

Specification of Thermoelectric Module

TEC2-127-127-08

Description

The TEC2-127-127-08 is a multistage module designed for greater temperature differential cooling, good for cooling and heating up to 100 °C applications. It is a 127-127 couples module in size of 40 mm × 40 mm (top) / 40 mm × 40 mm (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

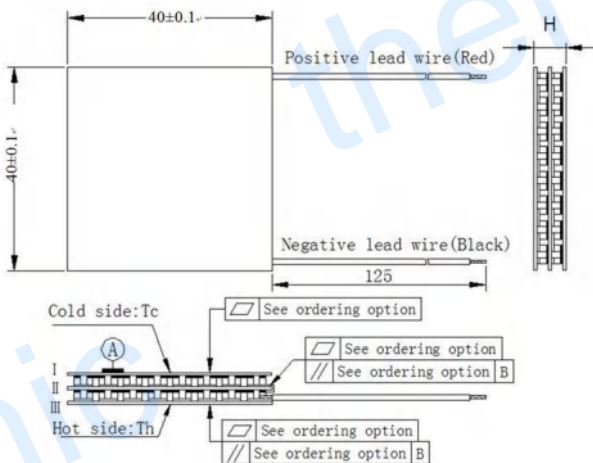
Application

- 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)	90	100	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U _{max} (Voltage)	14.6	16.4	Voltage applied to the module at DT _{max}
I _{max} (amps)	8.0	8.0	DC current through the modules at DT _{max}
Q _{Cmax} (Watts)	53.1	55.9	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (ohms)	1.85	2.05	The module resistance is tested under AC
Tolerance (%)	± 10		For thermal and electricity parameters

Geometric Characteristics Dimensions in millimeters



Ordering Option

Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:6.9± 0.2	0: Face II 0.08/0.08, Face III 0.08/0.08	125 ± 3 / Specify
TF	1:6.9± 0.1	1: Face II 0.03/0.03, Face III 0.03/0.03	125 ± 3 / Specify

Eg. TF01: Thickness 6.9± 0.2(mm) and Flatness Face II 0.03/0.03, Face III 0.03/0.03(mm)

Manufacturing Options

A. Solder:

1. T100: BiSn (T_{melt}=138°C)
2. T200: CuAgSn (T_{melt} = 217°C)
3. T240: SbSn (T_{melt} = 240°C)

C. Ceramics:

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

B. Sealant:

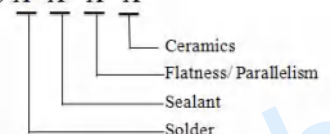
1. NS: No sealing (Standard)
2. SS: Silicone sealant
3. EPS: Epoxy sealant

D. Ceramics Surface Options:

1. Blank ceramics (not metalized)
2. Metalized

Naming for the Module

TEC2-127-127-08-X -X - X - X



TEC2-127-127-08-T100 - NS - TF01 - AlO

T100: Solder, BiSn (Melting Point=138 °C)

NS: No sealing

AlO: Alumina white 96%

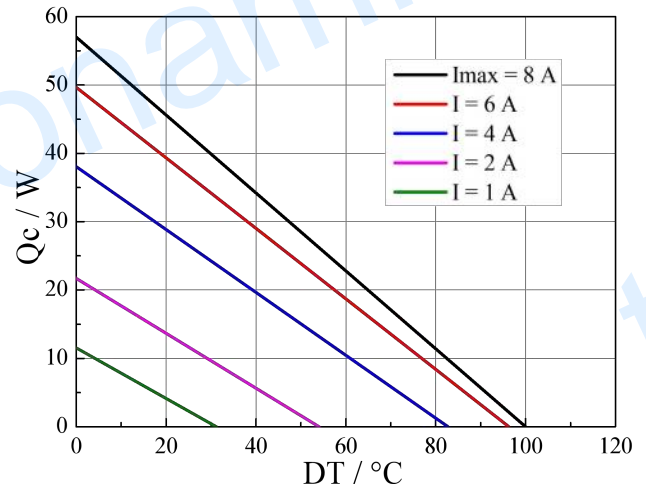
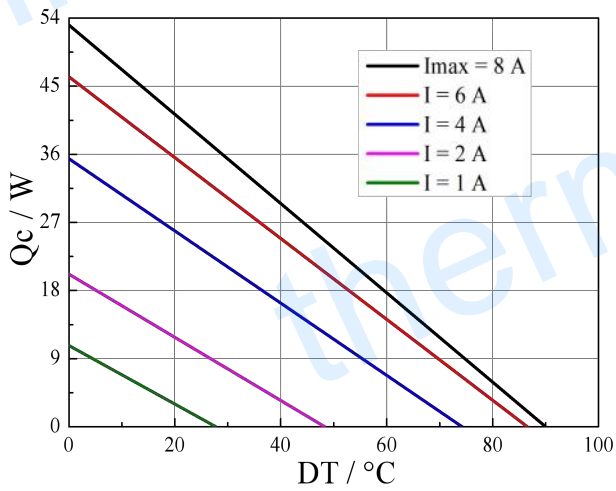
TF01: Thickness ±0.3(mm) and Flatness/Parallelism 0.10/0.10(mm)

