

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

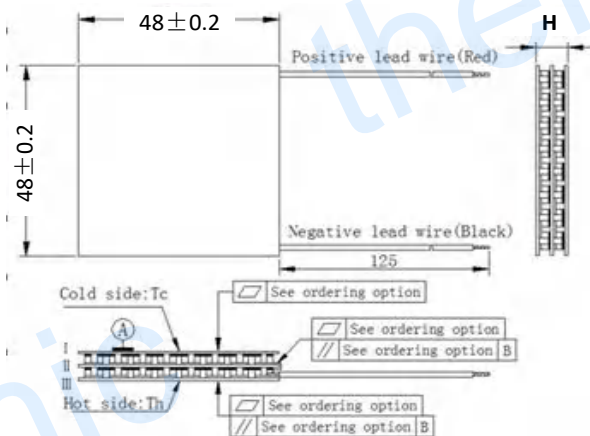
Application

- 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 (Tmelt=138°C)
2. T200: CuAgSn (Tmelt = 217°C)
3. T240: SbSn (Tmelt = 240°C)

B. Sealant:

1. NS: No sealing (Standard)
2. SS: Silicone sealant
3. EPS: Epoxy sealant

C. Ceramics:

1. Alumina (Al₂O₃, white 96%)
2. Aluminum Nitride (AlN)

D. Ceramics Surface Options:

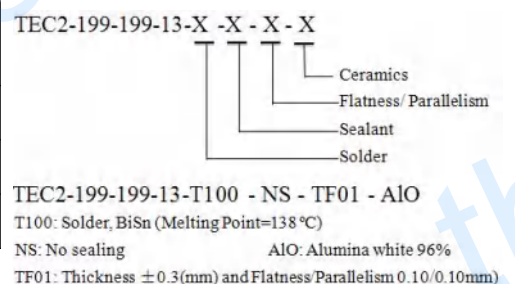
1. Blank ceramics (not metalized)
2. Metalized

Ordering Option

Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:6.4 ± 0.2	0: 0.10/0.010	125 ± 3 / Specify
TF	1:6.4 ± 0.1	1: 0.05/0.05	125 ± 3 / Specify

Eg. TF01: Thickness 6.4 ± 0.2(mm) and Flatness/ Parallelism: 0.05/0.05(mm)

