PowerCycling PC Series Thermoelectric Cooler

Note: *This product is not recommended for new designs.*

The recommended replacement is:
MFG Part Number: 387005684
Description: PCX7-16-F1-4040-TA-RT-W6

The PC7-16-F1-4040-TA-RT-W6 is a 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 Q_c of 71.6 Watts when $\Delta T = 0$ and a maximum ΔT of 70.5 °C at $Q_c = 0$.
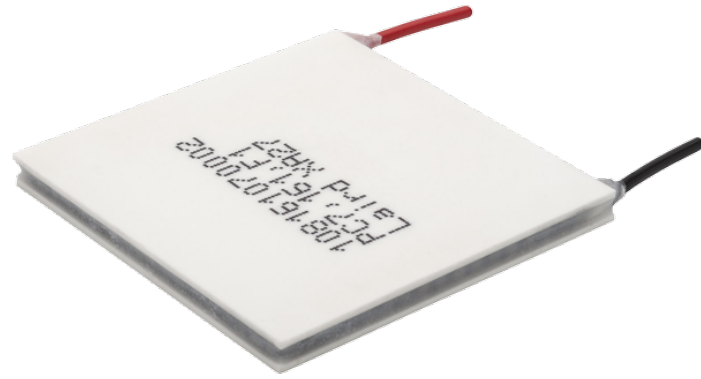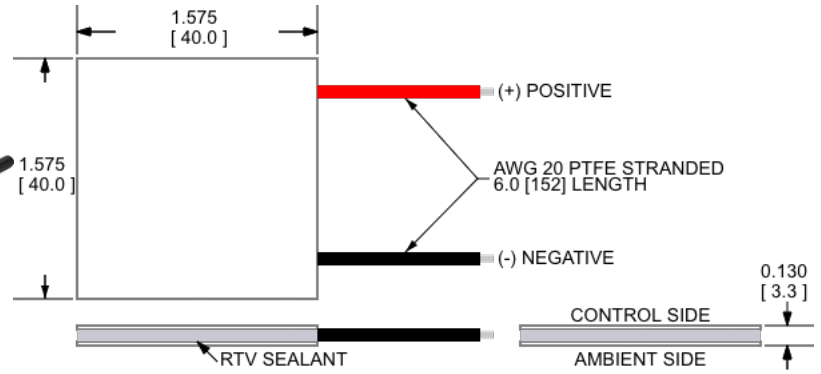
Features
- High thermal cycling capability
- Precise temperature control
- No sound or vibration
- Reliable solid-state operation
- RoHS-compliant

Applications
- Thermoelectric Modules Accelerate PCR Thermal Cycling
- DNA Amplification (PCR)

1.575 [40.0]
1.575 [40.0]
0.130 [3.3]

(+) POSITIVE
(-) NEGATIVE
AWG 20 PTFE STRANDED 6.0 [152] LENGTH
CONTROL SIDE
AMBIENT SIDE
RTV SEALANT

CERAMIC MATERIAL: Al_2O_3
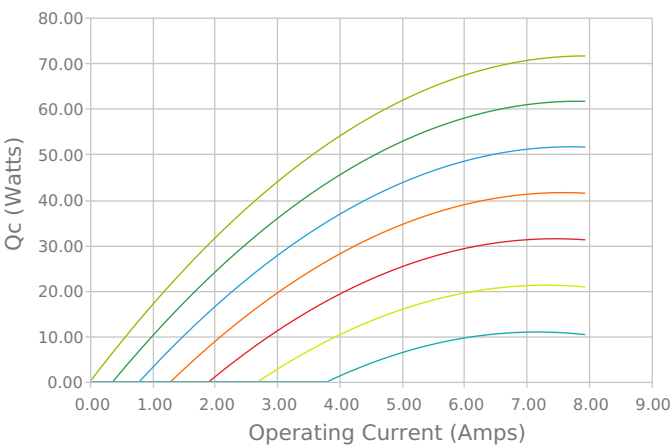SOLDER CONSTRUCTION: 232°C, SbSn
INCHES [MM]
Note: Allow 0.020 in [0.5 mm] around perimeter of the thermoelectric cooler and lead wire attachment to accommodate sealant
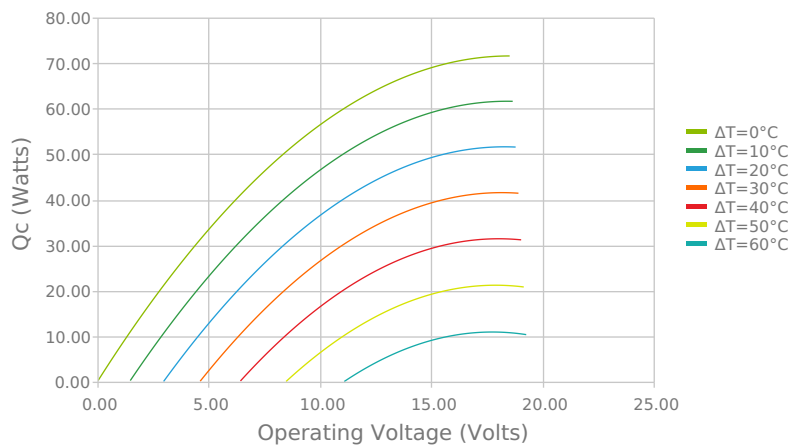
Electrical and Thermal Performance

