

Specification of Thermoelectric Module

TEC2-44-12-08

Description

The TEC2-44-12-08T200 is a multistage module designed for greater temperature differential cooling, good for cooling and heating up to 100 °C applications. It is a 44-12 couples module in size of 18 mm × 13 mm (top) / 25 mm × 22.5 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

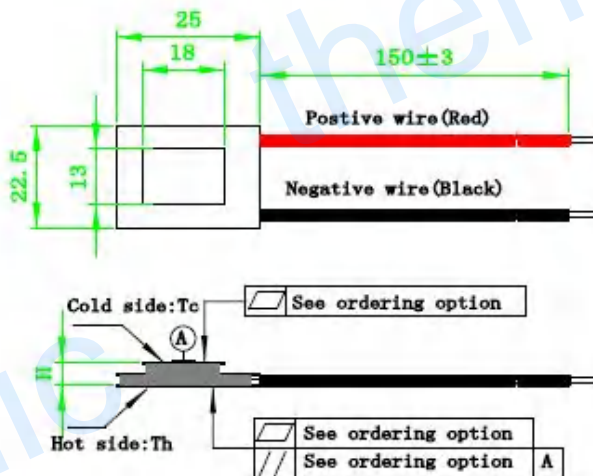
Application

- 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)	99.6	111.9	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U _{max} (Voltage)	5.2	5.7	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)	12.3	13.2	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (Ohms)	0.70	0.75	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: CuAgSn (T_{melt} = 217°C)
3. T240: SbSn (T_{melt} = 240°C)

B. Sealant:

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

C. Ceramics:

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

D. Ceramics Surface Options:

1. Blank ceramics (not metalized)
2. Metalized

Ordering Option

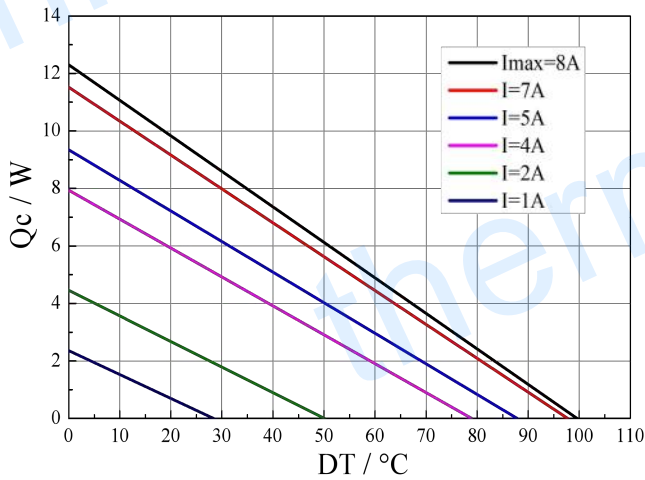
Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0: 7. 8 ± 0.2	0: Face II 0.05/0.05, Face III 0.07/0.07	150 ± 3 / Specify
TF	1: 7.8 ± 0.1	1: Face II 0.02/0.02, Face III 0.025/0.025	150 ± 3 / Specify

