Specification of Thermoelectric Module

TEC2-127-31-05

Description

The TEC2-127-31-05 is a multistage module designed for greater temperature differential cooling, good for cooling and heating up to 100 °C applications. It is a 127-31 couples module in size of 20 mm × 20 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

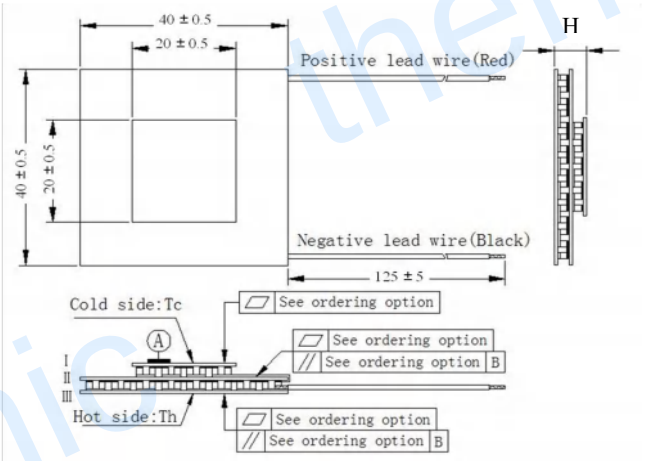
Application

- 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)	101	113	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U_{max} (Voltage)	14.3	15.6	Voltage applied to the module at DT_{max}
I_{max} (Amps)	4.7	4.7	DC current through the modules at DT_{max}
Q_{Cmax} (Watts)	16.3	17.5	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (Ohms)	2.93	3.22	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=138ºC)
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 (Al_2O_3, white 96%)
2. Aluminum Nitride (AlN)

D. Ceramics Surface Options:

1. Blank ceramics (not metalized)
2. Metalized

Ordering Option

Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0: 8 ± 0.2	0: Face II 0.05/0.05, Face III 0.08/0.08	125 ± 5 / Specify
TF	1: 8 ± 0.1	1: Face II 0.02/0.02, Face III 0.03/0.03	125 ± 5 / Specify
Eg. TF01: Thickness ± 0.2(mm) and Flatness :Face II 0.02/0.02, Face III 0.03/0.03			

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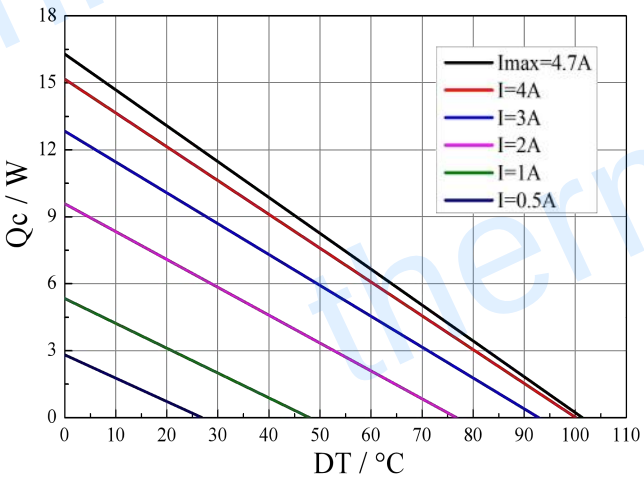
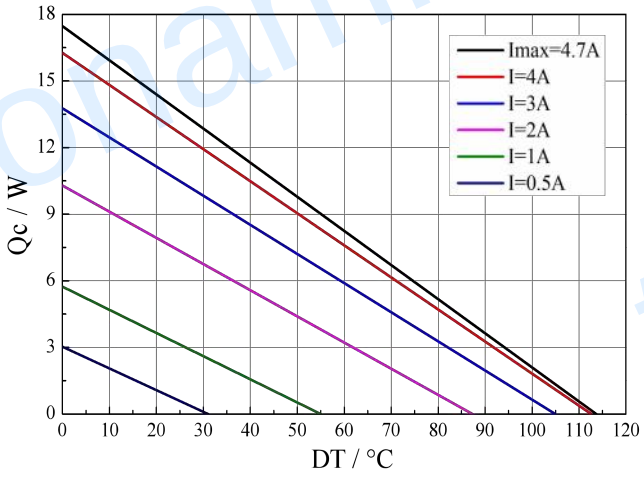
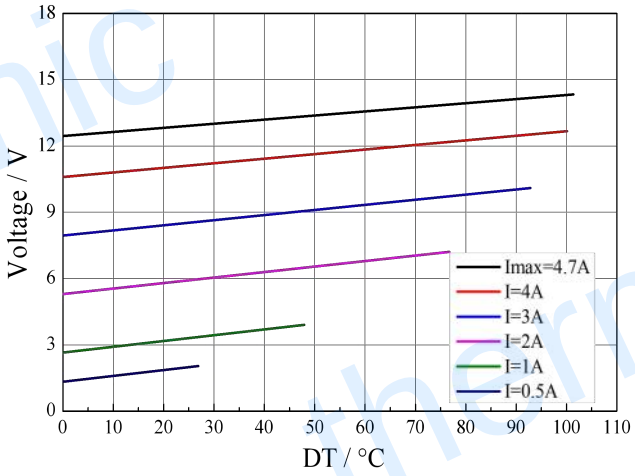
Performance Curves at Th=27 ºC

