

Specification of Thermoelectric Module

TES2-31-17-20

Description

The TES2-31-17-20 is a multistage module designed for greater temperature differential cooling, good for cooling and heating up to 100 °C applications. It is a 17-31 couples module in size of 11.5mm x 11.5mm (top)/15mm x 15mm (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

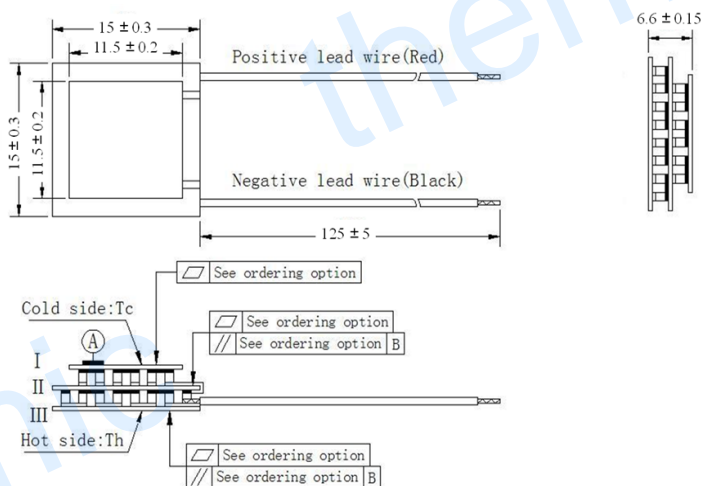
- Infrared (IR) Sensors
- CCD Sensor
- Gas Analyzers
- Calibration Equipment
- CPU cooler and scientific instrument
- Photonic and medical systems
- Guidance Systems

Performance Specification Sheet

Th (°C)	27	50	Hot side temperature at environment: dry air, N ₂
DT _{max} (°C)	91	101	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U _{max} (Voltage)	3.6	4.0	Voltage applied to the module at DT _{max}
I _{max} (Amps)	2.3	2.3	DC current through the modules at DT _{max}
Q _{Cmax} (Watts)	3.9	4.3	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (Ohms)	1.45	1.6	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: 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:

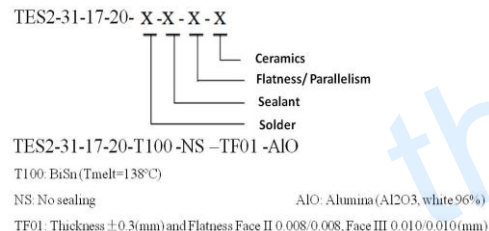
1. Blank ceramics (not metallized)
2. Metallized (Au plating)

Ordering Option

Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0: 6.55 ± 0.3	0: Face II 0.010/0.010, Face III 0.015/0.015	125 ± 1 / Specify
TF	1: 6.55 ± 0.15	1: Face II 0.008/0.008, Face III 0.010/0.010	125 ± 1 / Specify

Eg. TF01: Thickness 6.55 ± 0.15(mm) and Flatness Face II 0.008/0.008, Face III 0.010/0.010

