PowerCycling PCX Series Thermoelectric Cooler

The PCX4-12-F1-3030-TA-RT-W6 is a high-performance thermoelectric cooler designed for thermal cycling between multiple temperature set points and is ideal for applications in healthcare among others, where fast temperature changes are required. The thermoelectric module is specially constructed to reduce the amount of stress induced on the thermoelectric elements during operation. It has a maximum Qc of 34.7 Watts when $\Delta T = 0$ and a maximum ΔT of 73.6 °C at Qc = 0.

Features

- High thermal cycling reliability
- Precise temperature control
- Solid-state operation

Applications

- Molecular Diagnostics (DNA Amplification, PCR)
- Point of Care Testing Devices
- Thermal Test Sockets
- Boosted performance with next-gen material RoHS-compliant 1.181 [30.0] (+) POSITIVE WG 20 PTFE STRANDED .0 [152] LENGTH 1 181 CH LINE [30.0 (-) NEGATIVE 0.126 [3.2] CONTROL SIDE RTV SEALANT HEATSINK SIDE

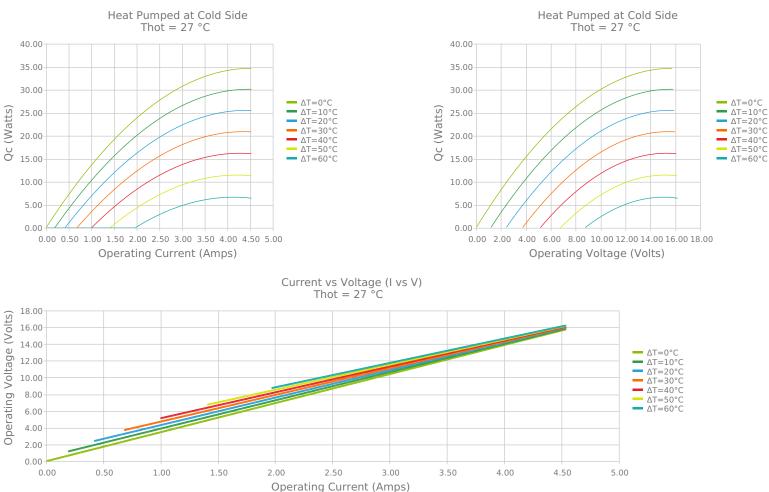
CERAMIC MATERIAL: Al₂O₃ SOLDER CONSTRUCTION: 232°C, SbSn

INCHES [MM]

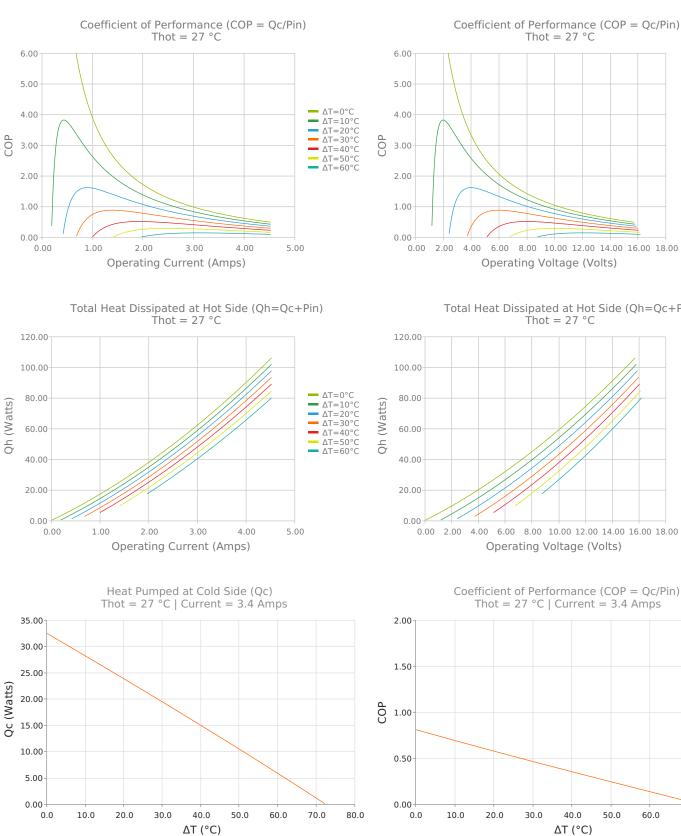
Note: Allow 0.020 in [0.5 mm] around perimeter of the thermoelectric cooler and lead wire attachment to accommodate sealant

ELECTRICAL AND THERMAL PERFORMANCE

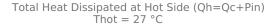
For maximum performance, be sure to orient the CONTROL side of the TEC against the application to be managed and the HEATSINK side against the heat sink or other heat rejection method. The CONTROL side is always opposite the side with lead attachments. Lead attachment is a passive heat loss and less impactful if located on the side that attaches to the heat exchanger.

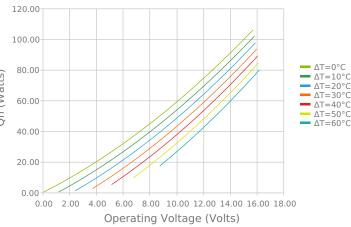


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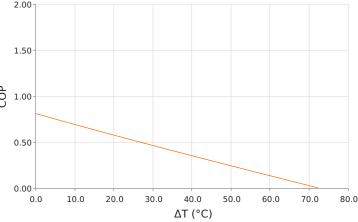


Thot = 27 °C ΔT=0°C ∆T=10°C ΔT=20°C ΔT=30°C ΔT=40°C ΔT=50°C $\Delta T = 60^{\circ}C$ 6.00 8.00 10.00 12.00 14.00 16.00 18.00 **Operating Voltage (Volts)**





Coefficient of Performance (COP = Qc/Pin) Thot = 27 °C | Current = 3.4 Amps



SPECIFICATIONS*

| Hot Side Temperature | 27.0 °C | 50.0 °C | 80.0 °C |
|---------------------------|-------------|------------|------------|
| $Qcmax (\Delta T = 0)$ | 34.7 Watts | 37.3 Watts | 40.0 Watts |
| $\Delta Tmax (Qc = 0)$ | 73.6°C | 82.6°C | 93.1°C |
| lmax (I @ ΔTmax) | 4.0 Amps | 3.9 Amps | 3.8 Amps |
| Vmax (V @ ΔTmax) | 14.9 Volts | 16.5 Volts | 18.6 Volts |
| Module Resistance | 3.47 Ohms | 3.91 Ohms | 4.47 Ohms |
| Max Operating Temperature | 120 °C | | |
| Weight | 9.0 gram(s) | | |

* Specifications reflect thermoelectric coefficients updated March 2020

FINISHING OPTIONS

| Suffix | Thickness | Flatness / Parallelism | Hot Face | Cold Face | Lead Length |
|--------|--------------------------------------|--|----------|-----------|---------------------|
| ТА | 3.200 ±0.025 mm 0.126 ± 0.0010 in | 0.025 mm / 0.025 mm 0.001 in / 0.001 in | Lapped | Lapped | 152.4 mm 6.00 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: 120°C
- 2. Do not exceed Imax or Vmax when operating module
- 3. Reference assembly guidelines for recommended installation
- 4. Solder tinning also available on metallized ceramics

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