

## UltraTEC™ UTX Series Thermoelectric Cooler

The UTX15-24-F2-5252-TA-EP-W8 is a high-performance thermoelectric cooler that is assembled with advanced thermoelectric materials and can boost cooling capacity by up to 10%. The UltraTEC UTX Series features a higher thermal insulating barrier when compared to standard materials creating a maximum temperature differential ( $\Delta T$ ) of 71.7 °C at  $Q_c = 0$ . It has a maximum  $Q_c$  of 251.2 Watts when  $\Delta T = 0$ .

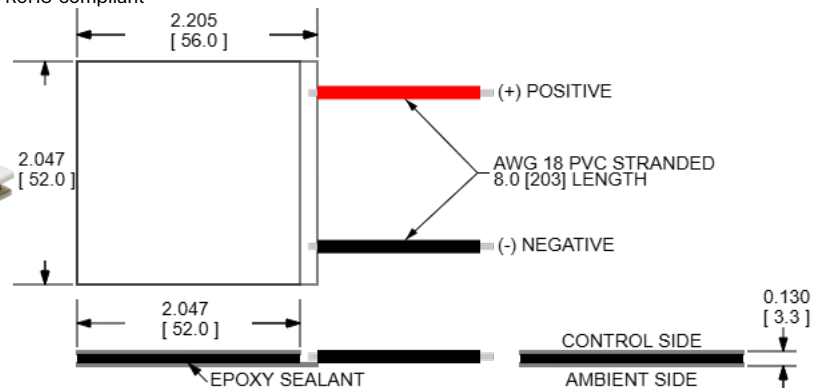


## Features

- High heat pump density
- Precise temperature control
- Reliable solid-state operation
- No sound or vibration
- DC operation
- RoHS-compliant

## Applications

- Spot Cooling for Industrial Lasers & Optics
- Thermoelectric Cooling for Projection Lasers



CERAMIC MATERIAL:  $Al_2O_3$

SOLDER CONSTRUCTION: 138°C, BiSn

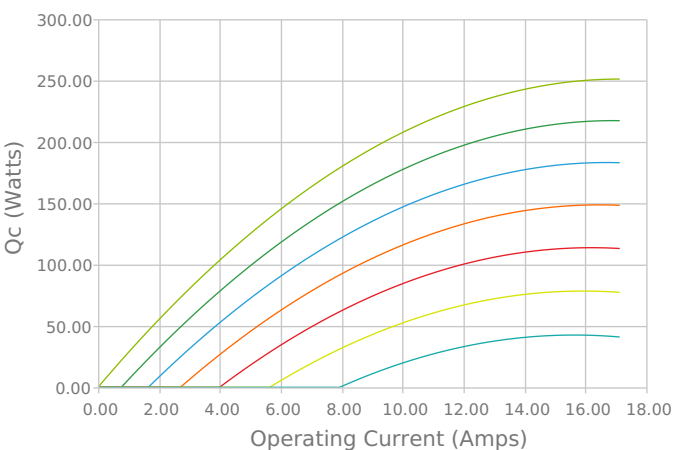
INCHES [MM]

Note: Allow 0.020 in [0.5 mm] around perimeter of the thermoelectric cooler and lead wire attachment to accommodate sealant

