

Specification of Thermoelectric Module

TEFC1-02313P

Description

The 23 couples, 3.8 mm × 5.04/6.04 mm size porch type module which is made of selected high performance ingot to achieve superior cooling performance and greater delta T up to 74 °C, designed for superior cooling and heating up to 100/200 °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

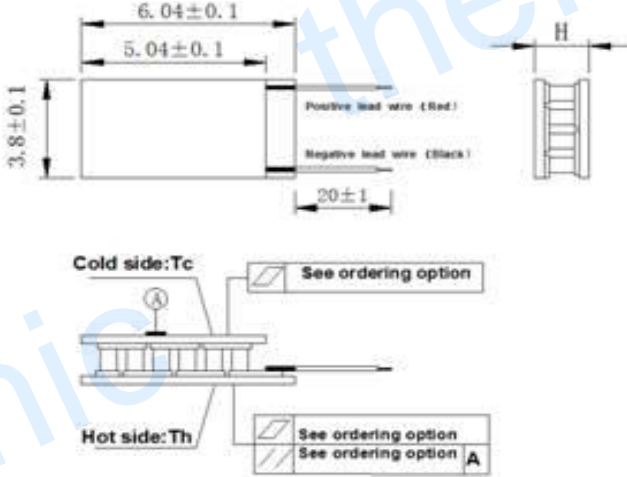
Application

- 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)	74	83	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U _{max} (Voltage)	3.0	3.3	Voltage applied to the module at DT _{max}
I _{max} (amps)	1.3	1.3	DC current through the modules at DT _{max}
Q _{Cmax} (Watts)	2.4	2.6	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (ohms)	1.76	1.89	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 °C)
 2. T200: CuSn (Tmelt = 227 °C)
- B. Sealant:**
 1. NS: No sealing (Standard)
 2. SS: Silicone sealant
 3. EPS: Epoxy sealant
 4. Customer specify sealing
- C. Ceramics:**
 1. Alumina (Al₂O₃, white 96%)
 2. Aluminum Nitride (AlN)
- D. Ceramics Surface Options:**
 1. Blank ceramics (not metallized)
 2. Metallized (Au plating)

Ordering Option

Suffix	Thickness H (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:1.0 ±0.1	0: 0.1/0.13	20±1/Specify
TF	1:1.0±0.05	1: 0.08/0.1	20±1/Specify
TF	2:1.0±0.025	2: 0.05/0.08	20±1/Specify
Eg. TF11: Thickness 1.0±0.05 (mm) and Flatness 0.08/0.1 (mm)			

Naming for the Module

TEFC1-02313P- X-X-X-X

TEFC1-02313P-T100-NS-TF11-AIO

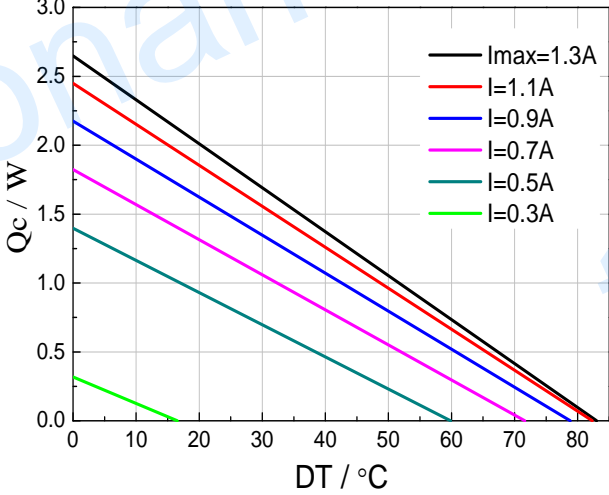
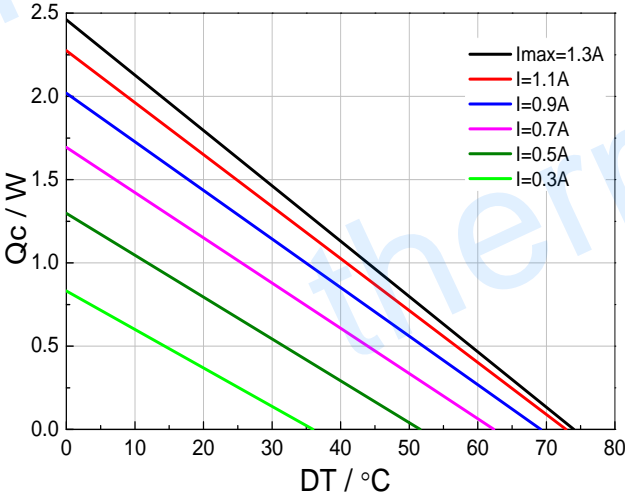
T100: BiSn (Tmelt=138°C)
 NS: No sealing AIO: Alumina (Al₂O₃, white 96%)
 TF11: Thickness ±0.05(mm) and Flatness/ Parallelism 0.08/0.1(mm)

