

Specification of Thermoelectric Module

TES3-143-143-143-90

Description

The TES3-143-143-143-90 is a multistage module designed for greater temperature differential cooling, good for cooling and heating up to 100 °C applications. It is a 143-143-143 couples module in size of 25mm ×50mm (top/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

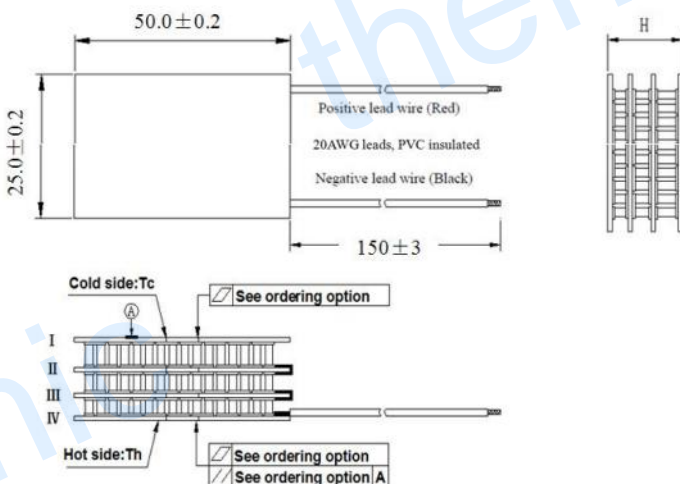
- Infrared (IR) Sensors
- CCD Sensor
- Gas Analyzers
- Calibration Equipment
- CPU cooler and scientific instrument
- Photonic and medical systems
- Guidance Systems

Performance Specification Sheet

Th (°C)	27	50	Hot side temperature at environment: dry air, N ₂
DT _{max} (°C)	104	117	Temperature Difference between cold and hot side of the module when cooling capacity is zero at cold side
U _{max} (Voltage)	16.4	17.8	Voltage applied to the module at DT _{max}
I _{max} (Amps)	8.9	8.9	DC current through the modules at DT _{max}
Q _{Cmax} (Watts)	41.8	44.8	Cooling capacity at cold side of the module under DT=0 °C
AC resistance (Ohms)	1.65	1.78	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 (Tmelt=138°C)
2. T200: CuAgSn (Tmelt = 217°C)
3. T240: SbSn (Tmelt = 240°C)

B. Sealant:

1. NS: No sealing (Standard)
2. SS: Silicone sealant
3. EPS: Epoxy sealant

C. Ceramics:

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

D. Ceramics Surface Options:

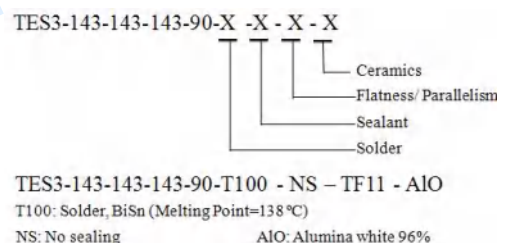
1. Blank ceramics (not metalized)
2. Metalized

Ordering Option

Suffix	Thickness (mm)	Flatness/ Parallelism (mm)	Lead wire length(mm) Standard/Optional length
TF	0: 8.0± 0.3	0: 0.1/0.1	150±3/Specify
TF	1: 8.0± 0.15	1: 0.05/0.05	150±3/Specify

Eg. TF11: Thickness 8.0±0.15 (mm) and Flatness/ Parallelism 0.05/0.05 (mm)

