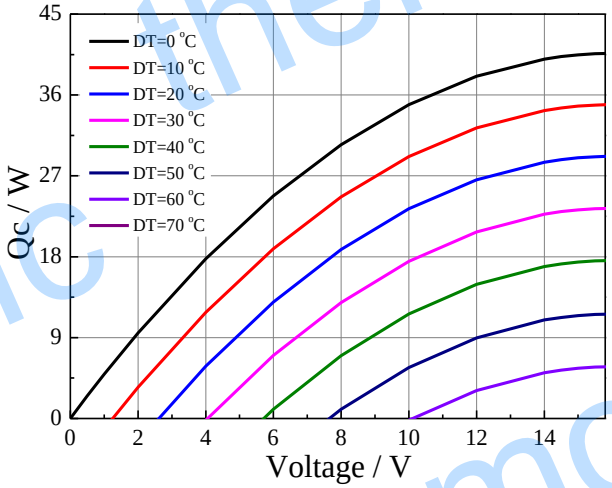


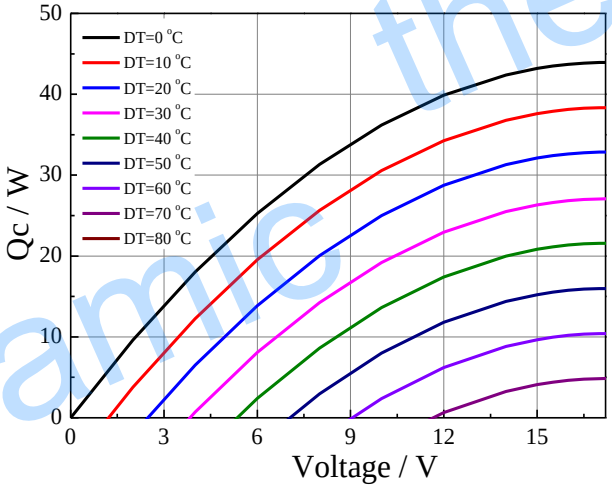
Standard Performance Graph Qc= f(DT)





Standard Performance Graph V= f(ΔT)





Standard Performance Graph Qc= f(V)

Specification of Thermoelectric Module

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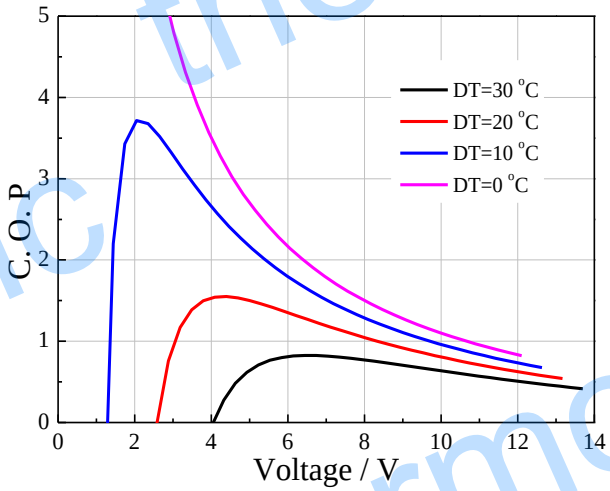
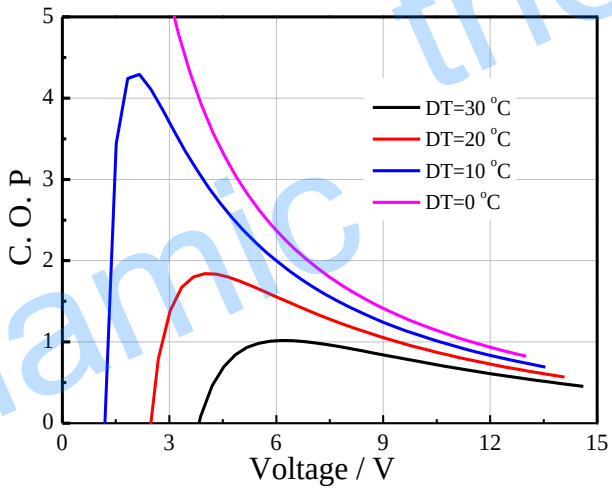
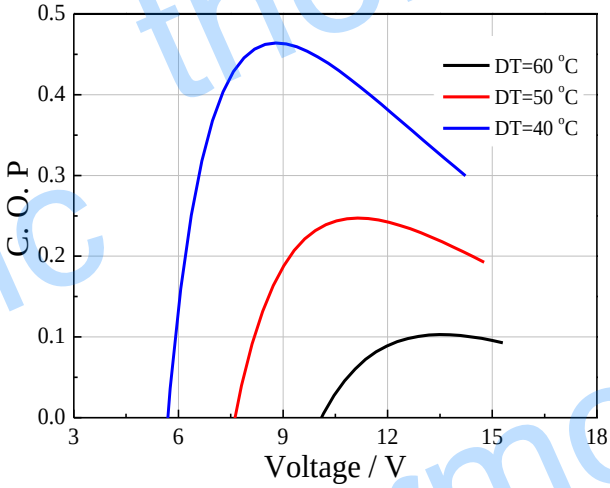
Performance Curves at Th=27 ℃

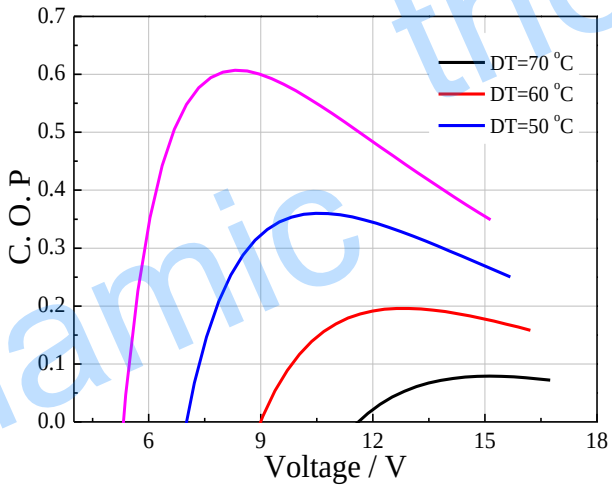


Performance Curves at Th=50 ℃



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 sticked on the object being cooled
- Hot side of the module mounted on a heat radiator
- Operation or storage module below 100 ℃
- Operation below I_{max} or V_{max}
- Work under DC