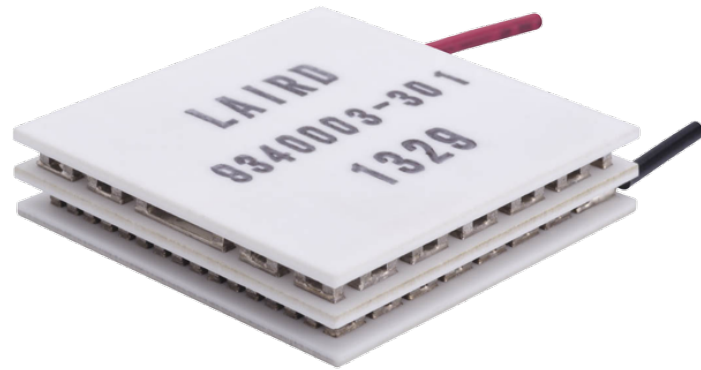


Multistage MS Series Thermoelectric Cooler

The MS2-190-10-10-12-12-00-W8 multistage thermoelectric cooler is able to reach colder temperatures than single stage thermoelectric coolers. It has a maximum Q_c of 15.4 Watts when $\Delta T = 0$ and a maximum ΔT of 91 °C at $Q_c = 0$.

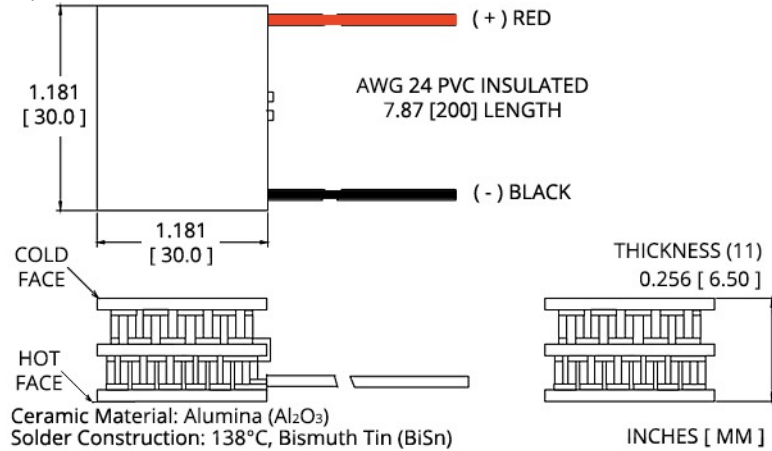


Features

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

Applications

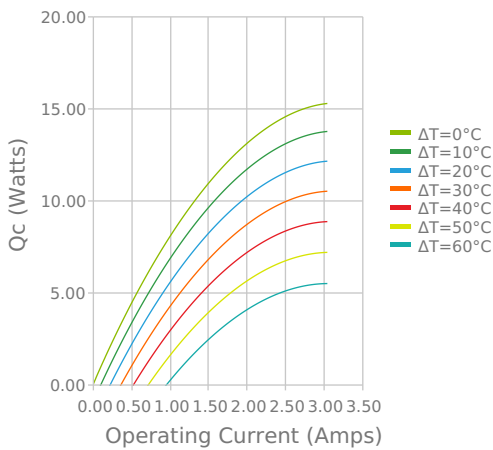
- Thermoelectric Cooling for CMOS Sensors



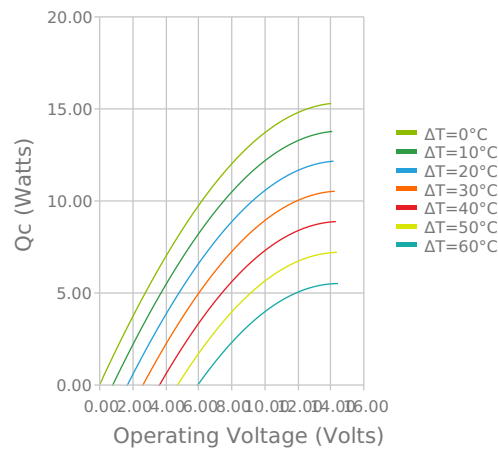
Electrical and Thermal Performance

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.

