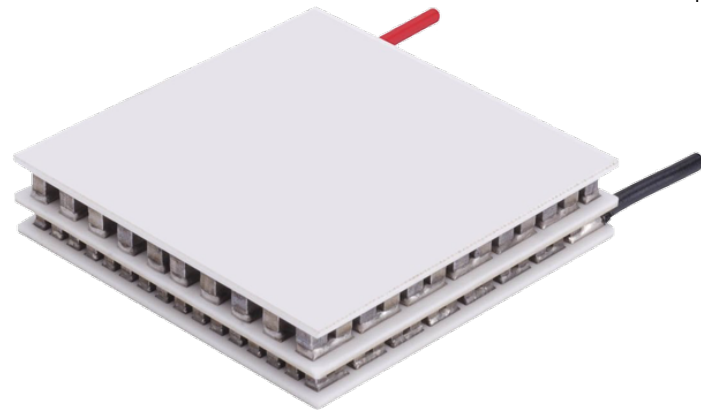


## HiTemp ET Series Thermoelectric Cooler

The ETMS2-192-14-20-11-18-11-W8 multistage high temperature style 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  $Q_c$  of 38 Watts when  $\Delta T = 0$  and a maximum  $\Delta T$  of 90 °C at  $Q_c = 0$ .

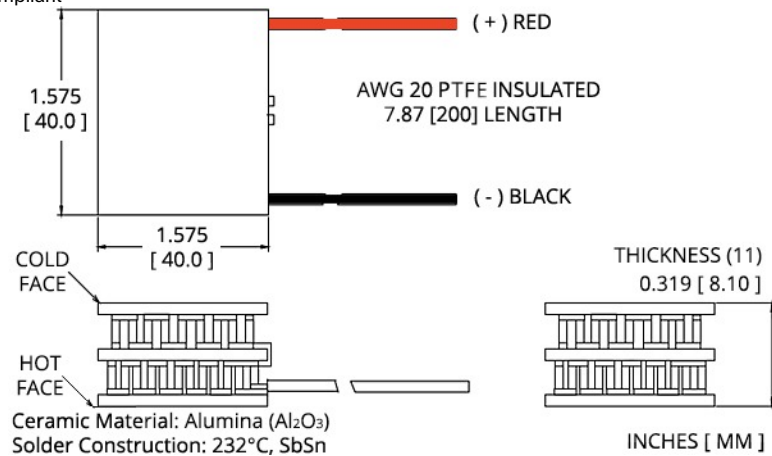


## Features

- High temperature differential
- Precise temperature control
- Reliable solid-state operation
- Environmentally-friendly
- DC operation
- RoHS-compliant

## Applications

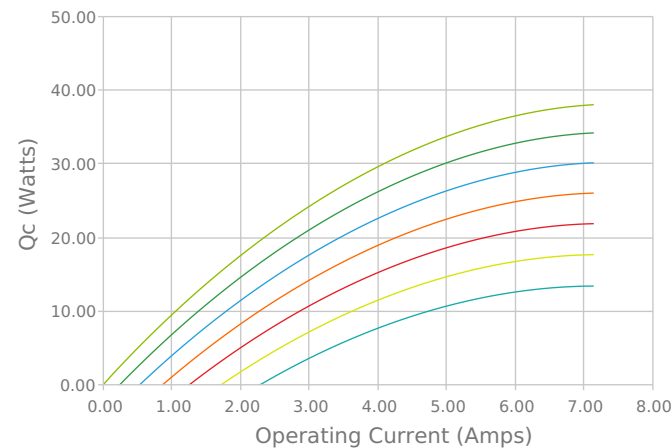
- Thermoelectric Cooling for CMOS Sensors



