

Specification of Thermoelectric Module

TEC4-97-49-17-7-05

Description

The TEC4-97-49-17-7-05 is a multistage module designed for greater temperature differential cooling, good for cooling and heating up to 100 °C applications. It 97-49-17-7 couples module in size of 10mm×10mm (top)/35mm ×35mm (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

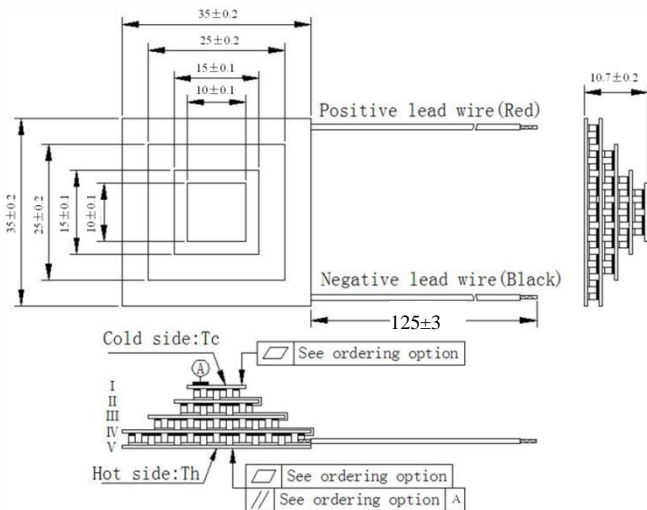
Application

- 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)	112	126	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U _{max} (Voltage)	11.2	12.6	Voltage applied to the module at DT _{max}
I _{max} (amps)	4.4	4.4	DC current through the modules at DT _{max}
Q _{Cmax} (Watts)	4.0	4.4	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (ohms)	2.4	2.6	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

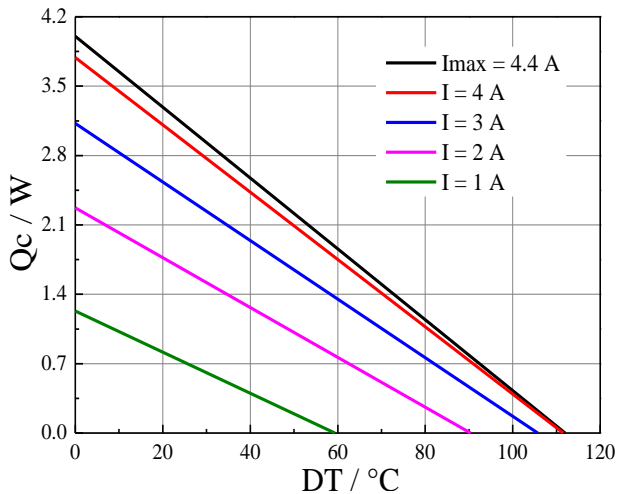
Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0: 10.7±0.2	0: 0.1/0.1	125±3/Specify
TF	1: 10.7±0.1	1: 0.05/0.05	125±3/Specify

Eg. TF01: Thickness 10.7±0.2(mm) and Flatness/ Parallelism : 0.05/0.05(mm)

