

Specification of Thermoelectric Module

TEFC1-23025P

Description

The 230 couples, 12.2 mm × 55.4/57.4 mm size porch type single module which is made of selected high performance ingot to achieve superior cooling performance and greater delta T up to 72, 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

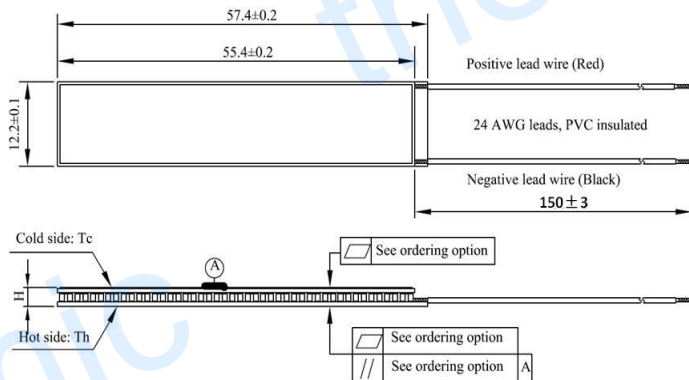
Application

- 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)	72	81	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U _{max} (Voltage)	30.3	32.6	Voltage applied to the module at DT _{max}
I _{max} (amps)	2.6	2.6	DC current through the modules at DT _{max}
Q _{Cmax} (Watts)	49.8	54.4	Cooling capacity at cold side of the module under DT=0 °C
AC resistance(ohms)	8.6	9.3	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 (T_{melt}=138°C)
2. T200: CuSn (T_{melt} = 227 °C)

B. Sealant:

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

X:

- Standard ceramic surface without metallizing
- M1: Cold Side metallizing
- M2: Hot Side metallizing
- M3: Both Sides metallizing

C. Ceramics:

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

D. Ceramics Surface Options:

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

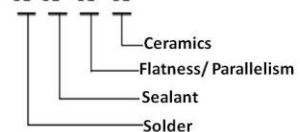
Ordering Option

Suffix	Thickness H (mm)	Flatness/ Parallellism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:2.6 ± 0.1	0:0.1 / 0.13	150 ± 3 / Specify
TF	1:2.6 ± 0.05	1:0.08 / 0.1	150 ± 3 / Specify
TF	2:2.6 ± 0.025	2:0.05 / 0.08	150 ± 3 / Specify

Eg. TF01: Thickness (Without plating) 2.6 ± 0.1 (mm) and Flatness 0.08 / 0.1 (mm)

Naming for the Module

TEFC1-23025PX- X-X-X-X



TEFC1-23025PM1-T100-NS-TF01-AIO-Au

T100: BiSn (T_{melt}=138°C)

NS: No sealing

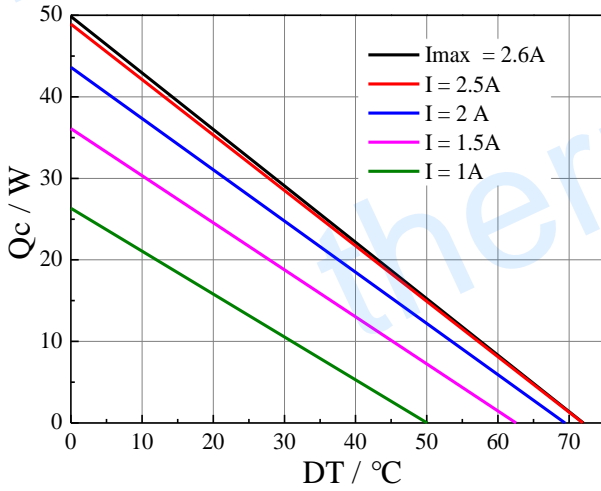
AIO: Alumina (Al₂O₃, white 96%)

TF01: Thickness(Without plating) ± 0.1(mm) and Flatness 0.08/0.1 (mm)

