

**OptoTEC™ HTX Series Thermoelectric Cooler**

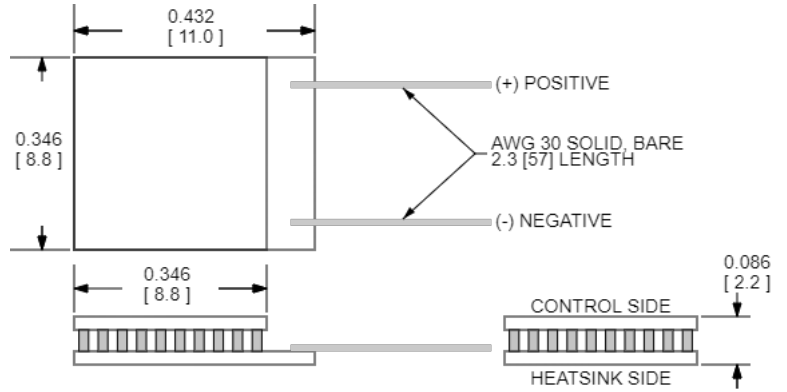
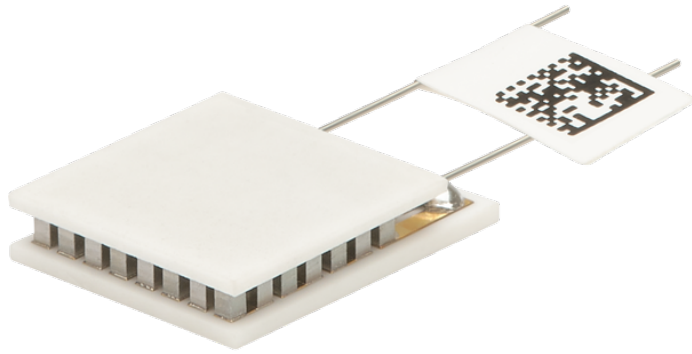
The HTX20-31-F2A-0909-11-W2.25 is a high-performance, high-temperature, miniature thermoelectric cooler. The HTX20-31-F2A-0909-11-W2.25 is primarily used in applications to stabilize the temperature of sensitive optical components in the telecom and photonics industries. It has a maximum  $Q_c$  of 4.6 Watts when  $\Delta T = 0$  and a maximum  $\Delta T$  of 81.6 °C at  $Q_c = 0$ .

**Features**

- Miniature footprint
- Precise temperature control
- Reliable solid-state operation
- Operates in high-temperature applications
- No sound or vibration
- RoHS-compliant

**Applications**

- Laser Diodes
- Optical Transceivers
- Lidar Sensors
- Infrared Range (IR) Sensors
- CMOS Sensors
- Autonomous Systems
- Machine Vision
- Security Cameras



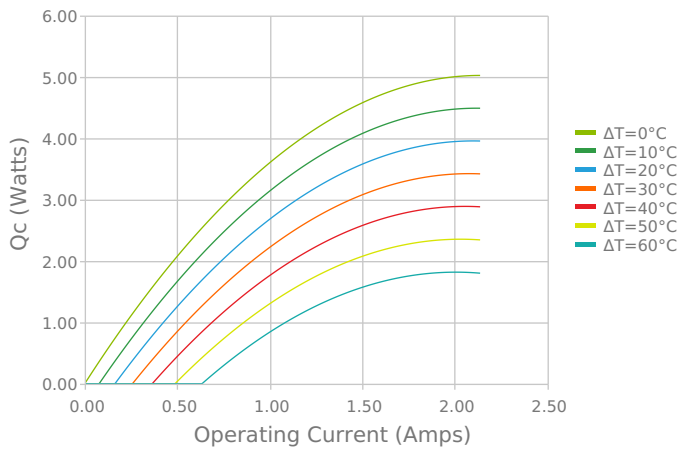
CERAMIC MATERIAL:  $Al_2O_3$   
 SOLDER CONSTRUCTION: 280°C, AuSn

INCHES [MM]

