Specification of Thermoelectric Module

TES2-181-176-14

Description

The TES2-181-176-14 is a multistage module designed for greater temperature differential cooling, good for cooling and heating up to 100 °C applications. It is a 181-176 couples module in size of 27 mm × 27 / 25.75 mm. 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

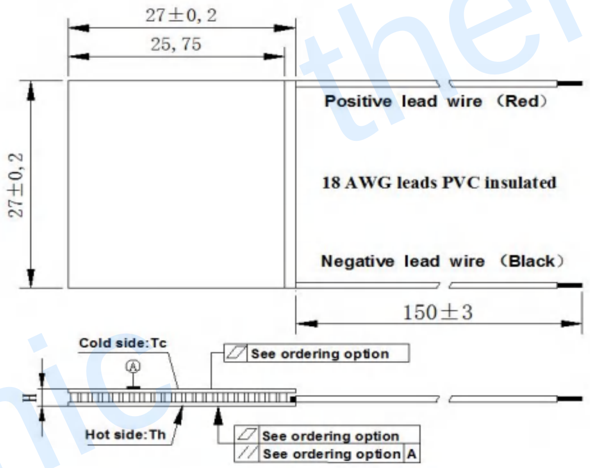
Application

- 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	101	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U_{max} (Voltage)	20.8	23.8	Voltage applied to the module at DT_{max}
I_{max} (amps)	14.3	14.3	DC current through the modules at DT_{max}
QC_{max} (Watts)	123.7	133.0	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (ohms)	1.45	1.56	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: CuSn (Tmelt = 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 (Al_2O_3, white 96%)
2. Aluminum Nitride (AlN)

D. Ceramics Surface Options:

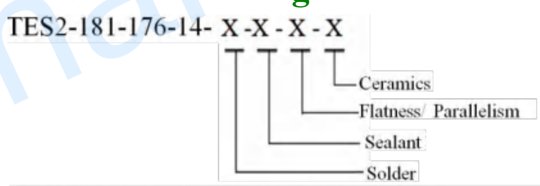
1. Blank ceramics (not metallized)
2. Metallized (Au plating)

Ordering Option

Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:2.55± 0.1	0: 0.05/0.05	150±3/Specify
TF	1:2.55± 0.05	1: 0.025/0.025	150±3/Specify
TF	2:2.55± 0.025	2: 0.015/0.015	150±3/Specify

Eg. TF11: Thickness2.55± 0.05(mm) and Flatness 0.025/0.025 (mm)

Naming for the Module



TES2-181-176-14-T100-NS-TF11-AlO

T100: BiSn (Tmelt=138ºC)

NS: No sealing

AlO: Alumina (Al2O3, white 96%)

TF11: Thickness ±0.05(mm) and Flatness/ Parallelism 0.025/0.025 (mm)

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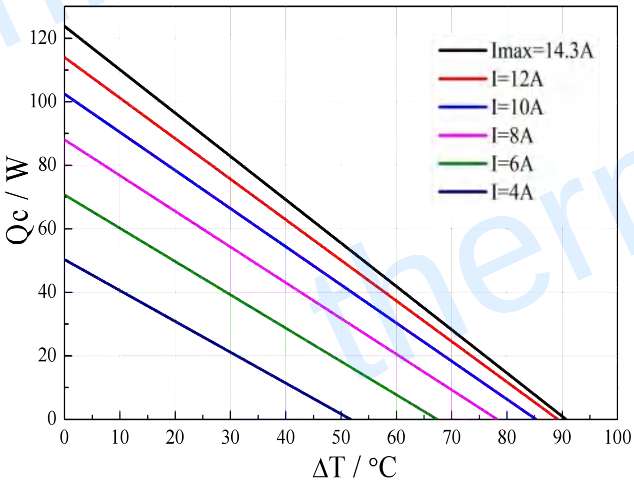
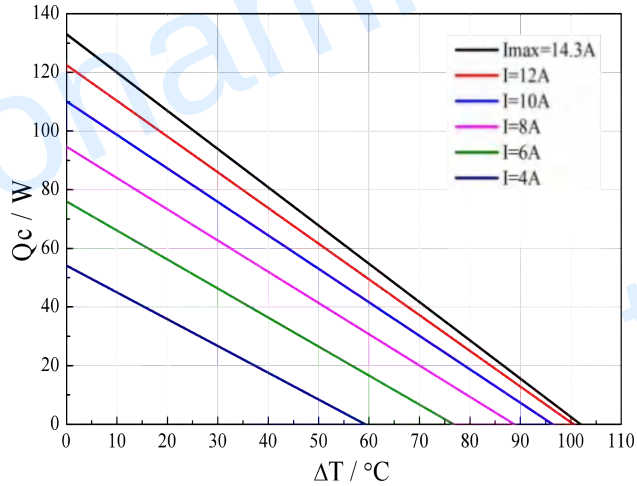
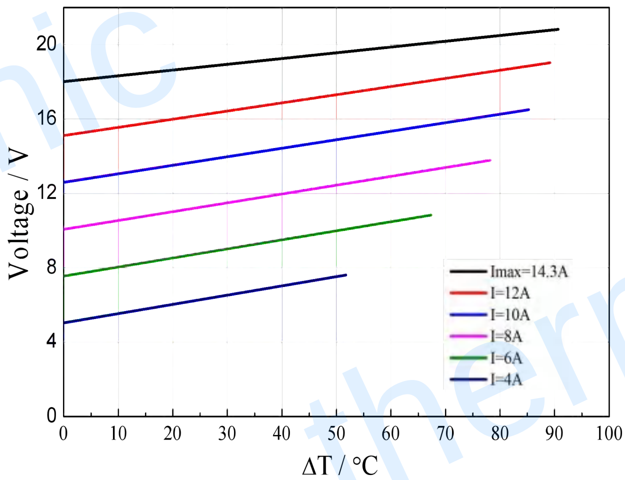
Performance Curves at Th=27 ºC