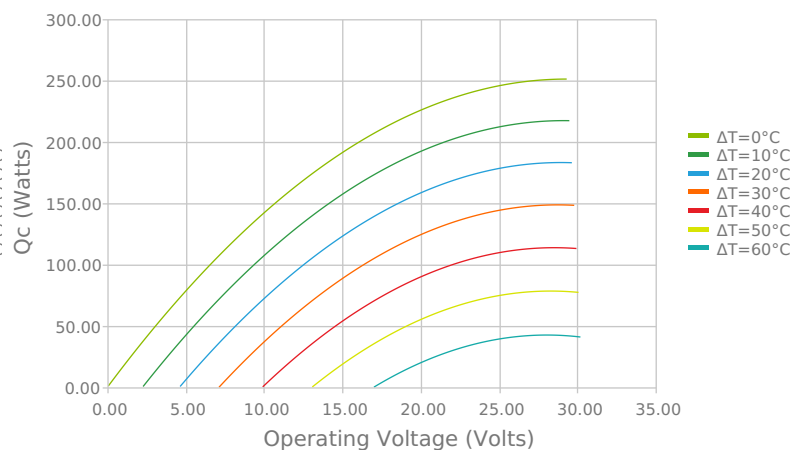
## Electrical and Thermal Performance

For maximum performance, be sure to orient the CONTROL side of the TEC against the application to be managed and the AMBIENT side against the heat sink or other heat rejection method. The CONTROL side is always opposite the side with lead attachments. Lead attachment is a passive heat loss and less impactful if located on the side that attaches to the heat exchanger.

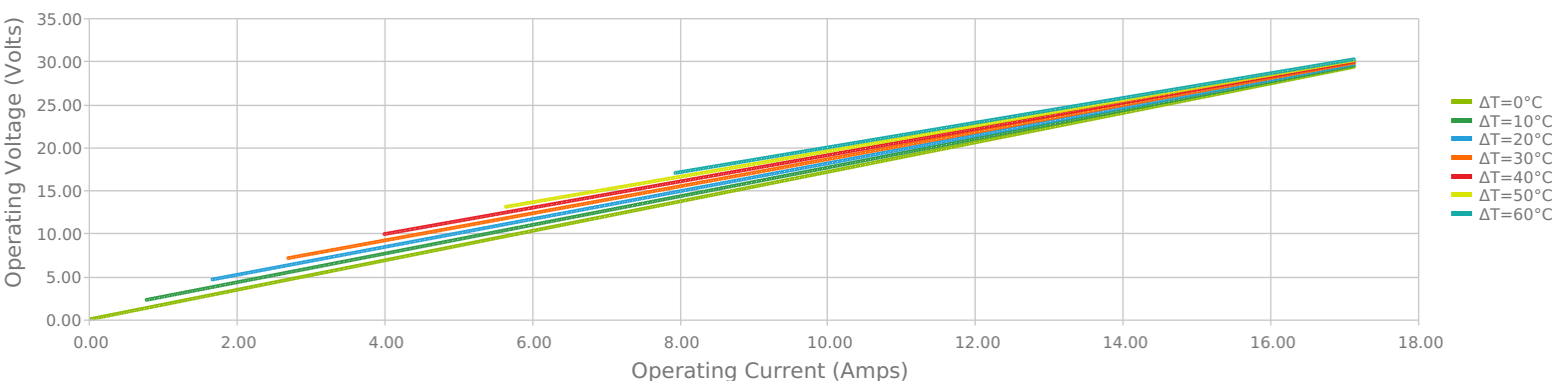
Heat Pumped at Cold Side  
 $T_{hot} = 27\text{ °C}$



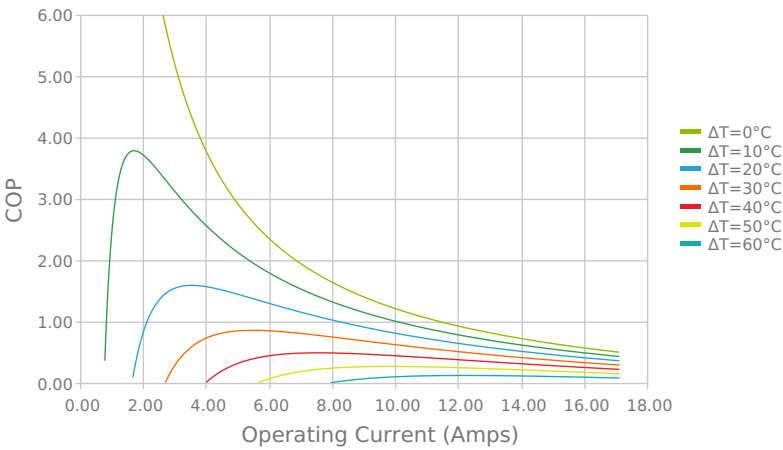
Heat Pumped at Cold Side  
 $T_{hot} = 27\text{ °C}$