Naming for the Module



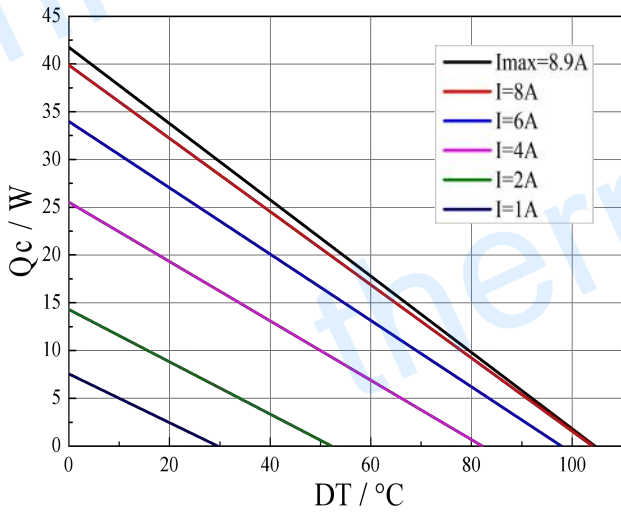
Creative technology with fine manufacturing processes provides you the reliable and quality products

Tel: +86-791-88198288 Fax: +86-791-88198308 Email: sales@thermonamic.com.cn Web Site: www.thermonamic.com.cn

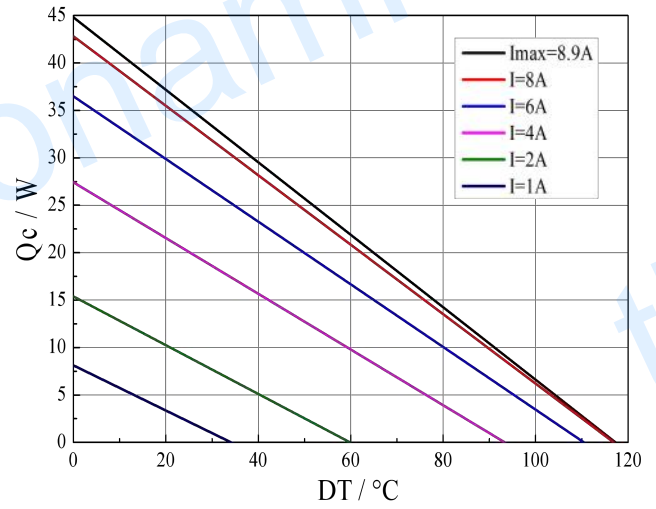
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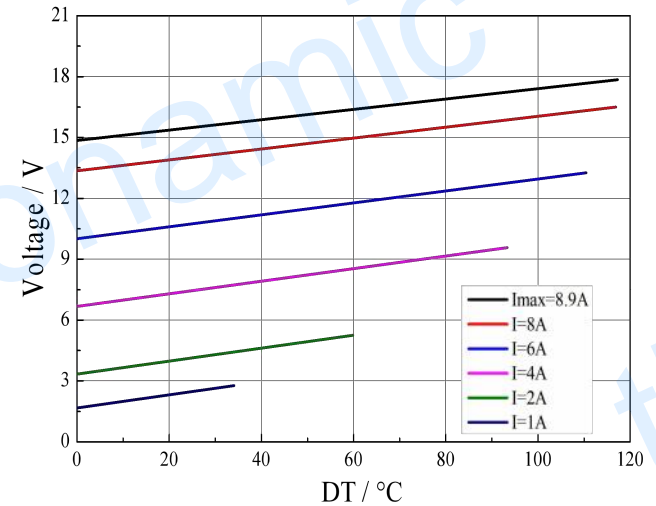
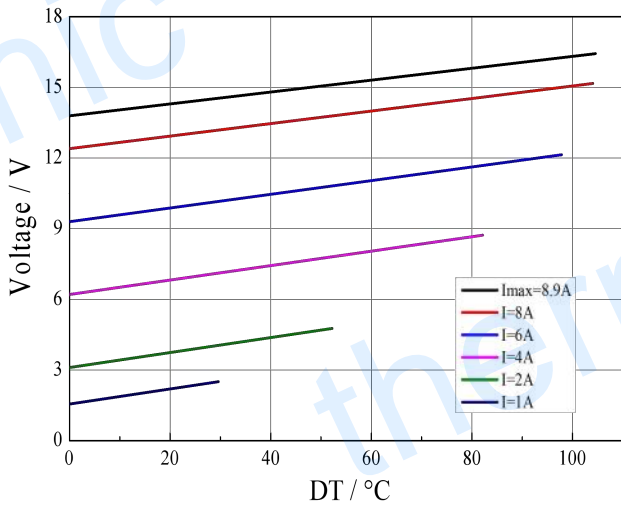
Performance Curves at $T_h=27\text{ }^\circ\text{C}$



