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**Note:** This product has reached end of production and is available on a limited basis only. This product series has been replaced with the improved HiTemp ETX Series product offering. Consider using 387004938 / ETX4-12-F2-4040-TA-RT-W6 HiTemp ETX Series module as a replacement.

The ThermaTEC™ Series of thermoelectric modules (TEMs) are designed to operate under cycling conditions or high temperature applications. This product line is available in multiple configurations and is ideal for applications that require both heating and cooling mode (reverse polarity) or power generation. Assembled with proprietary solder construction, Bismuth Telluride semiconductor material and thermally conductive Aluminum Oxide ceramics, the ThermaTEC Series is designed for higher current and larger heat-pumping applications.

## FEATURES

- Thermal cycling durability
- Power cycling reliability
- Precise temperature control
- Strong lead attachment
- RoHS compliant
- Continuous operation at high temperatures

## APPLICATIONS

- Analytical instrumentation
- PCR cyclers
- Thermal test sockets
- Electronic enclosure cooling
- Chillers (liquid cooling)
- Power generation

## SPECIFICATIONS

TECHNICAL		
Hot Side Temperature (°C)	25°C	50°C
Qmax (Watts)	33.0	36.0
Delta Tmax (°C)	64	75
I <sub>max</sub> (Amps)	3.8	3.8
V <sub>max</sub> (Volts)	14.5	16.4
Module Resistance (Ohms)	3.49	3.93

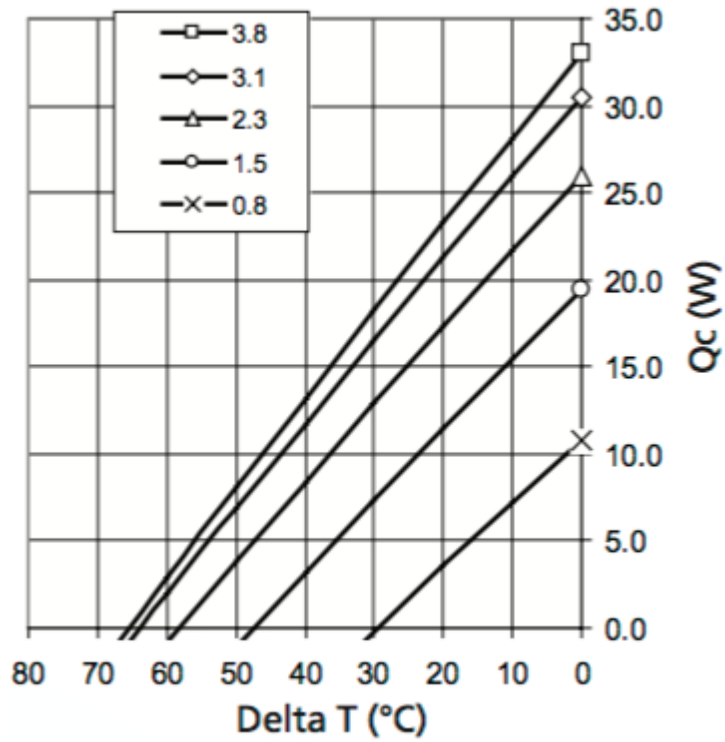
SUFFIX	THICKNESS (PRIOR TO TINNING)	FLATNESS & PARALLELISM	HOT FACE	COLD FACE	LEAD LENGTH
11	0.163"±0.005"	0.002" /0.0035"	Lapped	Lapped	6.0"
TA	0.163"±0.001"	0.001"/0.001"	Lapped	Lapped	6.0"
TB	0.163"±0.0005"	0.0005"/0.0005"	Lapped	Lapped	6.0"