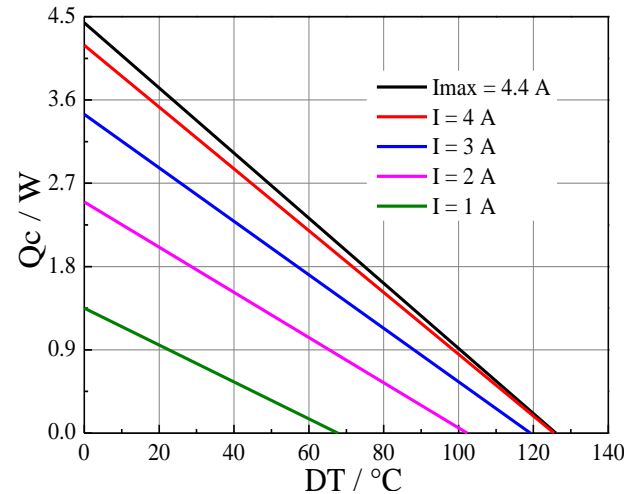
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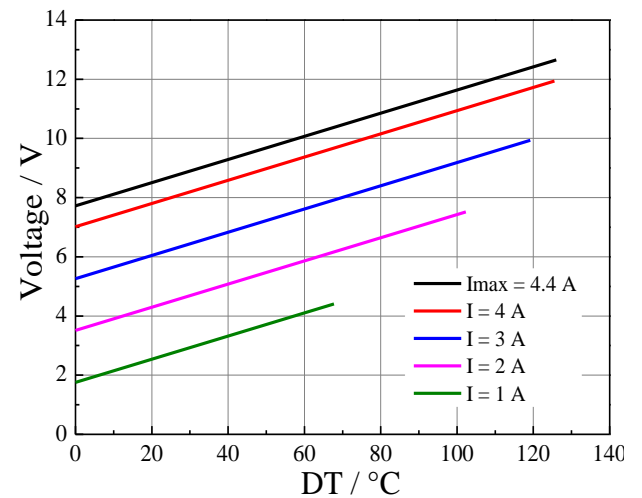
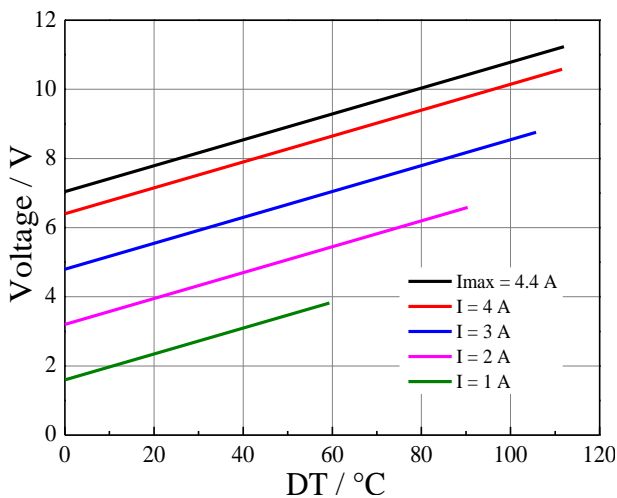
Performance Curves at Th=27 °C



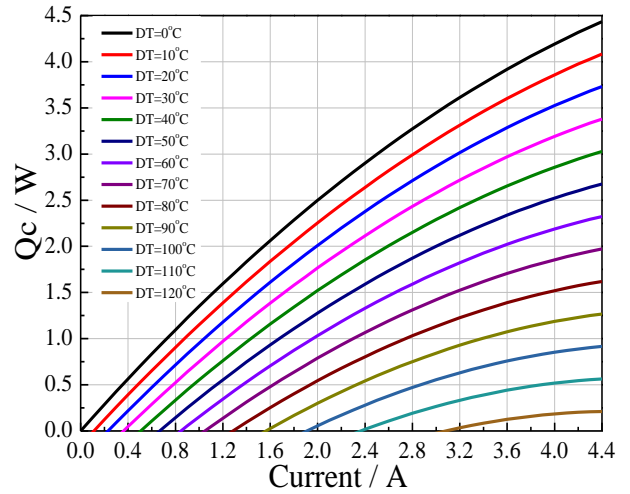
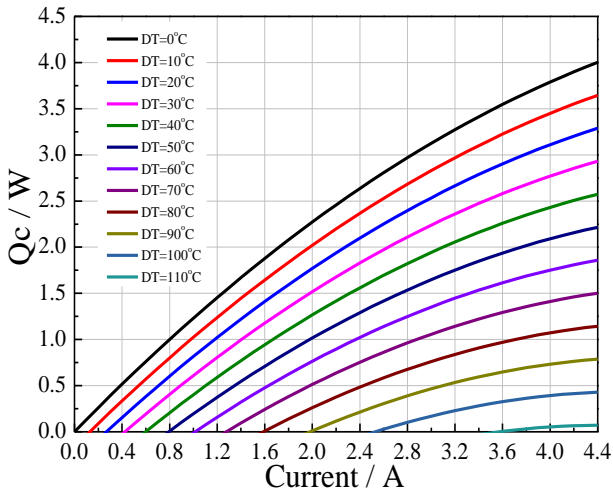
Performance Curves at Th=50 °C



Standard Performance Graph Qc= f(DT)



Standard Performance Graph V= f(DT)

