

Specification of Thermoelectric Module

TEC1-07103

Description

The 71 couples, 30mm × 30mm size module is made of selected high performance ingots to achieve superior cooling performance and greater delta T up to 70°C. Designed for superior cooling and heating up to 100°C applications. If higher operational processing temperature is required, please specify, we can design and manufacture custom made modules according to your requirements. Minimums do apply.

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

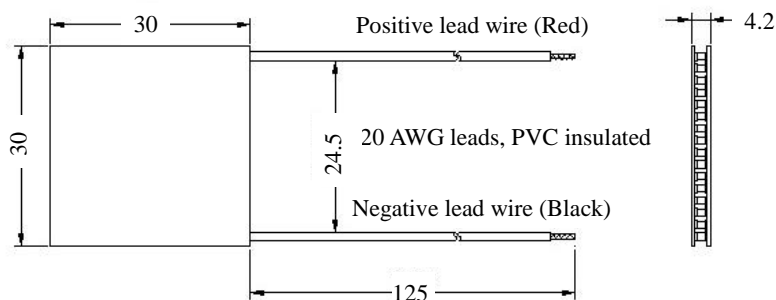
Application

- 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

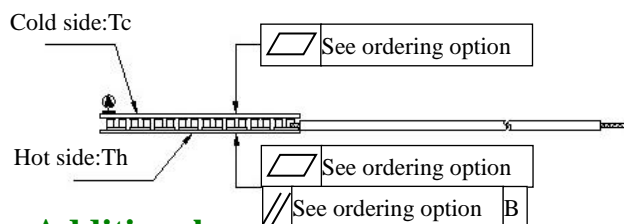
Th(°C)	27	50	Hot side temperature at environment: dry air, N ₂
DT _{max} (°C)	70	79	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U _{max} (Voltage)	8.9	9.6	Voltage applied to the module at DT _{max}
I _{max} (amps)	3.8	3.8	DC current through the modules at DT _{max}
Q _{Cmax} (Watts)	21.3	23.2	Cooling capacity at cold side of the module under DT=0 °C
AC resistance(ohms)	1.65~1.98	1.72~2.1	The module resistance is tested under AC

Geometric Characteristics Dimensions in millimeters



Sealing Option

Suffix	Sealant
NS	No sealing
SS	Silicone sealant
EPS	Epoxy
OS	Customer specify sealing other than above



Additional

Ceramic material: Alumina (Al₂O₃, white 96%)
Solder tinning: Bismuth Tin (BiSn) M.P. 138 °C

Ordering Option

Suffix	Thickness (mm)	Flatness/Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:4.2 ± 0.1	0:0.035/0.035	125±1/Specify
TF	1:4.2 ± 0.05	1:0.025/0.025	125±1/Specify
TF	2:4.2 ± 0.03	2:0.015/0.015	125±1/Specify

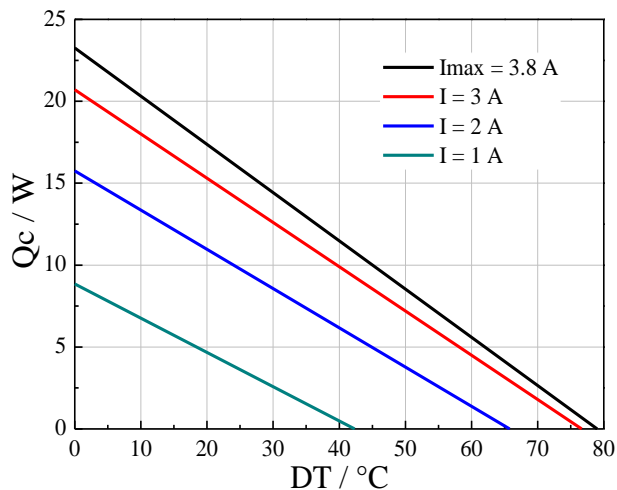
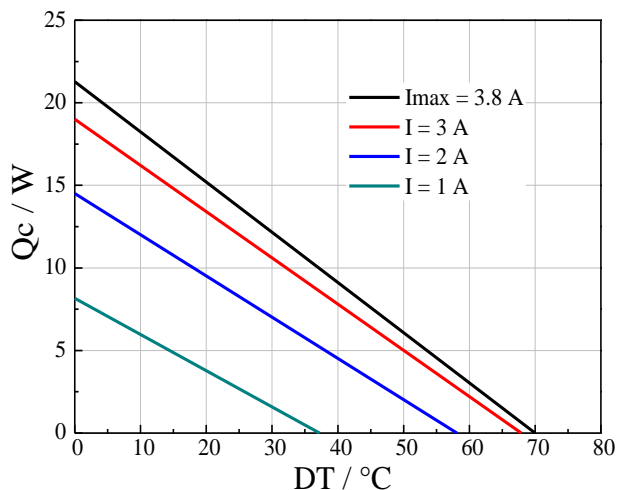
Eg. TF0: Thickness 4.2 ± 0.1(mm) and Flatness 0.035/0.035(mm)

