

## PowerCycling PC Series Thermoelectric Cooler

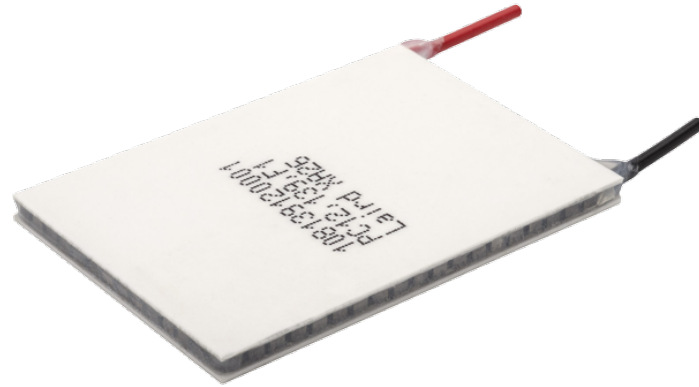
**Note: This product is not recommended for new designs.**

The recommended replacement is:

MFG Part Number: 387005661

Description: PCX12-139-F1-3550-TA-RT-W6

The PC12-139-F1-3550-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 108.9 Watts when  $\Delta T = 0$  and a maximum  $\Delta T$  of 70.5 °C at  $Q_c = 0$ .

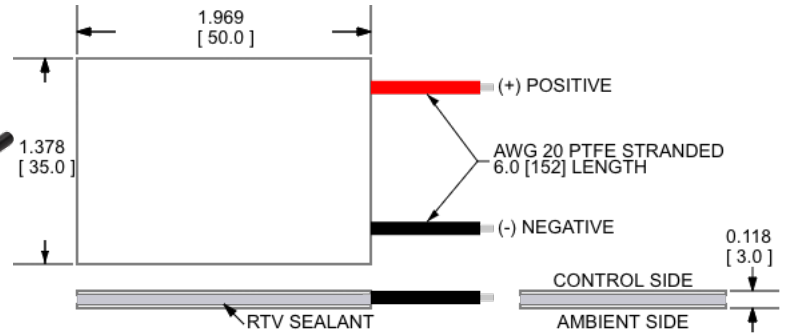


## Features

- 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)



CERAMIC MATERIAL:  $Al_2O_3$

SOLDER CONSTRUCTION: 232°C, SbSn

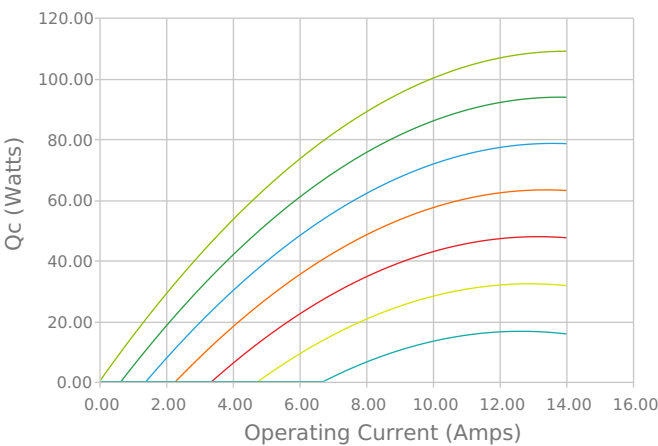
INCHES [MM]

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

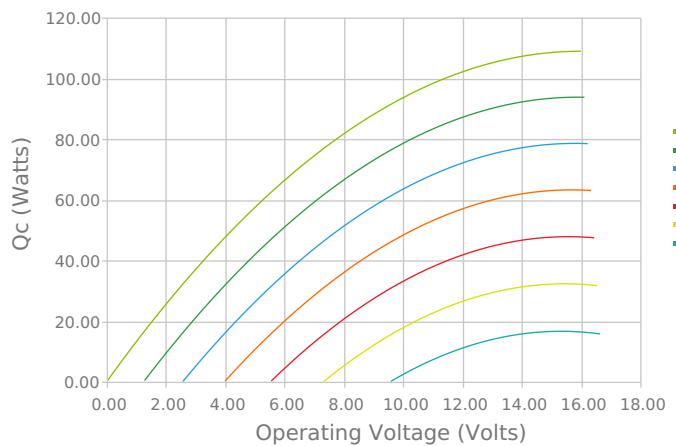
## Electrical and Thermal Performance

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.