Eg. TF00: Thickness ± 0.2(mm) and Flatness Face II 0.05/0.05, Face III 0.07/0.07

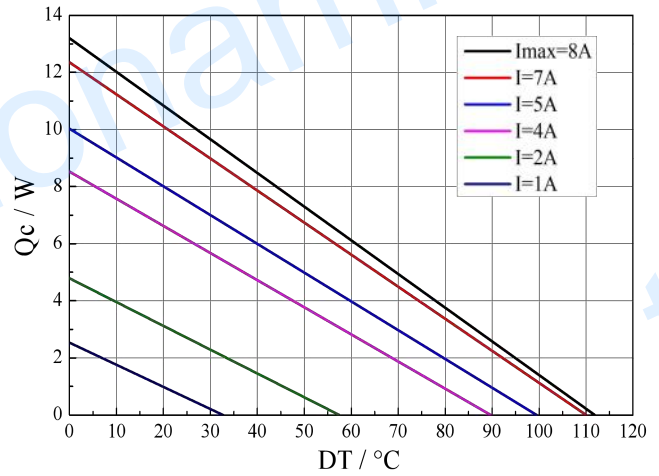
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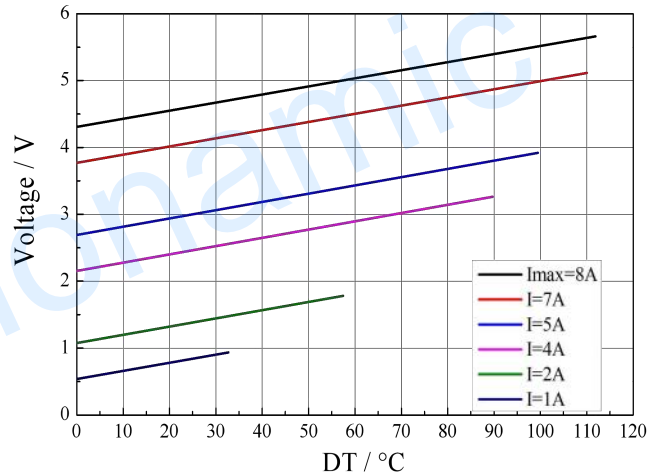
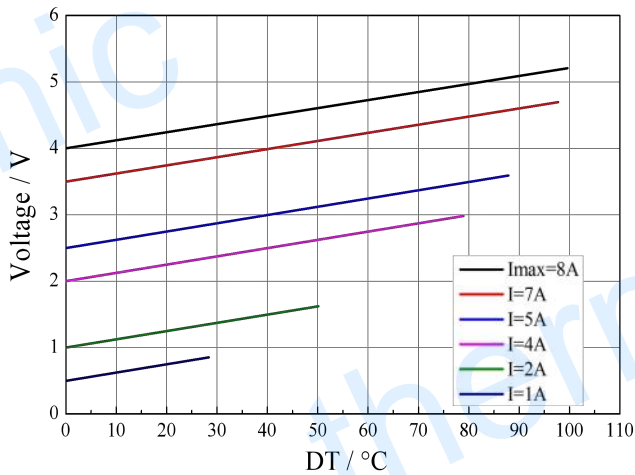
Performance Curves at $T_h=27^\circ\text{C}$



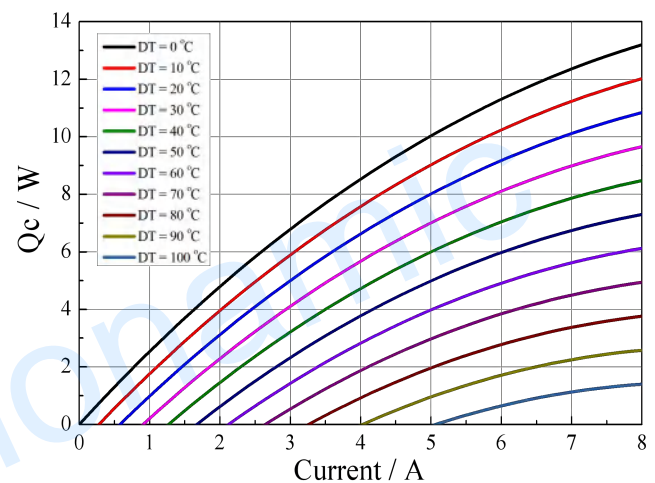
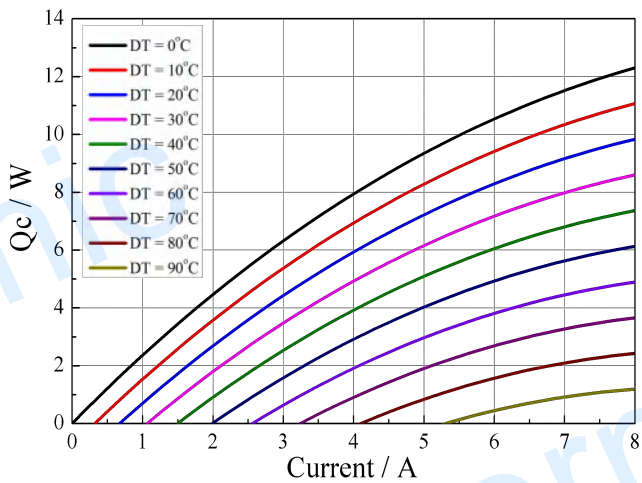
Performance Curves at $T_h=50^\circ\text{C}$



