#### 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  $\Delta T$  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

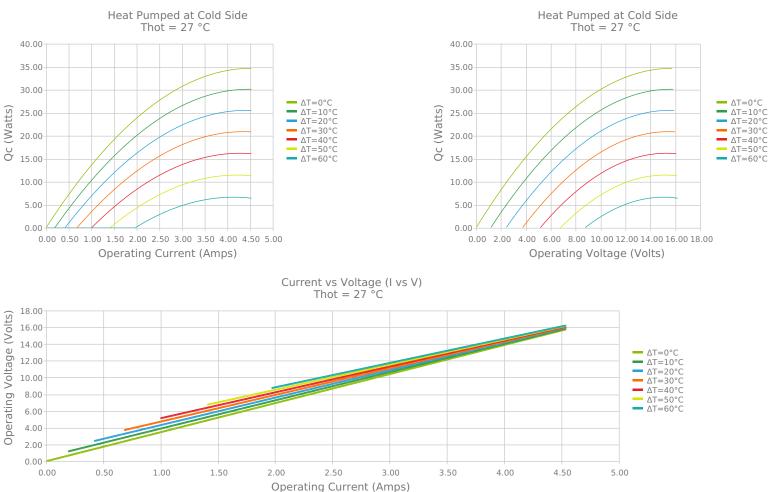
CERAMIC MATERIAL: Al₂O₃ SOLDER CONSTRUCTION: 232°C, SbSn

INCHES [ MM ]

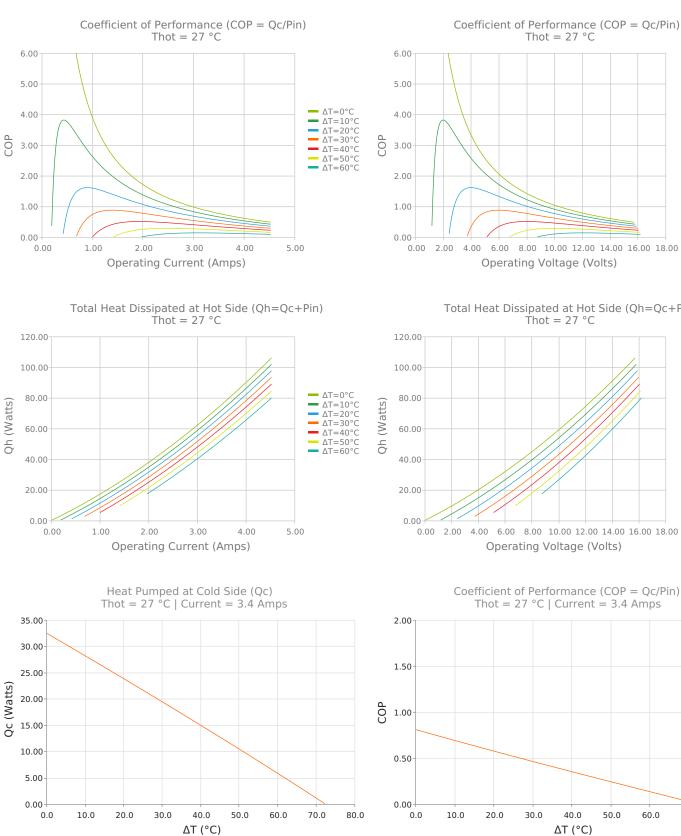
Note: Allow 0.020 in [0.5 mm] around perimeter of the thermoelectric cooler and lead wire attachment to accommodate sealant

## **ELECTRICAL AND THERMAL PERFORMANCE**

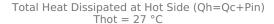
For maximum performance, be sure to orient the CONTROL side of the TEC against the application to be managed and the HEATSINK side against the heat sink or other heat rejection method. The CONTROL side is always opposite the side with lead attachments. Lead attachment is a passive heat loss and less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

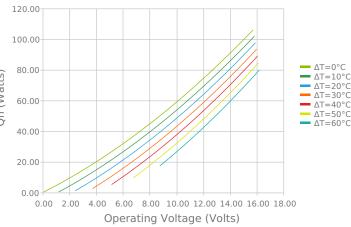


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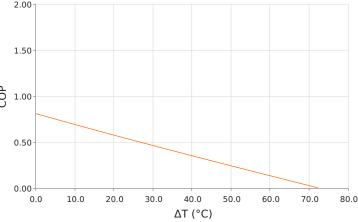


Thot = 27 °C ΔT=0°C ∆T=10°C ΔT=20°C ΔT=30°C ΔT=40°C ΔT=50°C  $\Delta T = 60^{\circ}C$ 6.00 8.00 10.00 12.00 14.00 16.00 18.00 **Operating Voltage (Volts)** 





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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