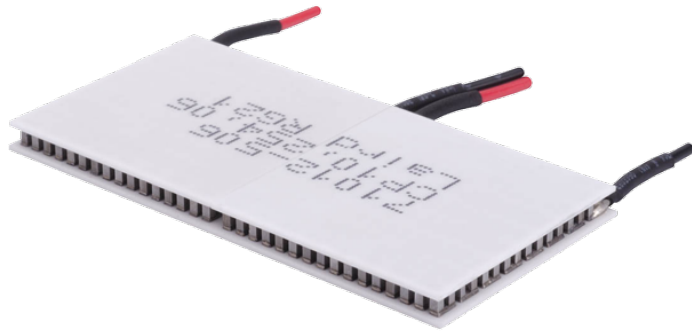


**Ceramic Plate Series Thermoelectric Cooler**

The CP10-254-06-L1-EP-W4.5 is a high-performance and highly reliable standard Thermoelectric Cooler. Assembled with Bismuth Telluride semiconductor material and thermally conductive Aluminum Oxide ceramics. It has a maximum Qc of 51 Watts when  $\Delta T = 0$  and a maximum  $\Delta T$  of 70.5 °C at Qc = 0.

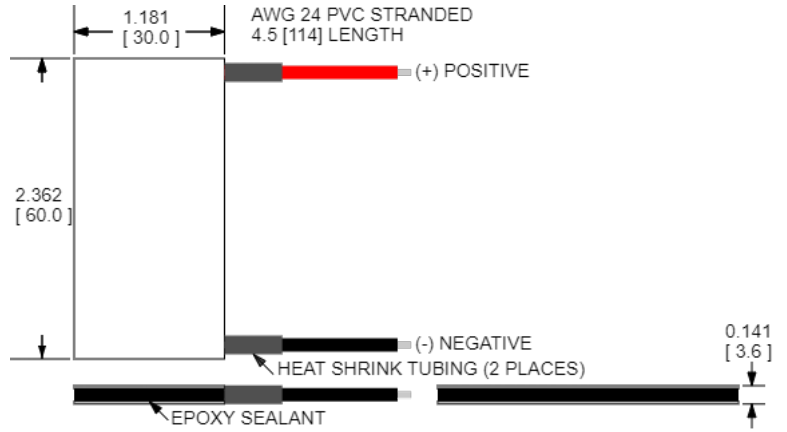


**Features**

- Compact geometric sizes
- DC Operation
- RoHS-compliant

**Applications**

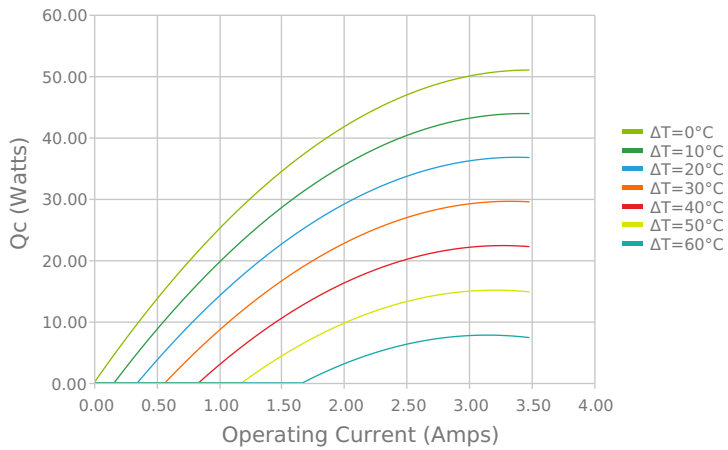
- Thermoelectric Coolers for Reagent Storage
- Thermoelectric Coolers for Handheld Cosmetic Lasers
- Cooling for Centrifuges
- Heads-Up Displays, Imaging Sensors
- Peltier Cooling for Machine Vision



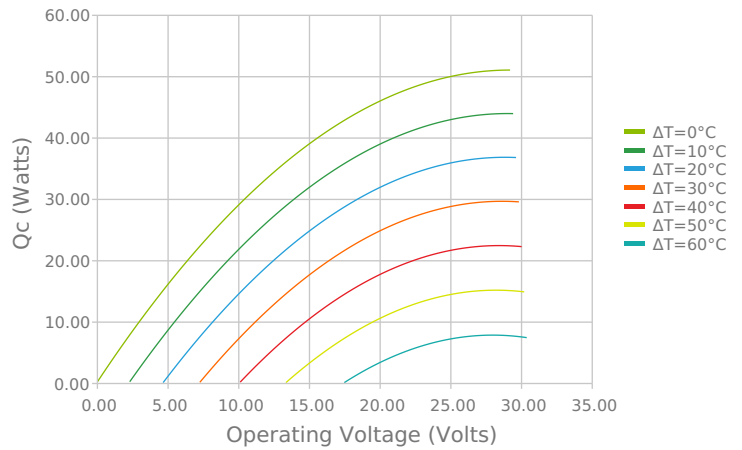
CERAMIC MATERIAL: Al<sub>2</sub>O<sub>3</sub>  
 SOLDER CONSTRUCTION: 138°C, BiSn  
 INCHES [MM]  
 Note: Allow 0.020 in [0.5 mm] around perimeter of the thermoelectric cooler and lead wire attachment to accommodate sealant