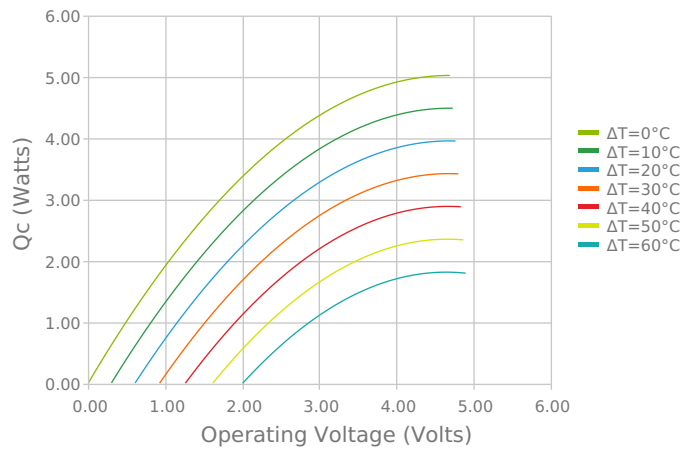
**ELECTRICAL AND THERMAL PERFORMANCE**

For maximum performance, be sure to orient the CONTROL side of the TEC against the application to be managed and the HEATSINK 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.

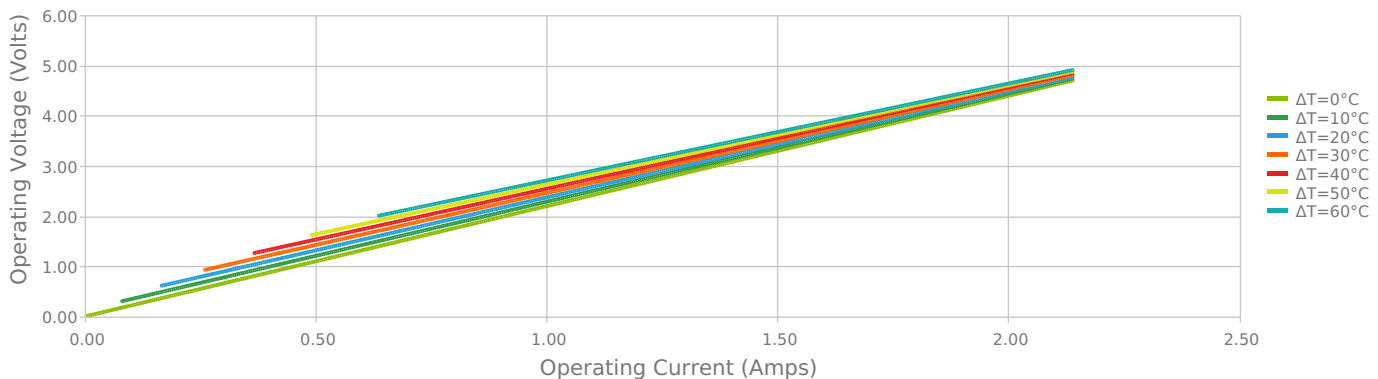
Heat Pumped at Cold Side  
 $Thot = 85\text{ °C}$



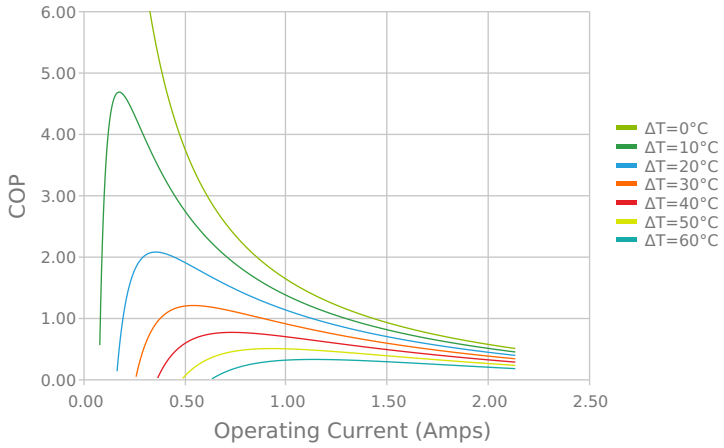
Heat Pumped at Cold Side  
 $Thot = 85\text{ °C}$



