

# Specification of Thermoelectric Module

**TEC2-127-127-08**

## Description

The TEC2-127-127-08 is a multistage module designed for greater temperature differential cooling, good for cooling and heating up to 100 °C applications. It is a 127-127 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

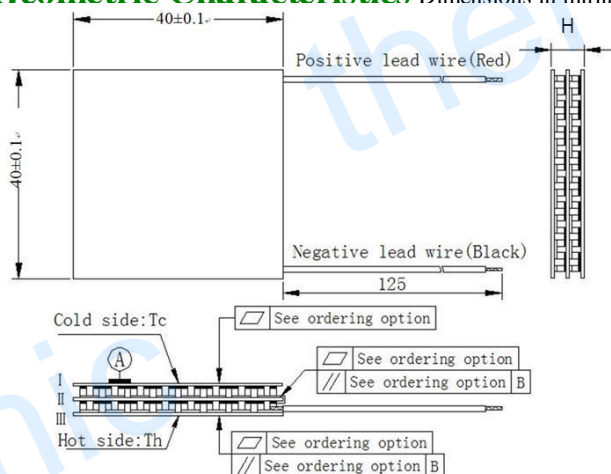
- Infrared (IR) Sensors
- CCD Sensor
- Gas Analyzers
- Calibration Equipment
- CPU cooler and scientific instrument
- Photonic and medical systems
- Guidance Systems

## Performance Specification Sheet

Th (°C)	27	50	Hot side temperature at environment: dry air, N <sub>2</sub>
DT <sub>max</sub> (°C)	90	100	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)	8.0	8.0	DC current through the modules at DT <sub>max</sub>
Q <sub>Cmax</sub> (Watts)	53.1	55.9	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (ohms)	1.85	2.05	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<sub>melt</sub>=138°C)
2. T200: CuSn (T<sub>melt</sub> = 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%)
2. Aluminum Nitride (AlN)

### D. Ceramics Surface Options:

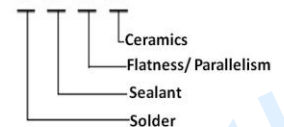
1. Blank ceramics (not metallized)
2. Metallized (Au plating)

## Ordering Option

Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:6.9± 0.3	0: Face II 0.010/0.010, Face III 0.015/0.015	125 ± 1 / Specify
TF	1:6.9± 0.2	1: Face II 0.008/0.008, Face III 0.010/0.010	125 ± 1 / Specify
TF	2:6.9± 0.1	2: Face II 0.005/0.005, Face III 0.008/0.008	125 ± 1 / Specify
Eg. TF01: Thickness 6.9± 0.3(mm) and Flatness Face II 0.008/0.008, Face III 0.010/0.010			

## Naming for the Module

TEC2-127-127-08- X - X - X - X



TEC2-127-127-08-T100-NS -TF01 -AIO

T100: BiSn (T<sub>melt</sub>=138°C)

NS: No sealing

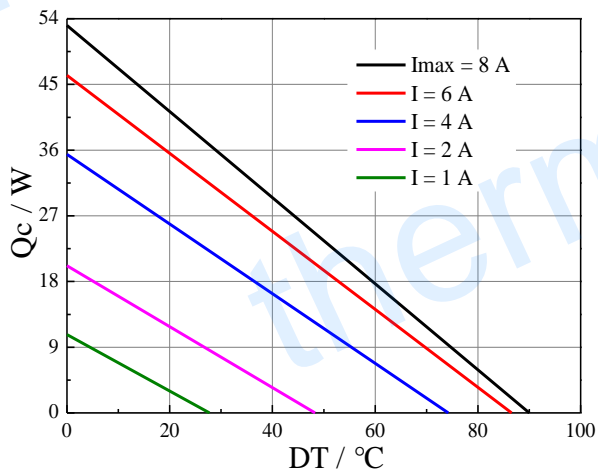
AIO: Alumina (Al<sub>2</sub>O<sub>3</sub>, white 96%)

