Specification of Thermoelectric Module
TEC1-12708

Description

The 127 couples, 40mm × 40mm size single stage 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. These modules have higher cooling efficiency than normal type module. If higher operational temperature is required, please contact us. We can design and manufacture custom modules to your requirements. Minimums apply.

Features

● High effective cooling and efficiency.

● No moving parts, no noise, and solid-state

● Compact structure, small in size, light in weight

● Environmental friendly, RoHS compliant

● Precise temperature control

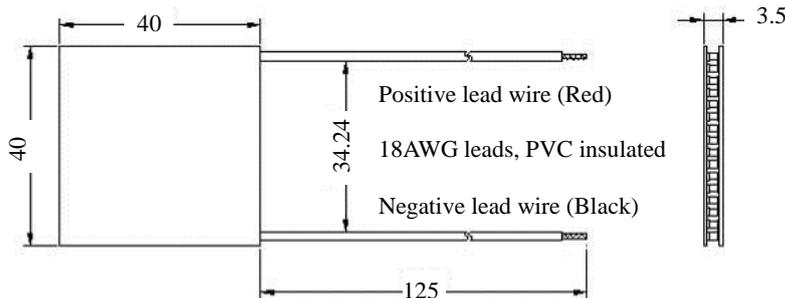● Exceptionally reliable in quality, high performance

Application

● Food and beverage service refrigerator

● Portable cooler box for cars

● Liquid cooling

● Temperature stabilizer

● Photonic and medical systems

Performance Specification Sheet

T_h (°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)	16.0	17.2	Voltage applied to the module at DT_{max}
I_{max} (amps)	8.2	8.2	DC current through the modules at DT_{max}
Q_{Cmax} (Watts)	82.1	89.8	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (ohms)	1.35~1.65	1.49~1.82	The module resistance is tested under AC

Geometric Characteristics Dimensions in millimeters

40
40
34.24
3.5
Positive lead wire (Red)
18AWG leads, PVC insulated
Negative lead wire (Black)
125

Cold side:Tc
See ordering option
See ordering option
See ordering option B
Hot side:Th

Sealing Option

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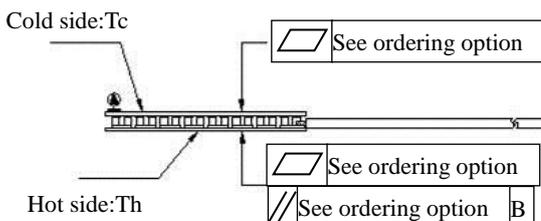
Ordering Option

| Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:3.5 ± 0.1	0:0.035/0.035	125 ± 1/Specify
TF	1:3.5 ± 0.05	1:0.025/0.025	125 ± 1/Specify
TF	2:3.5 ± 0.03	2:0.015/0.015	125 ± 1/Specify
Eg. TF01: Thickness 3.5 ± 0.1 (mm) and Flatness 0.025 / 0.025 (mm)			

Additional

Ceramic material: Alumina (Al_2O_3, white 96%)
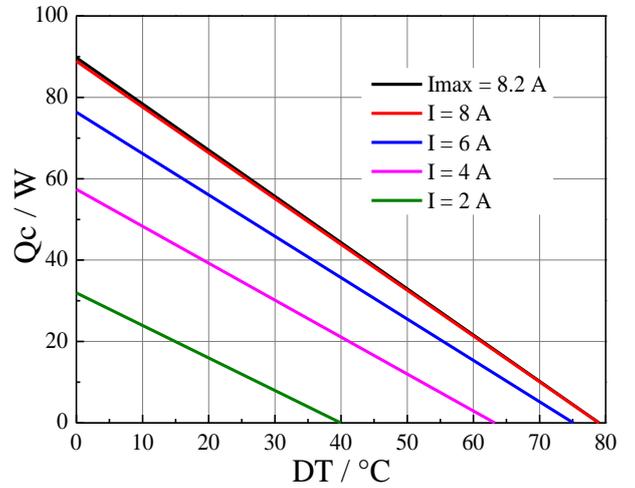Solder tinning: Bismuth Tin (BiSn) M.P. 138 °C