Standard Performance Graph $Q_c = f(DT)$



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

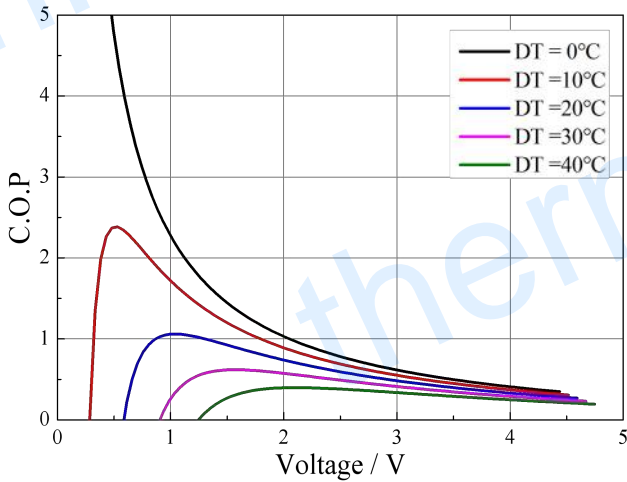


Standard Performance Graph $Q_c = f(V)$

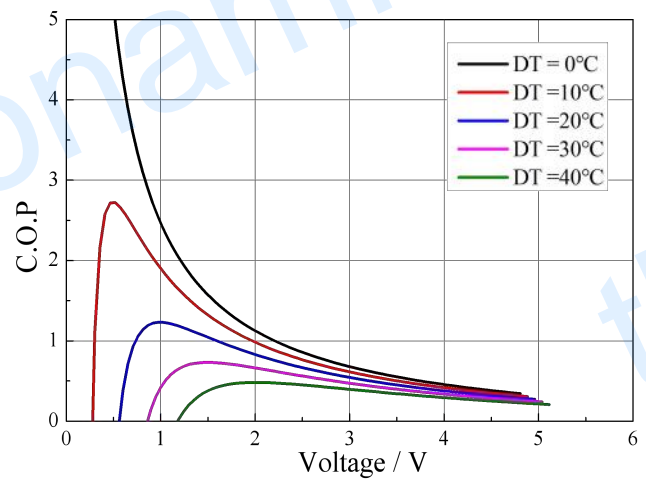
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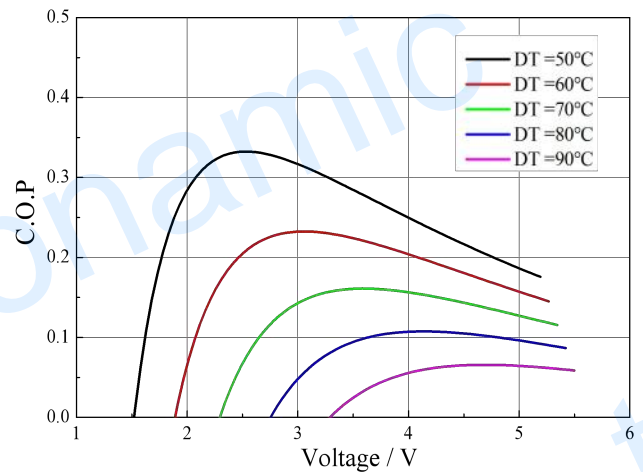
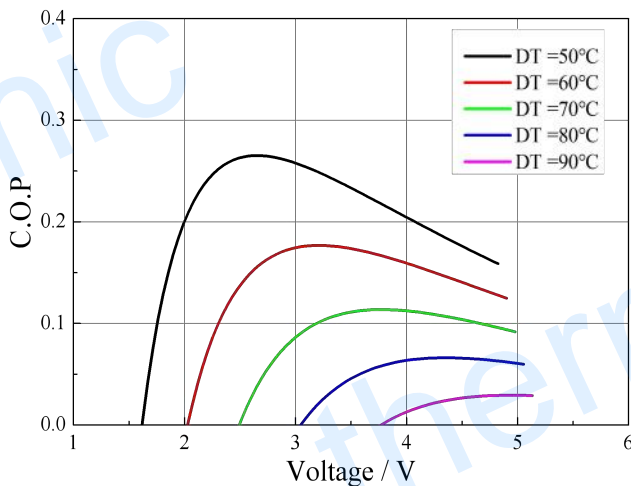
Performance Curves at Th=27 °C



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