TF01: Thickness ±0.3(mm) and Face II 0.008/0.008, Face III 0.010/0.010

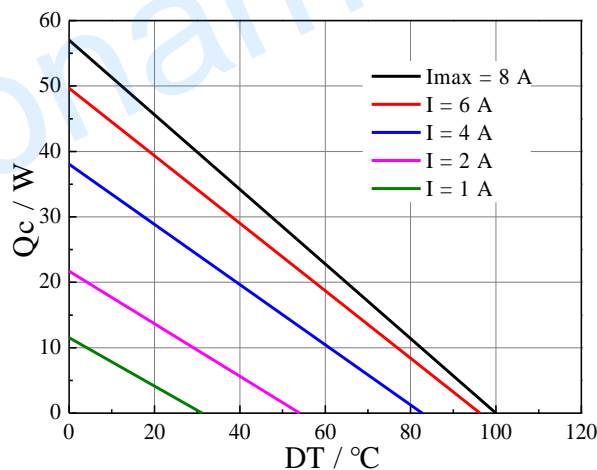
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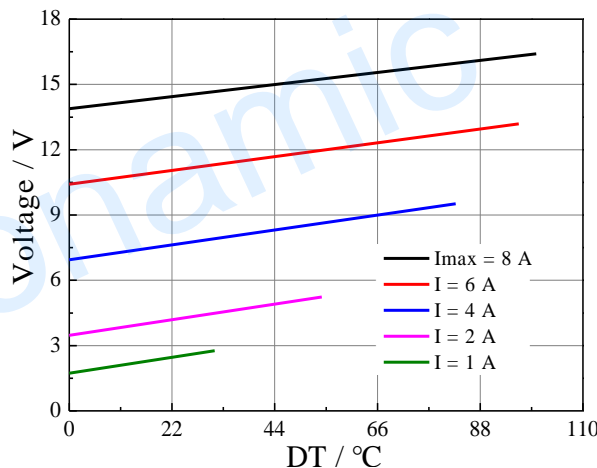
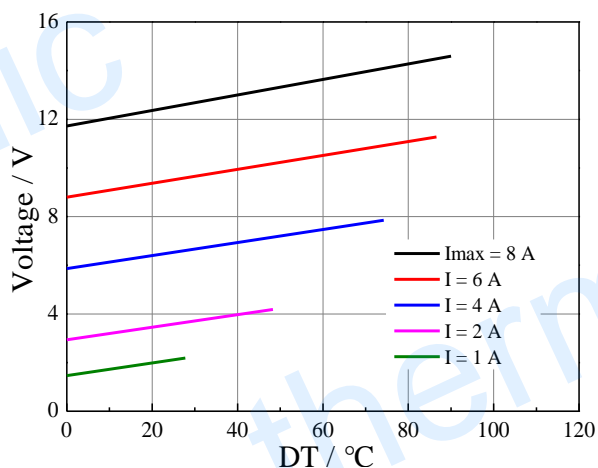
## Performance Curves at $T_h=27\text{ }^\circ\text{C}$



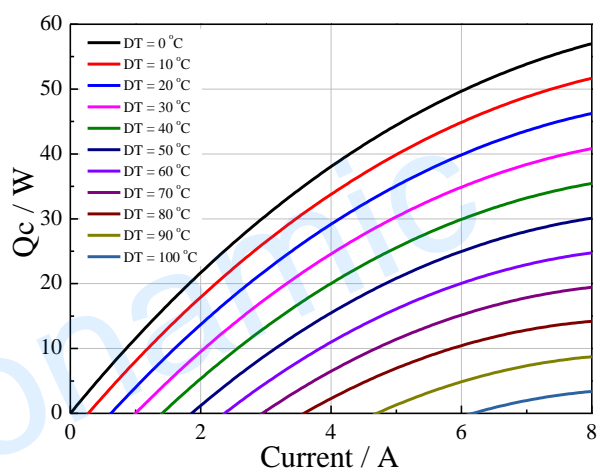
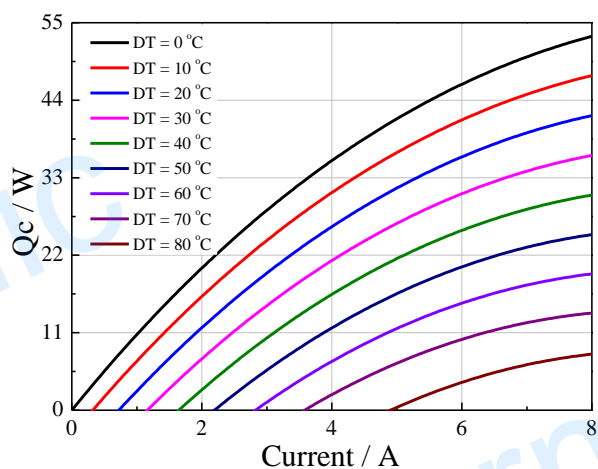
## Performance Curves at $T_h=50\text{ }^\circ\text{C}$



Standard Performance Graph  $Q_c = f(DT)$



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



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