

**HiTemp ET Series Thermoelectric Cooler**

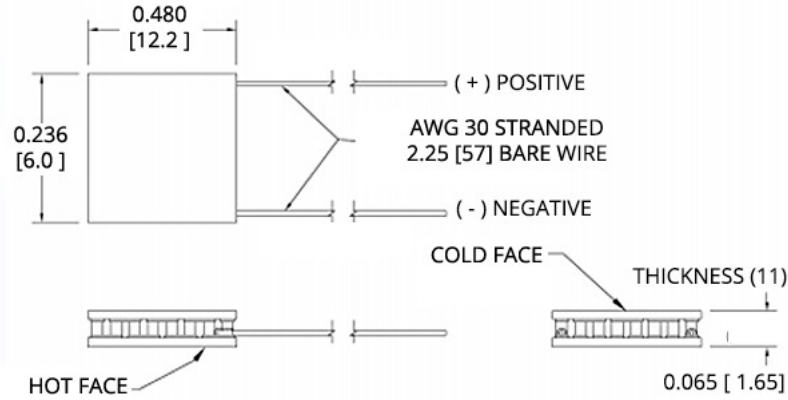
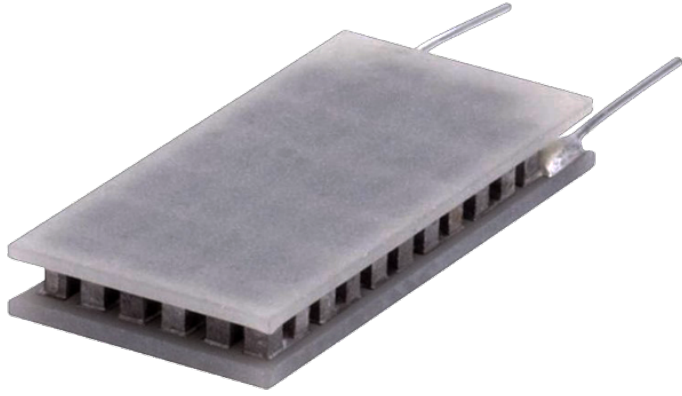
The ET19-35-F1N-0612-11-RT-28AWG high temperature Thermoelectric Cooler uses Laird's enhanced Thermoelectric Module construction preventing performance degrading copper diffusion, which is common in standard grade TEMs operating in high temperature environments exceeding 80 °C. It has a maximum Qc of 4.7 Watts when  $\Delta T = 0$  and a maximum  $\Delta T$  of 77.9 °C at Qc = 0.

**Features**

- High-temperature operation
- Reliable solid-state
- No sound or vibration
- Environmentally-friendly
- RoHS-compliant

**Applications**

- Peltier Cooling for Refrigerated Centrifuges
- Peltier Cooling for Machine Vision
- Thermoelectric Cooling for CMOS Sensors
- Cooling Solutions for Autonomous Systems
- Peltier Cooling for Digital
- Light Processors



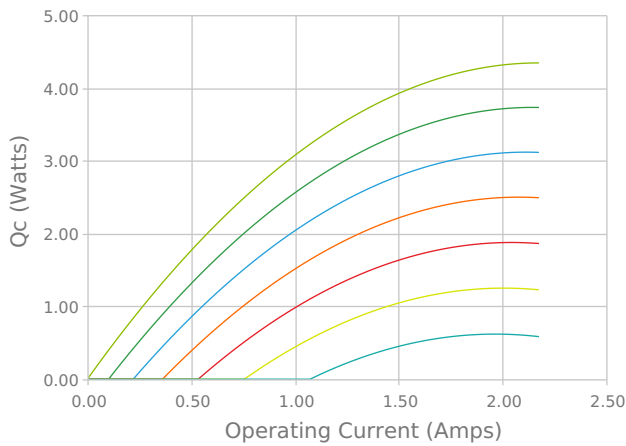
Ceramic Material: Aluminum Nitride (AlN)  
 Solder Construction: 232°C, SbSn