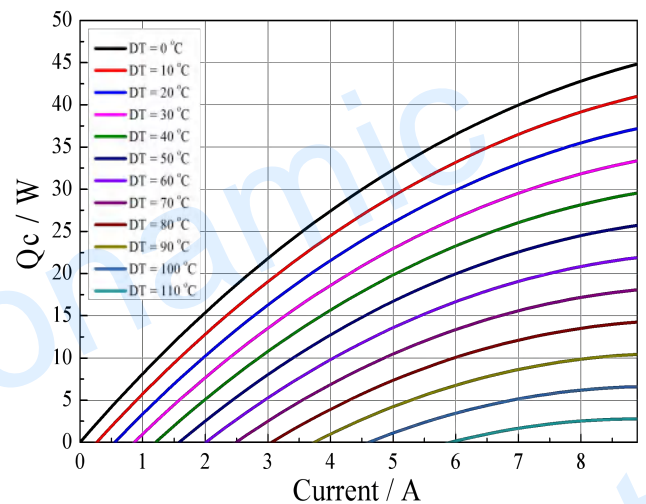
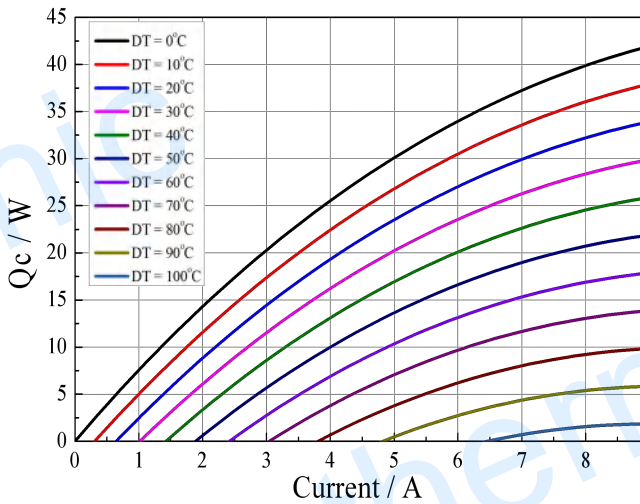
Performance Curves at $T_h=50\text{ }^\circ\text{C}$