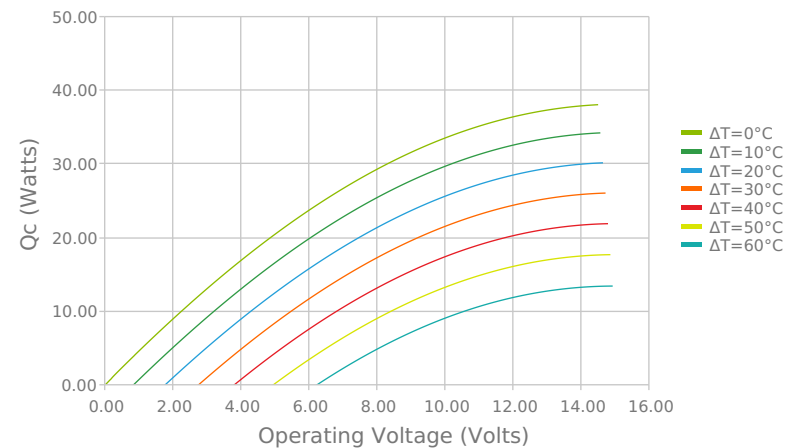
## Electrical and Thermal Performance

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.

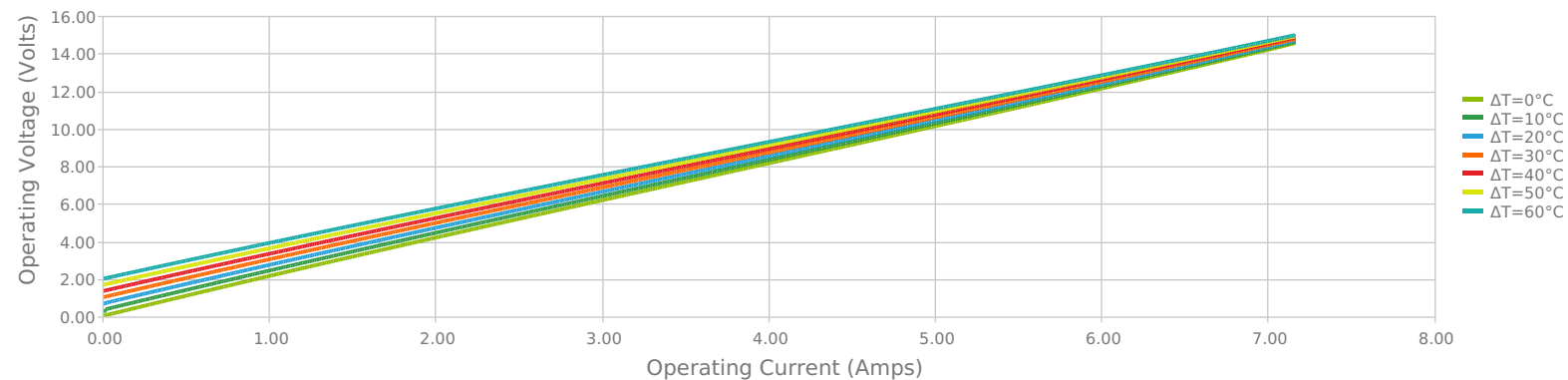
Heat Pumped at Cold Side  
 $T_{hot} = 27\text{ °C}$



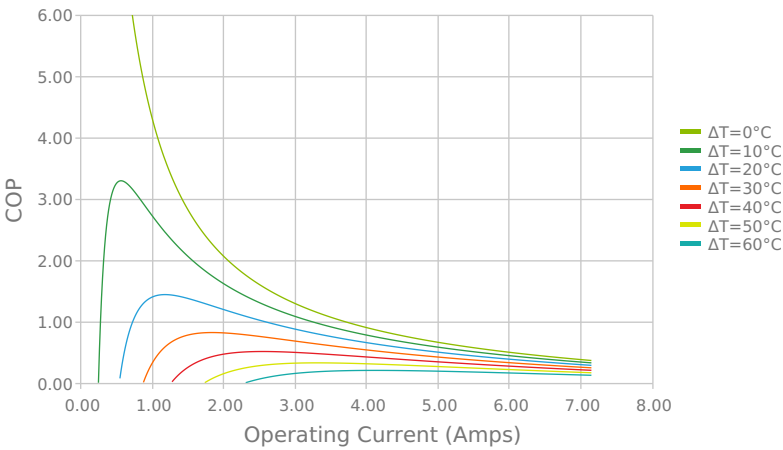
Heat Pumped at Cold Side  
 $T_{hot} = 27\text{ °C}$