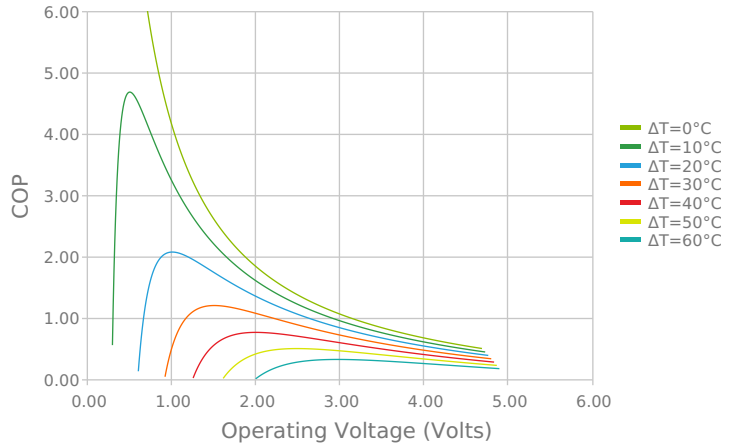
Current vs Voltage (I vs V)  
 $Thot = 85\text{ °C}$



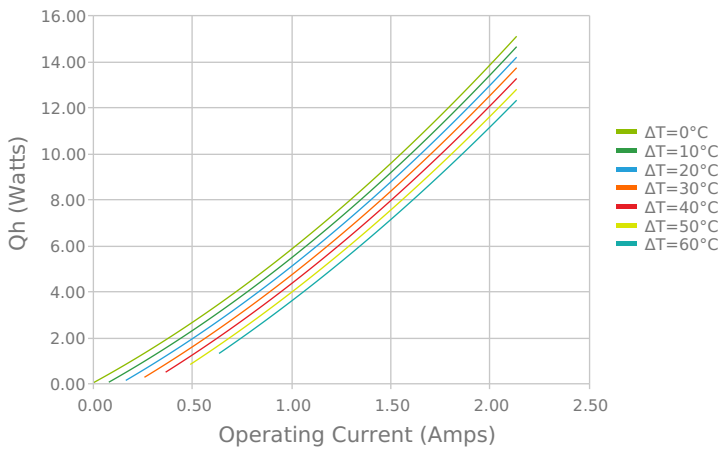
Coefficient of Performance (COP = Qc/Pin)  
 Thot = 85 °C



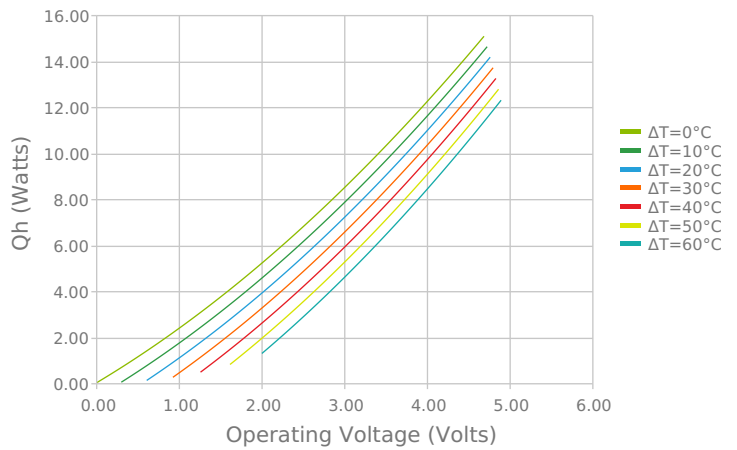
Coefficient of Performance (COP = Qc/Pin)  
 Thot = 85 °C