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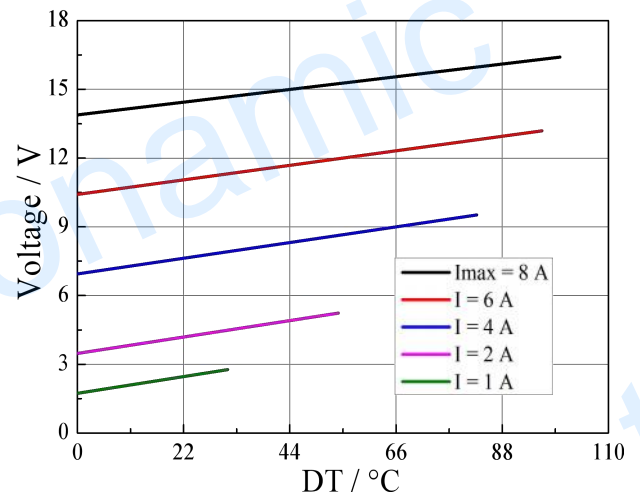
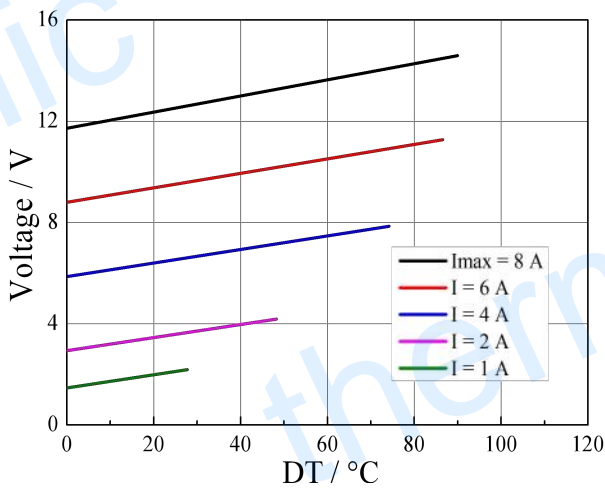
TEC2-127-127-08

Performance Curves at Th=27 °C

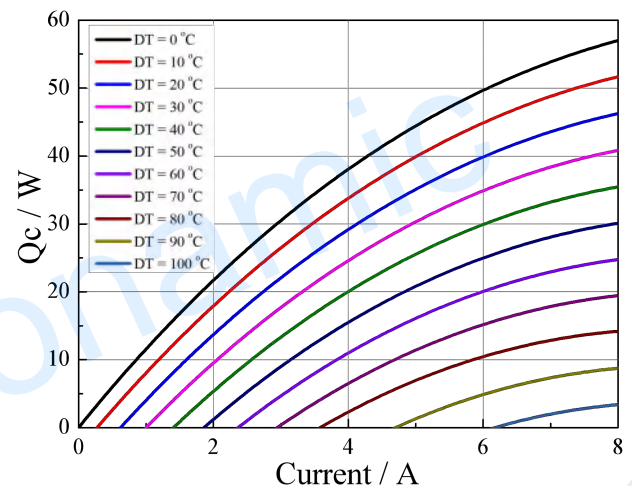
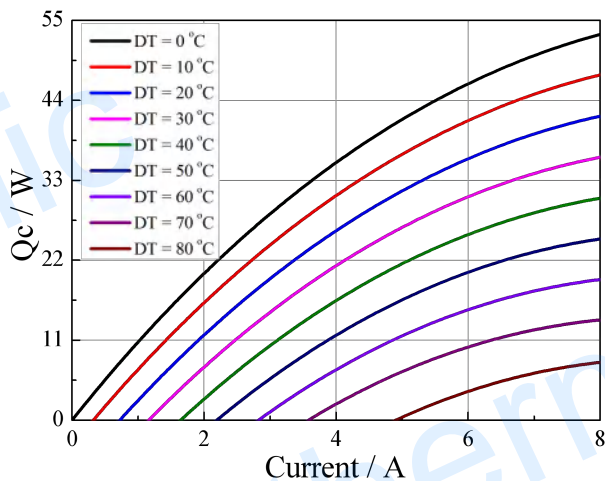
Performance Curves at Th=50 °C



