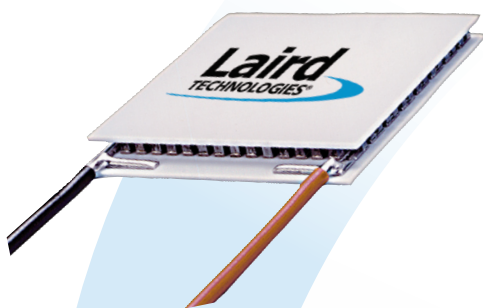


# ThermaTEC™ Series HT4,12,F2,4040

## Thermoelectric Modules



The ThermoTEC™ 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 ThermoTEC™ 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

### PERFORMANCE SPECIFICATIONS

|                           |      |      |
|---------------------------|------|------|
| 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<br>(PRIOR TO TINNING) | FLATNESS &<br>PARALLELISM | HOT<br>FACE | COLD<br>FACE | Lead<br>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 OPTION

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

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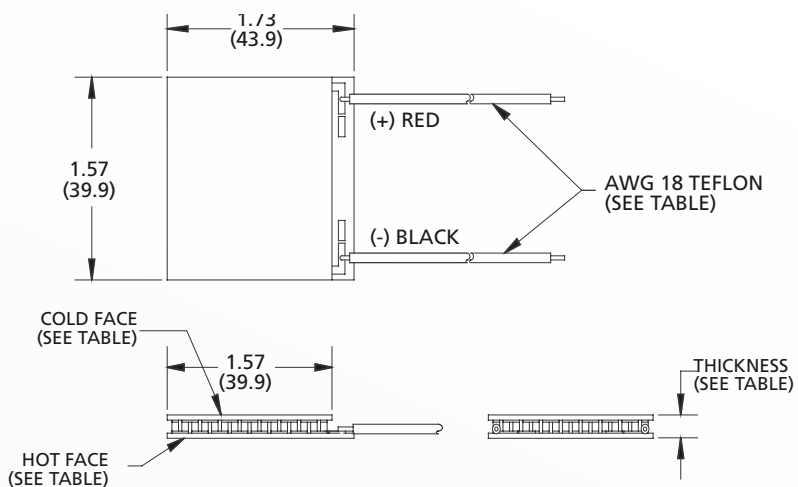
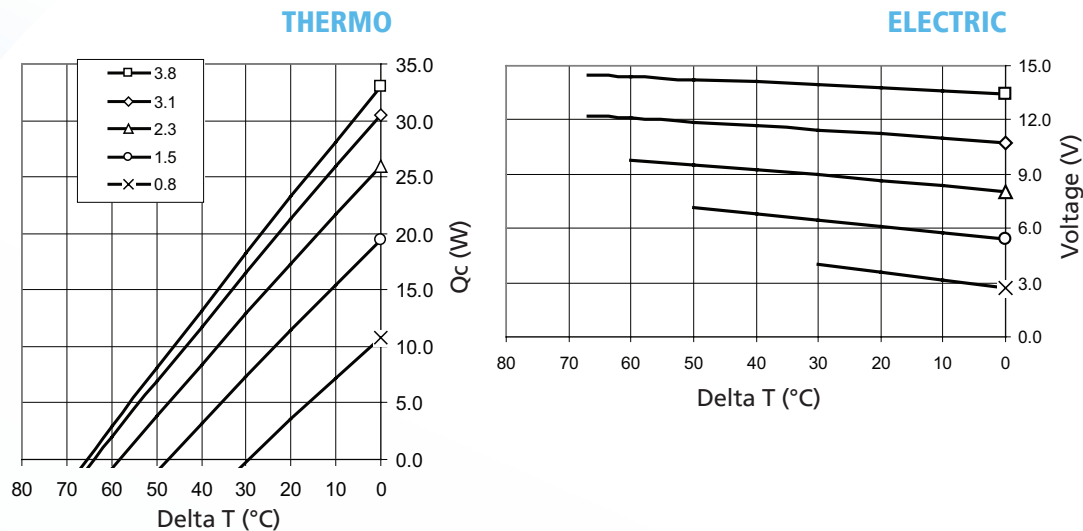
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# ThermaTEC™ Series HT4,12,F2,4040

## Thermoelectric Modules

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



Ceramic Material: Alumina ( $\text{Al}_2\text{O}_3$ )  
Solder Construction:  $271^\circ\text{C}$ , Proprietary

### OPERATING TIPS

- Max Operating Temperature:  $175^\circ\text{C}$
- Do not exceed  $I_{\text{max}}$  or  $V_{\text{max}}$  when operating module
- Reference assembly guidelines for recommended installation

THR-DS-HT4,12,F2,4040 0509

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