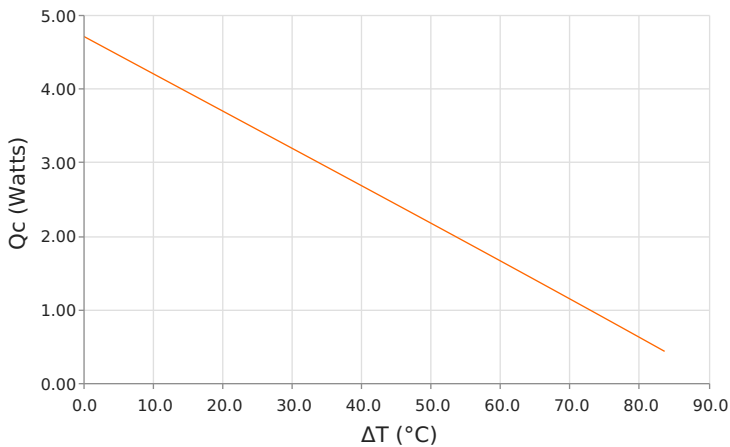
Total Heat Dissipated at Hot Side (Qh=Qc+Pin)  
 Thot = 85 °C



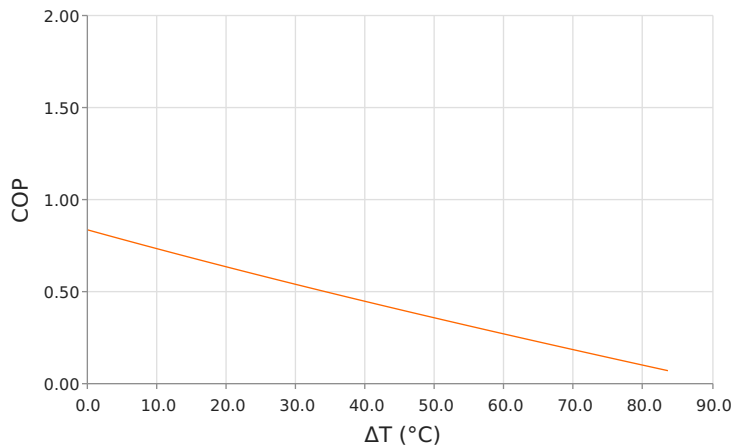
Total Heat Dissipated at Hot Side (Qh=Qc+Pin)  
 Thot = 85 °C



Heat Pumped at Cold Side (Qc)  
 Thot = 85 °C | Current = 1.6 Amps



Coefficient of Performance (COP = Qc/Pin)  
 Thot = 85 °C | Current = 1.6 Amps



## SPECIFICATIONS\*

Hot Side Temperature	50.0 °C	85.0 °C	110.0 °C
<b>Qcmax (<math>\Delta T = 0</math>)</b>	4.6 Watts	5.0 Watts	5.2 Watts
<b><math>\Delta T_{max}</math> (<math>Q_c = 0</math>)</b>	81.6°C	93.4°C	99.9°C
<b>I<sub>max</sub> (I @ <math>\Delta T_{max}</math>)</b>	2.0 Amps	1.9 Amps	1.9 Amps
<b>V<sub>max</sub> (V @ <math>\Delta T_{max}</math>)</b>	4.0 Volts	4.6 Volts	5.0 Volts
<b>Module Resistance</b>	1.88 Ohms	2.20 Ohms	2.40 Ohms
<b>Max Operating Temperature</b>	150 °C		
<b>Weight</b>	1.0 gram(s)		

\* Specifications reflect thermoelectric coefficients updated March 2020

## FINISHING OPTIONS

Suffix	Thickness	Flatness / Parallelism	Hot Face	Cold Face	Lead Length
11	2.184 ±0.127 mm 0.086 ± 0.0050 in	0.051 mm / 0.051 mm 0.002 in / 0.002 in	Lapped	Lapped	50.8 mm 2.00 in

## SEALING OPTIONS

Suffix	Sealant	Color	Temp Range	Description
	None			No sealing specified

## NOTES

1. Max operating temperature: 150°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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