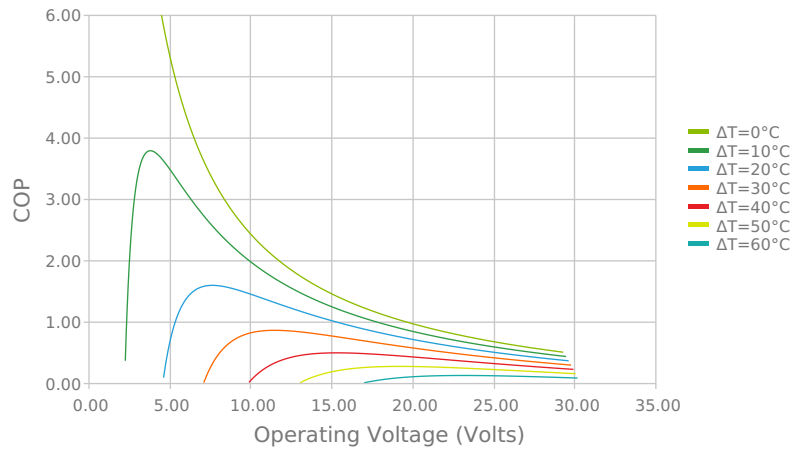
Current vs Voltage (I vs V)  
 $T_{hot} = 27\text{ °C}$



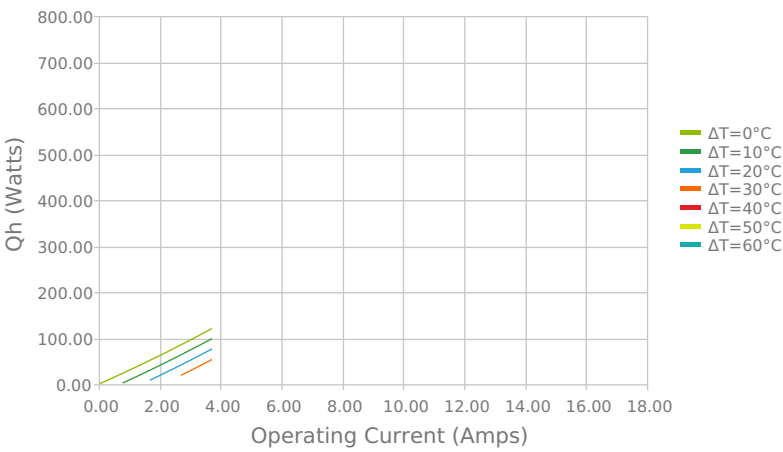
Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
 $T_{hot} = 27\text{ }^{\circ}\text{C}$



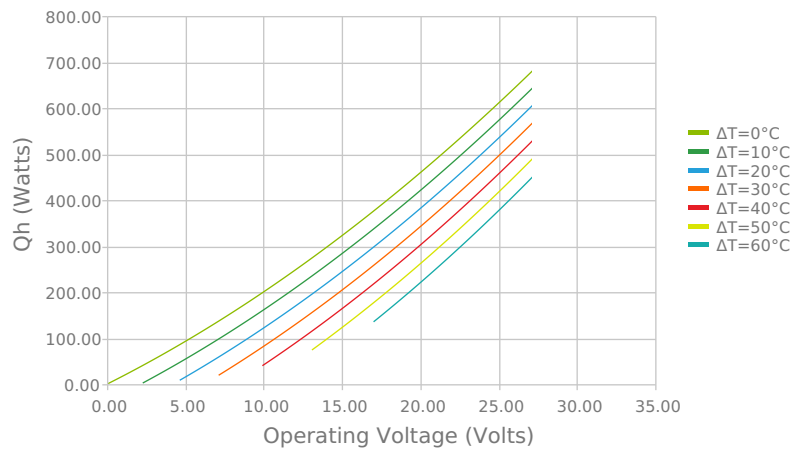
Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
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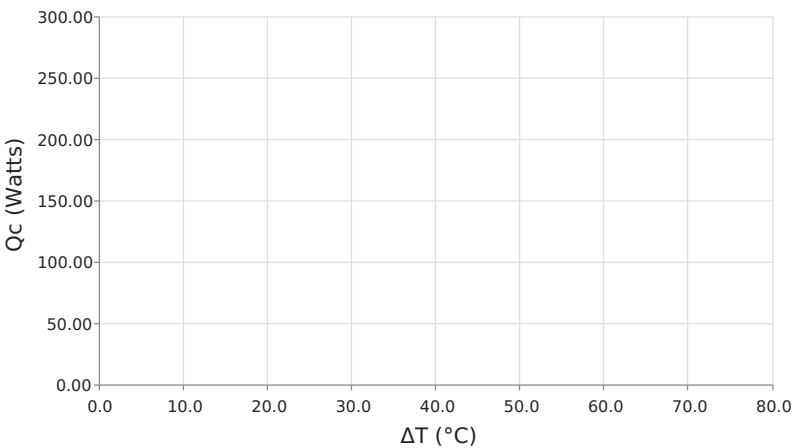
Total Heat Dissipated at Hot Side ( $Q_h = Q_c + P_{in}$ )  
 $T_{hot} = 27\text{ }^{\circ}\text{C}$



