

Specification of Thermoelectric Module

TEC5-127-71-31-17-8-03

Description

The TEC5-127-71-31-17-8-03 is a multistage module designed for greater temperature differential cooling, good for cooling and heating up to 100 °C applications. It 127-71-31-17-8 couples module in size of 10mm×10mm (top)/40mm ×40mm (bottom). If higher operation or processing temperature is required, please specify, we can design and manufacture according to your special requirements.

Features

- High Temperature Differential
- 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

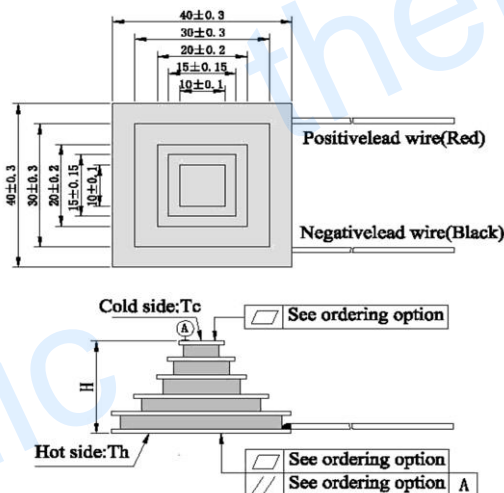
Application

- Infrared (IR) Sensors
- CCD Sensor
- Gas Analyzers
- Calibration Equipment
- CPU cooler and scientific instrument
- Photonic and medical systems
- Guidance Systems

Performance Specification Sheet

Th (°C)	27	50	Hot side temperature at environment: dry air, N ₂
DT _{max} (°C)	128	143	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U _{max} (Voltage)	13.06	14.20	Voltage applied to the module at DT _{max}
I _{max} (Amps)	3.1	3.1	DC current through the modules at DT _{max}
Q _{Cmax} (Watts)	4.43	4.72	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (Ohms)	3.51	3.78	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

C. Ceramics:

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

D. Ceramics Surface Options:

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

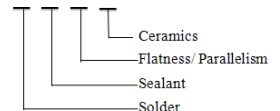
Ordering Option

Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:13.9±0.3	0:0.1/0.1	125±1/Specify
TF	1:13.9±0.15	1:0.05/0.05	125±1/Specify

Eg. TF00: Thickness 13.9±0.3 (mm) and Flatness 0.1 / 0.1 (mm)

Naming for the Module

TEC5-127-71-31-17-8-03-X -X - X - X



TEC5-127-71-31-17-8-03- T100 - NS - TF00 - AIO
 T100: Solder, BiSn (Melting Point=138 °C)

NS: No sealing AIO: Alumina white 96%
 TF00: Thickness ±0.3(mm) and Flatness/Parallelism 0.1/0.1mm

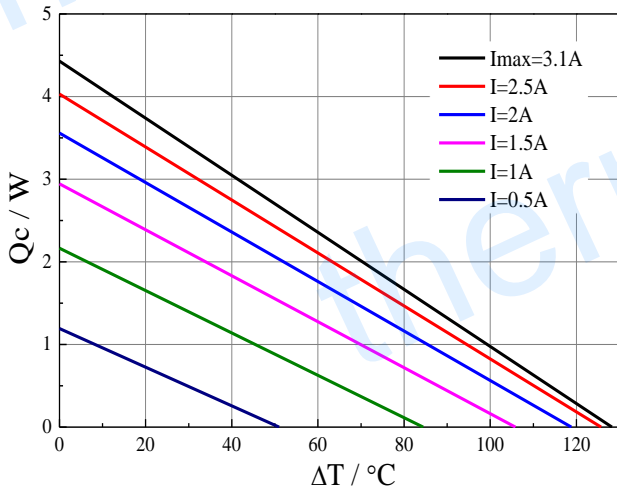
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Tel: +86-791-88198288 Fax: +86-791-88198308 Email: sales@thermonamic.com.cn Web Site: www.thermonamic.com.cn