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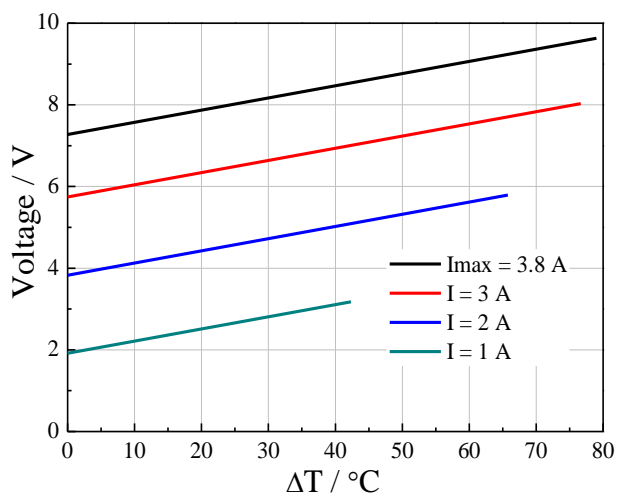
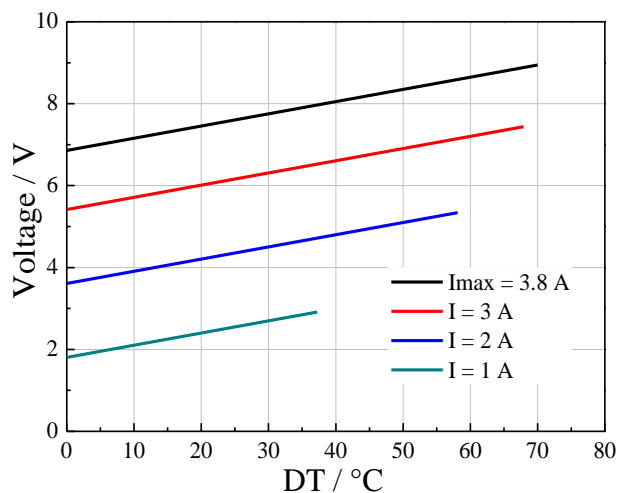
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Performance Curves at Th=27 °C

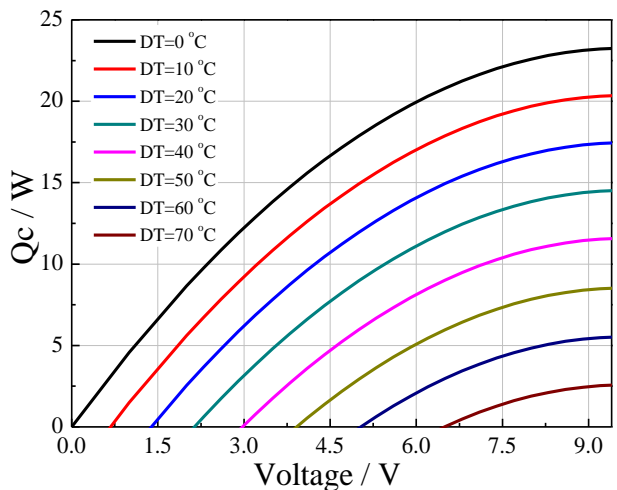
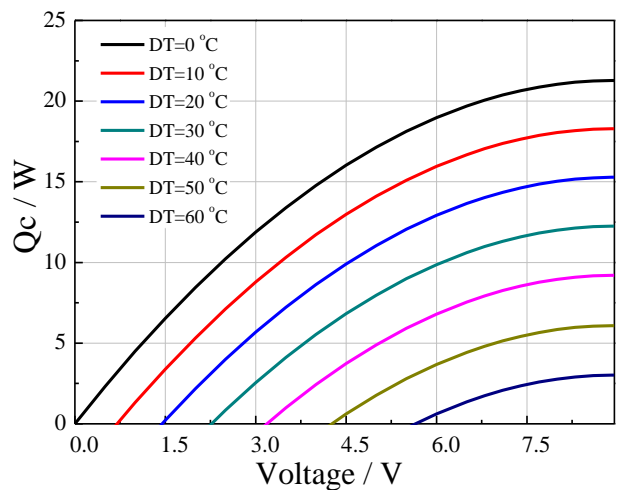
Performance Curves at Th=50 °C