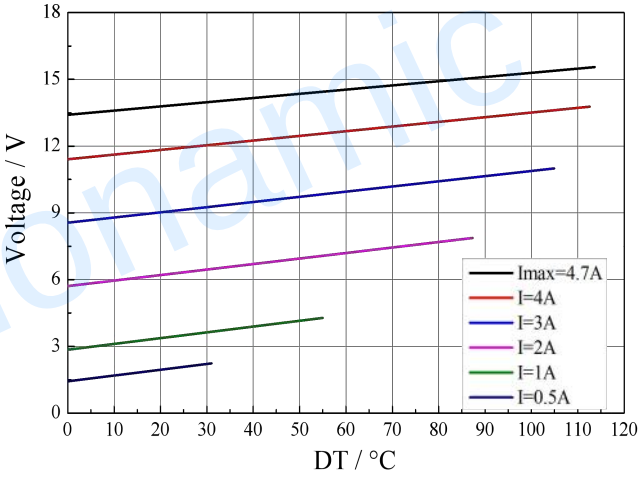


Performance Curves at Th=50 ºC

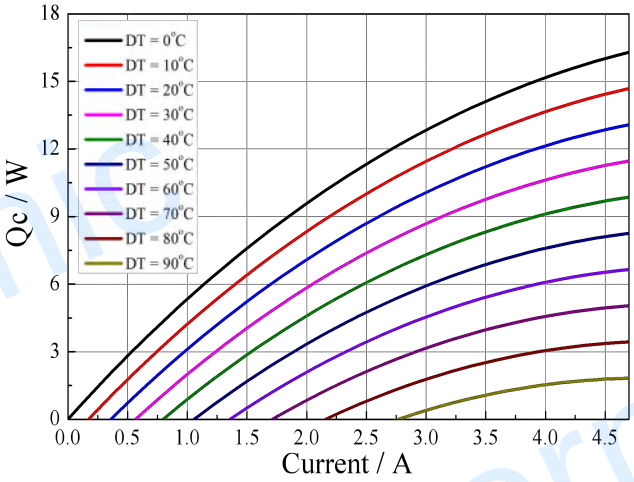


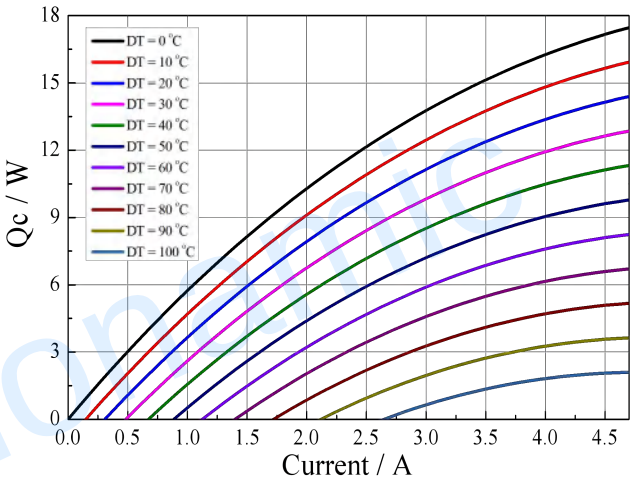
Standard Performance Graph Qc= f(DT)





Standard Performance Graph V= f(ΔT)





Standard Performance Graph Qc= f(V)