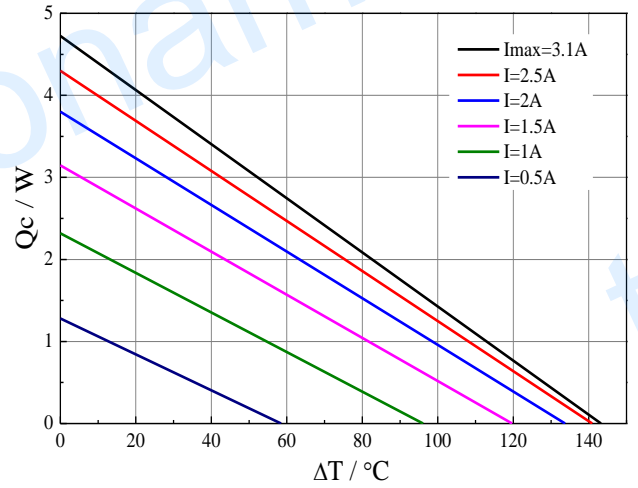
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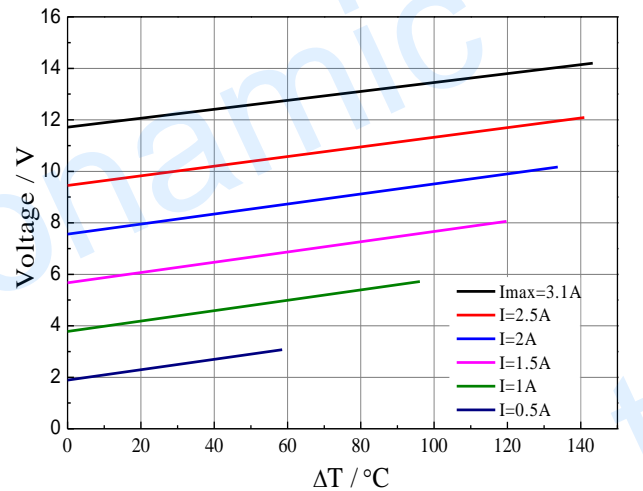
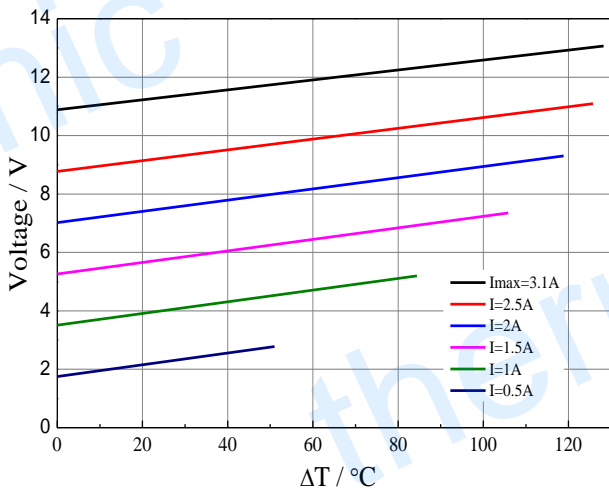
Performance Curves at $T_h=27\text{ }^\circ\text{C}$



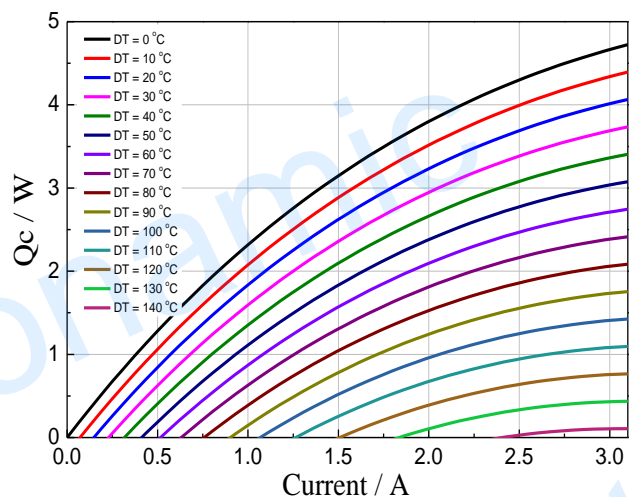
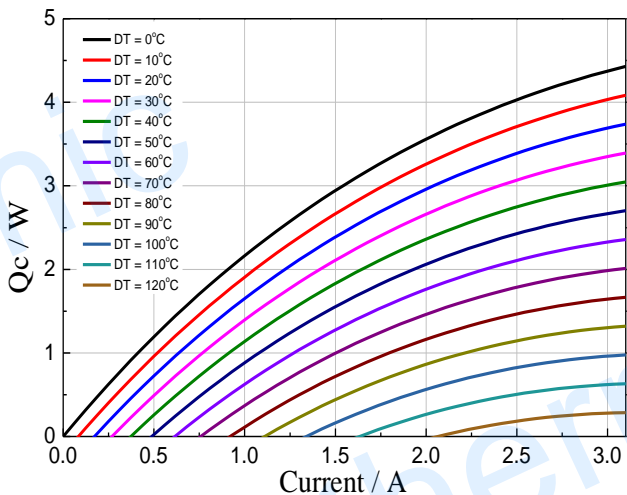
Performance Curves at $T_h=50\text{ }^\circ\text{C}$



