

Specification of Thermoelectric Module

TEC2-199-199-13

Description

The TEC2-199-199-13 is a multistage module designed for greater temperature differential cooling, good for cooling and heating up to 100 °C applications. It is a 199-199 couples module in size of 48 mm × 48 mm (top) / 48 mm × 48 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

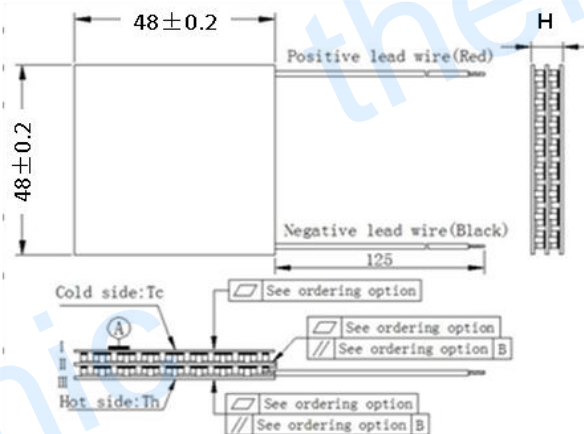
Application

- 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)	93	104	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U _{max} (Voltage)	24.5	26.5	Voltage applied to the module at DT _{max}
I _{max} (amps)	13.4	13.4	DC current through the modules at DT _{max}
Q _{Cmax} (Watts)	126.4	135.2	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (ohms)	2.12	2.26	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: CuSn (T_{melt} = 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 (Al₂O₃, white 96%)
2. Aluminum Nitride (AlN)

D. Ceramics Surface Options:

1. Blank ceramics (not metallized)
2. Metallized (Au plating)

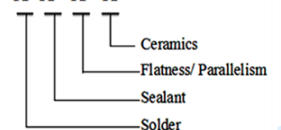
Ordering Option

Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0: 6.4 ± 0.3	0: Face II 0.010/0.010, Face III 0.015/0.015	125 ± 1 / Specify
TF	1: 6.4 ± 0.2	1: Face II 0.008/0.008, Face III 0.010/0.010	125 ± 1 / Specify
TF	2: 6.4 ± 0.1	2: Face II 0.005/0.005, Face III 0.008/0.008	125 ± 1 / Specify

Eg. TF01: Thickness 6.4 ± 0.3(mm) and Flatness Face II 0.008/0.008, Face III 0.010/0.010

Naming for the Module

TEC2-199-199-13-X-X-X-X



TEC2-199-199-13-T100-NS-TF01-AIO

T100: BiSn(T_{melt}=138°C)