## SEALING OPTIONS

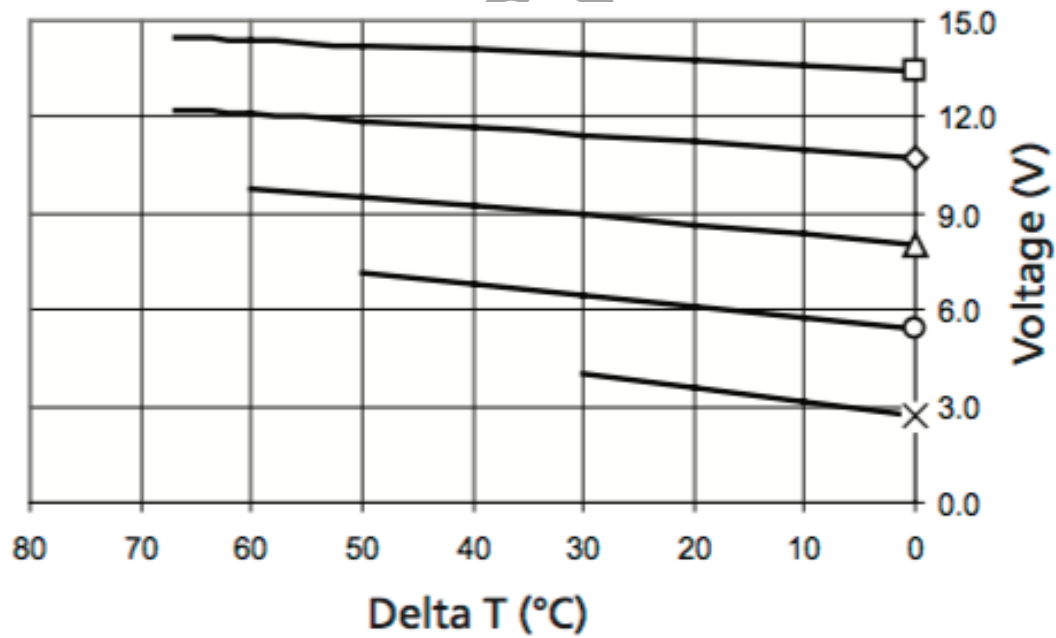
SUFFIX	SEALANT	COLOR	TEMP RANGE	DESCRIPTION
RT	RTV	White	-60 to 204 °C	Non-corrosive, silicone adhesive
EP	Epoxy	Black	-55 to 150 °C	Low density syntactic foam epoxy encapsulant

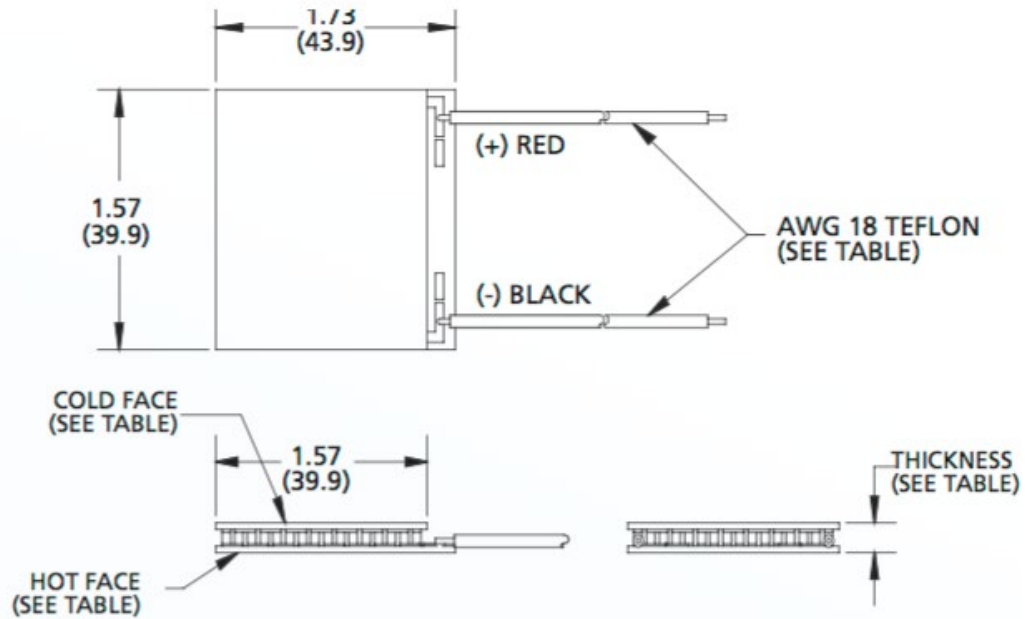
Performance Curves at Th =25°C

THERMO



ELECTRIC





Ceramic Material: Alumina ( $Al_2O_3$ )  
 Solder Construction: 271°C, Proprietary

**NOTES**

1. Max operating temperature: 175°C
2. Do not exceed  $I_{max}$  or  $V_{max}$  when operating module
3. Reference assembly guidelines for recommended installation

LAIRD-ETS-HT4-12-F2-4040-DATA-SHEET-101416

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