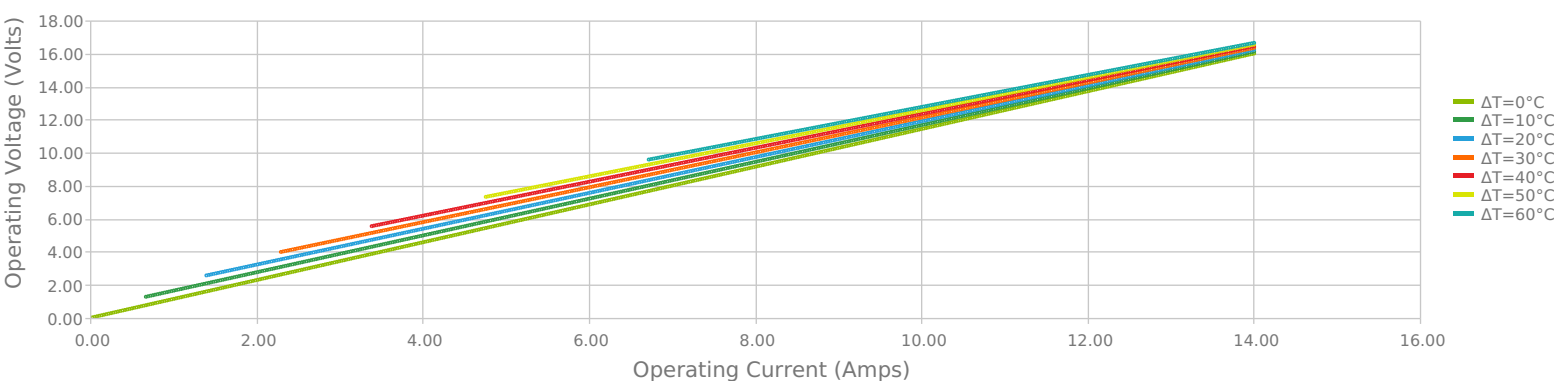
Heat Pumped at Cold Side  
 $T_{hot} = 27^\circ C$



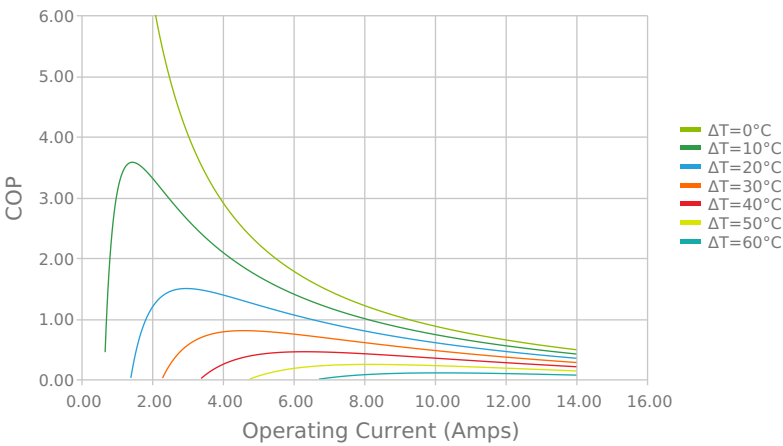
Heat Pumped at Cold Side  
 $T_{hot} = 27^\circ C$



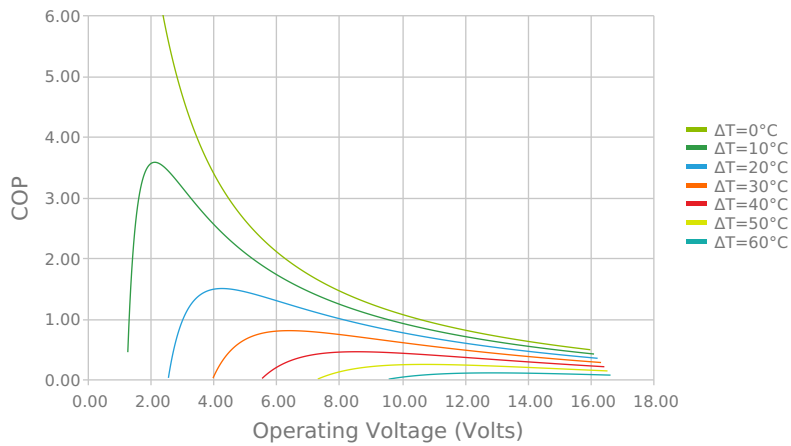
Current vs Voltage (I vs V)  
 $T_{hot} = 27^\circ C$



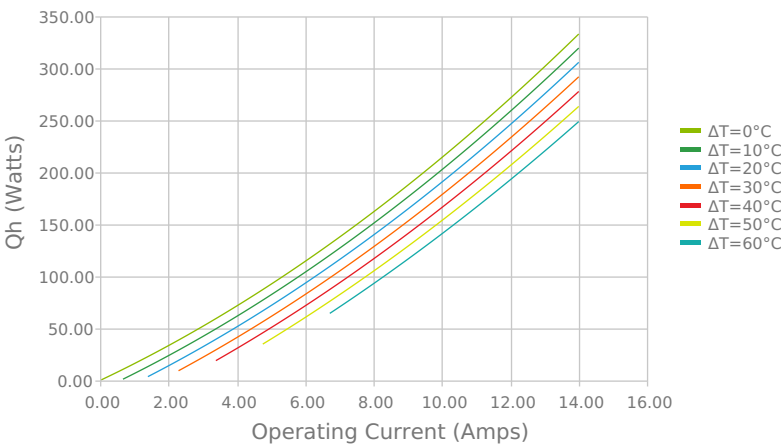
Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
 $T_{hot} = 27\text{ }^{\circ}\text{C}$



