

Specification of Thermoelectric Module

TES1-07139

Description

The 71 couples, 23 mm × 23 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

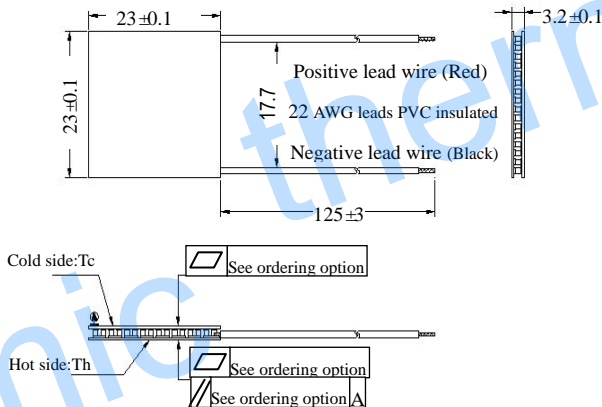
- Food and beverage service refrigerator
- Portable cooler box for cars
- Liquid cooling
- Temperature stabilizer
- CPU cooler and scientific instrument
- Photonic and medical systems

Performance Specification Sheet

Th(°C)	27	50	Hot side temperature at environment: dry air, N2
DTmax(°C)	68	76	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
Umax(Voltage)	8.67	9.71	Voltage applied to the module at DTmax
I _{max} (amps)	4.7	4.7	DC current through the modules at DTmax
QC _{max} (Watts)	25.9	28.4	Cooling capacity at cold side of the module under DT=0 °C
AC resistance(ohms)	1.58~1.76	1.74~1.95	The module resistance is tested under AC

Geometric Characteristics Dimensions in millimeters

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

D. Ceramics Surface Options:

1. Blank ceramics (not metalized)
2. Metalized (Copper-Nickel plating)

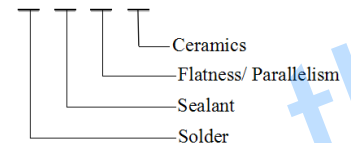
Flatness/ Parallelism Option

Naming for the Module

Suffix	Thickness / H (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:3.2±0.1	0:0.05/0.05	125 ±3/Specify
TF	1:3.2±0.05	1:0.025/0.025	125 ±3/Specify
TF	2:3.2±0.03	2:0.015/0.015	125 ±3/Specify

Eg. TF01: Thickness 3.2±0.1(mm) and Flatness 0.025/0.025(mm)

TES1- 07139 - X - X - X - X



TEC1-07139- T200 -NS - TF02 - AIO

T200: Solder, Copper Tin (Melting Point=227 °C)

NS: No sealing

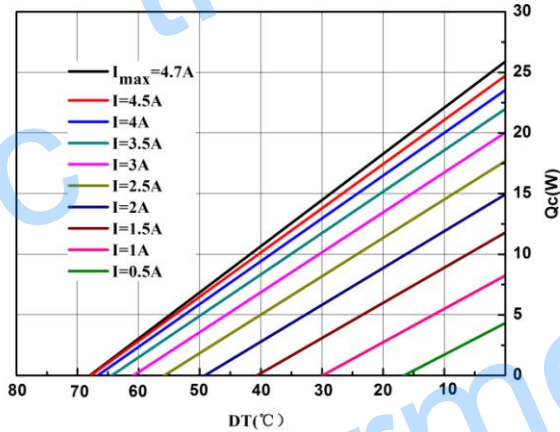
AIO: Alumina white 96%

TF02: Thickness ±0.1(mm) and Flatness/Parallelism 0.015/0.015(mm)

