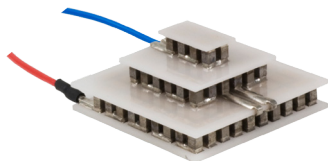


Multistage Series MS4,129,10,15

Thermoelectric Modules



The MS Series of thermoelectric modules (TEMs) are designed to reach cool down temperatures that are not achievable with single stage TEMs. This product line is available in numerous heat pumping capacities, geometric shapes and temperature differentials. Assembled with Bismuth Telluride semiconductor material and thermally conductive Aluminum Oxide ceramics, the MS Series is designed for higher current and lower heat-pumping applications.

FEATURES & BENEFITS

- High temperature differential
- Precise temperature control
- Reliable solid state operation
- Environmentally friendly
- DC operation
- RoHS compliant



MARKETS

- CCD cameras
- Electron microscope
- Calibration equipment
- Photonics laser systems
- Gas analyzers
- Infrared (IR) Sensors
- Guidance systems

SPECIFICATIONS

PERFORMANCE SPECIFICATIONS	
Hot Side Temperature (°C)	25
Qmax (Watts)	1.9
Delta Tmax (°C)	115
Imax (Amps)	1.8
Vmax (Volts)	8.3

SUFFIX	THICKNESS PRIOR TO TINNING	FLATNESS & PARALLELISM	HOT FACE	COLD FACE	LEAD LENGTH
00	0.500"± 0.016"	0.001" / 0.004"	Metallized	Metallized	7.87"
11	0.492"± 0.008"	0.001" / 0.002"	Lapped	Lapped	7.87"
22	0.500"± 0.016"	0.001" / 0.004"	Metallized	Metallized	7.87"

SEALING OPTION

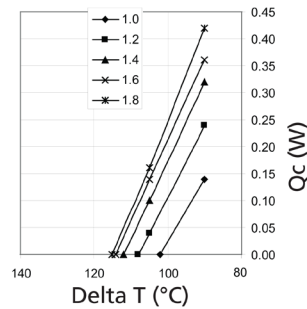
SUFFIX	SEALANT	COLOR	TEMP RANGE	DESCRIPTIONS
RT	RTV	White	-60 to +204°C	Non-corrosive, silicone adhesive sealant
EP	Epoxy	Black	-55 to +150°C	Low density syntactic foam epoxy encapsulant

Multistage Series MS4,129,10,15

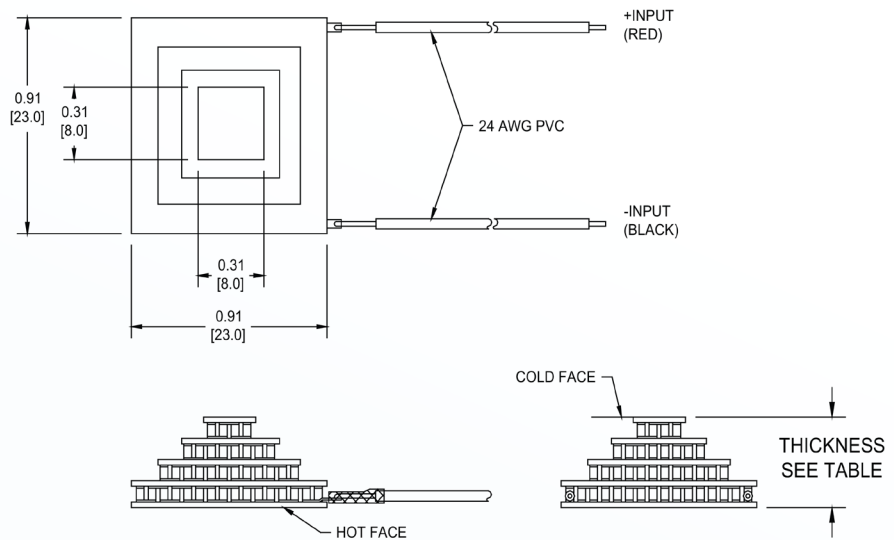
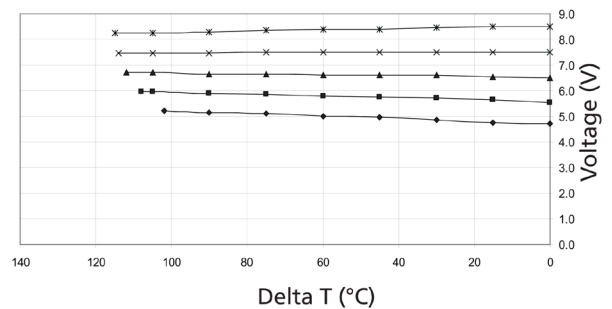
Thermoelectric Modules

Performance curves at $T_h = +25^\circ\text{C}$

THERMO



ELECTRIC



Ceramic material: 100% Alumina ceramics

Solder construction: 138°C Tin Bismuth Tin (BiSn)

OPERATING TIPS

- Max operating temperature: 80°C
- Do not exceed I_{max} or V_{max} when operating module
- Reference assembly guidelines for recommended installation
- Solder tinning also available on metallized ceramics

THR-DS-MS4,129,10,15_0614

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