

Specification of Thermoelectric Module

TEC1-12707BT200

Description

The 127 couples, 62 mm × 62 mm size single stage module which is made of selected high performance ingot to achieve superior cooling performance and 70 °C or larger delta T max, is designed for superior cooling and heating applications. Beyond the standard below, we can design and manufacture the custom made module according to your special requirements.

Features

- 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

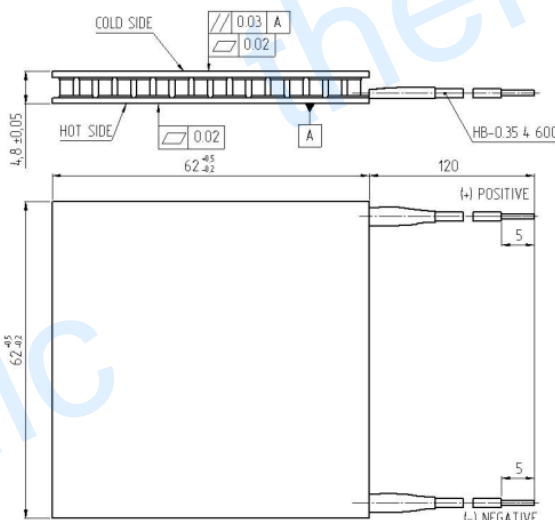
Application

- Food and beverage service refrigerator
- Portable cooler box for cars
- Liquid cooling
- Temperature stabilizer
- CPU cooler and scientific instrument
- Photonic and medical systems

Performance Specification Sheet

Th (°C)	27	50	Hot side temperature at environment: dry air, N ₂
DT _{max} (°C)	70	79	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U _{max} (Voltage)	15.8	17.0	Voltage applied to the module at DT _{max}
I _{max} (Amps)	7.5	7.5	DC current through the modules at DT _{max}
Q _{Cmax} (Watts)	76.2	82.0	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (Ohms)	1.65	1.77	The module resistance is tested under AC
Tolerance (%)	± 10		For thermal and electricity parameters

Geometric Characteristics Dimensions in millimeters



Manufacturing Options

A. Solder:

T200: CuSn (T_{melt}=227 °C)

B. Sealant:

SS: Silicone sealant

C. Ceramics:

AlO: Al₂O₃, white 96%

D. Ceramics Surface:

Blank ceramics (not metalized)

Ordering Option

Suffix	Thickness H / (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:4.8±0.08	0:0.05/0.05	120±3/Specify
TF	1:4.8±0.05	1:0.02/0.03	120±3/Specify

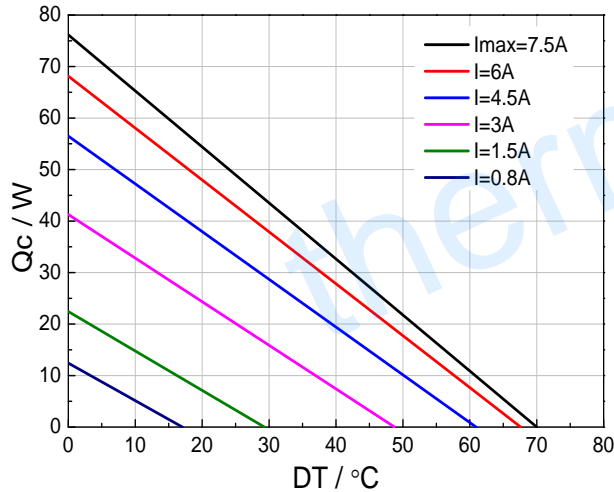
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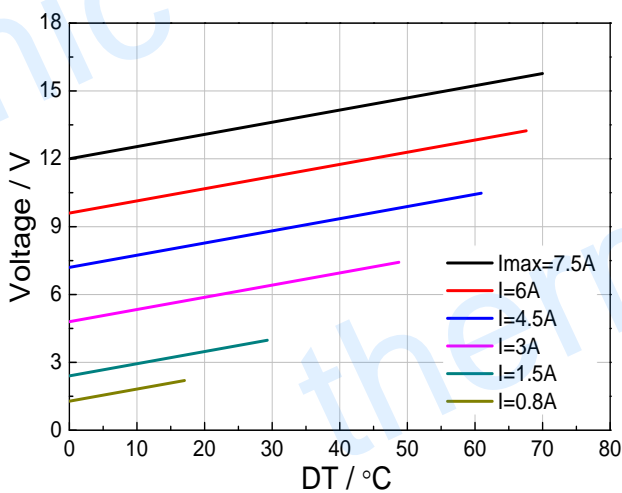
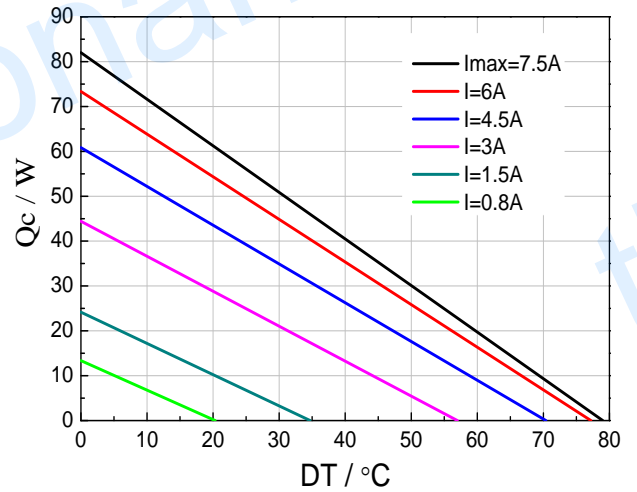
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Performance Curves at $T_h=27\text{ }^\circ\text{C}$