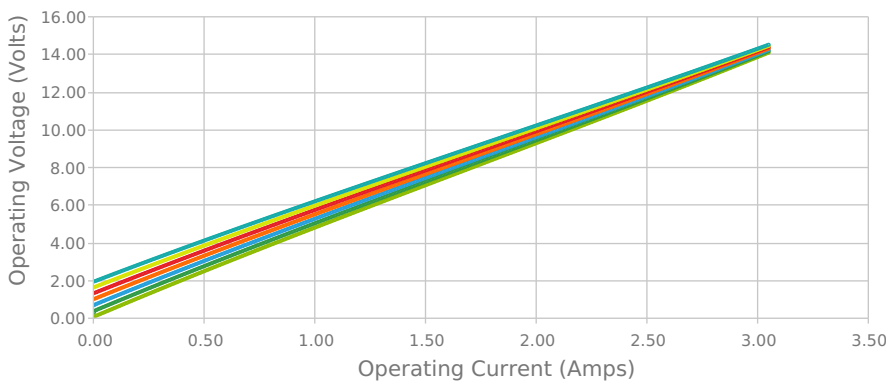
Heat Pumped at Cold Side
 $T_{hot} = 27\text{ }^{\circ}\text{C}$



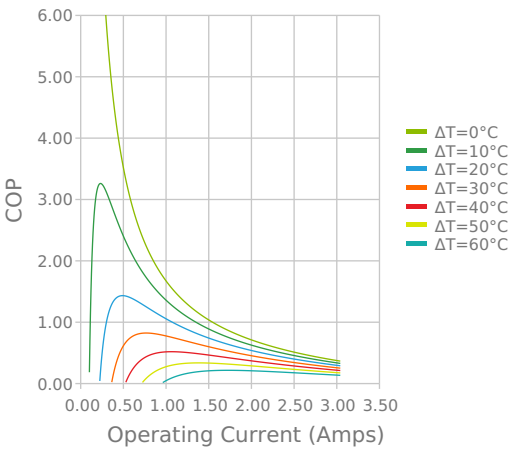
Heat Pumped at Cold Side
 $T_{hot} = 27\text{ }^{\circ}\text{C}$



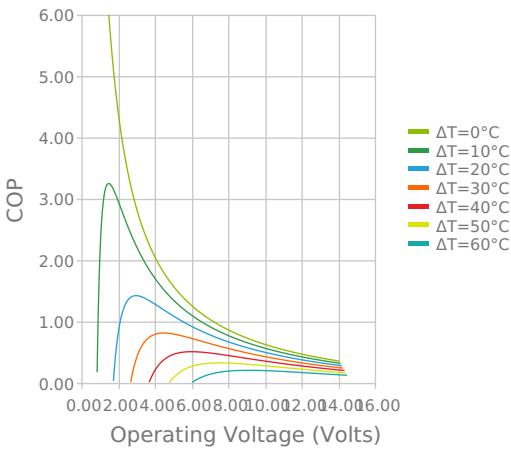
Current vs Voltage (I vs V)
 $T_{hot} = 27\text{ }^{\circ}\text{C}$



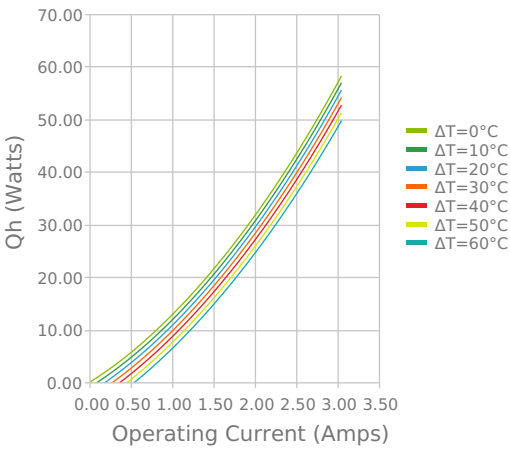
Coefficient of Performance (COP = Q_c/P_{in})
 $T_{hot} = 27\text{ }^{\circ}\text{C}$



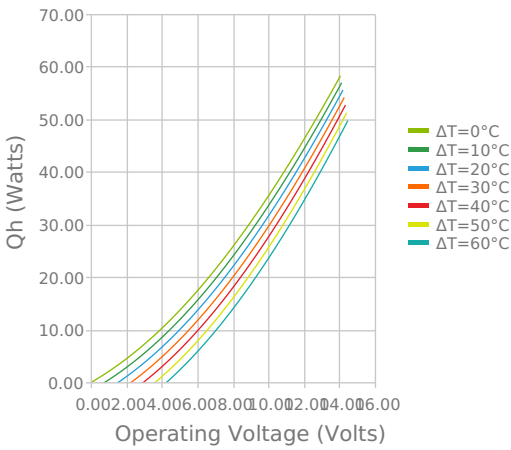
Coefficient of Performance (COP = Q_c/P_{in})
 $T_{hot} = 27\text{ }^{\circ}\text{C}$



