

Specification of Thermoelectric Module

TEFC1-02310P

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

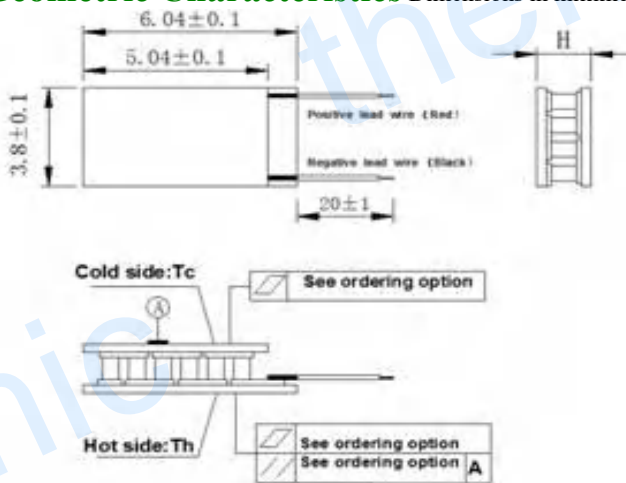
Application

- 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) | 1.0 | 1.0 | DC current through the modules at DT _{max} |
| Q _{Cmax} (Watts) | 1.9 | 2.0 | Cooling capacity at cold side of the module under DT=0 °C |
| AC resistance (ohms) | 2.29 | 2.46 | 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: CuAgSn (Tmelt = 217°C)
3. T240: SbSn (Tmelt = 240°C)

B. Sealant:

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

C. Ceramics:

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

D. Ceramics Surface Options:

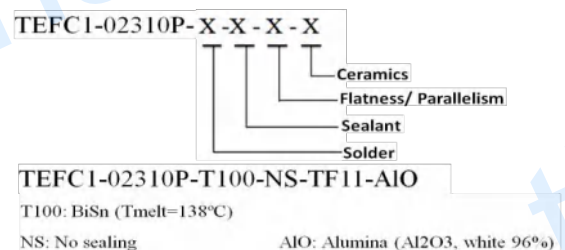
1. Blank ceramics (not metalized)
2. Metalized

Ordering Option

| Suffix | Thickness H (mm) | Flatness/ Parallelism (mm) | Lead wire length(mm) Standard/Optional length |
|--------|---------------------|-------------------------------|--|
| TF | 0: 1.2 ± 0.1 | 0: 0.03/0.03 | 20±1/Specify |
| TF | 1: 1.2±0.03 | 1: 0.015/0.015 | 20±1/Specify |

Eg. TF11: Thickness 1.2± 0.03 (mm) and Flatness 0.015/0.015 (mm)