**ELECTRICAL AND THERMAL PERFORMANCE**

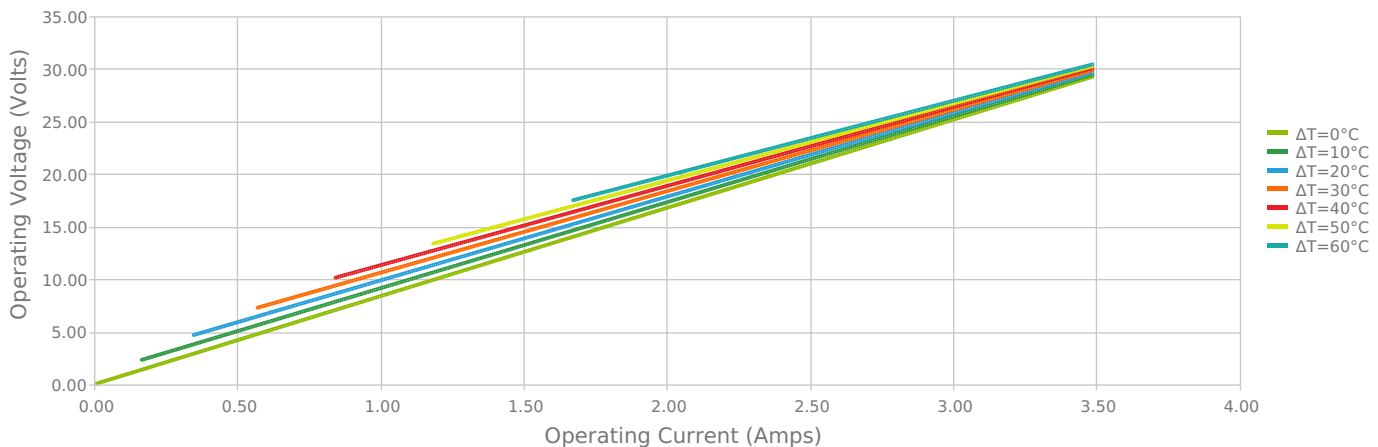
Heat Pumped at Cold Side  
 Thot = 27 °C



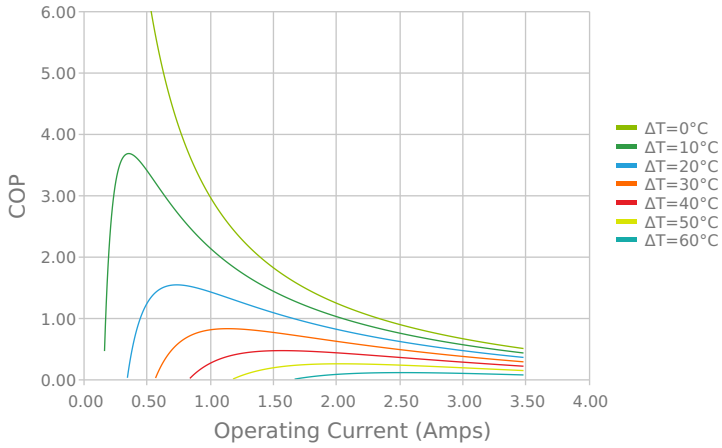
Heat Pumped at Cold Side  
 Thot = 27 °C



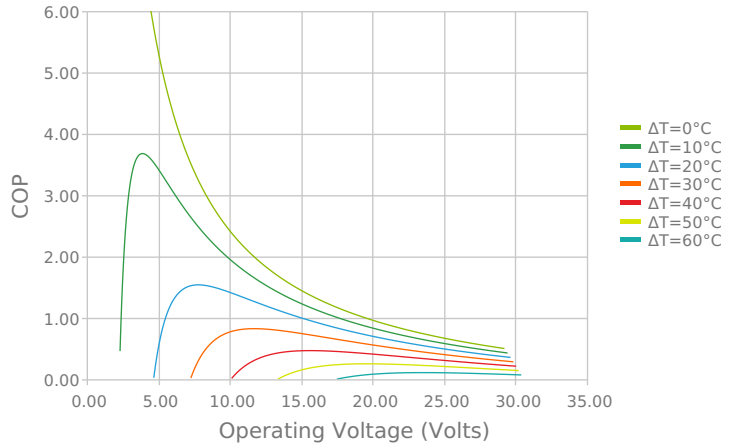
Current vs Voltage (I vs V)  
 Thot = 27 °C