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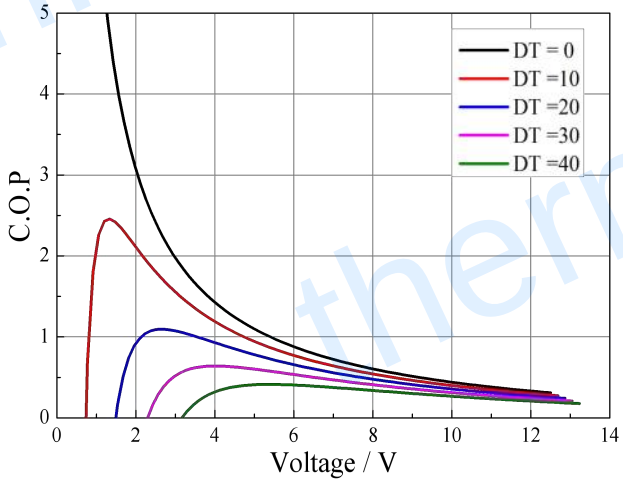
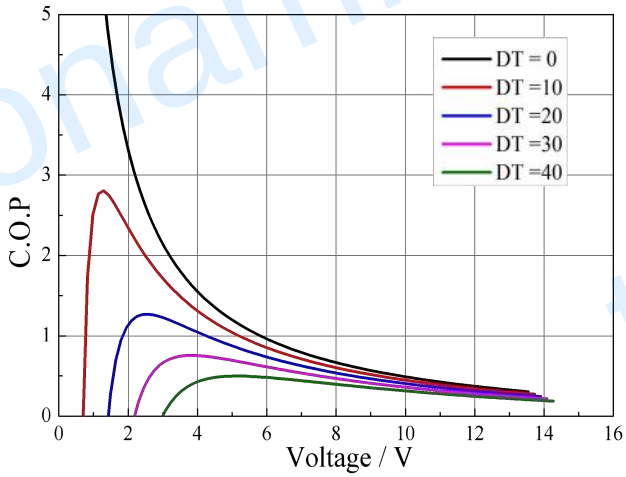
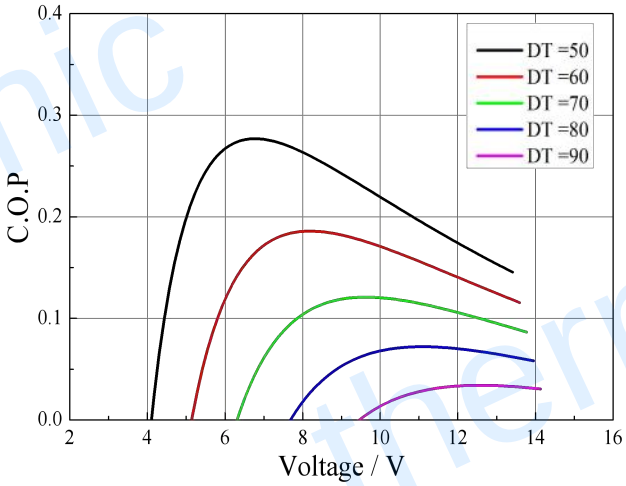
Performance Curves at Th=27 ºC

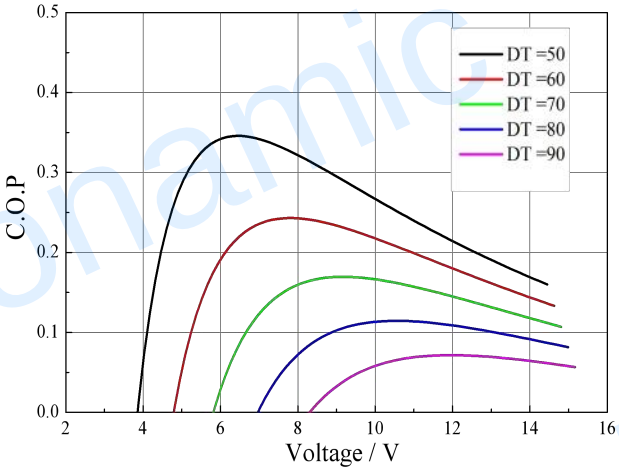


Performance Curves at Th=50 ºC



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 Qc/Input power (V × 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 ºC
- Operation below I_{max} or V_{max}
- Work under DC