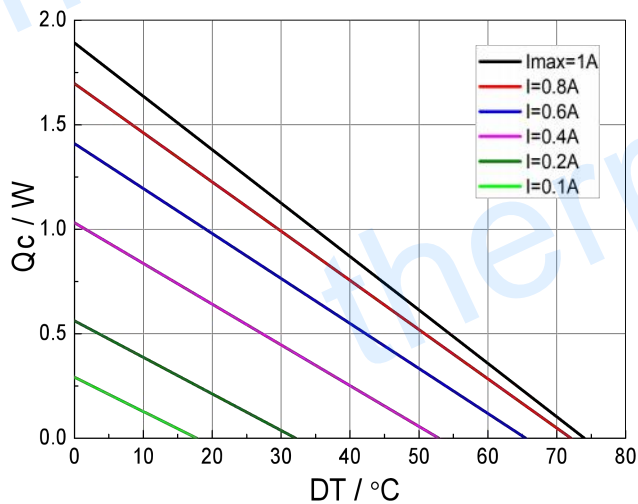
Naming for the Module



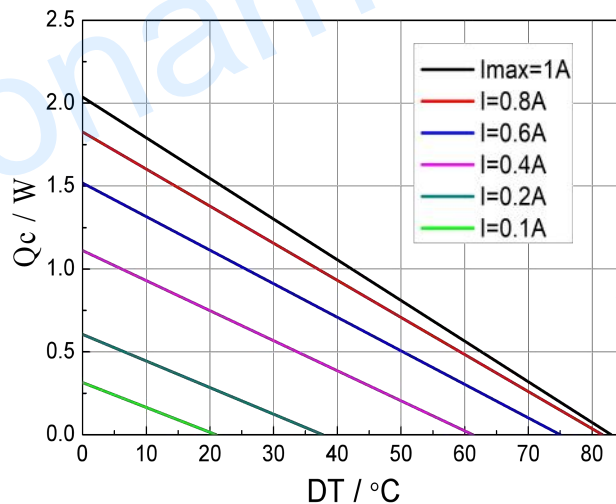
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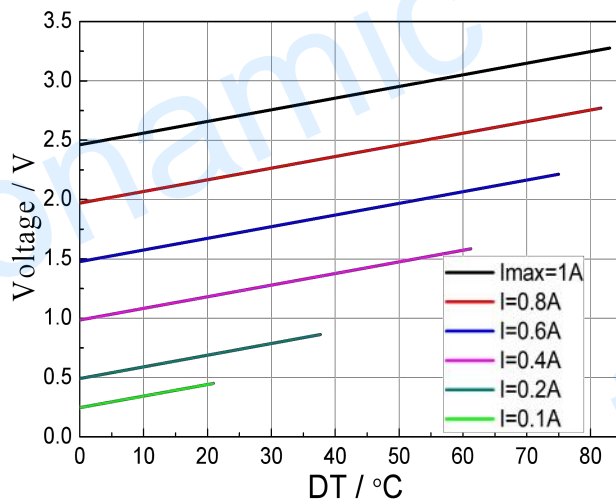
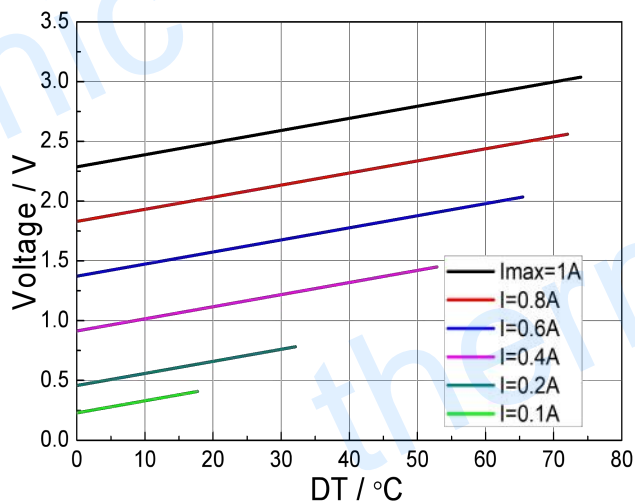
Performance Curves at Th=27 °C



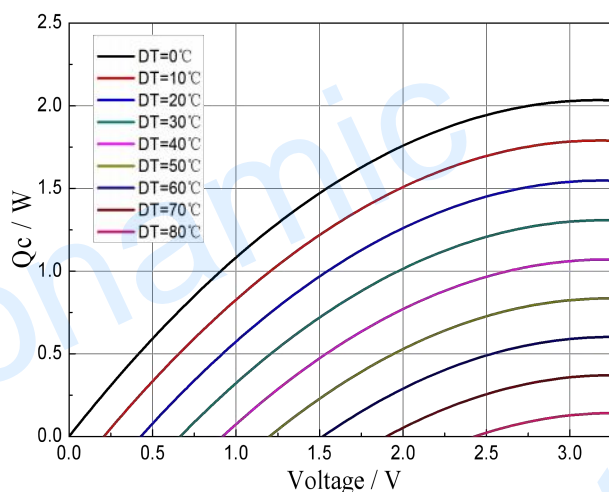
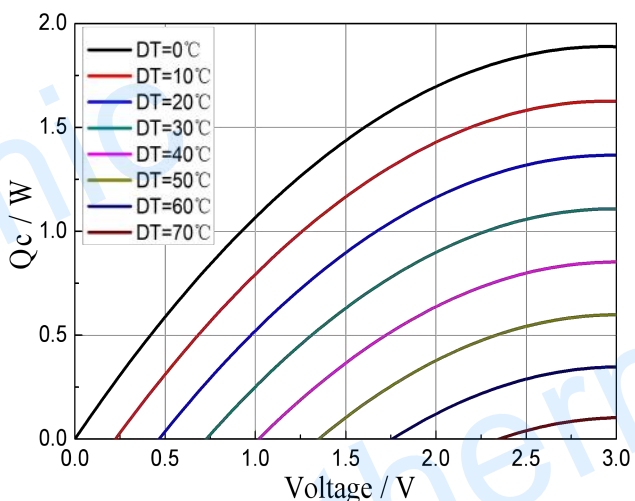
Performance Curves at Th=50 °C



