

Multistage MS Series Thermoelectric Cooler

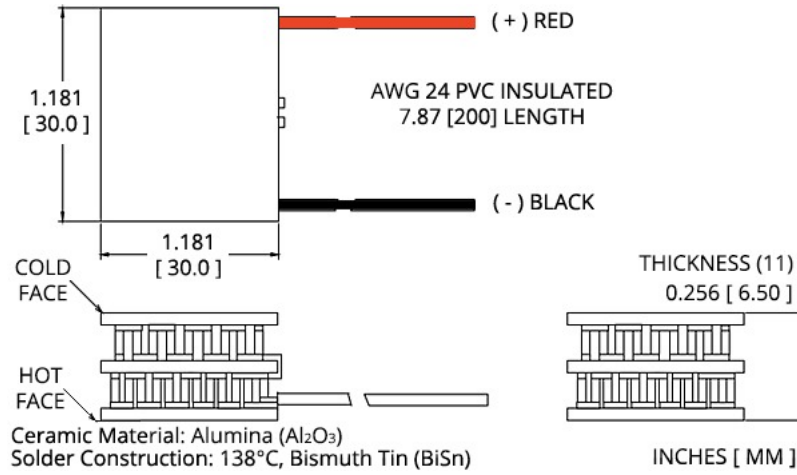
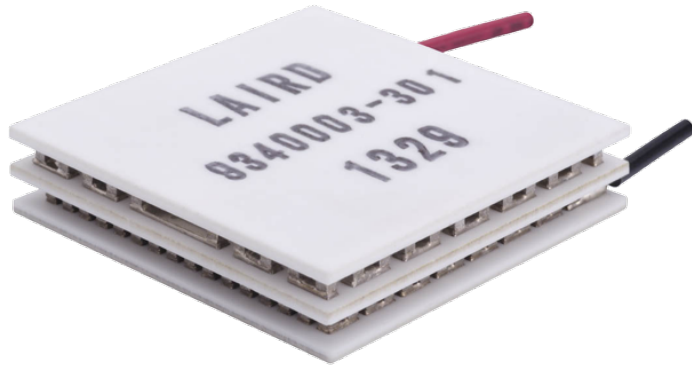
The MS2-190-10-10-12-12-11-RT-W8 multistage thermoelectric cooler is able to reach colder temperatures than single stage thermoelectric coolers. It has a maximum Q_c of 15.4 Watts when $\Delta T = 0$ and a maximum ΔT of 91 °C at $Q_c = 0$.

Features

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

Applications

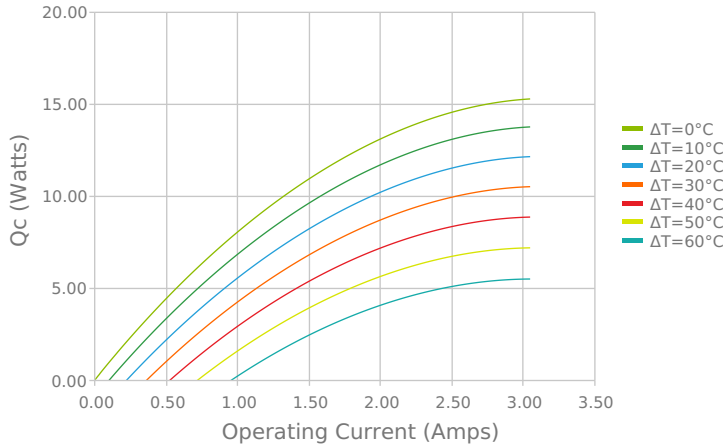
- Thermoelectric Cooling for CMOS Sensors
- Heads-Up Displays, Imaging Sensors



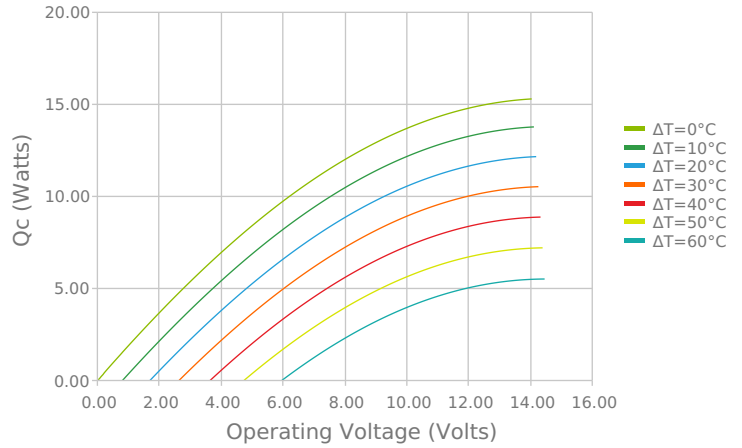
Note: Allow 0.020 in [0.5 mm] around perimeter of the thermoelectric cooler and lead wire attachment to accommodate sealant