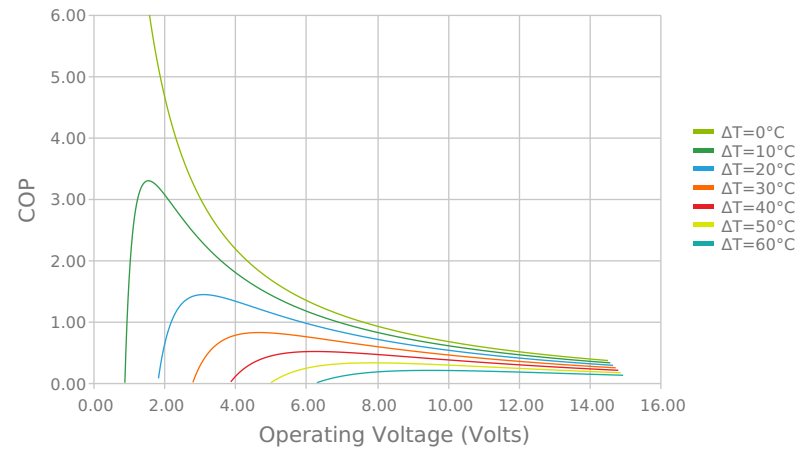
Current vs Voltage (I vs V)  
 $T_{hot} = 27\text{ °C}$



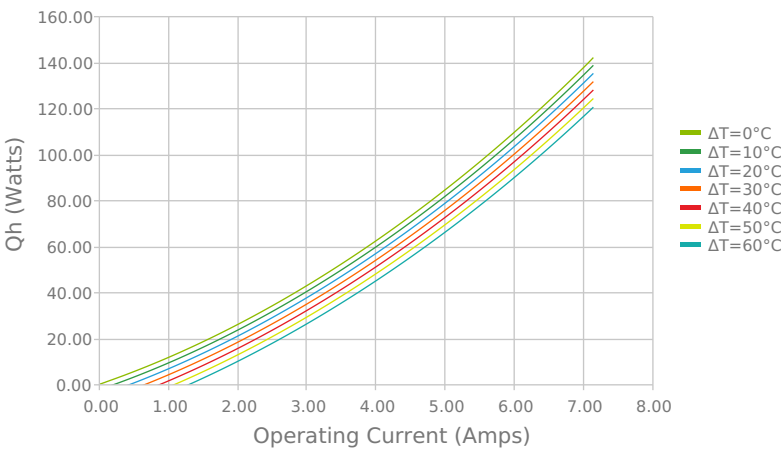
Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
 $T_{hot} = 27\text{ }^{\circ}\text{C}$



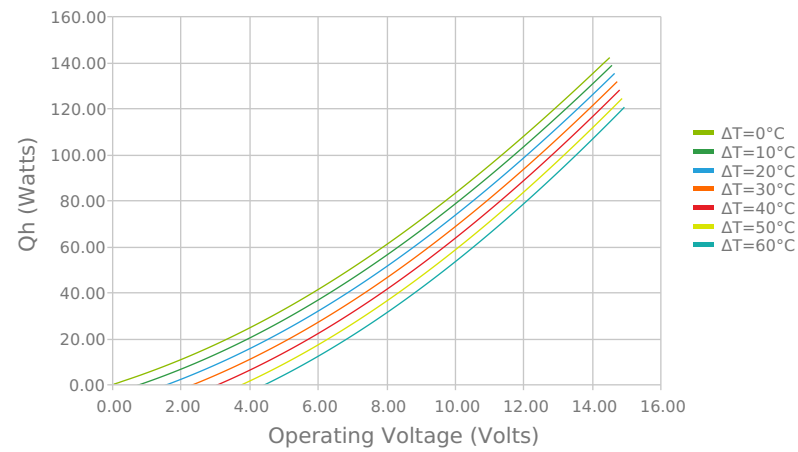
Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
 $T_{hot} = 27\text{ }^{\circ}\text{C}$