For maximum performance, be sure to orient the CONTROL side of the TEC against the application to be managed and the 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.
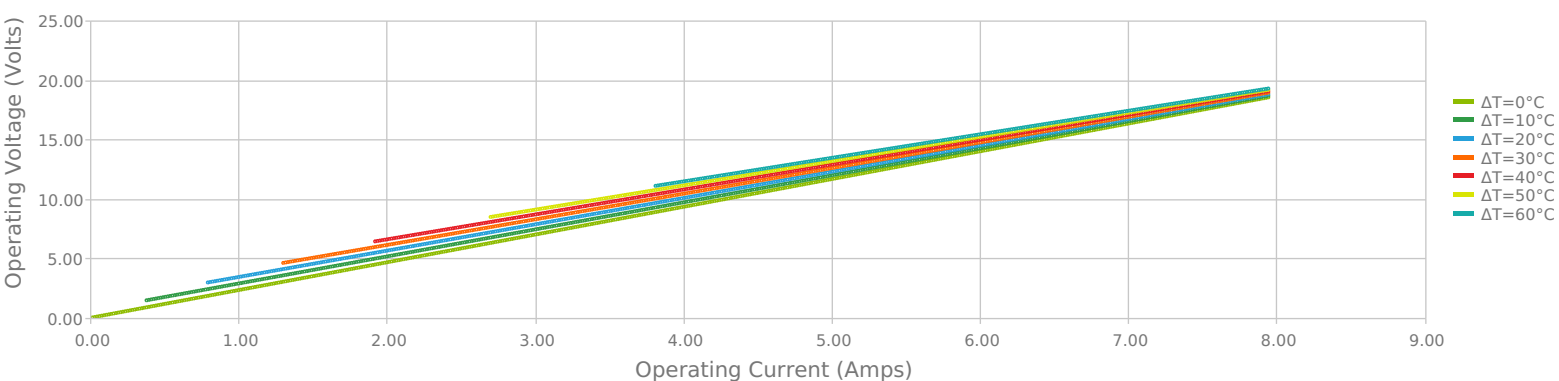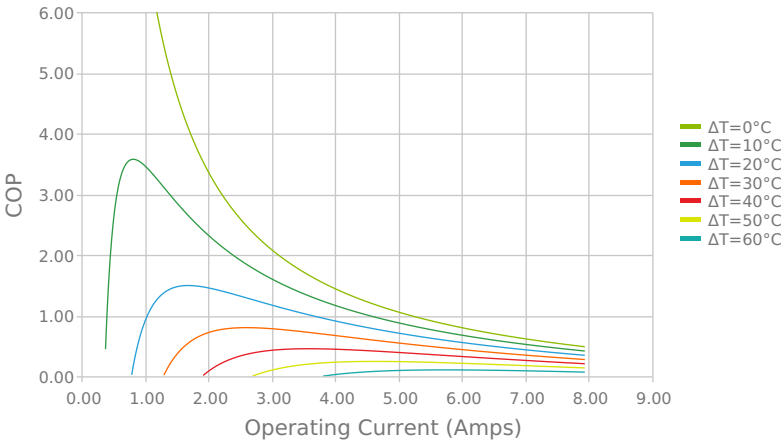