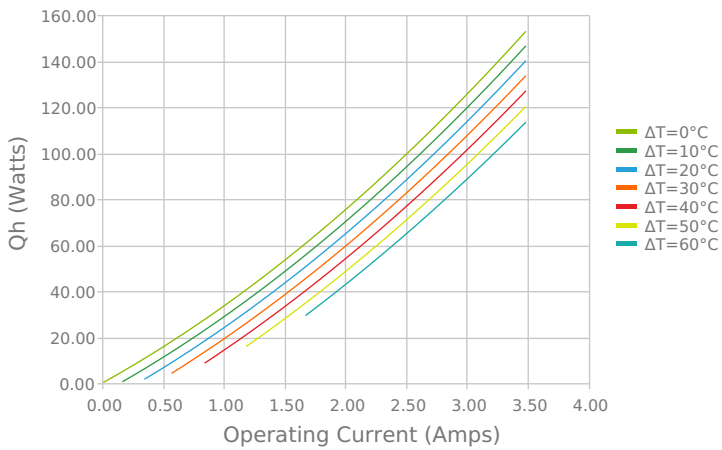
Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
 $T_{hot} = 27\text{ }^\circ\text{C}$



Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
 $T_{hot} = 27\text{ }^\circ\text{C}$



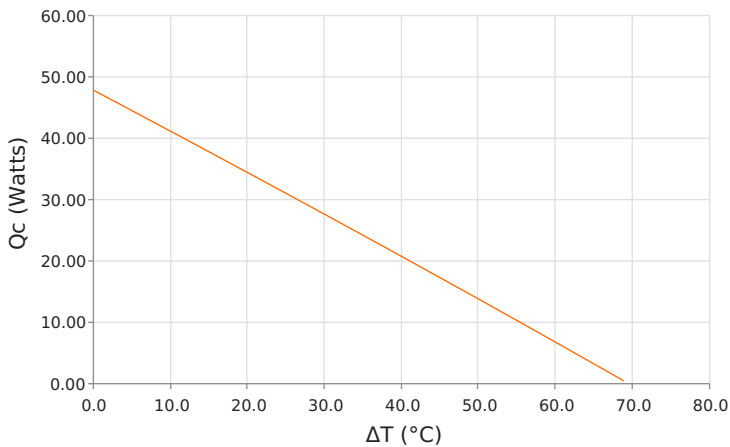
Total Heat Dissipated at Hot Side ( $Q_h=Q_c+P_{in}$ )  
 $T_{hot} = 27\text{ }^\circ\text{C}$



Total Heat Dissipated at Hot Side ( $Q_h=Q_c+P_{in}$ )  
 $T_{hot} = 27\text{ }^\circ\text{C}$



Heat Pumped at Cold Side ( $Q_c$ )  
 $T_{hot} = 27\text{ }^\circ\text{C}$  | Current = 2.6 Amps



Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
 $T_{hot} = 27\text{ }^\circ\text{C}$  | Current = 2.6 Amps



## SPECIFICATIONS\*

|   | 27.0 °C      | 35.0 °C    | 50.0 °C    |
|---|--------------|------------|------------|
| <b>Hot Side Temperature</b>                               |              |            |            |
| <b>Qcmax (<math>\Delta T = 0</math>)</b>                  | 51.0 Watts   | 52.5 Watts | 55.3 Watts |
| <b><math>\Delta T_{max}</math> (<math>Q_c = 0</math>)</b> | 70.5°C       | 73.5°C     | 78.8°C     |
| <b>I<sub>max</sub> (I @ <math>\Delta T_{max}</math>)</b>  | 3.1 Amps     | 3.1 Amps   | 3.0 Amps   |
| <b>V<sub>max</sub> (V @ <math>\Delta T_{max}</math>)</b>  | 27.7 Volts   | 28.8 Volts | 30.8 Volts |
| <b>Module Resistance</b>                                  | 8.38 Ohms    | 8.73 Ohms  | 9.39 Ohms  |
| <b>Max Operating Temperature</b>                          | 80 °C        |            |            |
| <b>Weight</b>   | 17.0 gram(s) |            |            |

\* Specifications reflect thermoelectric coefficients updated March 2020

## FINISHING OPTIONS

| Suffix | Thickness                             | Flatness / Parallelism                     | Hot Face | Cold Face | Lead Length         |
|--------|---------------------------------------|--|----------|-----------|---------------------|
| L1     | 3.581 ± 0.025 mm<br>0.141 ± 0.0010 in | 0.025 mm / 0.025 mm<br>0.001 in / 0.001 in | Lapped   | Lapped    | 114.3 mm<br>4.50 in |

## SEALING OPTIONS

| Suffix | Sealant | Color | Temp Range   | Description                                  |
|--------|---------|-------|--------------|--|
| EP     | Epoxy   | Black | -55 to 150°C | Low density syntactic foam epoxy encapsulant |

## NOTES

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

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Date: 05/26/2021