Standard Performance Graph $Q_c = f(DT)$



Standard Performance Graph $V = f(DT)$

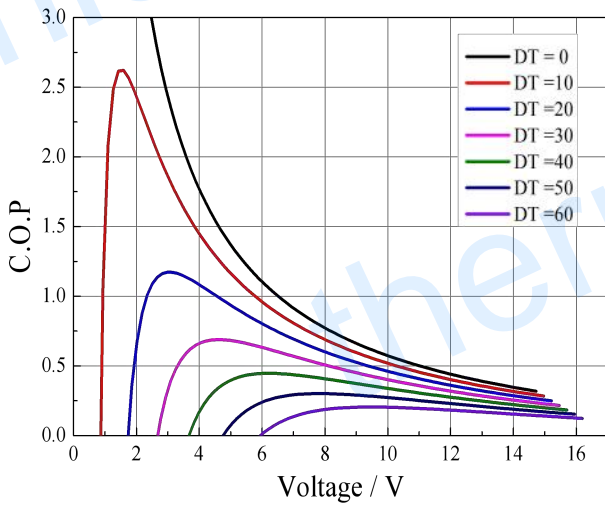


Standard Performance Graph $Q_c = f(I)$

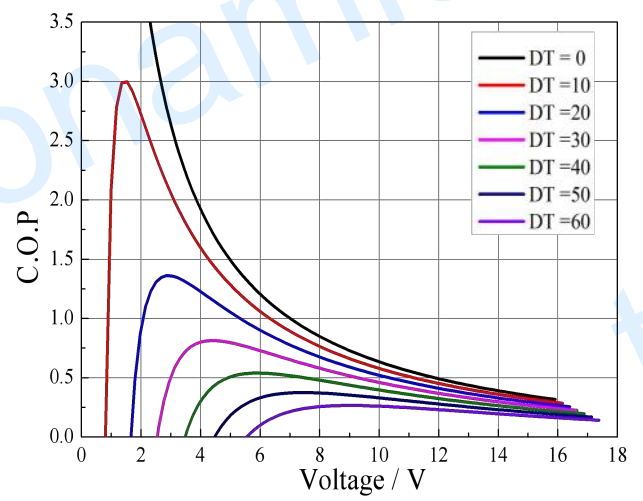
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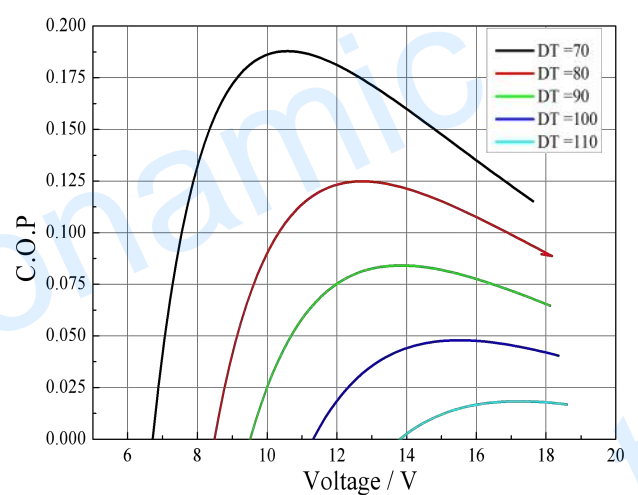
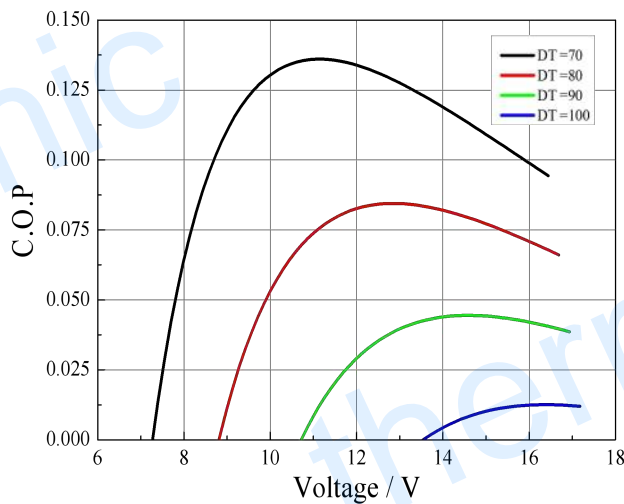
Performance Curves at Th=27 °C



Performance Curves at Th=50 °C



Standard Performance Graph COP = f(V) of DT ranged from 0 to 60 °C



Standard Performance Graph COP = f(V) of DT ranged from 70 to 100/110 °C

Remark: The coefficient of performance (COP) is the cooling power Q_c /Input power ($V \times I$).

Operation Cautions

- Attach the cold side of module to the object to be cooled
- Attach the hot side of module to a heat radiator for heat dissipating
- Storage module below 100 °C
- Operation below I_{max} or V_{max}
- Work under DC

Note: All specifications subject to change without notice.