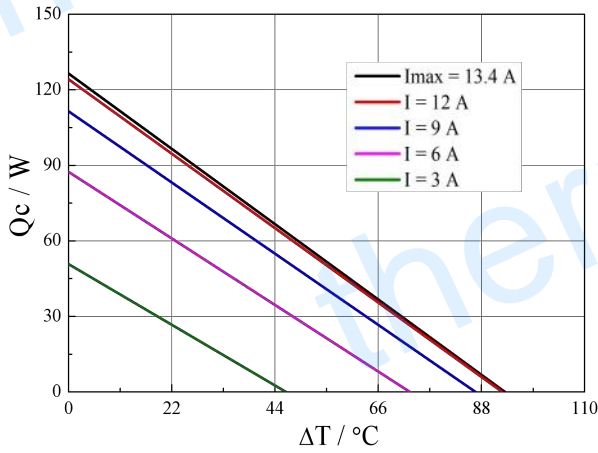
Naming for the Module



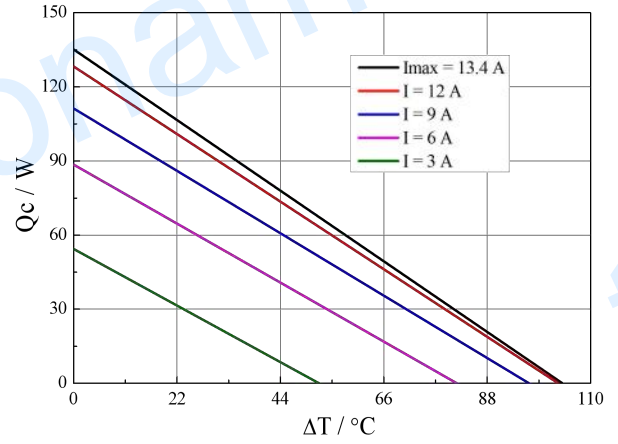
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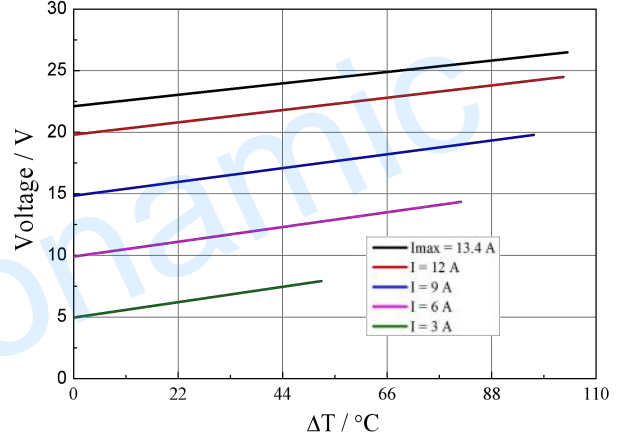
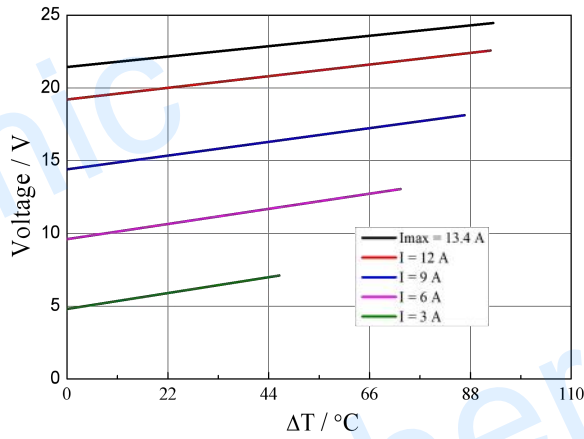
Performance Curves at Th=27 °C



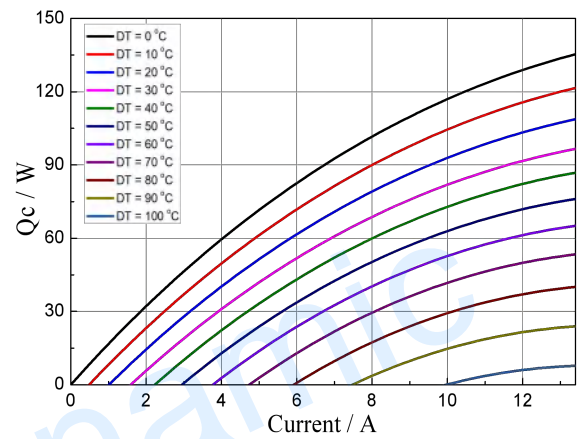
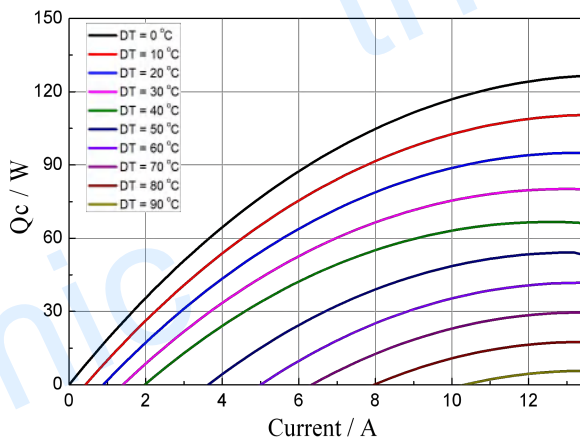
Performance Curves at Th=50 °C



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



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



Standard Performance Graph $Q_c = f(V)$

Operation Cautions

- 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 or storage module below 100 °C

- Operation below I_{max} or V_{max}
- Work under DC