ELECTRICAL AND THERMAL PERFORMANCE

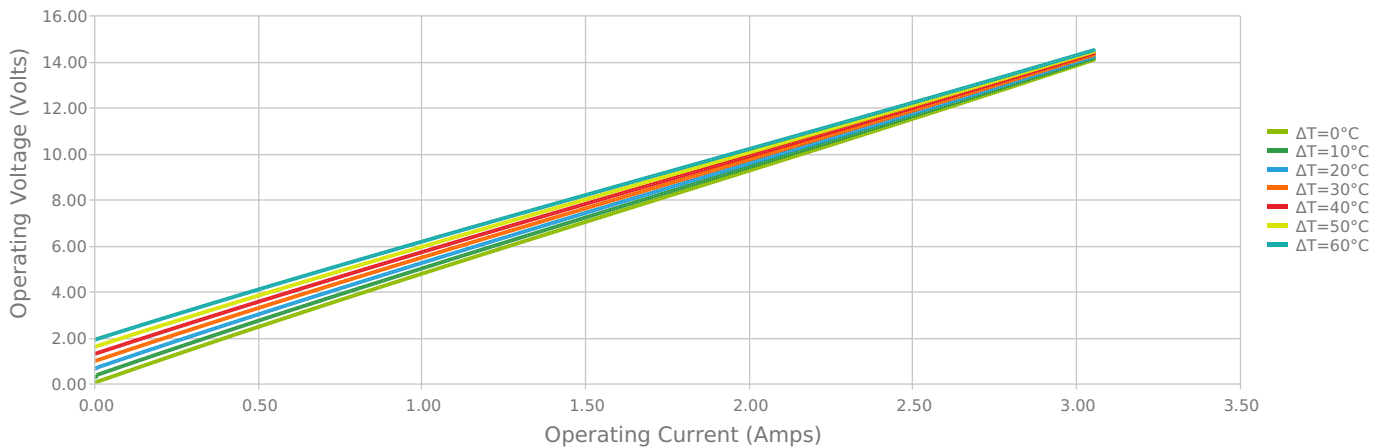
Heat Pumped at Cold Side
 $T_{hot} = 27$ °C



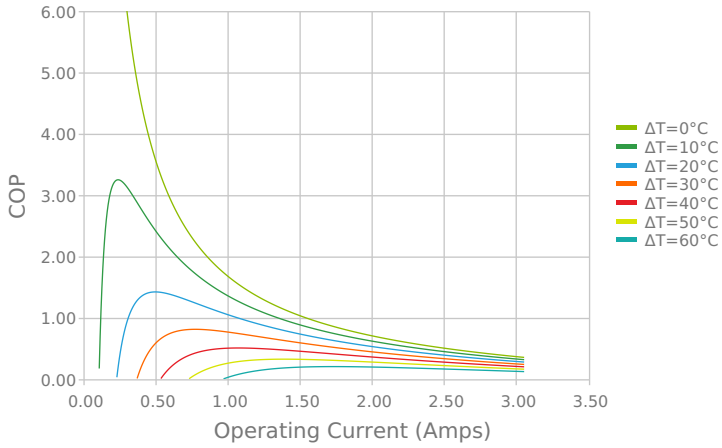
Heat Pumped at Cold Side
 $T_{hot} = 27$ °C



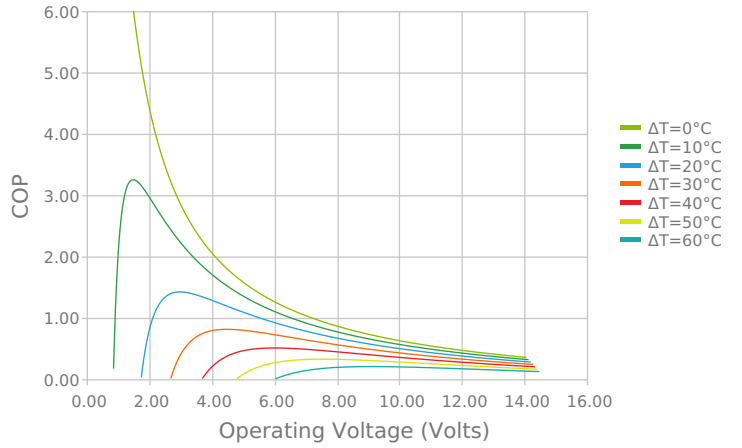
Current vs Voltage (I vs V)
 $T_{hot} = 27$ °C



