

# Specification of Thermoelectric Module

## TEC1-12704

### Description

The 127 couples, 40mmx40mm size module is a single stage module which is designed for cooling and heating up to 100°C applications. If higher operation or processing temperature is required, please specify, 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

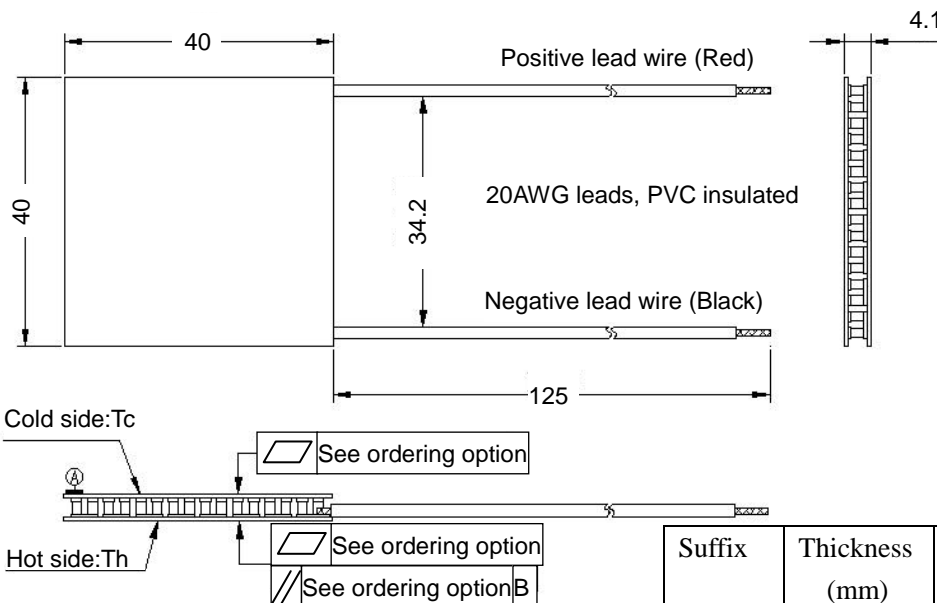
### Application

- 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, N <sub>2</sub>
DT <sub>max</sub> (°C)	68	76	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U <sub>max</sub> (Voltage)	15.4	17.2	Voltage applied to the module at DT <sub>max</sub>
I <sub>max</sub> (amps)	5.2	5.2	DC current through the modules at DT <sub>max</sub>
Q <sub>Cmax</sub> (Watts)	50.8	55.7	Cooling capacity at cold side of the module under DT=0°C
AC resistance(ohms)	2.3~2.7	2.54~2.98	The module resistance is tested under AC

### Geometric Characteristics Dimensions in millimeters



### Sealing Option

Suffix	Sealant
NS	No sealing
SS	Silicone sealant
EPS	Epoxy
OS	Customer specify sealing other than above

### Ordering Option

Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0:4.1 ±0.1	0: 0.035/0.035	125 ±1/Specify
TF	0:4.1 ±0.05	1: 0.025/0.025	125 ±1/Specify
TF	0:4.1 ±0.03	2: 0.015/0.015	125 ±1/Specify
Eg. TF01: Thickness 4.1 ±0.1(mm) and Flatness 0.025/0.025(mm)			

### Additional

Ceramic material: Alumina (Al<sub>2</sub>O<sub>3</sub>, white 96%)  
Solder tinning: Bismuth Tin (BiSn) M.P. 138°C