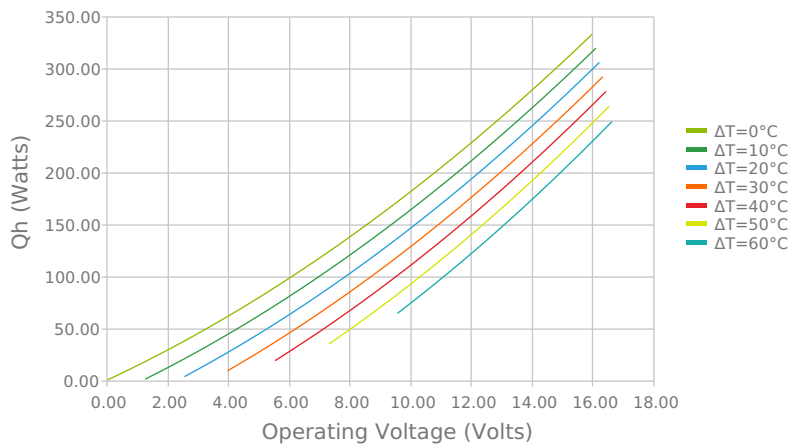
Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
 $T_{hot} = 27\text{ }^{\circ}\text{C}$



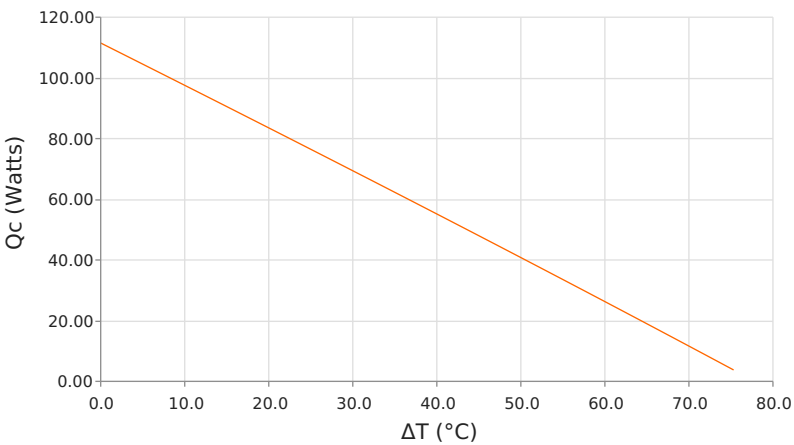
Total Heat Dissipated at Hot Side ( $Q_h=Q_c+P_{in}$ )  
 $T_{hot} = 27\text{ }^{\circ}\text{C}$



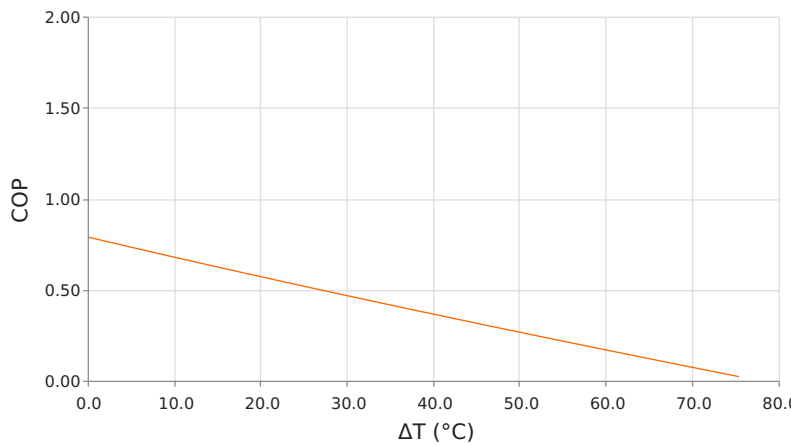
Total Heat Dissipated at Hot Side ( $Q_h=Q_c+P_{in}$ )  
 $T_{hot} = 27\text{ }^{\circ}\text{C}$



Heat Pumped at Cold Side ( $Q_c$ )  
 $T_{hot} = 50\text{ }^{\circ}\text{C}$  |  $I_{operating} = 10.5\text{ Amps}$



Coefficient of Performance (COP =  $Q_c/P_{in}$ )  
 $T_{hot} = 50\text{ }^{\circ}\text{C}$  |  $I_{operating} = 10.5\text{ Amps}$



Specifications

Hot Side Temperature	27.0 °C	50.0 °C	80.0 °C
Qcmax (ΔT = 0)	108.9 Watts	118.1 Watts	128.0 Watts
ΔTmax (Qc = 0)	70.5°C	78.8°C	88.8°C
Imax (I @ ΔTmax)	12.4 Amps	12.2 Amps	11.9 Amps
Vmax (V @ ΔTmax)	15.2 Volts	16.9 Volts	19.0 Volts
Module Resistance	1.14 Ohms	1.28 Ohms	1.46 Ohms
Max Operating Temperature	120 °C		
Weight	21.0 gram(s)		

Finishing Options

Suffix	Thickness	Flatness / Parallelism	Hot Face	Cold Face	Lead Length
TA	3.000 ±0.025 mm 0.118 ± 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

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 2025 Tark Thermal Solutions, Inc. All rights reserved.

Revision: 00 Date: 06-01-2022

Print Date: 05-29-2025