Heat Pumped at Cold Side
Thot = 27 °C
Qc (Watts) vs Operating Current (Amps)
ΔT=0°C, ΔT=10°C, ΔT=20°C, ΔT=30°C, ΔT=40°C, ΔT=50°C, ΔT=60°C

Heat Pumped at Cold Side
Thot = 27 °C
Qc (Watts) vs Operating Voltage (Volts)
ΔT=0°C, ΔT=10°C, ΔT=20°C, ΔT=30°C, ΔT=40°C, ΔT=50°C, ΔT=60°C

Current vs Voltage (I vs V)
Thot = 27 °C
Operating Voltage (Volts) vs Operating Current (Amps)
ΔT=0°C, ΔT=10°C, ΔT=20°C, ΔT=30°C, ΔT=40°C, ΔT=50°C, ΔT=60°C

TTS ⟲
TARK THERMAL
SOLUTIONS

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

ΔT=0°C
ΔT=10°C
ΔT=20°C
ΔT=30°C
ΔT=40°C
ΔT=50°C
ΔT=60°C

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

ΔT=0°C
ΔT=10°C
ΔT=20°C
ΔT=30°C
ΔT=40°C
ΔT=50°C
ΔT=60°C

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

ΔT=0°C
ΔT=10°C
ΔT=20°C
ΔT=30°C
ΔT=40°C
ΔT=50°C
ΔT=60°C

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

ΔT=0°C
ΔT=10°C
ΔT=20°C
ΔT=30°C
ΔT=40°C
ΔT=50°C
ΔT=60°C
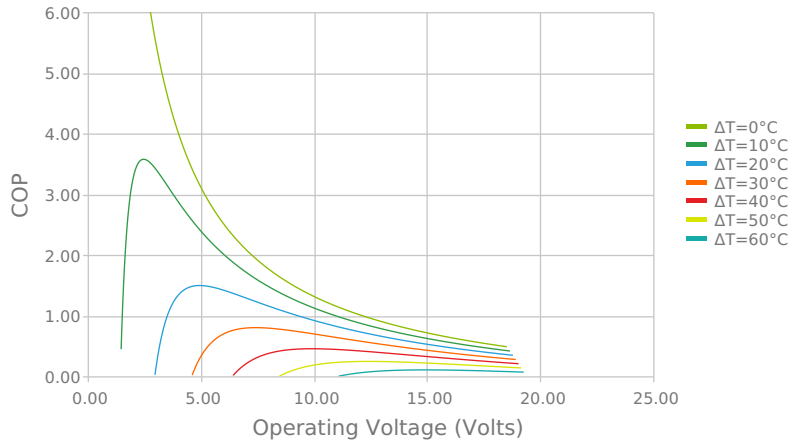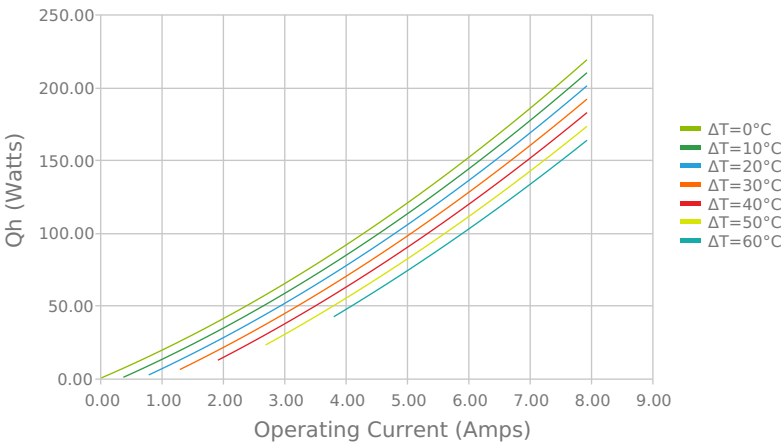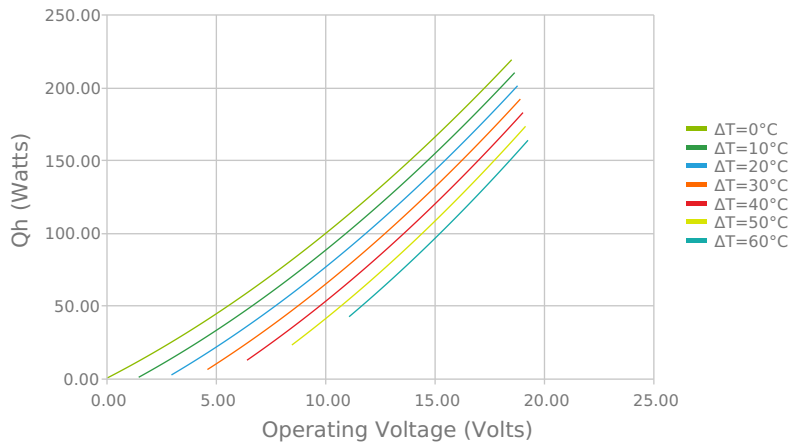
Heat Pumped at Cold Side (Qc)