Standard Performance Graph $Q_c = f(\Delta T)$



Standard Performance Graph $V = f(\Delta T)$



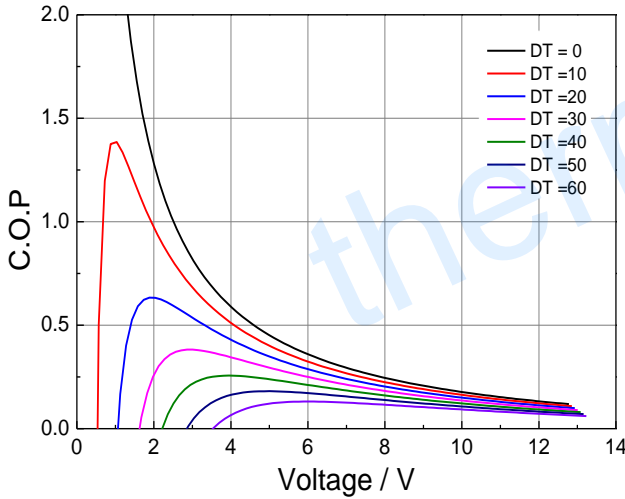
Standard Performance Graph $Q_c = f(V)$

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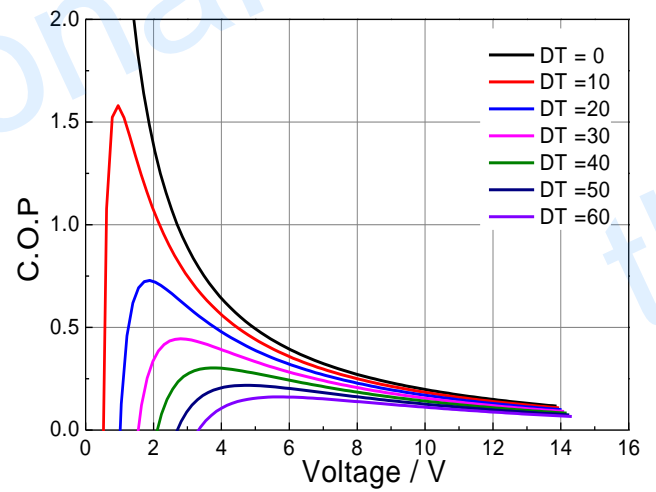
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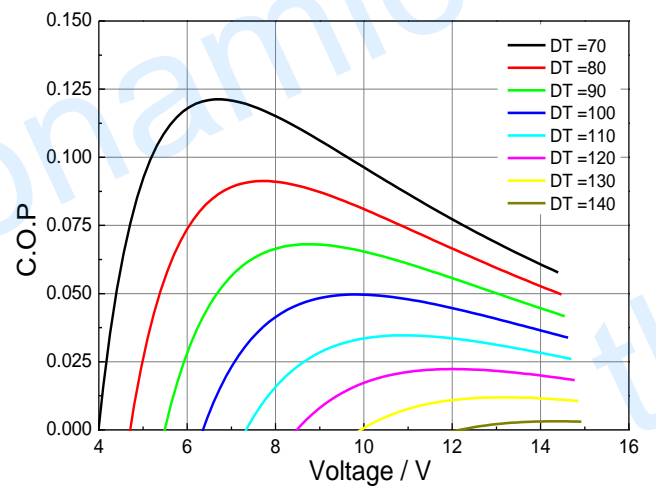
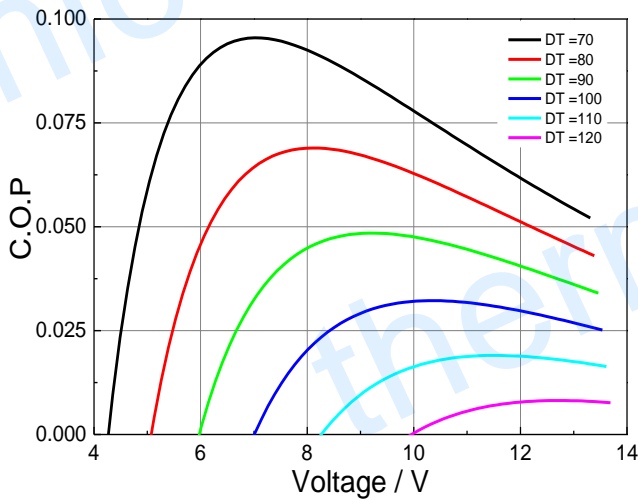
Performance Curves at Th=27 °C



Performance Curves at Th=50 °C



Standard Performance Graph COP = f(V) of ΔT ranged from 0 to 60 °C



Standard Performance Graph COP = f(V) of ΔT ranged from 70 to 120/140 °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 or storage module below 100 °C
- Operation below I_{max} or V_{max}
- Work under DC