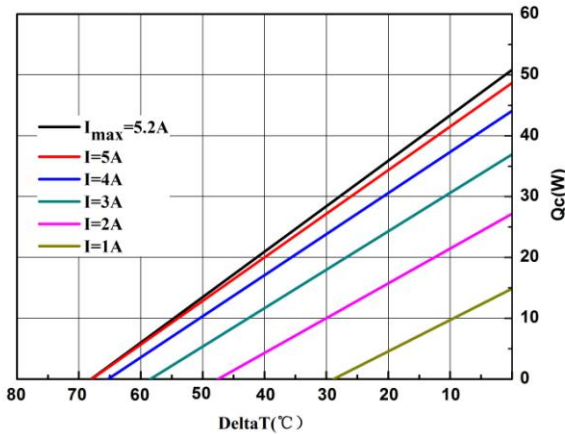
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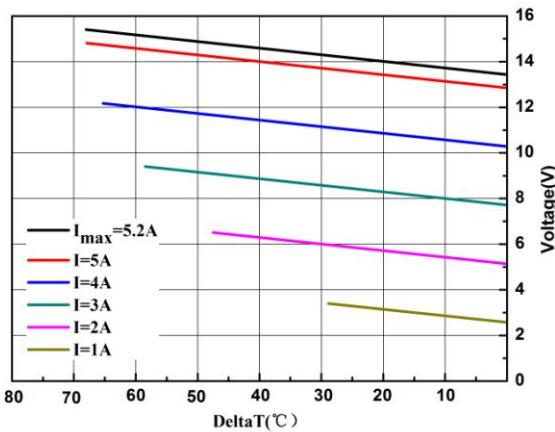
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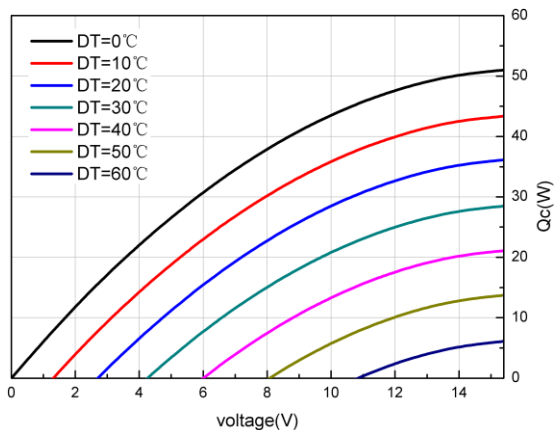
## Performance Curves at Th=27°C



The chart for  $Q_c$  Vs  $\Delta T$  under various currents

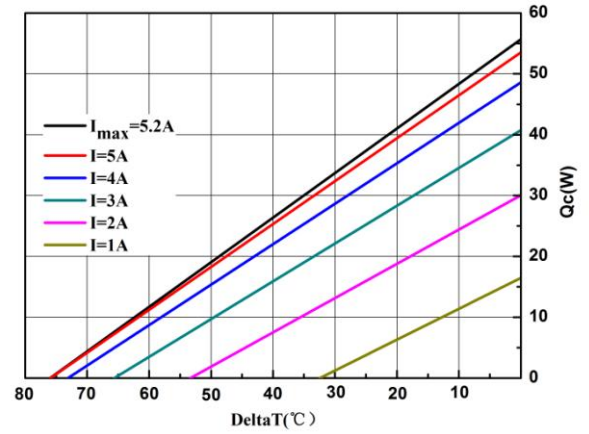


The chart for Voltage Vs  $\Delta T$  under various currents

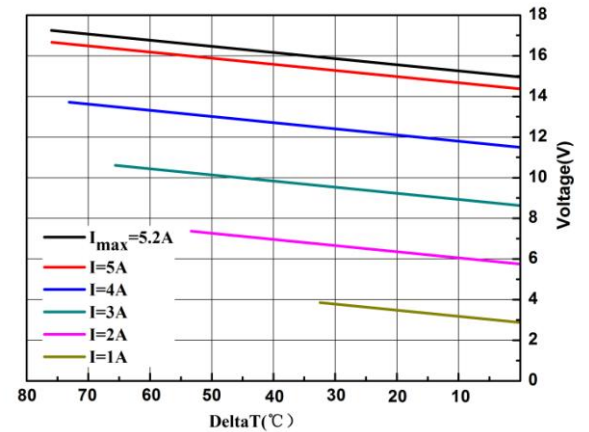


The chart for  $Q_c$  Vs Voltage under various  $\Delta T$

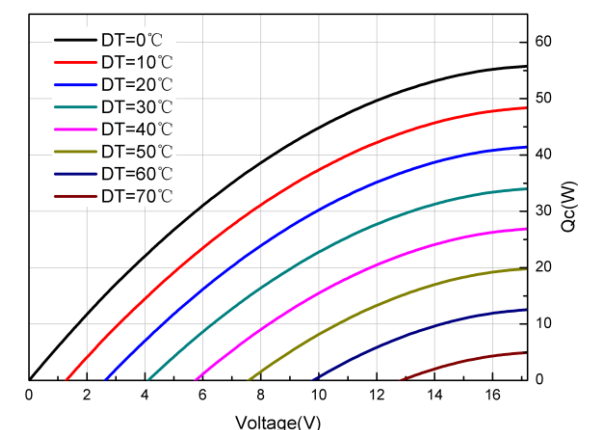
## Performance Curves at Th=50°C



The chart for  $Q_c$  Vs  $\Delta T$  under various currents



The chart for Voltage Vs  $\Delta T$  under various currents



The chart for  $Q_c$  Vs Voltage under various  $\Delta T$

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

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