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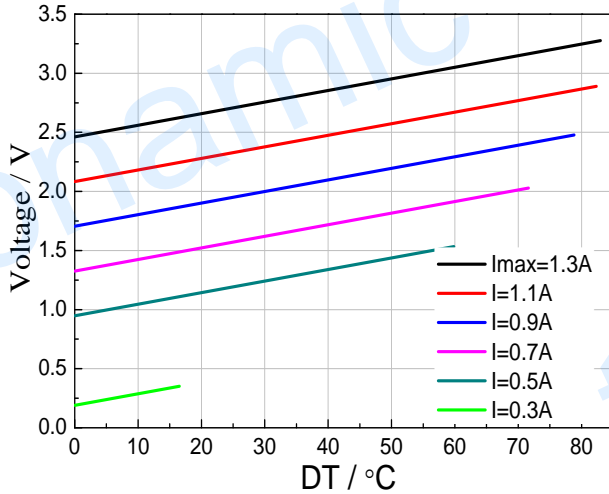
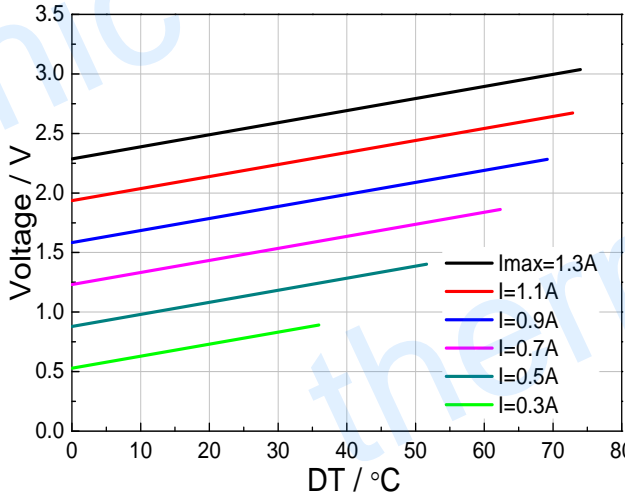
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Performance Curves at Th=27 °C

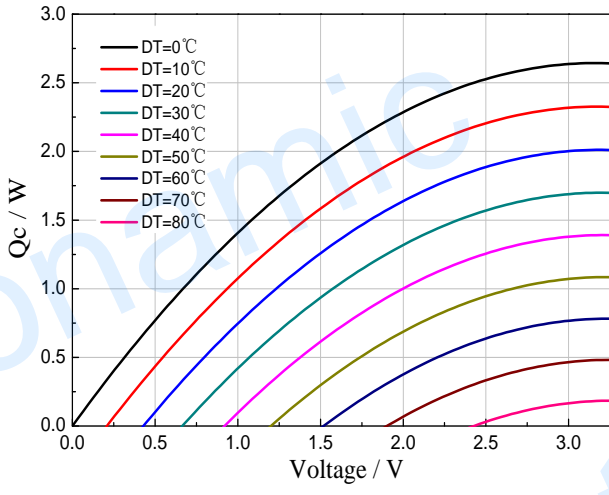
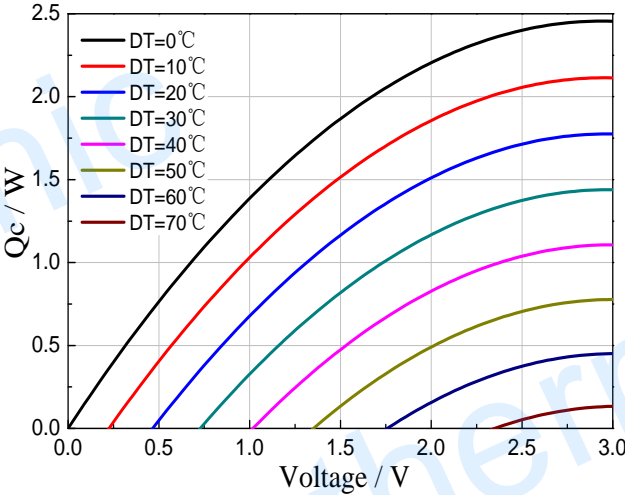
Performance Curves at Th=50 °C