INCHES [ MM ]

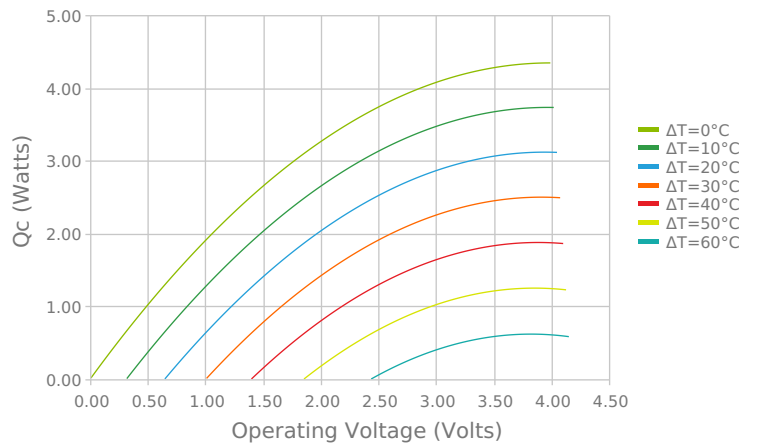
Note: Allow 0.020 in [0.5 mm] around perimeter of the thermoelectric cooler and lead wire attachment to accommodate sealant

**ELECTRICAL AND THERMAL PERFORMANCE**

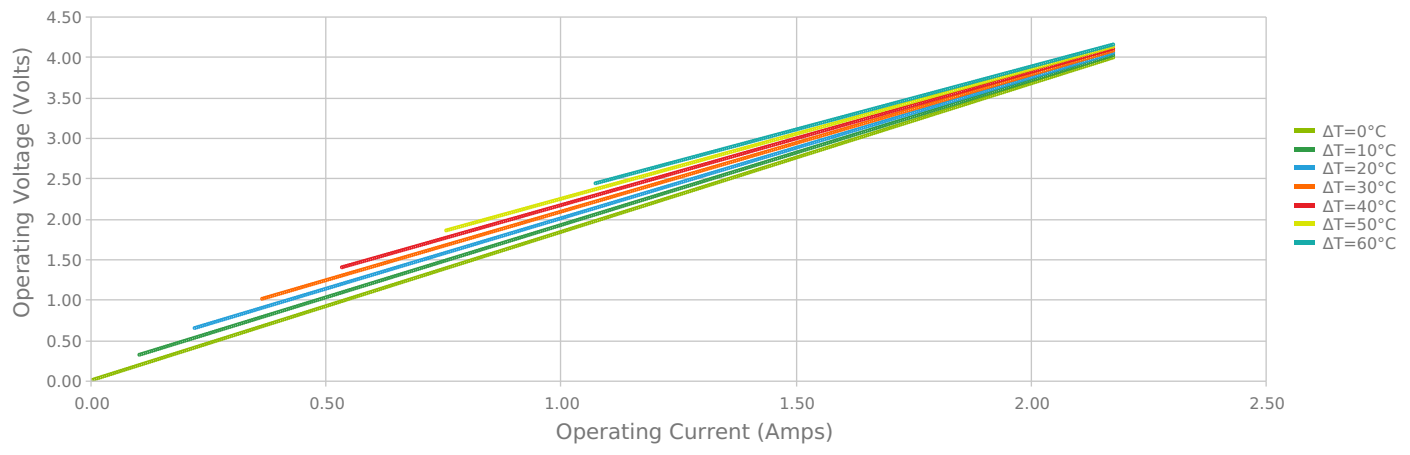
Heat Pumped at Cold Side  
 T<sub>hot</sub> = 85 °C



