

Specification of Thermoelectric Module

TEC2-199-199-10

Description

The TEC2-199-199-10 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 40 mm × 40 mm (top) / 40 mm × 40 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

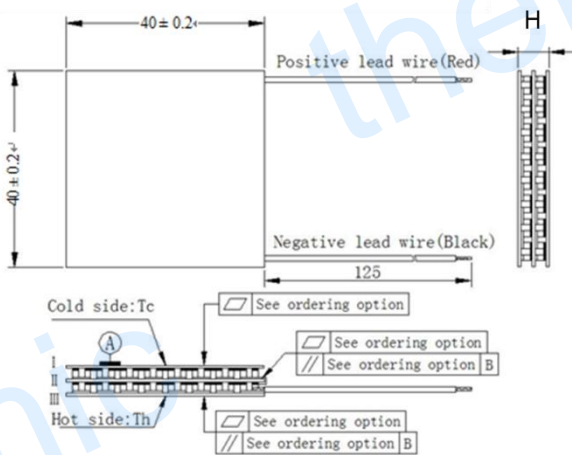
Application

- 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 | 26.6 | Voltage applied to the module at DT _{max} |
| I _{max} (amps) | 10.2 | 10.2 | DC current through the modules at DT _{max} |
| Q _{Cmax} (Watts) | 98.6 | 108.3 | Cooling capacity at cold side of the module under DT=0 °C |
| AC resistance (ohms) | 2.3 | 2.6 | 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: CuAgSn (T_{melt} = 217°C)
3. T240: SbSn (T_{melt} = 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:

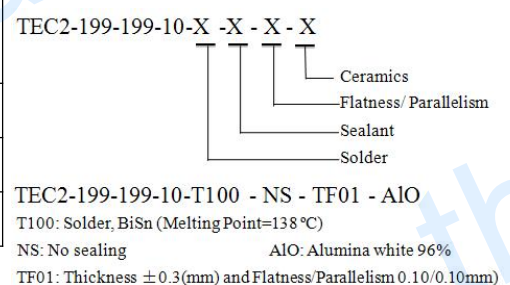
1. Blank ceramics (not metalized)
2. Metalized

Ordering Option

| Suffix | Thickness (mm) | Flatness/ Parallelism (mm) | Lead wire length(mm) Standard/Optional length |
|--------|----------------|--|---|
| TF | 0: 6.3 ± 0.2 | 0: Face II 0.08/0.08, Face III 0.08/0.08 | 125 ± 3/ Specify |
| TF | 1: 6.3 ± 0.1 | 1: Face II 0.03/0.03, Face III 0.03/0.03 | 125 ± 3 / Specify |

Eg. TF01: Thickness 6.3 ± 0.2(mm) and Flatness Face II 0.03/0.03, Face III 0.03/0.03 (mm)