Standard Performance Graph $Q_c = f(DT)$



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

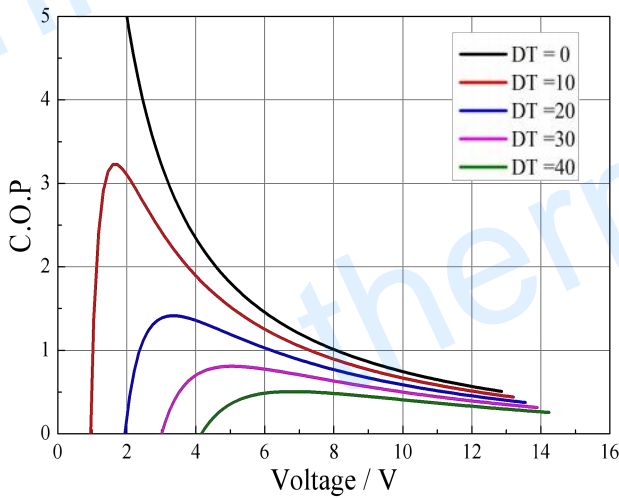


Standard Performance Graph $Q_c = f(I)$

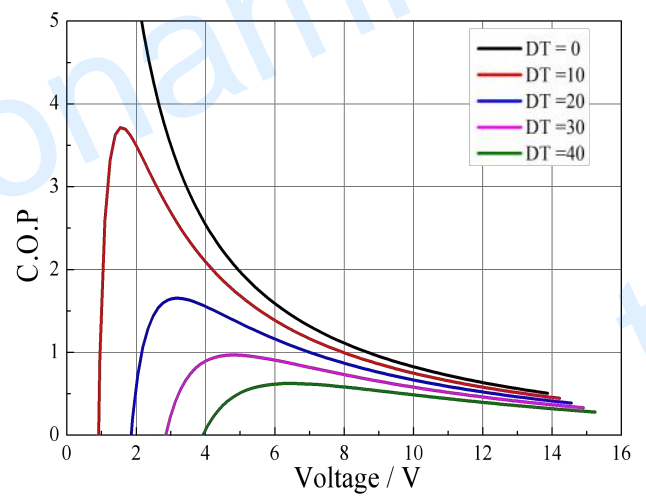
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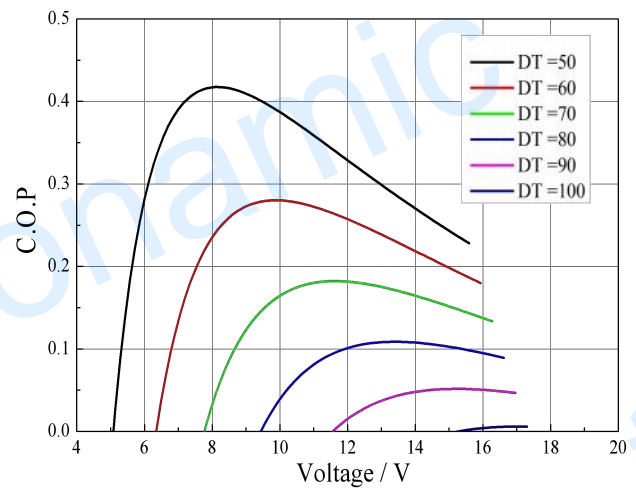
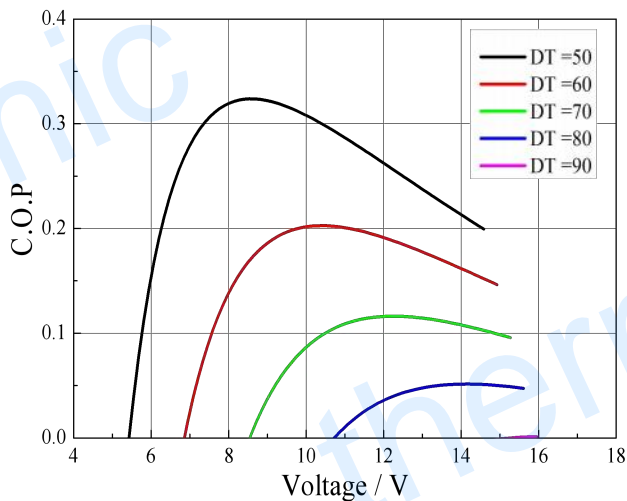
Performance Curves at Th=27 °C



Performance Curves at Th=50 °C



Standard Performance Graph COP = f(V) of DT ranged from 0 to 40 °C



Standard Performance Graph COP = f(V) of DT ranged from 50 to 90/100 °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
- Storage module below 100 °C
- Operation below I_{max} or V_{max}
- Work under DC