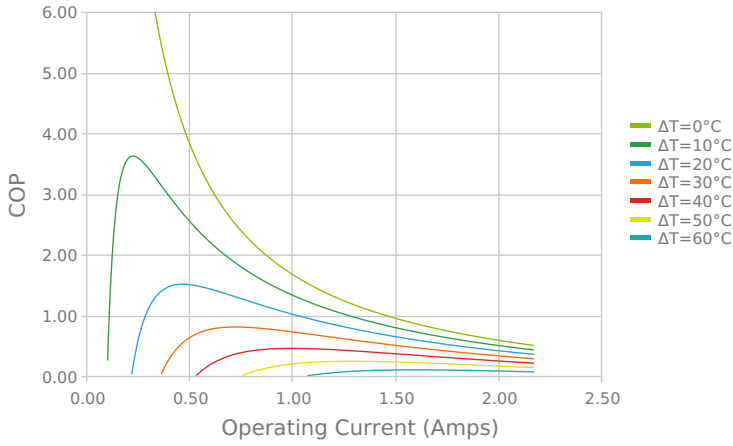
Heat Pumped at Cold Side  
 T<sub>hot</sub> = 85 °C



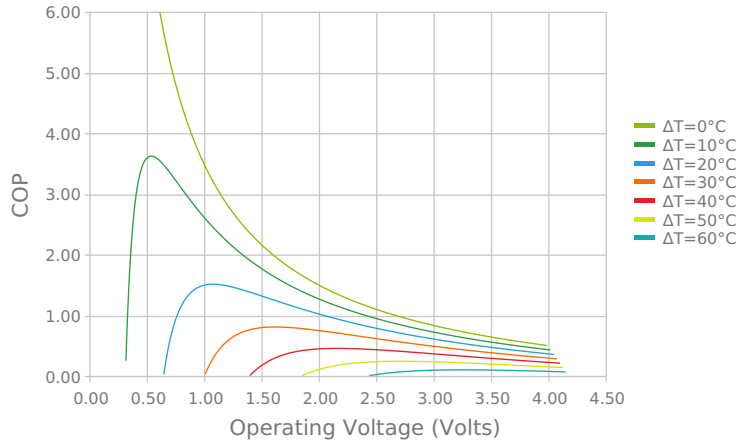
Current vs Voltage (I vs V)  
Thot = 85 °C



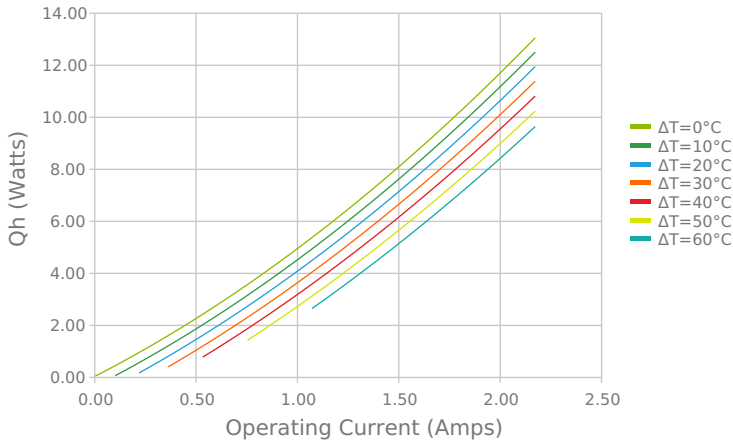
Coefficient of Performance (COP = Qc/Pin)  
 Thot = 85 °C