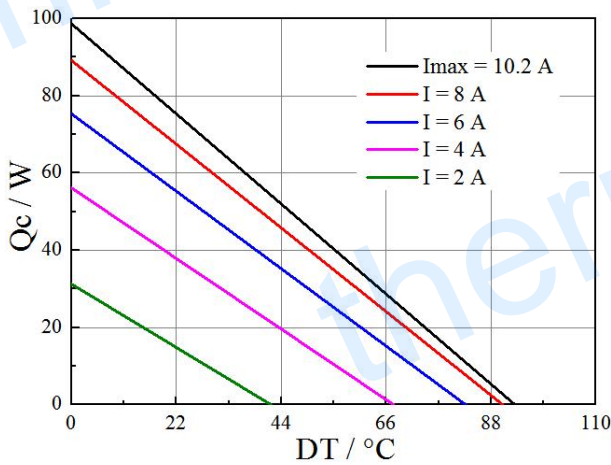
Naming for the Module



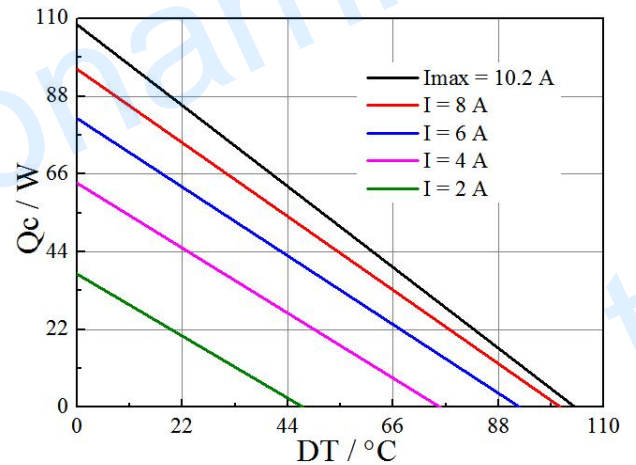
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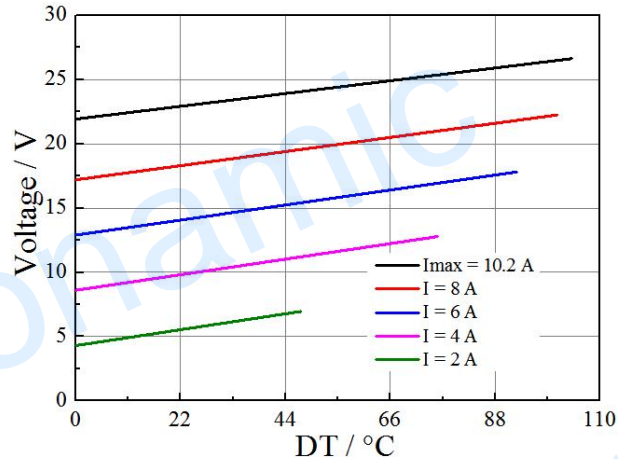
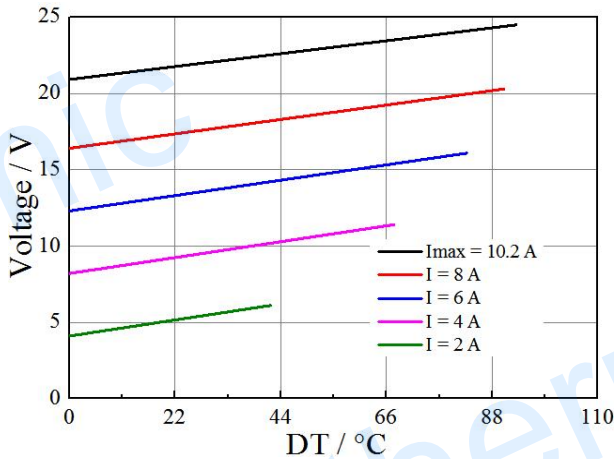
Performance Curves at $T_h=27\text{ }^\circ\text{C}$



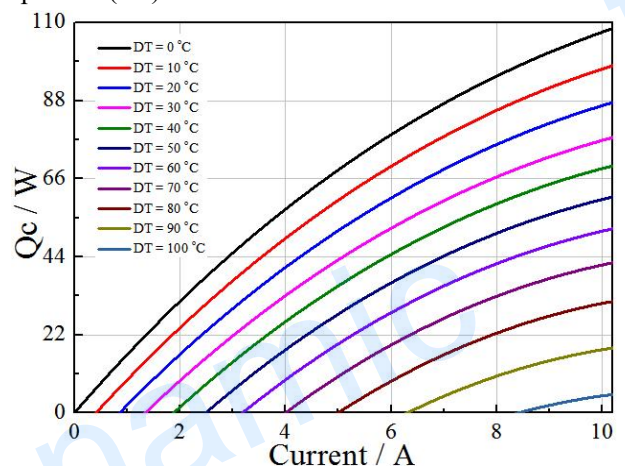
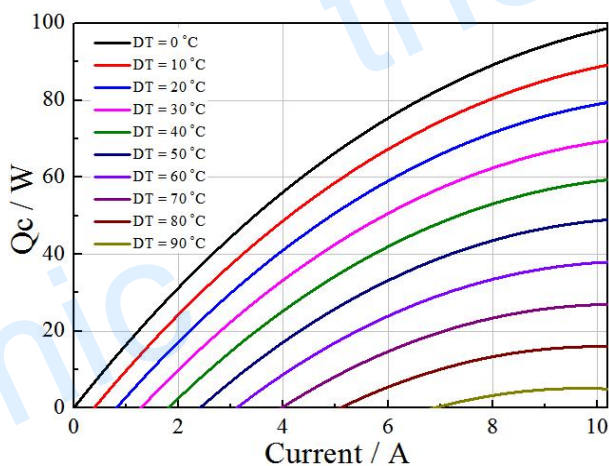
Performance Curves at $T_h=50\text{ }^\circ\text{C}$



Standard Performance Graph $Q_c = f(DT)$



Standard Performance Graph $V = f(DT)$



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 $100\text{ }^\circ\text{C}$

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