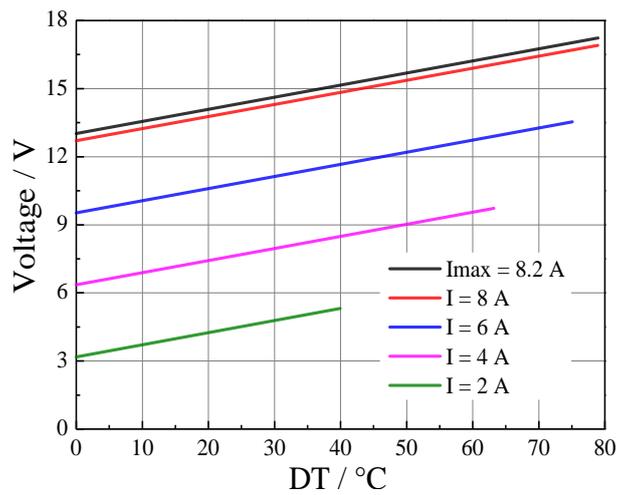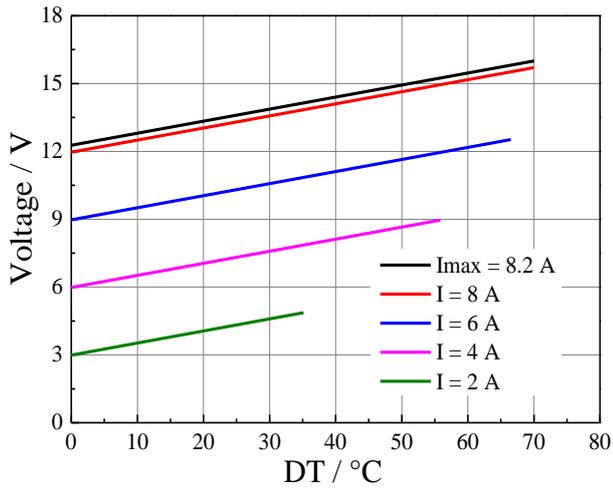# Specification of Thermoelectric Module

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Performance Curves at Th=27 ºC
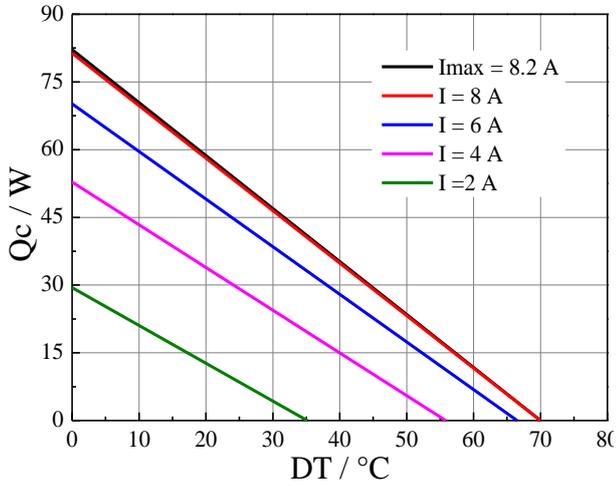
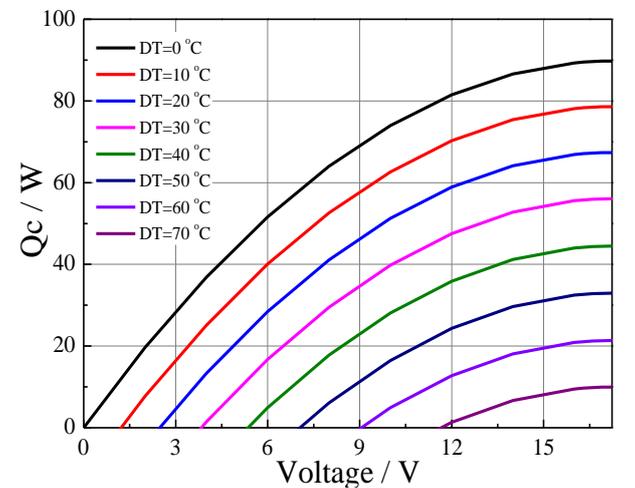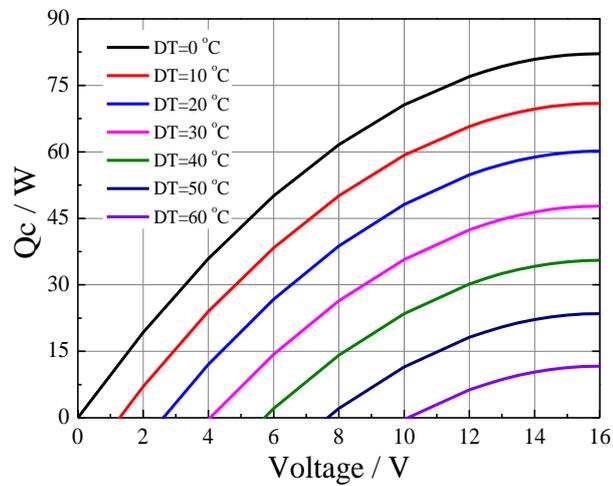## Performance Curves at Th=50 ºC

