Specification of Thermoelectric Module

TEFC1-00515

Description

The 5 couples, 1.4 mm × 3.2/ 3.8mm size module which is made of selected high performance ingot to achieve superior cooling performance and greater delta T up to 70 ℃, designed for superior cooling and heating up to 100 ℃ 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

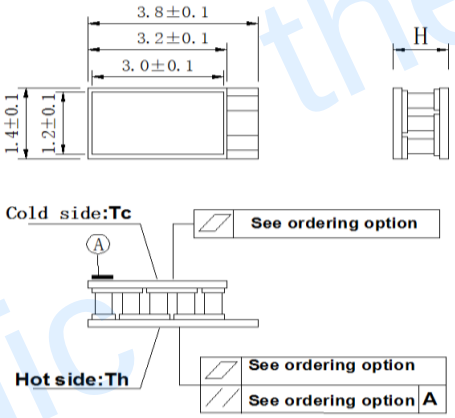
Application

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

Peformance Specification Sheet

Th (℃)	27	50	Hot side temperature at environment: dry air, N_2
DT_{max} (℃)	70	79	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U_{max} (Voltage)	0.60	0.64	Voltage applied to the module at DT_{max}
I_{max} (amps)	1.5	1.5	DC current through the modules at DT_{max}
Q_{Cmax} (Watts)	0.46	0.5	Cooling capacity at cold side of the module under DT=0 ℃
AC resistance (ohms)	0.32	0.34	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 (Tmelt=138℃)
2. T200: CuSn (Tmelt = 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%)
2. Aluminum Nitride (AlN)

D. Ceramics Surface Options:

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

X:

: Standard ceramic surface without metallizing M1: Cold Side metallizing

M2: Hot Side metalizing M3: Both Sides metallizing

Ordering Option

Suffix	Thickness (mm)	Flatness/ Parallelism (mm)
TF	0:1.1 ± 0.05	0:0.08/0.1
TF	1:1.1 ±0.025	1:0.05/0.08
Eg. TF01: Thickness (Without plating)1.1 ± 0.05(mm) and Flatness 0.05/0.08(mm)		

Naming for the Module

TEFC1-00515X- X -X - X - X

- Ceramics
- Flatness/ Parallelism
- Sealant
- Solder

TEFC1-00515M3-T100-NS-TF01-AlO-Au

T100: BiSn (Tmelt=138°C)

NS: No sealing AlO: Alumina (Al2O3, white 96%)

TF01: Thickness(Without plating) ±0.05(mm) and Flatness 0.05/0.08(mm)

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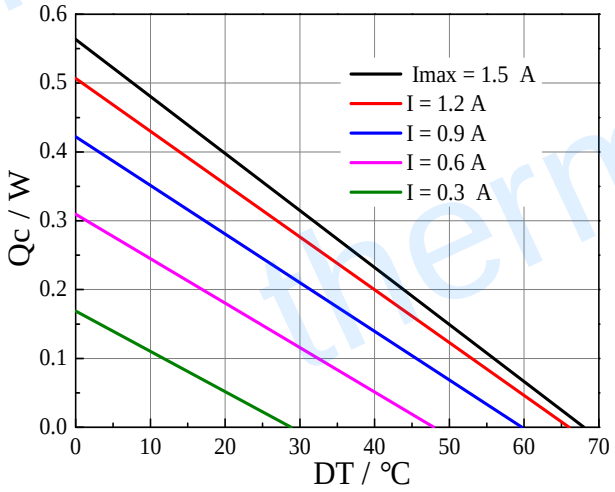
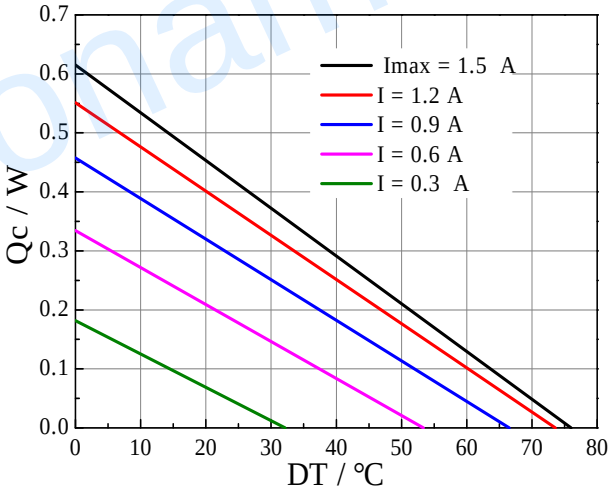
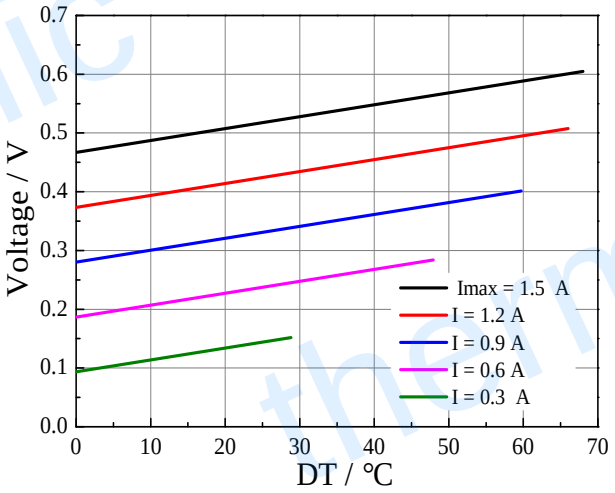
Performance Curves at Th=27 ℃