Thot = 50 °C | Ioperating = 6 Amps
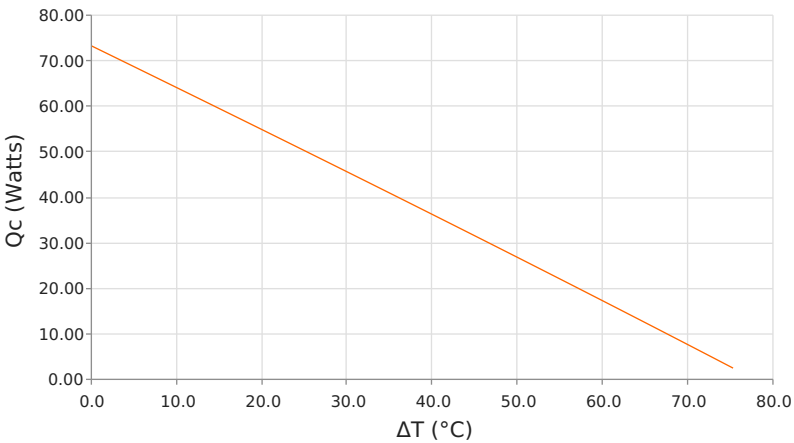
Coefficient of Performance (COP = Qc/Pin)
Thot = 50 °C | Ioperating = 6 Amps
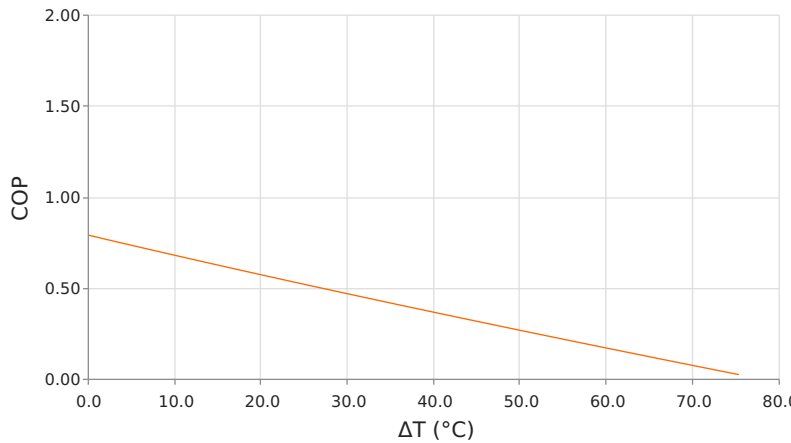
Specifications

Hot Side Temperature	27.0 °C	50.0 °C	80.0 °C
Qcmax (ΔT = 0)	71.6 Watts	77.6 Watts	84.1 Watts
ΔTmax (Qc = 0)	70.5°C	78.8°C	88.8°C
Imax (I @ ΔTmax)	7.0 Amps	6.9 Amps	6.8 Amps
Vmax (V @ ΔTmax)	17.6 Volts	19.5 Volts	22.0 Volts
Module Resistance	2.33 Ohms	2.61 Ohms	2.97 Ohms
Max Operating Temperature	120 °C		
Weight	20.0 gram(s)		

Finishing Options

Suffix	Thickness	Flatness / Parallelism	Hot Face	Cold Face	Lead Length
TA	3.300 ±0.025 mm 0.130 ± 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

Max operating temperature: 120°C
Do not exceed Imax or Vmax when operating module
Reference assembly guidelines for recommended installation
Solder tinning also available on metallized ceramics

Revision: 00 Date: 06-01-2022

Print Date: 05-29-2025

Mouser Electronics

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