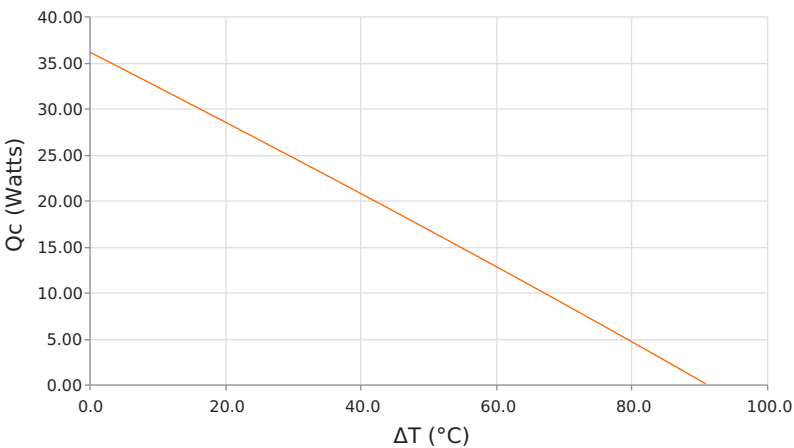
Total Heat Dissipated at Hot Side ( $Q_h = Q_c + P_{in}$ )  
 $T_{hot} = 27\text{ }^{\circ}\text{C}$



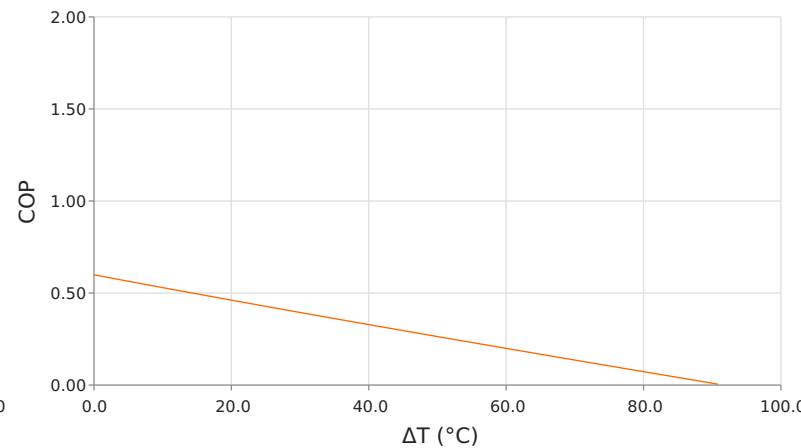
Total Heat Dissipated at Hot Side ( $Q_h = Q_c + P_{in}$ )  
 $T_{hot} = 27\text{ }^{\circ}\text{C}$



Heat Pumped at Cold Side ( $Q_c$ )  
 $T_{hot} = 35\text{ }^{\circ}\text{C}$  | operating = 5.4 Amps



Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
 $T_{hot} = 35\text{ }^{\circ}\text{C}$  | operating = 5.4 Amps



Specifications

Hot Side Temperature	27.0 °C
Qcmax (ΔT = 0)	38.0 Watts
ΔTmax (Qc = 0)	90.0 °C
I <sub>max</sub> (I @ ΔT <sub>max</sub> )	6.9 Amps
V <sub>max</sub> (V @ ΔT <sub>max</sub> )	14.8 Volts
Module Resistance	2.14 Ohms
Max Operating Temperature	150 °C
Weight	60.0 gram(s)

Finishing Options

Suffix	Thickness	Flatness / Parallelism	Hot Face	Cold Face	Lead Length
11	8.100 ±0.203 mm 0.319 ± 0.008 in	0.025 mm / 0.203 mm 0.001 in / 0.008 in	Lapped	Lapped	199.9 mm 7.87 in

Sealing Options

Suffix	Sealant	Color	Temp Range	Description

Notes

Max operating temperature: 150°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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