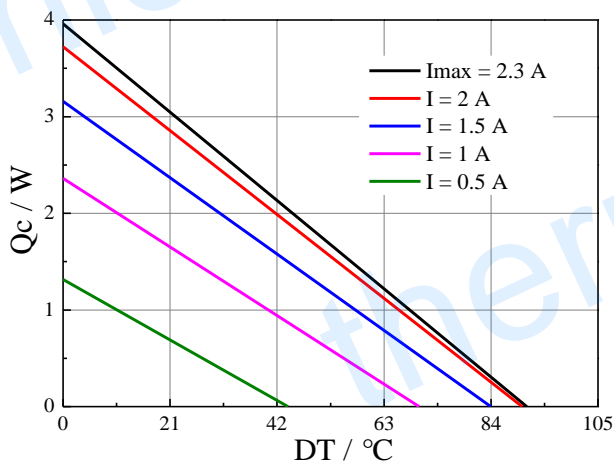
Naming for the Module



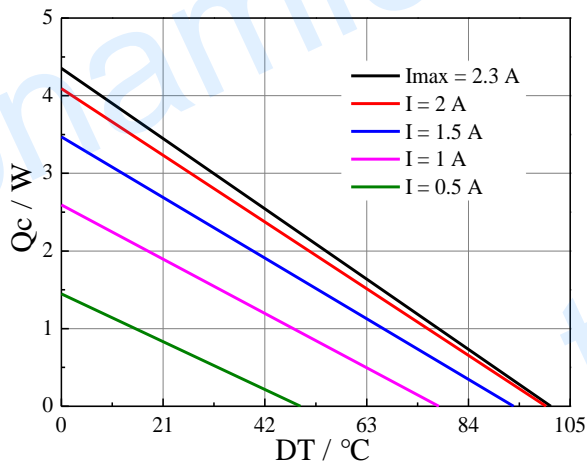
Specification of Thermoelectric Module

TES2-31-17-20

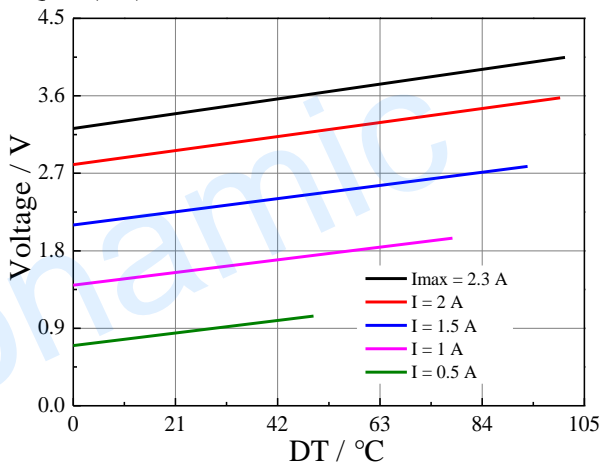
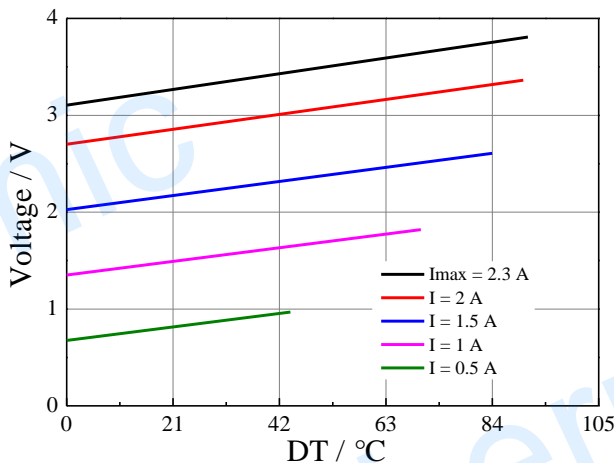
Performance Curves at $T_h=27\text{ }^\circ\text{C}$



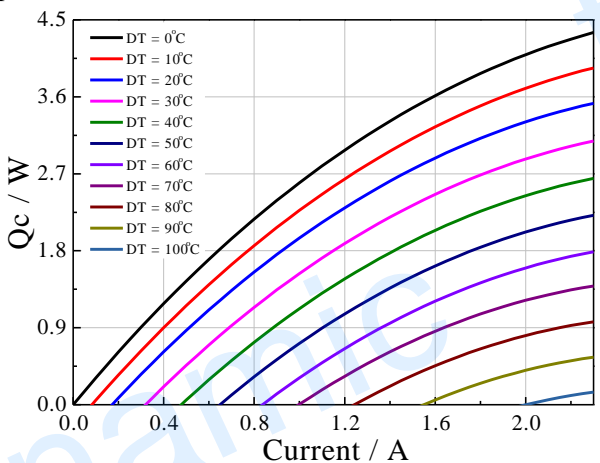
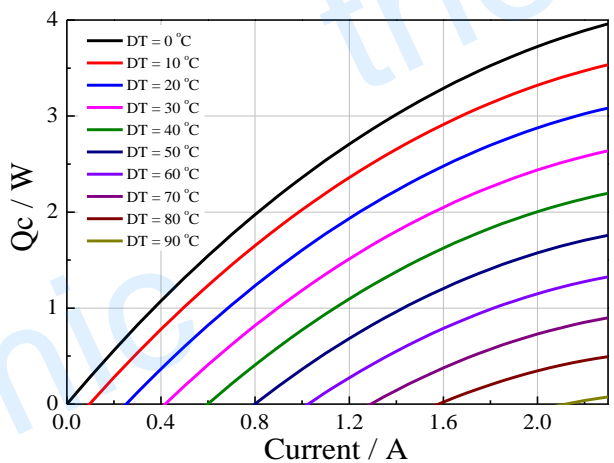
Performance Curves at $T_h=50\text{ }^\circ\text{C}$



Standard Performance Graph $Q_c = f(DT)$



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



Standard Performance Graph $Q_c = f(V)$

Operation Cautions

- Cold side of the module stucked on the object being cooled
- Hot side of the module mounted on a heat radiator
- Storage module below $100\text{ }^\circ\text{C}$

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