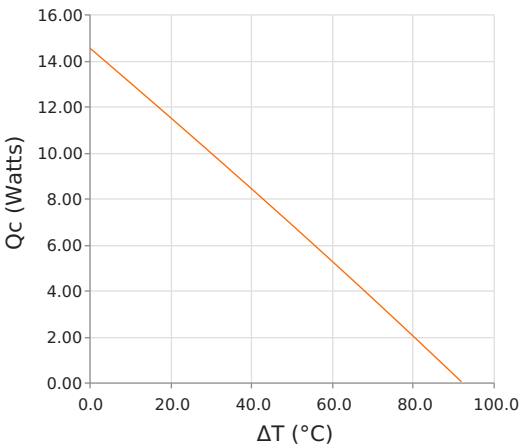
Total Heat Dissipated at Hot Side ($Q_h=Q_c+P_{in}$)
 $T_{hot} = 27\text{ }^{\circ}\text{C}$



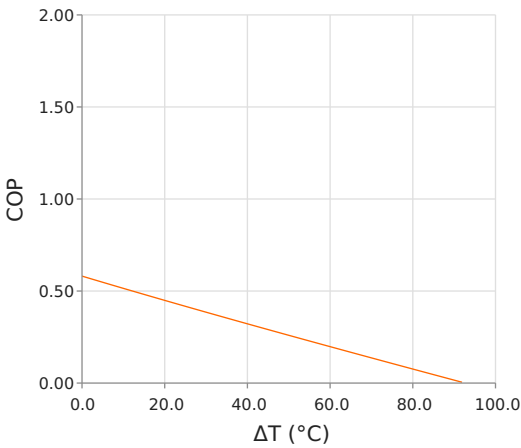
Total Heat Dissipated at Hot Side ($Q_h=Q_c+P_{in}$)
 $T_{hot} = 27\text{ }^{\circ}\text{C}$



Heat Pumped at Cold Side (Q_c)
 $T_{hot} = 35\text{ }^{\circ}\text{C}$ | $I_{operating} = 2.3\text{ Amps}$



Coefficient of Performance (COP = Q_c/P_{in})
 $T_{hot} = 35\text{ }^{\circ}\text{C}$ | $I_{operating} = 2.3\text{ Amps}$



Specifications

Hot Side Temperature	27.0 °C
Qcmax ($\Delta T = 0$)	15.4 Watts
ΔT_{max} ($Q_c = 0$)	91.0 °C
I _{max} (I @ ΔT_{max})	3.0 Amps
V _{max} (V @ ΔT_{max})	14.3 Volts
Module Resistance	4.85 Ohms
Max Operating Temperature	80 °C
Weight	18.0 gram(s)

Finishing Options

Suffix	Thickness	Flatness / Parallelism	Hot Face	Cold Face	Lead Length
00	6.703 ±0.203 mm 0.264 ± 0.008 in	0.025 mm / 0.203 mm 0.001 in / 0.008 in	Metallized	Metallized	199.9 mm 7.87 in

Sealing Options

Suffix	Sealant	Color	Temp Range	Description
	None			No sealing specified

Notes

- 1. Max operating temperature: 80°C
- 2. Do not exceed I_{max} or V_{max} when operating module
- 3. Reference assembly guidelines for recommended installation
- 4. Solder tinning also available on metallized ceramics

Any information furnished by Tark Thermal Solutions and its agents, whether in specifications, data sheets, product catalogues or otherwise, is believed to be (but is not warranted as being) accurate and reliable, is provided for information only and does not form part of any contract with Tark Thermal Solutions. All specifications are subject to change without notice. Tark Thermal Solutions assumes no responsibility and disclaims all liability for losses or damages resulting from use of or reliance on this information. All Tark products are sold subject to the Tark Thermal Solutions Terms and Conditions of sale (including Tark’s limited warranty) in effect from time to time, a copy of which will be furnished upon request.

© Copyright 2026 Tark Thermal Solutions, Inc. All rights reserved.

Revision: 00 Date: 06-01-2022

Print Date: 04-11-2026