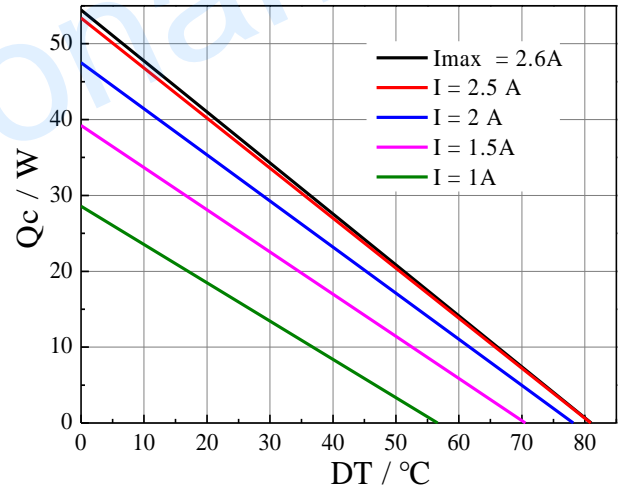
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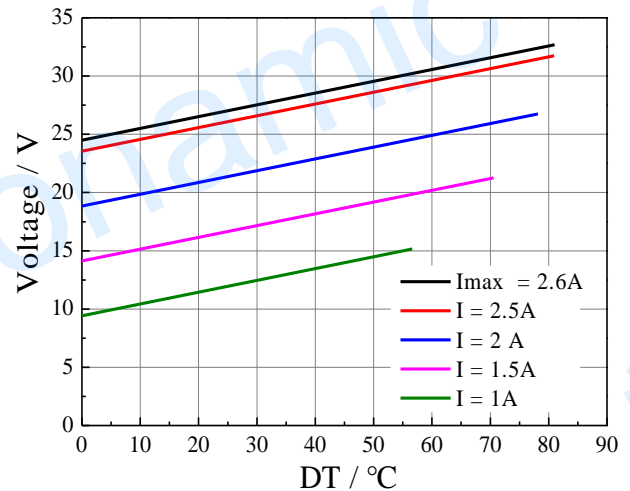
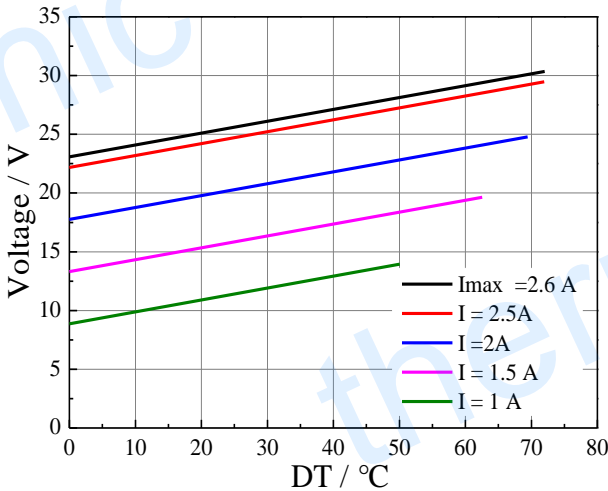
Performance Curves at $T_h=27\text{ }^\circ\text{C}$



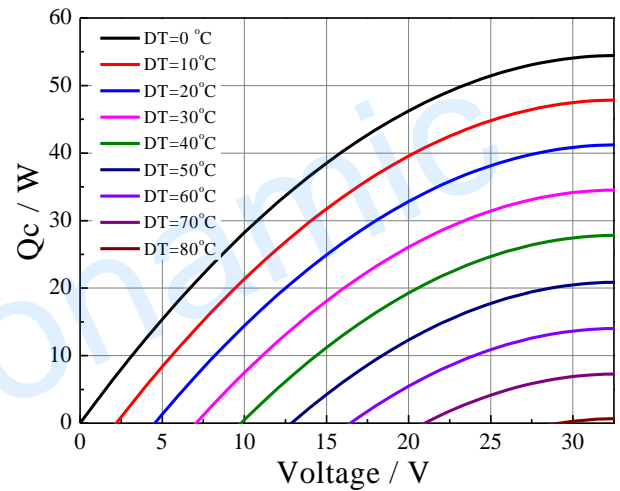
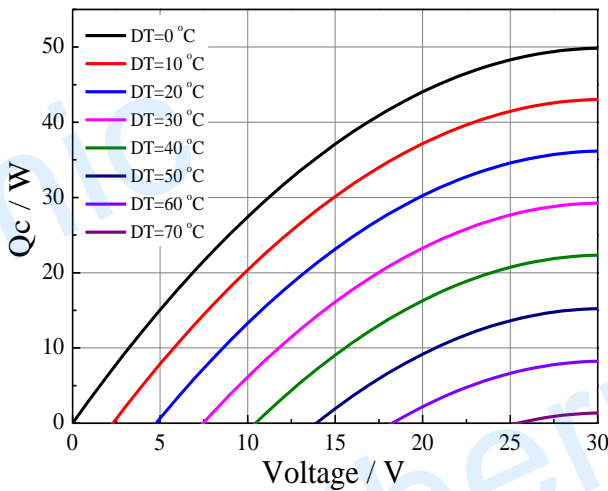
Performance Curves at $T_h=50\text{ }^\circ\text{C}$