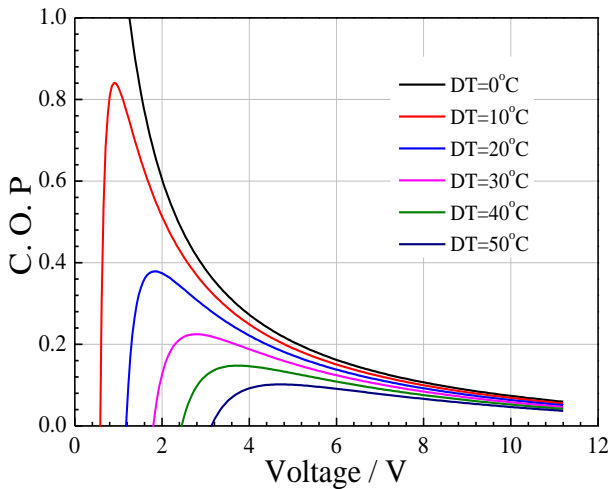


Standard Performance Graph $Q_c = f(I)$

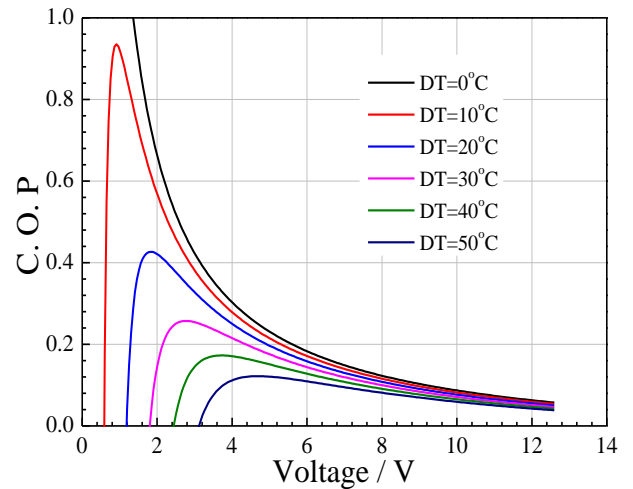
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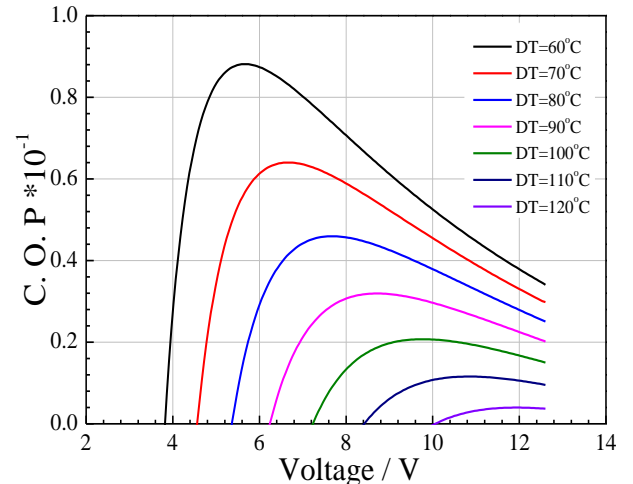
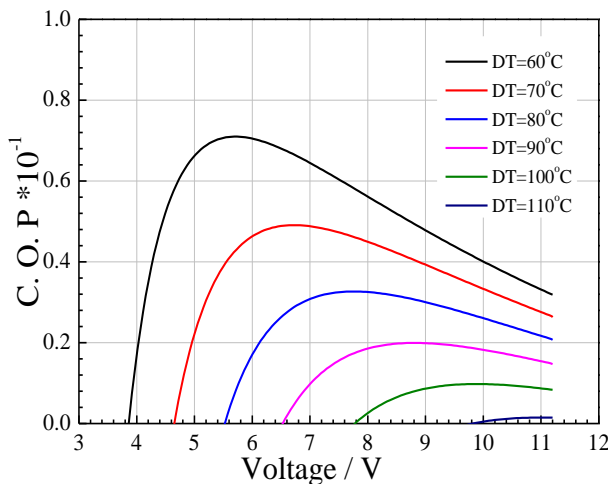
Performance Curves at $T_h = 27^\circ\text{C}$



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



Standard Performance Graph COP = f(V) of DT ranged from 0 to 50°C



Standard Performance Graph COP = f(V) of DT ranged from 60 to 110/120 $^\circ\text{C}$

Remark: The coefficient of performance (COP) is the cooling power Q_c /Input power ($V \times I$).

Operation Cautions

- Cold side of the module sticked 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