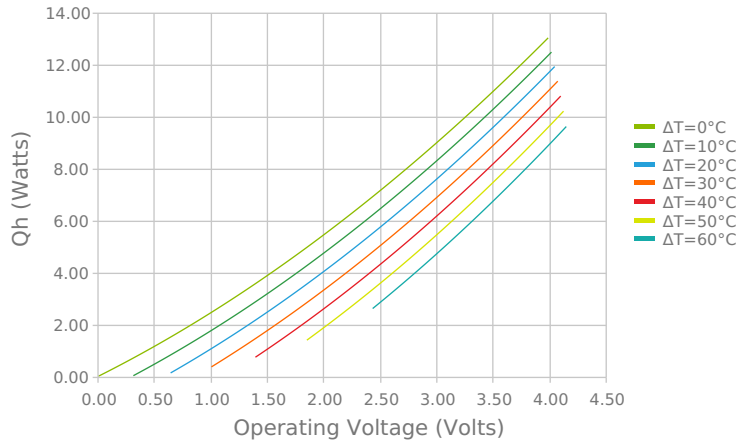
Coefficient of Performance (COP = Qc/Pin)  
 Thot = 85 °C



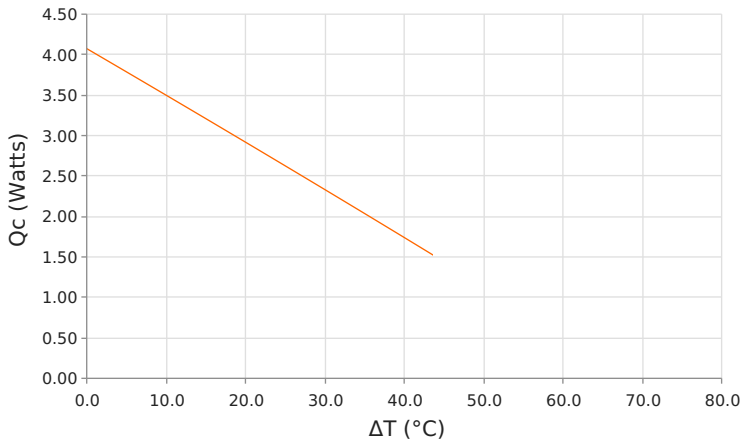
Total Heat Dissipated at Hot Side (Qh=Qc+Pin)  
 Thot = 85 °C



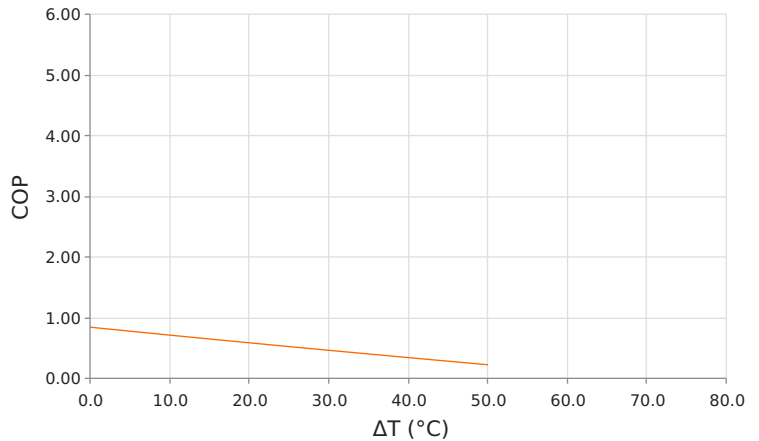
Total Heat Dissipated at Hot Side (Qh=Qc+Pin)  
 Thot = 85 °C



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>	4.7 Watts	5.2 Watts	5.4 Watts
<b><math>\Delta T_{max}</math> (<math>Q_c = 0</math>)</b>	77.9°C	89.3°C	96.2°C
<b>I<sub>max</sub> (I @ <math>\Delta T_{max}</math>)</b>	1.9 Amps	1.8 Amps	1.8 Amps
<b>V<sub>max</sub> (V @ <math>\Delta T_{max}</math>)</b>	4.2 Volts	4.8 Volts	5.3 Volts
<b>Module Resistance</b>	2.05 Ohms	2.39 Ohms	2.61 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	1.651 ± 0.051 mm 0.065 ± 0.002 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
RT	RTV	White	-60 to 204°C	Non-corrosive, silicone adhesive

## 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

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