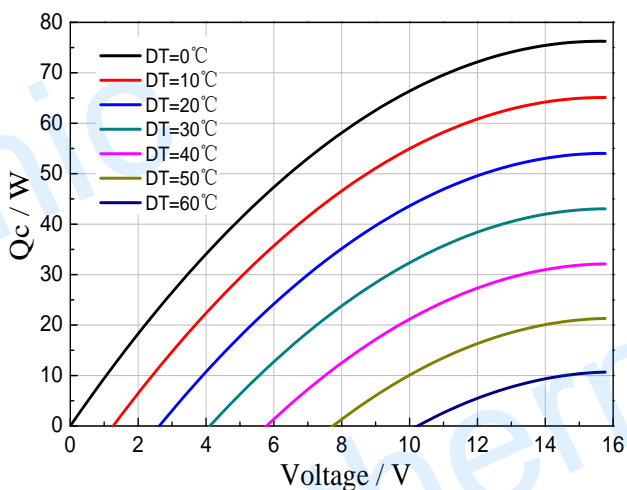
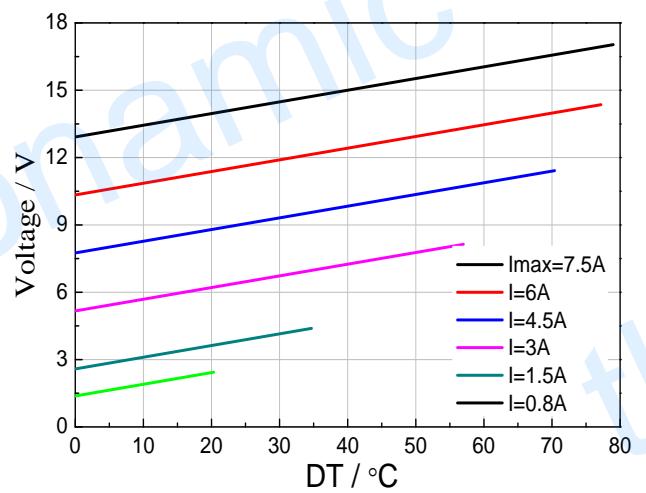


Standard Performance Graph $Q_c = f(\Delta T)$

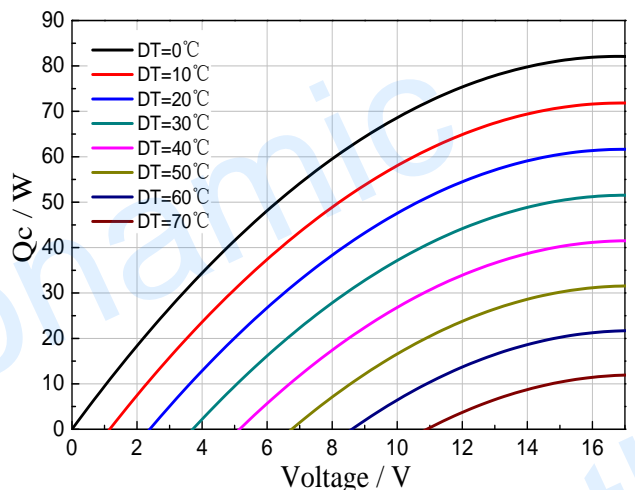
Performance Curves at $T_h=50\text{ }^\circ\text{C}$