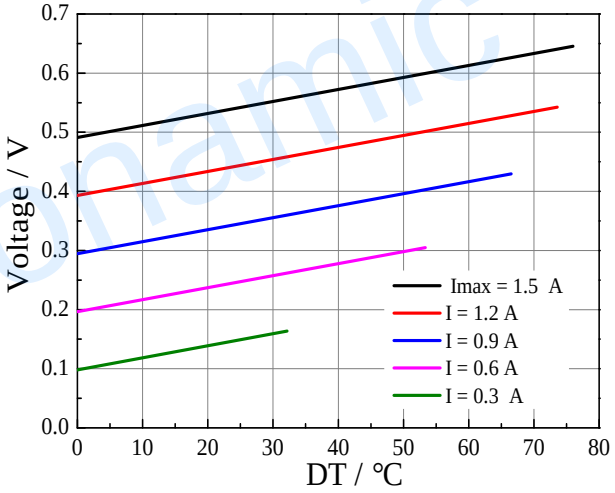


Performance Curves at Th=50 ℃

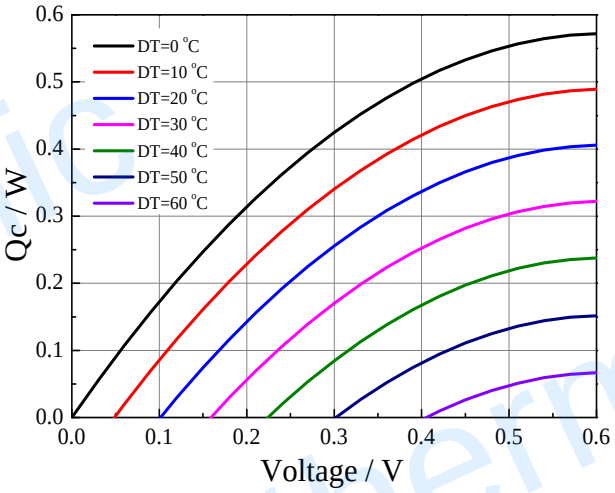


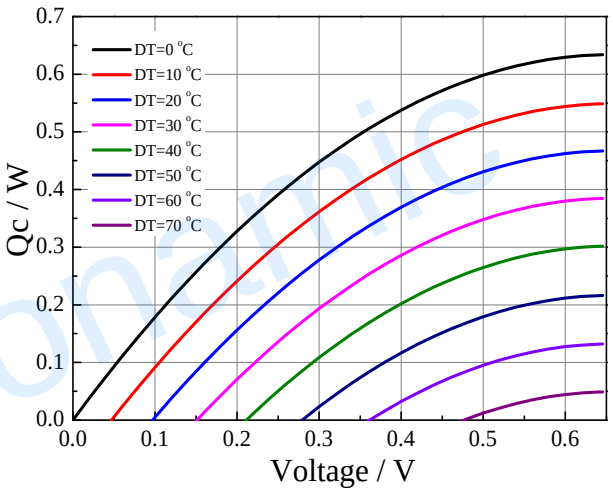
Standard Performance Graph Qc= f(DT)





Standard Performance Graph V= f(ΔT)





