

# Specification of Thermoelectric Module

TEC2-127-70-09

## Description

The TEC2-127-70-09 is a multistage module designed for greater temperature differential cooling, good for cooling and heating up to 100 °C applications. It is a 127-70 couples module in size of 62 mm × 62 mm (top) / 62 mm × 62 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

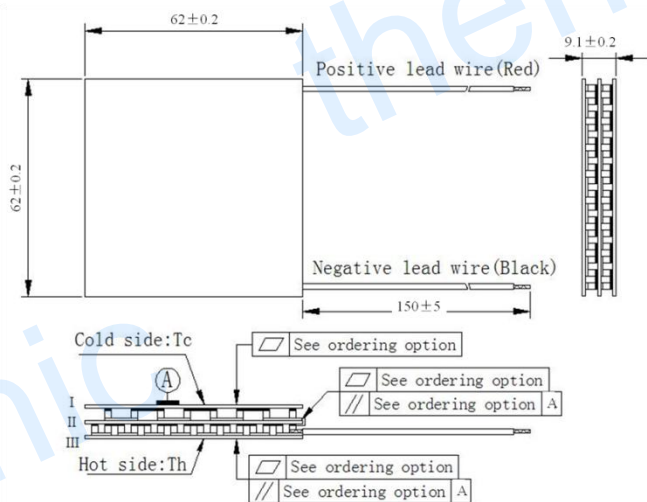
## Application

- 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 <sub>2</sub>
DT <sub>max</sub> (°C)	88	98	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U <sub>max</sub> (Voltage)	14.6	16.4	Voltage applied to the module at DT <sub>max</sub>
I <sub>max</sub> (Amps)	8.9	8.9	DC current through the modules at DT <sub>max</sub>
Q <sub>Cmax</sub> (Watts)	59.1	65	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (Ohms)	1.53	1.68	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 (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 (Al<sub>2</sub>O<sub>3</sub>, white 96%)(AIO)
2. Aluminum Nitride (AlN)

### D. Ceramics Surface Options:

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

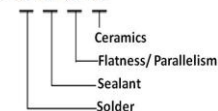
## Ordering Option

Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0: 9±0.3	0: Face II 0.013/0.013 Face III 0.015/0.015	150±5/Specify
TF	1: 9±0.2	1: Face II 0.01/0.01, Face III 0.013/0.013	150±5/Specify
TF	2: 9±0.1	2: Face II 0.008/0.008, Face III 0.01/0.01	150±5/Specify

Eg. TF01: Thickness 9.±0.3(mm) and Face II 0.01/0.01, Face III 0.013/0.013(mm)

## Naming for the Module

TEC2-127-70-09- X - X - X - X



TEC2-127-70-09-T100-NS -TF01 -AIO

T100: BiSn(T<sub>mel</sub>=138°C)

NS: No sealing

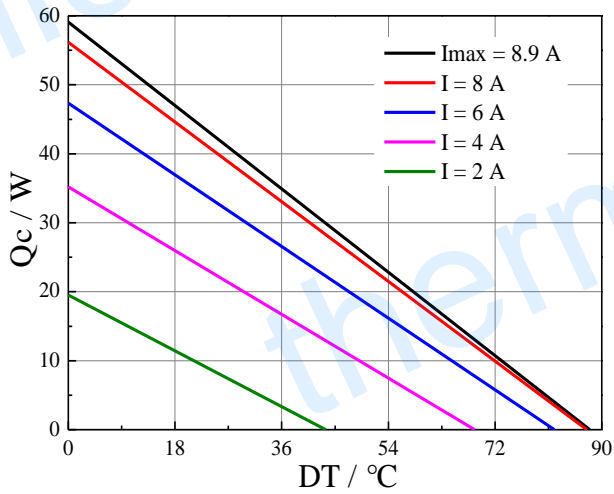
AIO: Alumina, white 96%

TF01: Thickness ± 0.3 (mm) and Flatness Face 0.01/0.01, Face III 0.013/0.013 (mm)