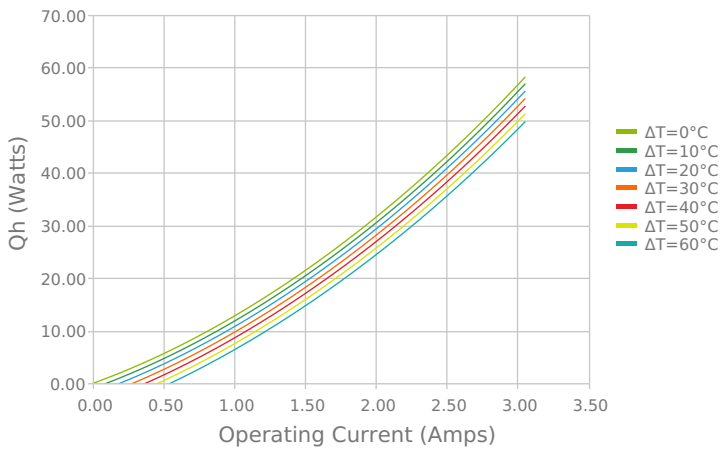
Coefficient of Performance (COP = Qc/Pin)
Thot = 27 °C



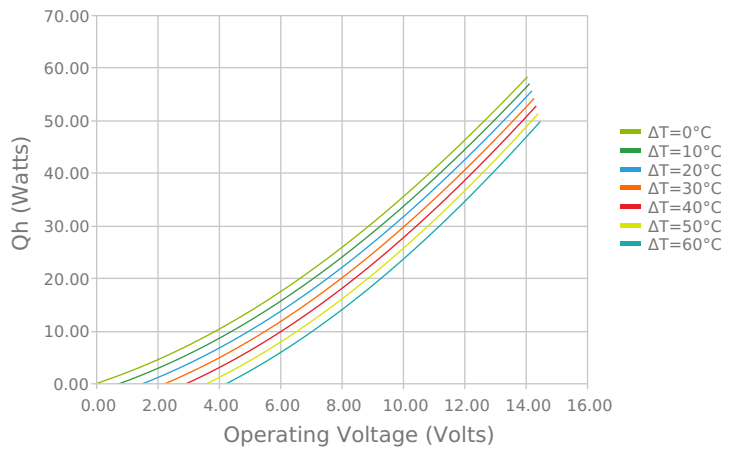
Coefficient of Performance (COP = Qc/Pin)
Thot = 27 °C



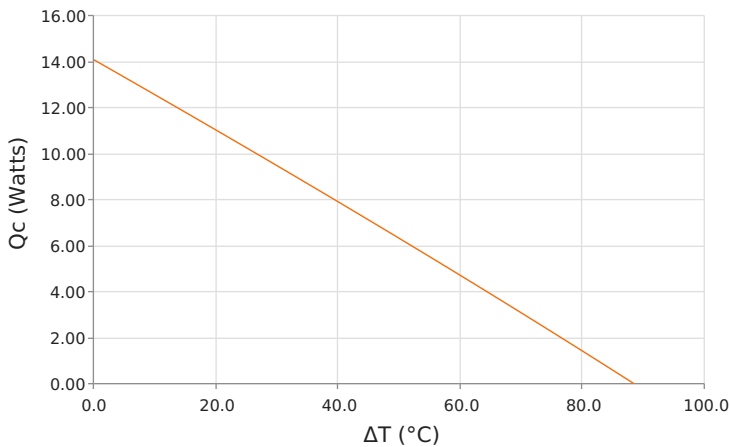
Total Heat Dissipated at Hot Side (Qh=Qc+Pin)
Thot = 27 °C



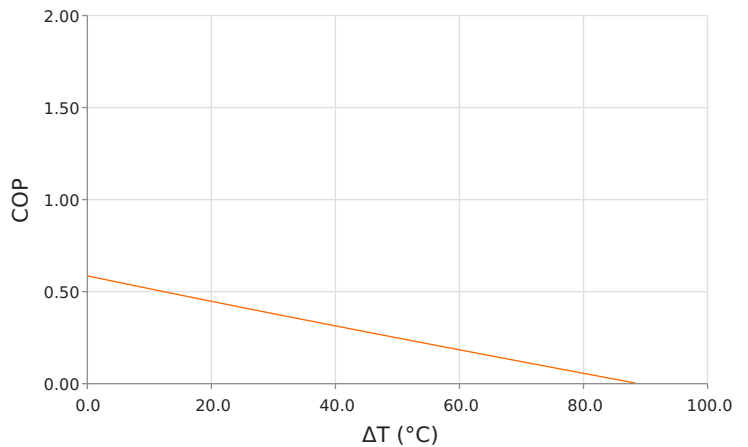
Total Heat Dissipated at Hot Side (Qh=Qc+Pin)
Thot = 27 °C



Heat Pumped at Cold Side (Qc)
Thot = 27 °C | Current = 2.3 Amps



Coefficient of Performance (COP = Qc/Pin)
Thot = 27 °C | Current = 2.3 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) |

* Specifications reflect thermoelectric coefficients updated March 2020

FINISHING OPTIONS

| Suffix | Thickness | Flatness / Parallelism | Hot Face | Cold Face | Lead Length |
|--------|--------------------------------------|--|----------|-----------|---------------------|
| 11 | 30.000 ±0.203 mm 1.181 ± 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 |
|--------|---------|----------------------|--------------|----------------------------------|
| RT | RTV | Translucent or White | -60 to 204°C | Non-corrosive, silicone adhesive |

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

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