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



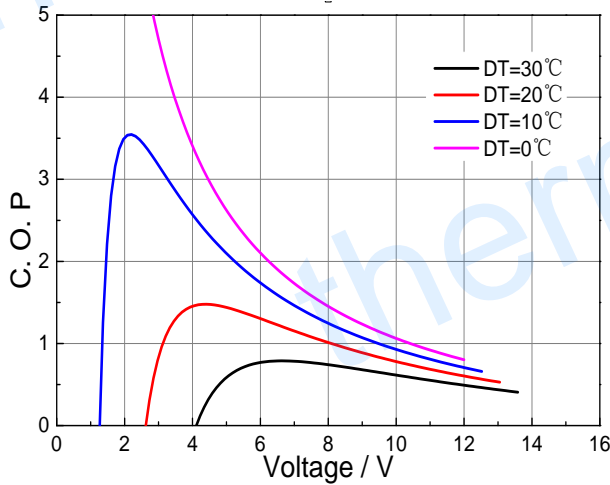
Standard Performance Graph $Q_c = f(V)$



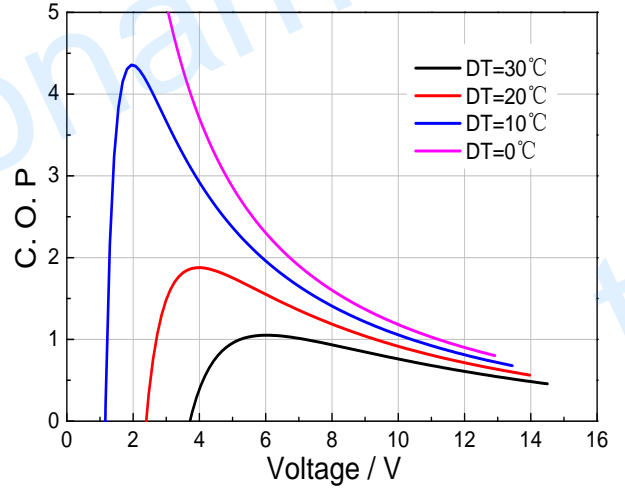
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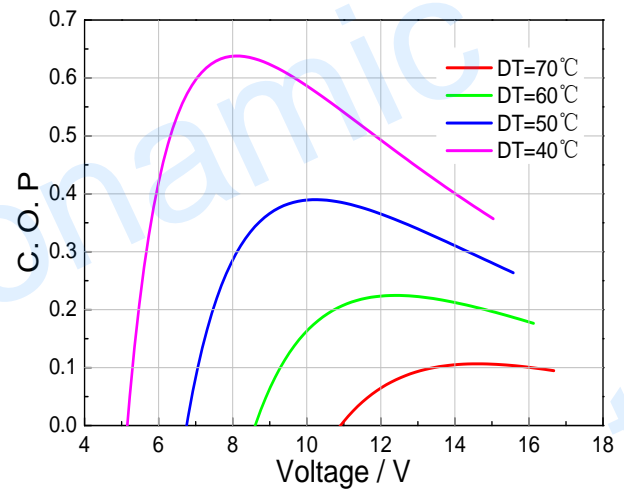
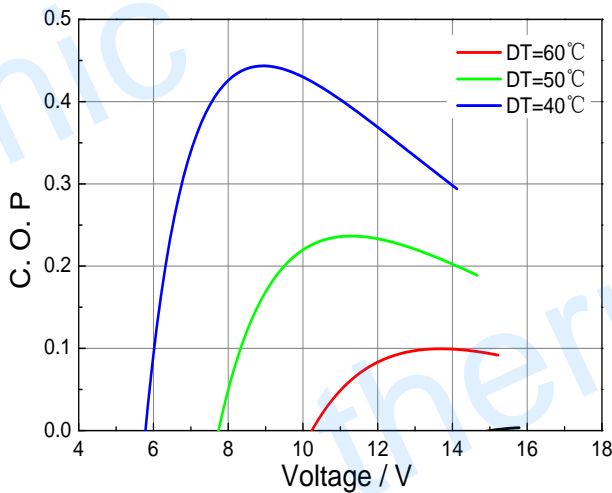
Performance Curves at Th=27 °C



Performance Curves at Th=50 °C



Standard Performance Graph COP = f(V) of ΔT ranged from 0 to 30 °C



Standard Performance Graph COP = f(V) of ΔT ranged from 40 to 60/70 °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
- Operation below I_{max} or V_{max}
- Work under DC