Standard Performance Graph $Q_c = f(DT)$



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

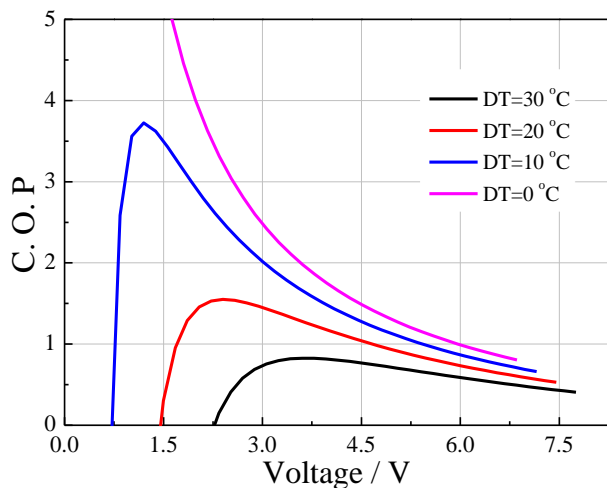


Standard Performance Graph $Q_c = f(V)$

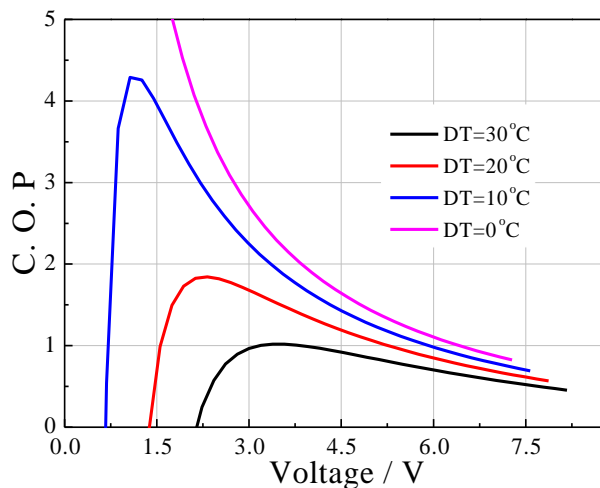
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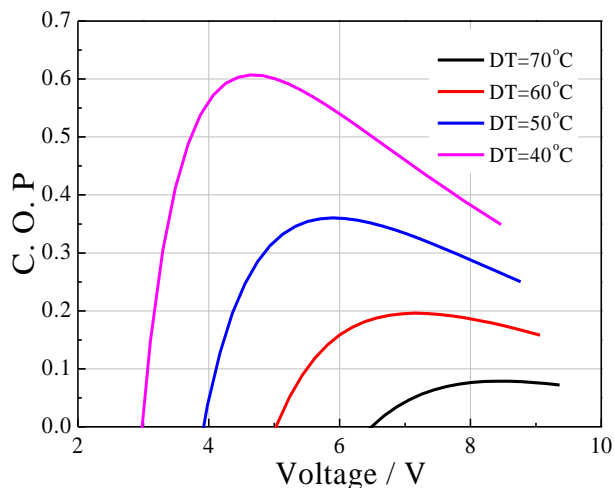
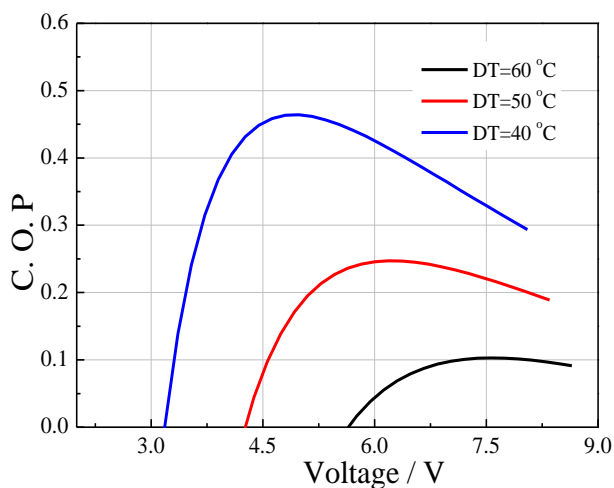
Performance Curves at Th=27 °C



Performance Curves at Th=50 °C



Standard Performance Graph COP = f(V) of 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 Conditions

- Cold side of the module applied to object being cooled
- Hot side of the module mounted on a heat radiating surface
- Operation below I_{max} or V_{max}
- Apply DC current only