Standard Performance Graph Qc= f(DT)
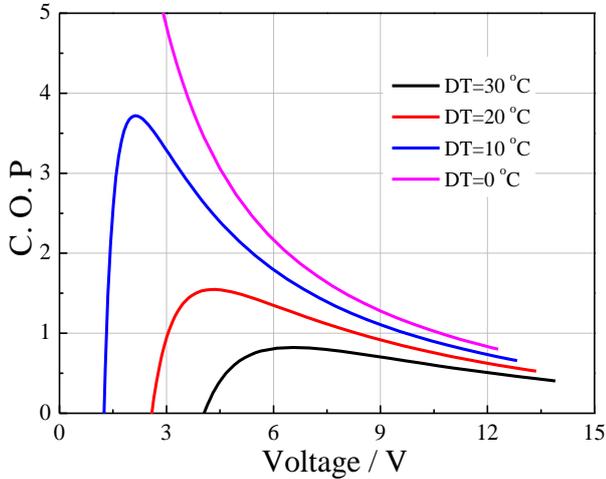

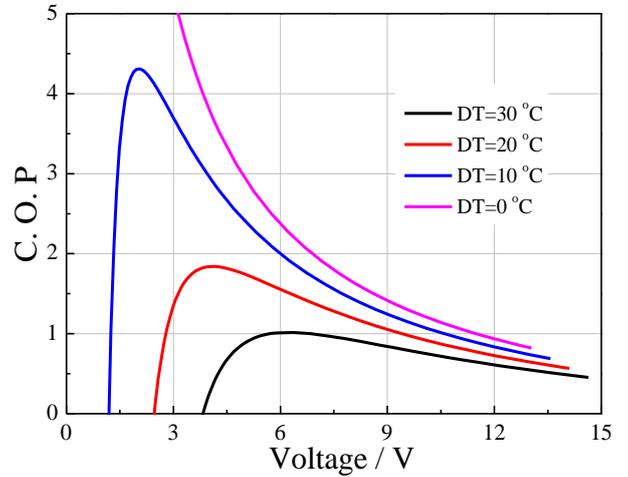Standard Performance Graph V= f(ΔT)

Standard Performance Graph Qc= f(V)

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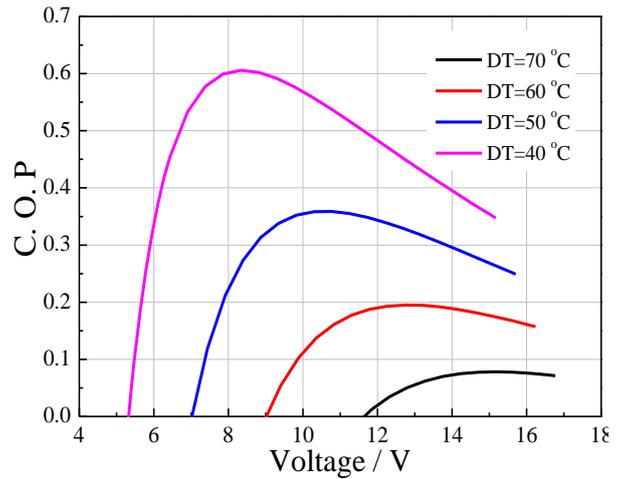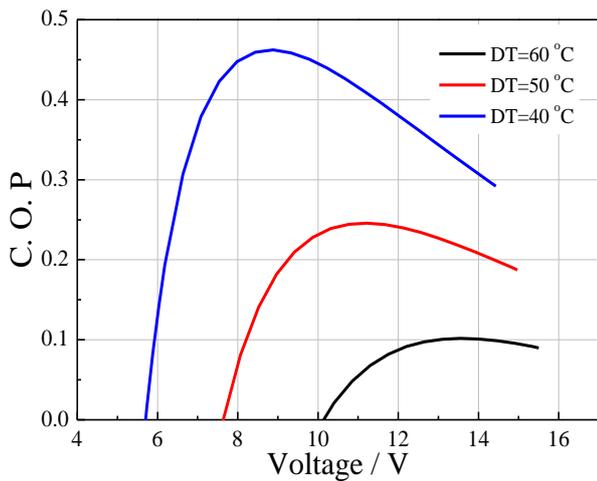
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Performance Curves at Th=27 ºC

Performance Curves at Th=50 ºC

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 × I).

Operating Procedure:

● Cold side of the module applied on the object being cooled

● Hot side of the module mounted on a heat sink

● Operation below I_{max} or V_{max}

● DC voltage only