NS: No sealing

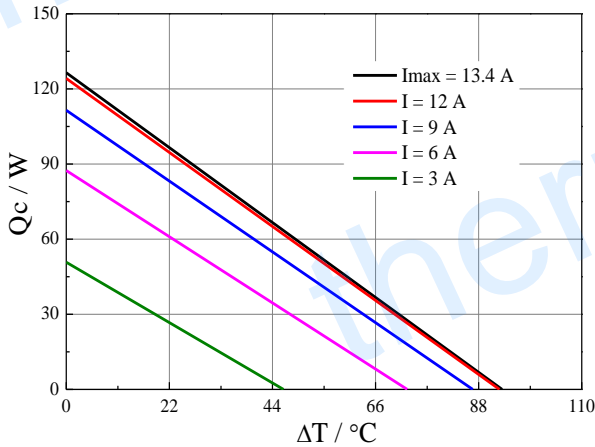
AIO: Alumina white 96%

TF01: Thickness ±0.3 (mm) and Face II 0.008/0.008, Face III 0.010/0.010

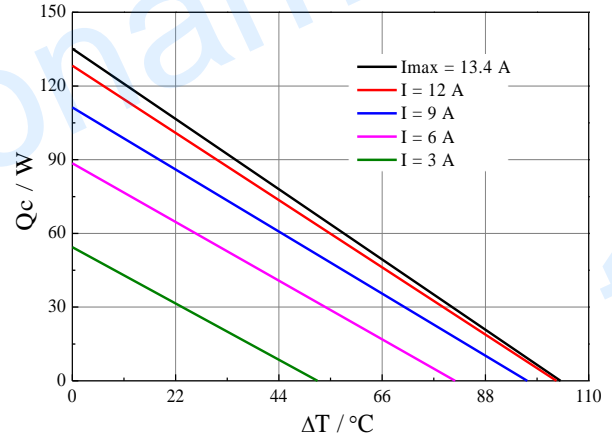
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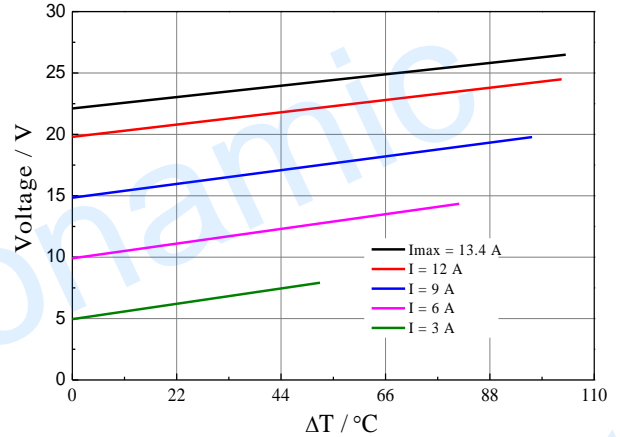
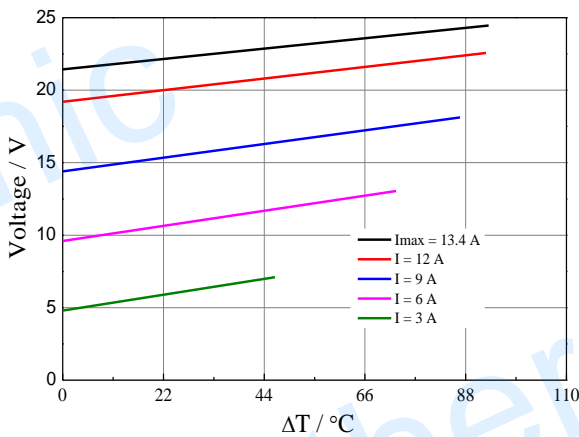
Performance Curves at $T_h=27\text{ }^\circ\text{C}$



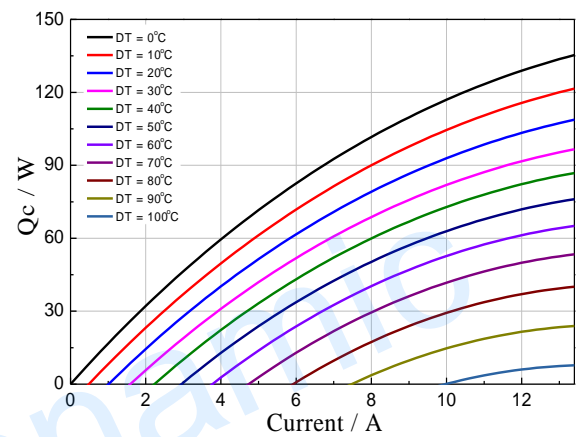
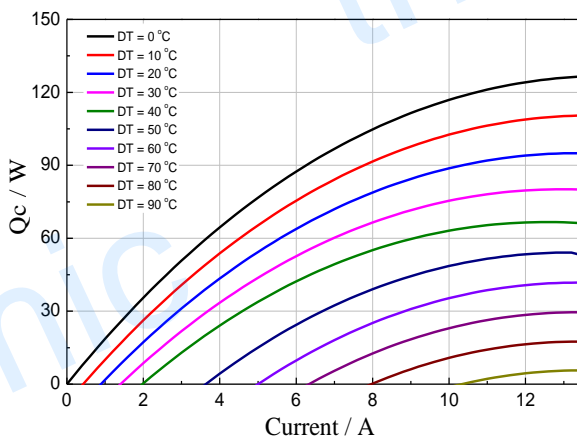
Performance Curves at $T_h=50\text{ }^\circ\text{C}$



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



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



Standard Performance Graph $Q_c = f(V)$

Operation Cautions

- Cold side of the module stuck on the object being cooled
- Hot side of the module mounted on a heat radiator
- Work under DC
- Storage module below $100\text{ }^\circ\text{C}$
- Operation below I_{max} or V_{max}