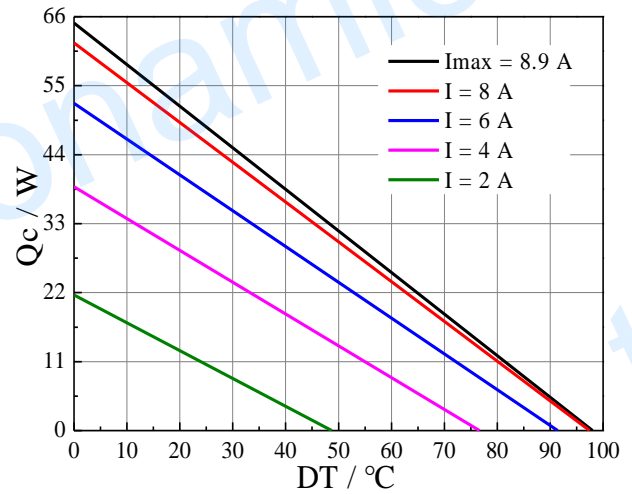
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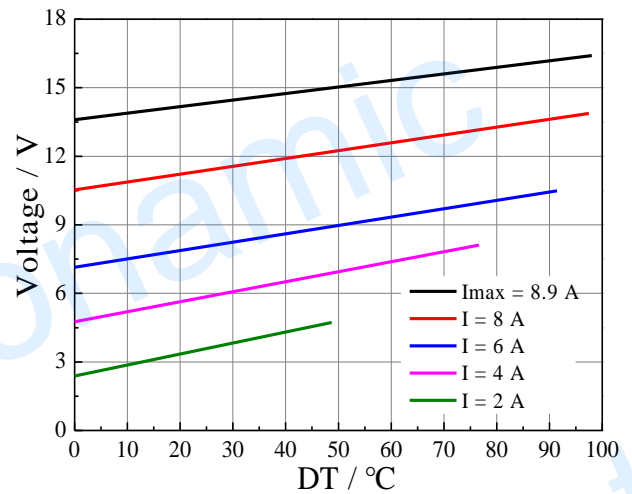
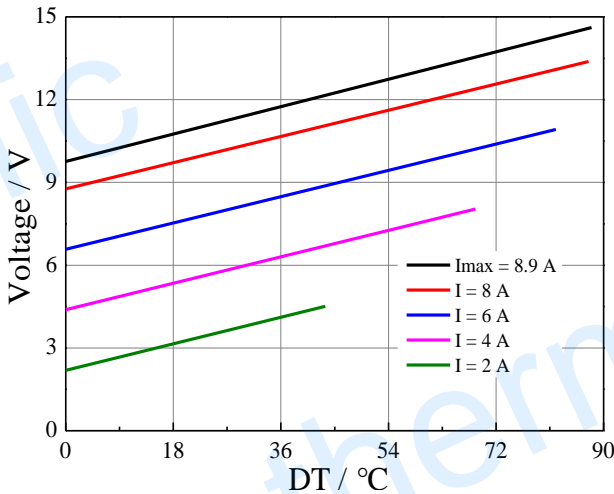
## Performance Curves at Th=27 °C



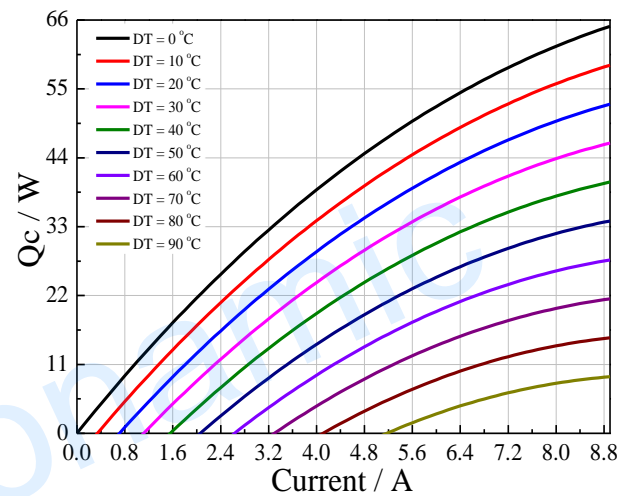
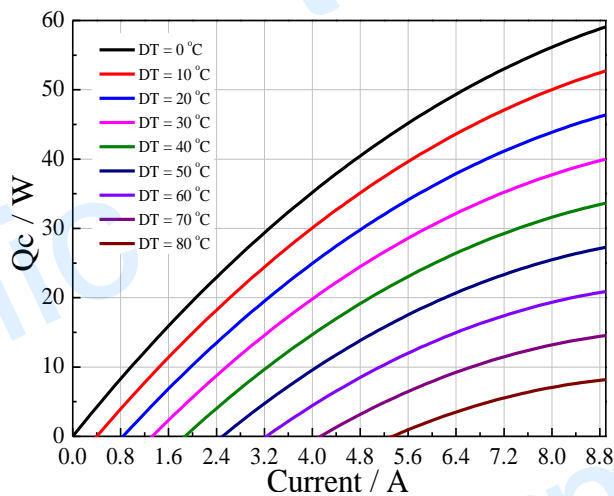
## Performance Curves at Th=50 °C



Standard Performance Graph  $Q_c = f(DT)$



Standard Performance Graph  $V = f(DT)$



Standard Performance Graph  $Q_c = f(I)$

## Operation Cautions

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