Standard Performance Graph $Q_c = f(DT)$



Standard Performance Graph $V = f(DT)$

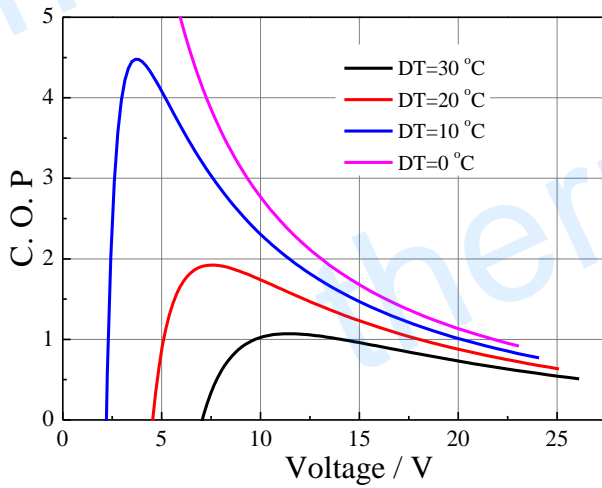


Standard Performance Graph $Q_c = f(V)$

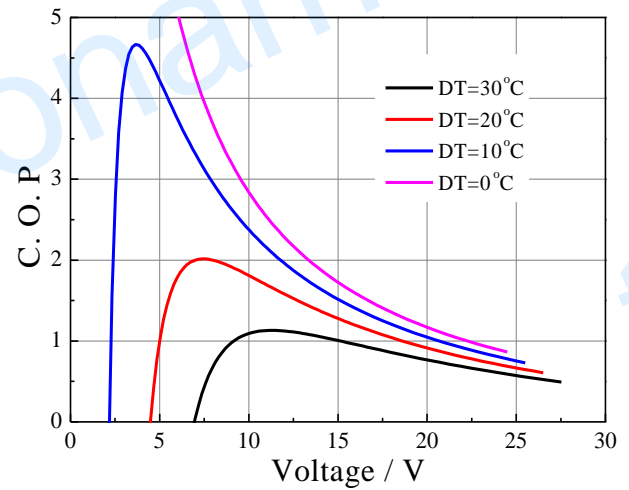
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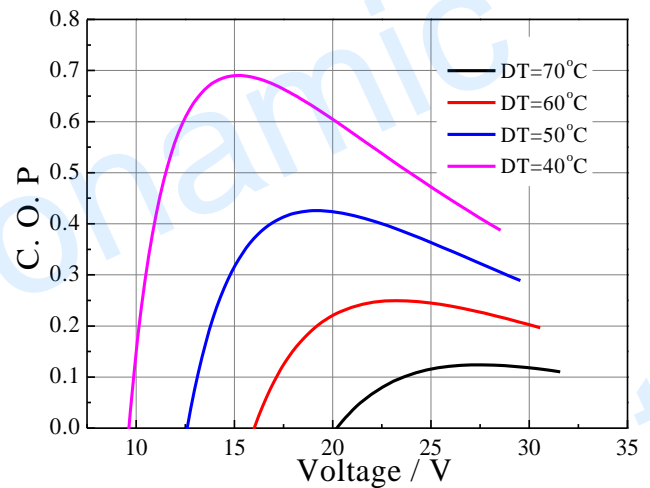
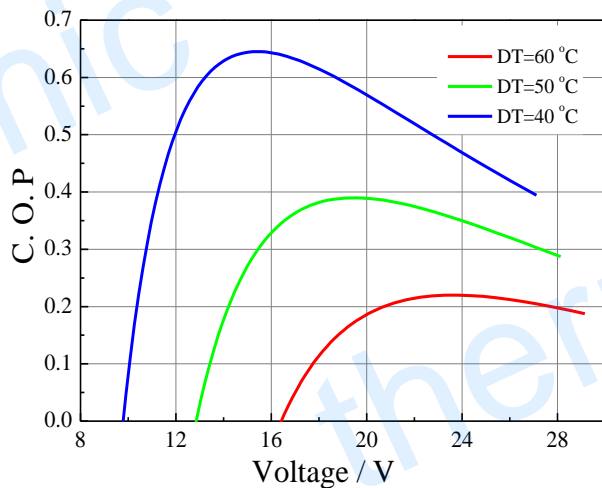
Performance Curves at Th=27 °C



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 60/70 °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.