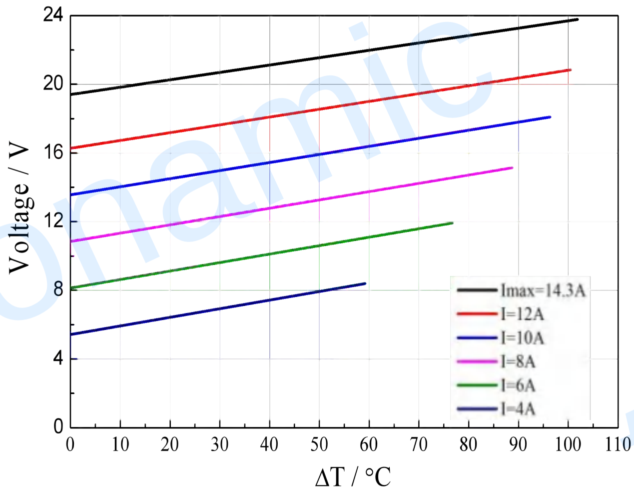


Performance Curves at Th=50 ºC

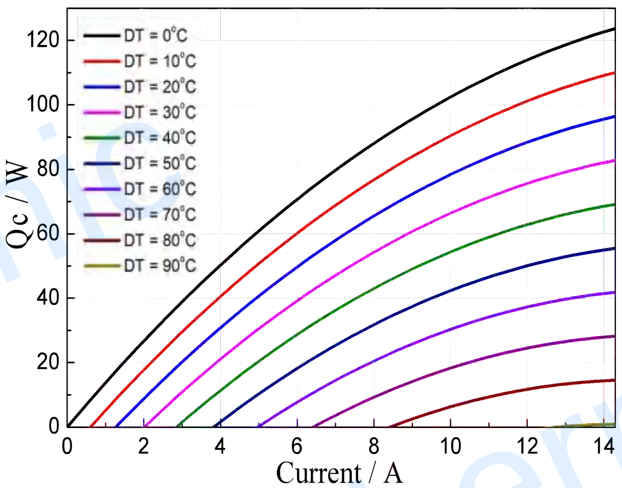


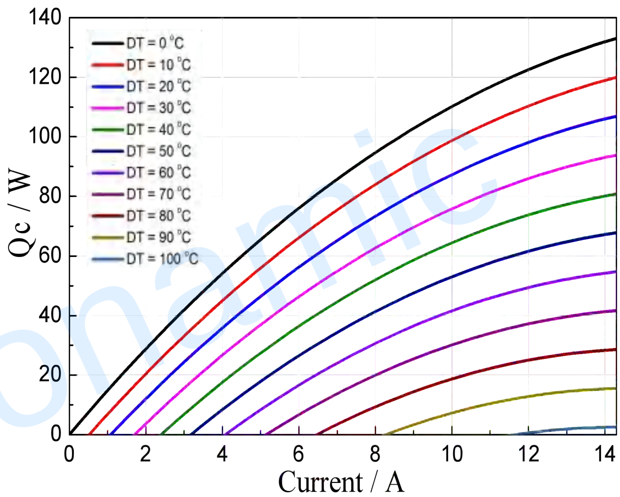
Standard Performance Graph Qc= f(DT)





