Specification of Thermoelectric Module

TEC1-12715

Description

The 127 couples, 50 mm × 50 mm size single module which is made of our 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
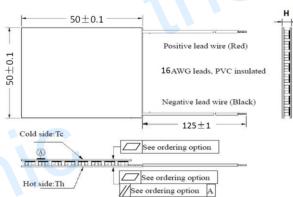● Exceptionally reliable in quality, high performance

Application

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

Peformance 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)	15.0	15.0	DC current through the modules at DT_{max}
Q_{Cmax} (Watts)	150.2	164.2	Cooling capacity at cold side of the module under DT = 0 °C
AC resistance (ohms)	0.80	0.88	The module resistance is tested under AC
Tolerance (%)	± 10		For thermal and electricity parameters

Geometric Characteristics Dimensions in millimeters

Positive lead wire (Red)

16AWG leads, PVC insulated

Negative lead wire (Black)

Cold side:Tc

See ordering option

See ordering option

Hot side:Th

See ordering option A

Manufacturing Options

A. Solder:

1. T100: BiSn (Melting Point=138°C)

2. T200: CuSn (Melting Point= 227 °C)

B. Sealant:

1. NS: No sealing (Standard)

2. SS: Silicone sealant

3. EPS: Epoxy sealant

4. Customer specify sealing

C. Ceramics:

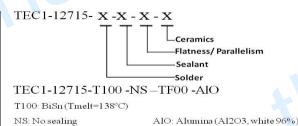1. Alumina (Al_2O_3, white 96%)(AlO)

2. Aluminum Nitride (AlN)

D. Ceramics Surface Options:

1. Blank ceramics (not metalized)

2. Metalized (Copper-Nickel plating)

Ordering Option

Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:4.0±0.1	0:0.05/0.05	125±1/Specify
TF	1:4.0±0.05	1:0.025/0.025	125±1/Specify
Eg. TF00: Thickness 4.0 ± 0.1 (mm) and Flatness 0.05 / 0.05 (mm)			

Naming for the Module

TEC1-12715- **X -X - X - X**

Ceramics
Flatness/ Parallelism
Sealant
Solder

TEC1-12715-T100 -NS —TF00 -AlO

T100: BiSn (Tmelt=138°C)

NS: No sealing   AlO: Alumina (Al2O3, white 96%)

TF00: Thickness ± 0.1 (mm) and Flatness/ Parallelism:0.05/0.05 (mm)
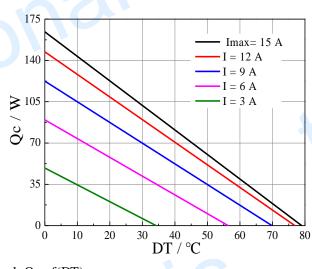
Specification of Thermoelectric Module

TEC1-12715

Performance Curves at Th=27 ℃

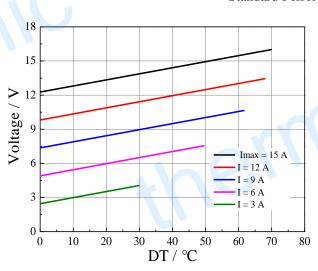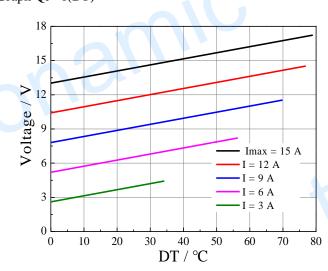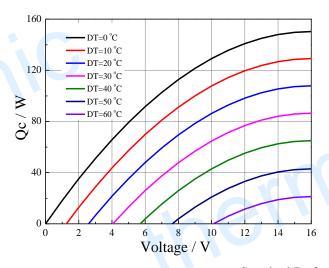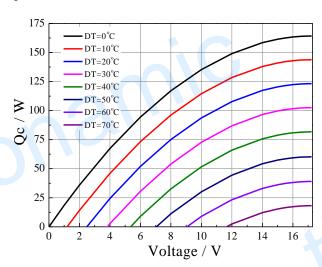

Performance Curves at Th=50 ℃

Standard Performance Graph Qc= f(DT)

Standard Performance Graph V= f(DT)
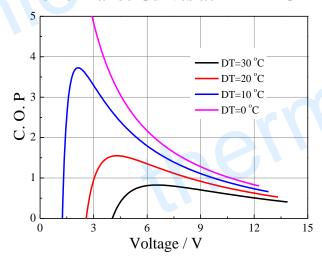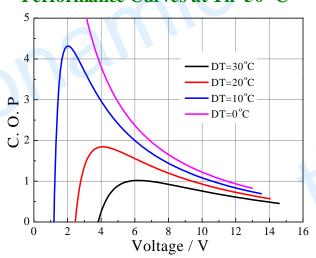

Standard Performance Graph Qc= f(V)
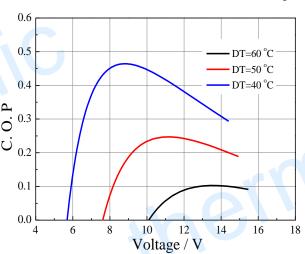
Specification of Thermoelectric Module
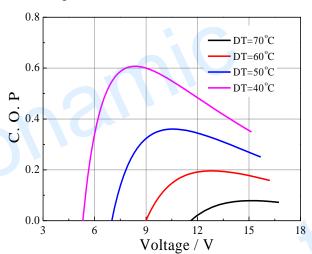
TEC1-12715

Performance Curves at Th=27 ℃

Performance Curves at Th=50 ℃

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

Standard Performance Graph COP = f(V) of DT ranged from 40 to 60/70 ˚C

Remark: The coefficient of performance (COP) is the cooling power Qc/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

● Storage module below 100˚C

● Operation below I_{max} or V_{max}

● Work under DC

Note: All specifications subject to change without notice.