Standard Performance Graph $Q_c = f(DT)$



Standard Performance Graph $V = f(DT)$

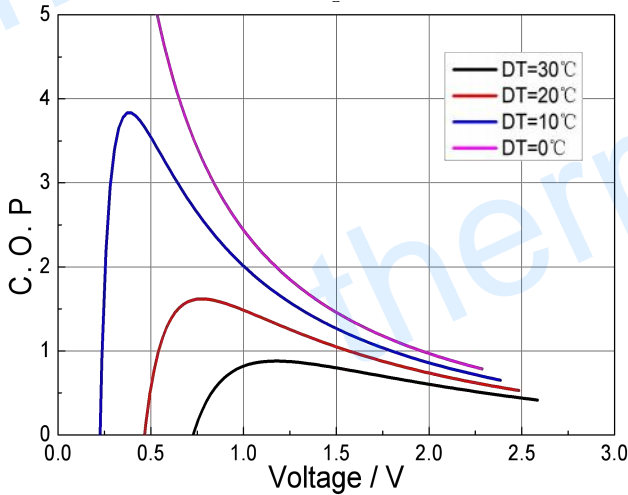


Standard Performance Graph $Q_c = f(V)$

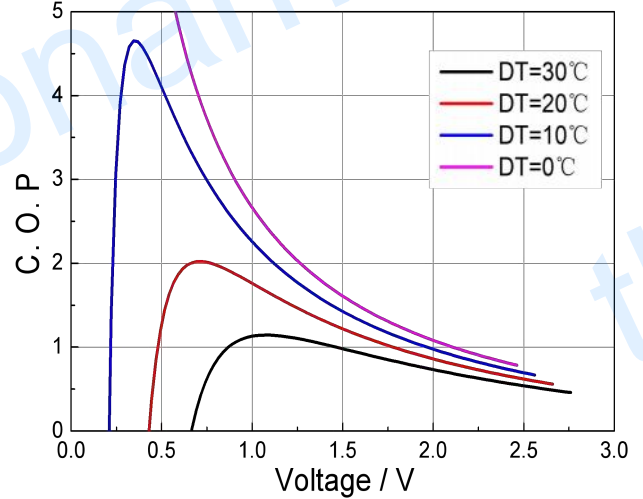
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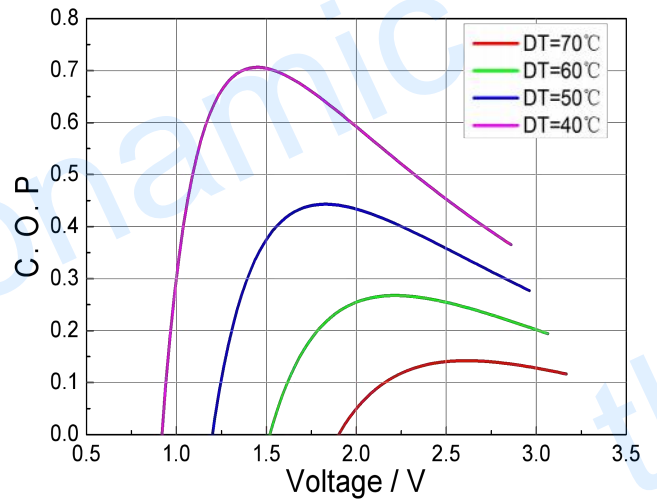
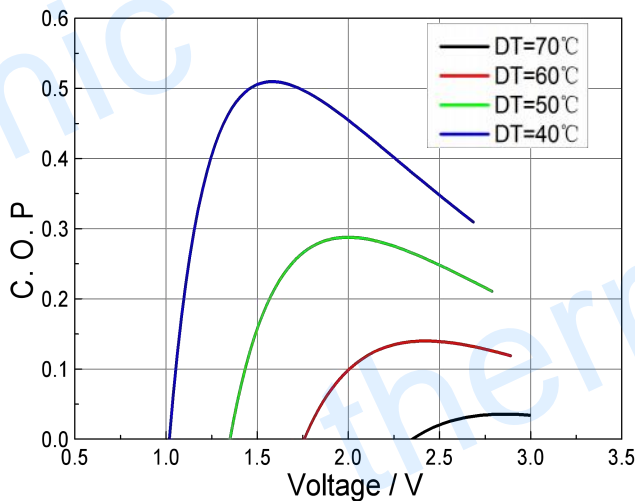
Performance Curves at Th=27 °C



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

- 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
- Operation below I_{max} or V_{max}
- Work under DC

Note: All specifications subject to change without notice.