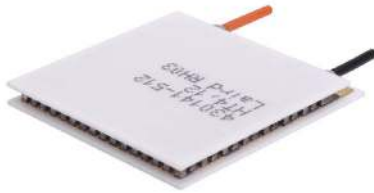


ThermaTEC™ Series HT4-12-F2-4040

Thermoelectric Modules



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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 ET Series product offering. Consider using ET4-12-F2-4040 HiTemp ET 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 _{max} (Amps) | 3.8 | 3.8 |
| V _{max} (Volts) | 14.5 | 16.4 |
| Module Resistance (Ohms) | 3.49 | 3.93 |

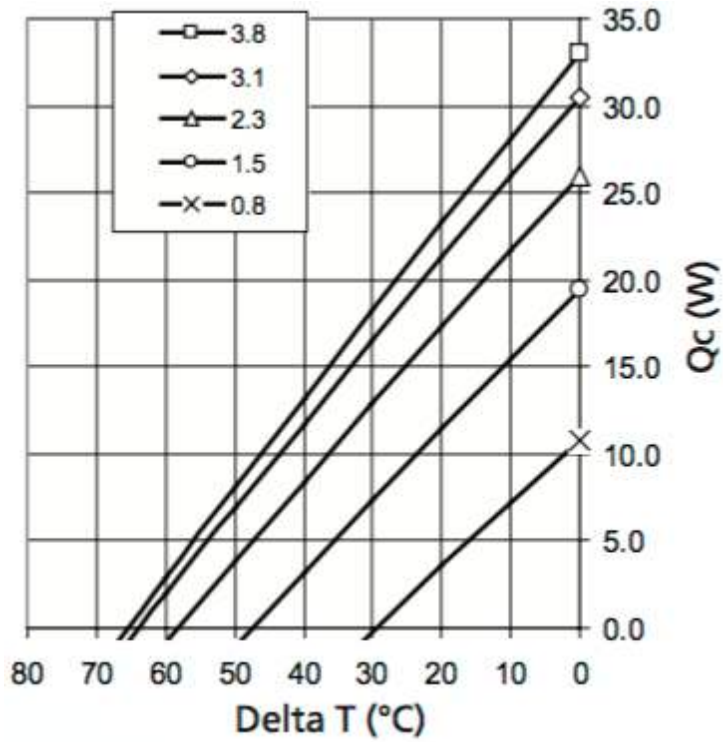
| SUFFIX | THICKNESS (PRIOR TO TINNING) | FLATNESS & PARALLELISM | HOT FACE | COLD FACE | LEAD LENGTH |
|--------|------------------------------|------------------------|----------|-----------|-------------|
| 11 | 0.163"±0.005" | 0.002" /0.0035" | Lapped | Lapped | 6.0" |
| TA | 0.163"±0.001" | 0.001"/0.001"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

SEALING OPTIONS

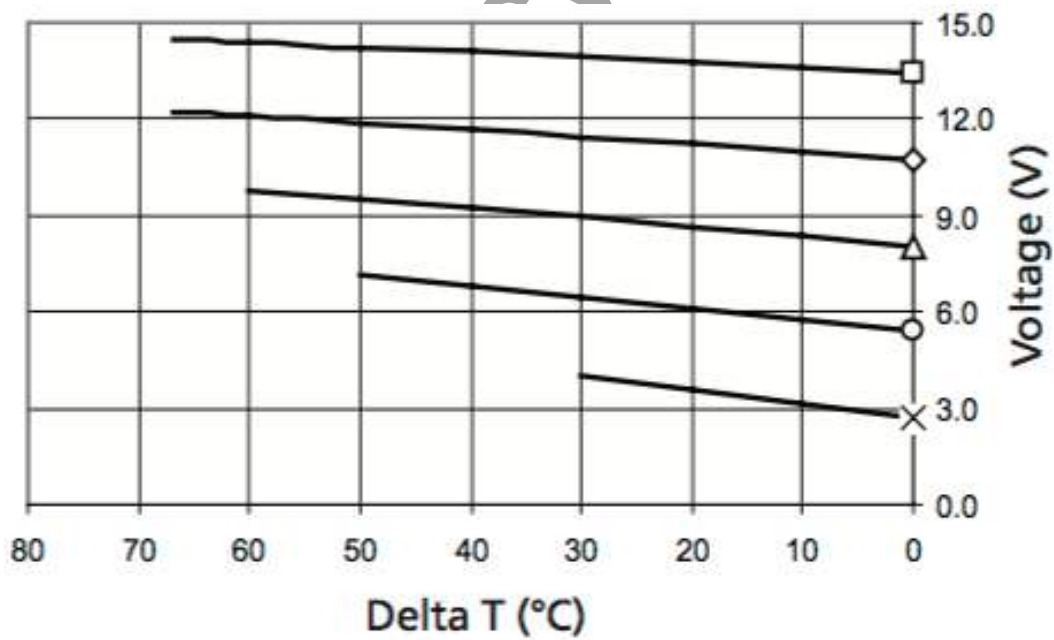
| SUFFIX | SEALANT | COLOR | TEMP RANGE | DESCRIPTION |
|--------|---------|-------|---------------|--|
| RT | RTV | White | -60 to 204 °C | Non-corrosive, silicone adhesive |
| EP | Epoxy | Black | -55 to 150 °C | Low density syntactic foam epoxy encapsulant |

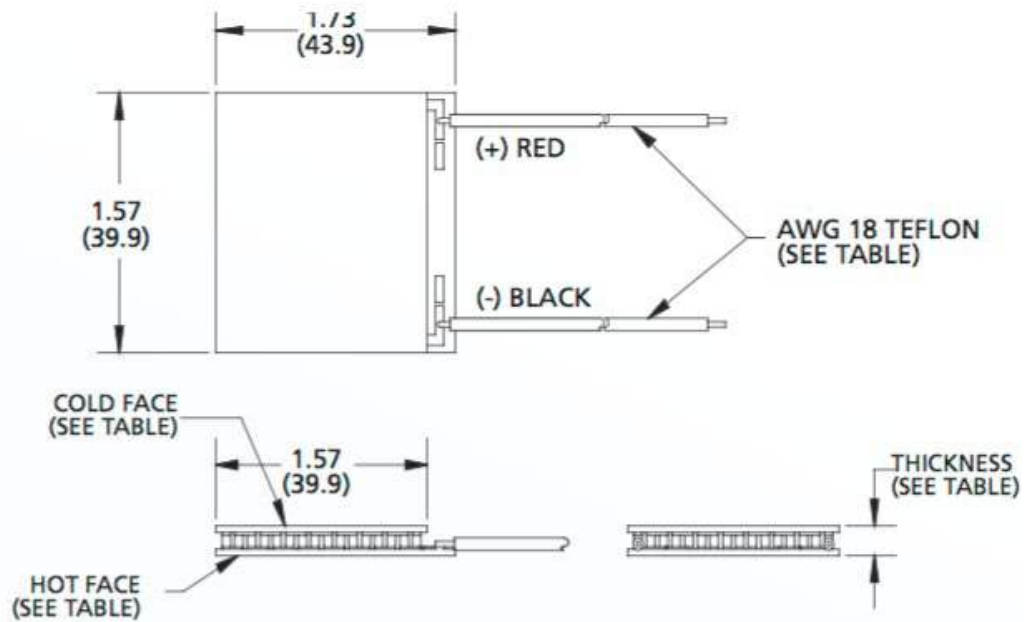
Performance Curves at Th =25°C

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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