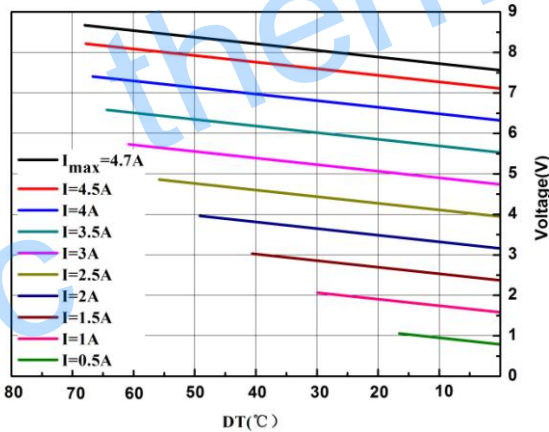
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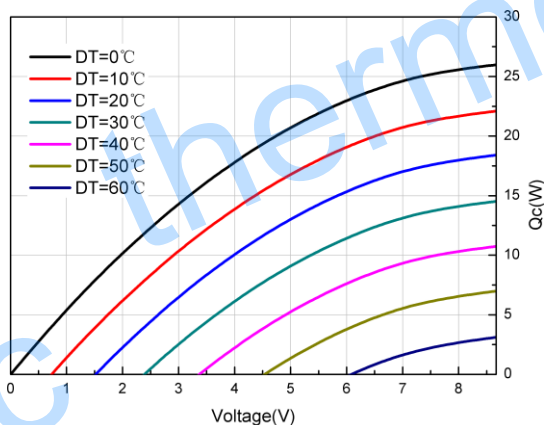
Performance Curves at $T_h=27^\circ\text{C}$



The chart for Q_c Vs DT under various currents

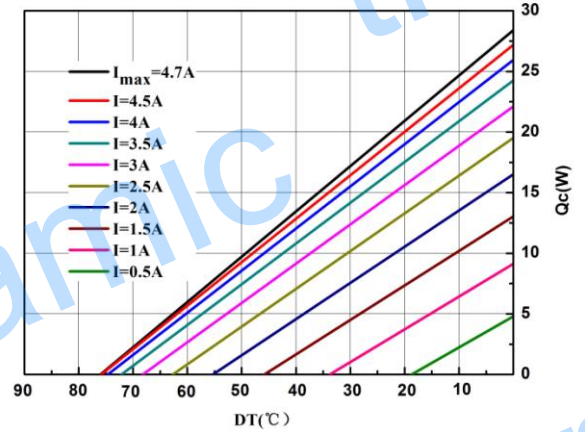


The chart for Voltage Vs DT under various currents

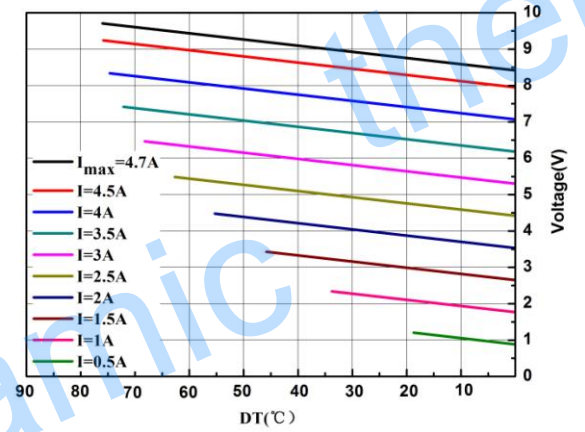


The chart for Q_c Vs Voltage under various DT

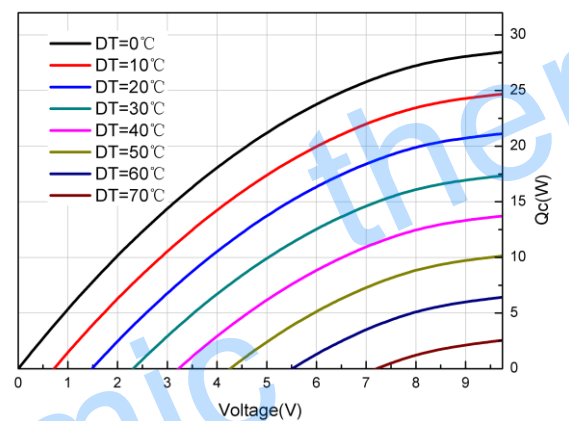
Performance Curves at $T_h=50^\circ\text{C}$



The chart for Q_c Vs DT under various currents



The chart for Voltage Vs DT under various currents



The chart for Q_c Vs Voltage under various DT

Operation Cautions

- Cold side of the module stucked on the object being cooled
- Hot side of the module mounted on a heat radiator
- Work under DC
- Operation below I_{max} or V_{max}
- Operation or storage module below 100°C