

# OptoTEC™ Series ET20-31-F1A-0909

## Thermoelectric Module



The OptoTEC™ Series is a miniature thermoelectric module (TEM). This product series is primarily used in applications to stabilize the temperature of sensitive optical components in telecom and photonics industries.

This product line is available in multiple configurations and surface finishing options. Assembled with Bismuth Telluride semiconductor material and thermally conductive Aluminum Oxide ceramics, the OptoTEC Series is designed for lower current and lower heat-pumping applications. Custom designs are available to accommodate metallization, pretinning, ceramic patterns, and solder posts, however MOQ applies.

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### FEATURES

- Miniature geometric sizes
- Precise temperature control
- Reliable solid state operation
- No sound or vibration
- DC operation
- RoHS compliant

### APPLICATIONS

- Laser diodes
- CCD cameras
- Calibration equipment
- Infrared (IR) sensors
- Pump lasers
- Crystal oscillators
- Optical transceivers

### SPECIFICATIONS

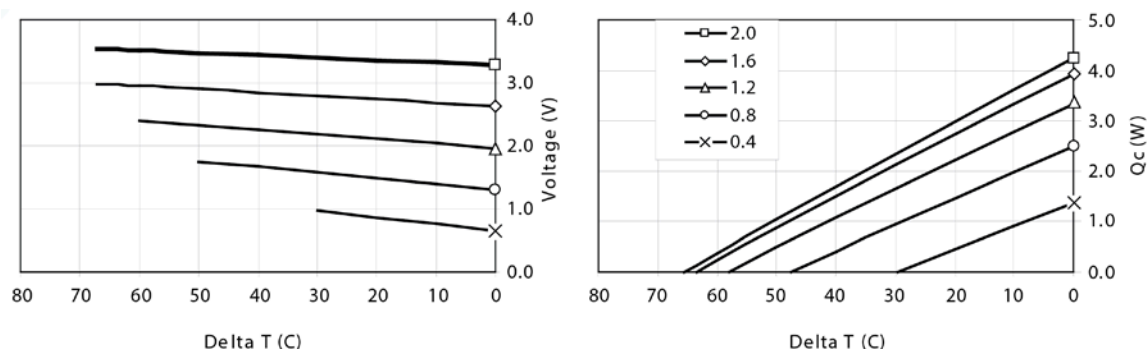
| PERFORMANCE               |      |      |
|---------------------------|------|------|
| Hot Side Temperature (°C) | 25   | 50   |
| Qmax (Watts)              | 4.2  | 4.7  |
| Delta Tmax (°C)           | 67   | 77   |
| I <sub>max</sub> (Amps)   | 2.0  | 2.0  |
| V <sub>max</sub> (Volts)  | 3.5  | 4.0  |
| Module resistance (ohms)  | 1.62 | 1.82 |

| SUFFIX | THICKNESS<br>PRIOR TO TINNING | FLATNESS &<br>PARALLELISM | HOT FACE   | COLD FACE  | LEAD<br>LENGTH |
|--------|-------------------------------|---------------------------|------------|------------|----------------|
| 11     | 0.086" ± 0.002"               | 0.0002" / 0.002"          | Lapped     | Lapped     | 2.0"           |
| TB     | 0.086" ± 0.0005"              | 0.0005" / 0.0005"         | Lapped     | Lapped     | 2.0"           |
| 00     | 0.098" ± 0.005"               | NA / NA                   | Metallized | Metallized | 2.0"           |
| 22     | 0.098" ± 0.005"               | NA / NA                   | Pre-tinned | Pre-tinned | 2.0"           |
| GG     | 0.098" ± 0.005"               | NA / NA                   | AuPlated   | AuPlated   | 2.0"           |

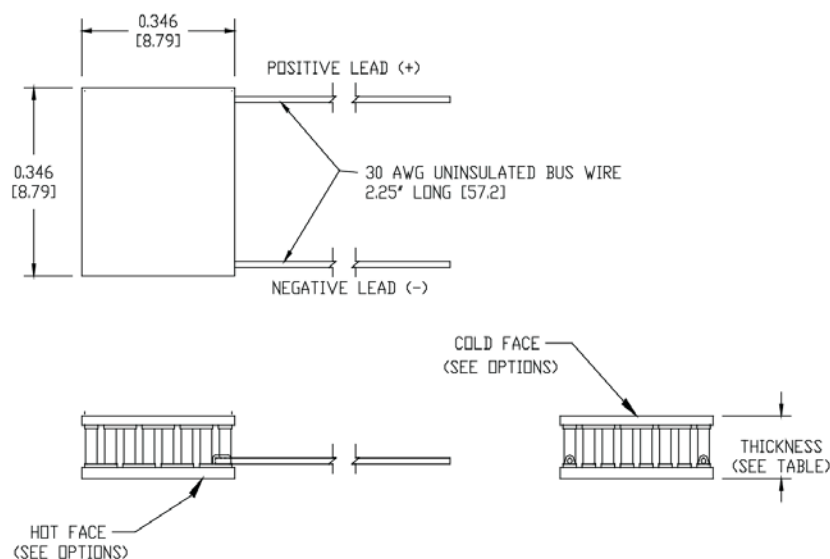
### SEALING OPTIONS

| SUFFIX | SEALANT | COLOR | TEMP RANGE    | DESCRIPTION                                  |
|--------|---------|-------|---------------|----------------------------------------------|
| 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 |

## PERFORMANCE CURVES



## MECHANICAL DRAWING



Ceramic Material: 96% Alumina Ceramics

Solder Construction: 232°C SnSb

## OPERATING TIPS

- Max operating temperature: 80°C
- Do not exceed I<sub>max</sub> or V<sub>max</sub> when operating module
- Reference assembly guidelines for recommended installation
- Solder tinning also available on metallized ceramics

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