Standard Performance Graph $Q_c = f(DT)$



Standard Performance Graph $V = f(DT)$

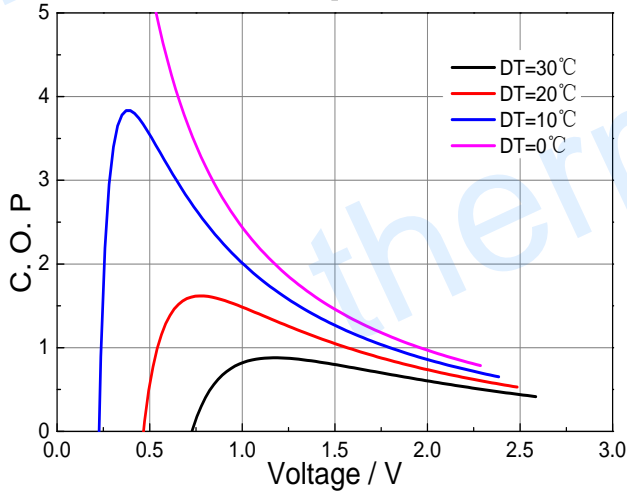


Standard Performance Graph $Q_c = f(V)$

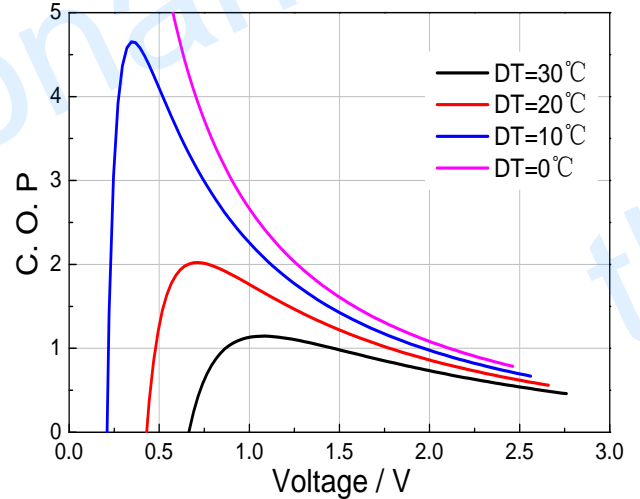
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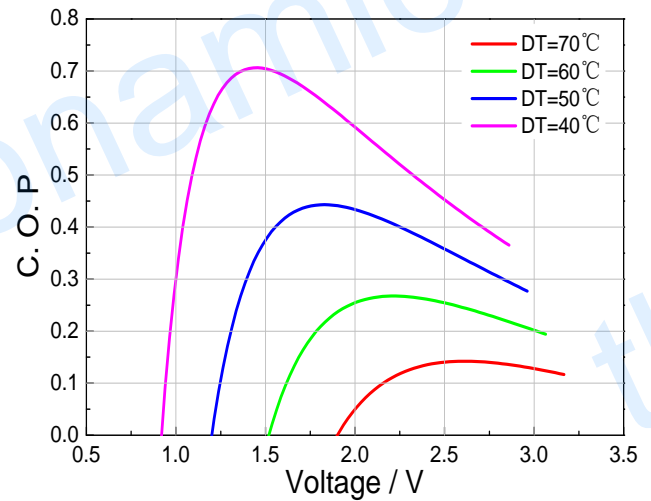
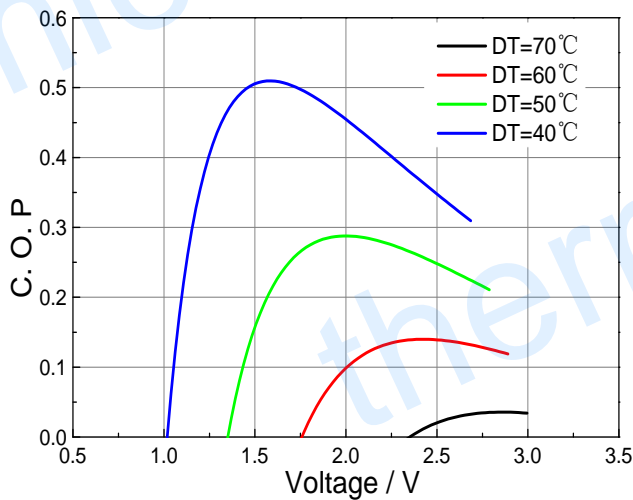
Performance Curves at Th=27 °C



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 70 °C

Remark: The coefficient of performance (COP) is the cooling power Q_c /Input power ($V \times I$).

Operation Cautions

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

Note: All specifications subject to change without notice.