Standard Performance Graph V= f(ΔT)





Standard Performance Graph Qc= f(V)

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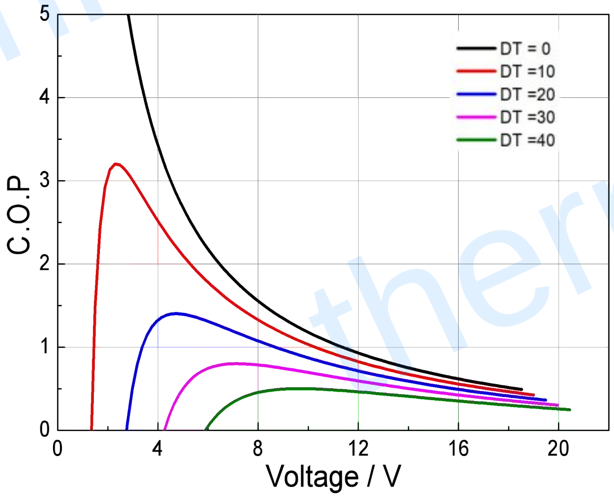
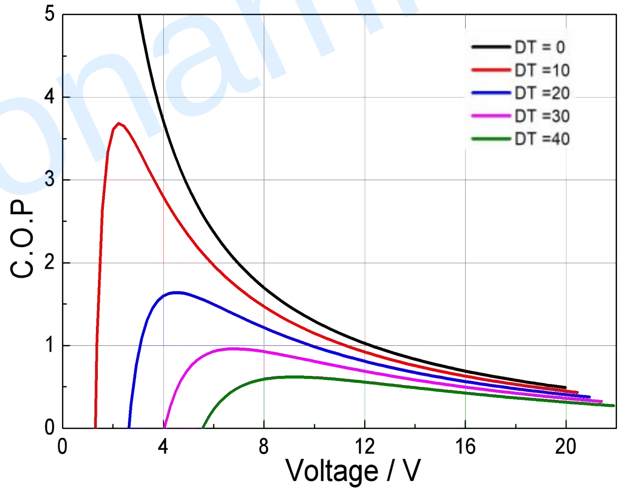
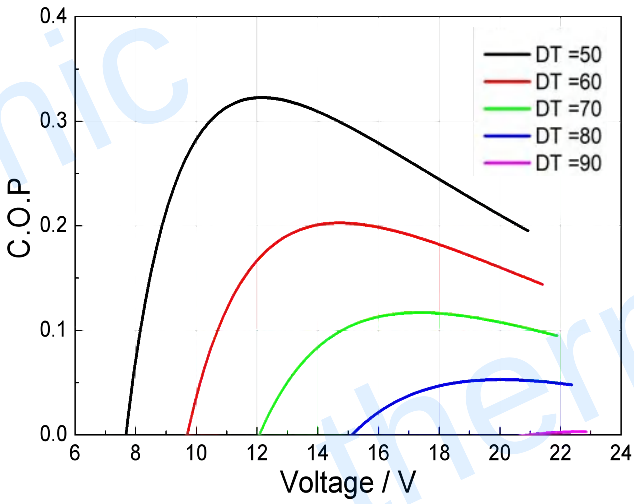
Performance Curves at Th=27 ºC

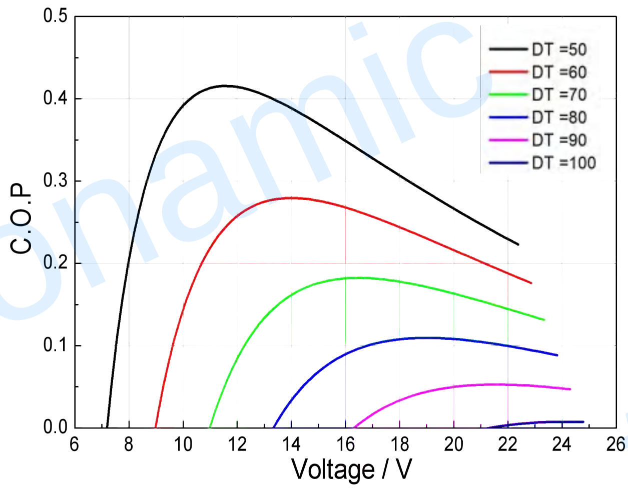


Performance Curves at Th=50 ºC



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

- Cold side of the module stuck on the object being cooled
- Hot side of the module mounted on a heat radiator
- Storage module below 100 ºC
- Operation below I_{max} or V_{max}
- Work under DC