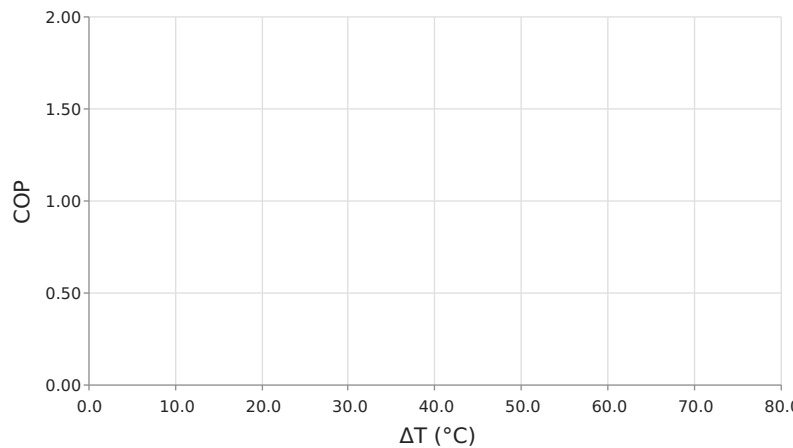
Total Heat Dissipated at Hot Side ( $Q_h = Q_c + P_{in}$ )  
 $T_{hot} = 27\text{ }^{\circ}\text{C}$



Heat Pumped at Cold Side ( $Q_c$ )  
 $T_{hot} = 35\text{ }^{\circ}\text{C}$  | operating = 12.9 Amps



Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
 $T_{hot} = 35\text{ }^{\circ}\text{C}$  | operating = 12.9 Amps



Specifications

| Hot Side Temperature      | 27.0 °C      | 35.0 °C     | 50.0 °C     |
|---------------------------|--------------|-------------|-------------|
| Qcmax (ΔT = 0)            | 251.2 Watts  | 258.2 Watts | 270.3 Watts |
| ΔTmax (Qc = 0)            | 71.7°C       | 74.8°C      | 80.4°C      |
| Imax (I @ ΔTmax)          | 15.3 Amps    | 15.2 Amps   | 14.9 Amps   |
| Vmax (V @ ΔTmax)          | 27.8 Volts   | 28.8 Volts  | 30.8 Volts  |
| Module Resistance         | 1.71 Ohms    | 1.79 Ohms   | 1.93 Ohms   |
| Max Operating Temperature | 80 °C        |             |             |
| Weight                    | 47.0 gram(s) |             |             |

Finishing Options

| Suffix | Thickness                            | Flatness / Parallelism                     | Hot Face | Cold Face | Lead Length         |
|--------|--------------------------------------|--------------------------------------------|----------|-----------|---------------------|
| TA     | 3.300 ±0.025 mm<br>0.130 ± 0.0010 in | 0.025 mm / 0.025 mm<br>0.001 in / 0.001 in | Lapped   | Lapped    | 152.4 mm<br>6.00 in |

Sealing Options

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

Notes

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  
Recommended to be used with a liquid heat exchanger on the hot side

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