Standard Performance Graph Qc= f(V)

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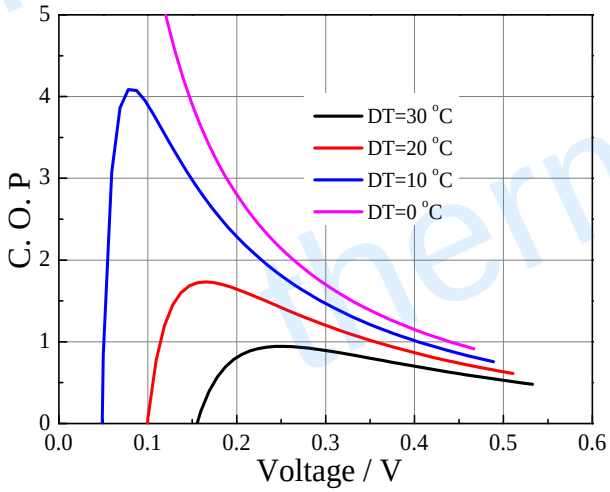
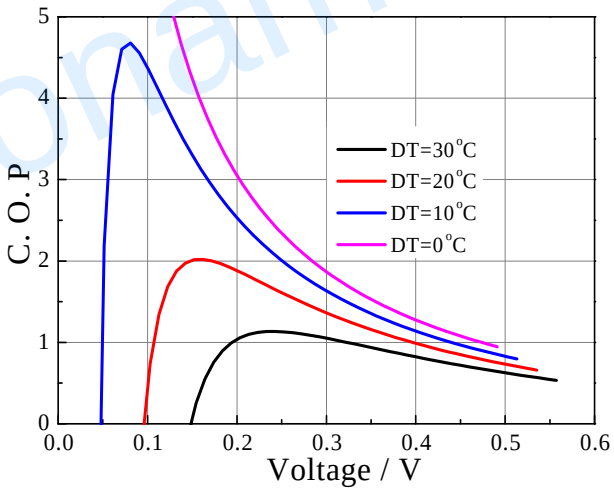
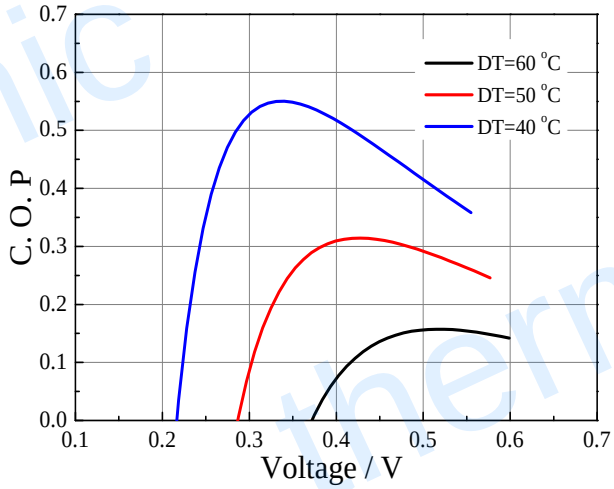
Performance Curves at Th=27 ℃

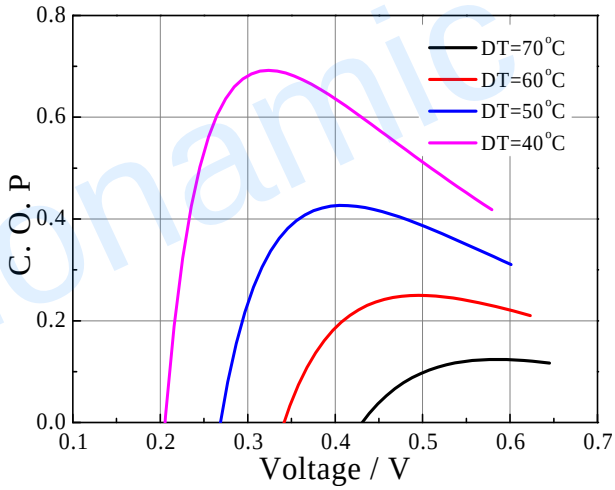


Performance Curves at Th=50 ℃



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

- Stick Cold side of the module onto the object to be cooled
- Hot side of the module mounted on a heat radiator
- Storage module below 100 ℃
- Operation below I_{max} or V_{max}
- Work under DC