DATASHEET AND OPERATING GUIDE

PTC5000/PTC10000

PCB-Mount Temperature Controllers

FEATURES AND BENEFITS

- Drive ±5 or ±10 A of TEC or heater current
- Single supply operation: 5 to 30 VDC
- Small package: 2.32” x 2.15” x 3.85”
- Remote Output Enable and Temperature Setpoint controls
- Short term stability of 0.0012°C (off-ambient)
- Long term stability 0.002°C
- Selectable sensor bias current
- Adjustable current limit
- PI Control with “Smart Integrator”
- Failsafe Setpoint default in case of remote temperature setpoint signal error

TIME-TESTED RELIABILITY

The PTC Series PCB-Mount Temperature Controllers are based on our long-proven PTC-CH linear controllers, and deliver the precision performance and reliability you expect from Wavelength Electronics.

PTC Series controllers are found in such diverse applications as particle and droplet measurement, communications, manufacturing test, and medical systems.

POWERFUL AND EASY TO USE

The PTC controllers operate from a single power supply between 5 V and 30 V, and two models drive ±5 A or ±10 A to a Peltier thermoelectric cooler or a resistive heater. These controllers mount directly to your circuit board.

PTC controllers interface with a variety of temperature sensors, and the bias current is adjustable in order to maximize controller sensitivity and stability for your application.

You can use the PTCEVAL board to quickly configure the PTC controller for prototyping. Using the same controller for development and production helps guarantee there are no surprises when it’s time to integrate the final design.

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ORDERING INFORMATION

PART NO	DESCRIPTION
PTC5000	±5 A Temperature Controller
PTC10000	±10 A Temperature Controller
PTCEVAL	Evaluation board for PTC-PCB Series Controllers

RoHS Compliant

TEMPERATURE SENSORS R_T AD590 LM335 RTD SUPPORTED

406-587-4910

www.teamWavelength.com

Applies to PTC Product Revision A

Applies to PTCEVAL Revision A

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WAVELENGTH ELECTRONICS

ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	PTC5000	PTC10000	UNIT	NOTE
ABSOLUTE MAXIMUM RATINGS					
Supply Voltage[1]	V_S or V+	5 to 30		VDC	
Internal Power Dissipation	P_{MAX}	110		W	derating begins at 25ºC
Case Operating Temperature		-40 to 85		ºC	
Case Storage Temperature		-65 to 125		ºC	
Weight		11.3		oz	320.4 g
Size		3.85 x 2.15 x 2.32		inches	97.7 x 54.7 x 58.9 mm
OUTPUT CURRENT					
Max Output Current	I_{MAX}	±5	±10	A	V_S > 5.2 VDC
Output Current Limit	I_{LIM}	Symmetrically applied to heat and cool current			
Minimum Compliance Voltage	V_{COMP}	V_S – 1.7	V_S – 3	V	V_S > 5.2 VDC
Maximum Compliance Voltage	V_{COMP}	28.3	27	V	
Short Term Stability, 1 hr, Off ambient [1]		< 0.0012		ºC	using 10 kΩ thermistor with 100 µA bias current at 25ºC.
Short Term Stability, 1 hr, On ambient [1]		< 0.0014		ºC	
Long Term Stability, 24 hr, Off ambient [1]		< 0.002		ºC	
Temperature Coefficient		< 100		ppm / ºC	
POWER SUPPLY					
Power Supply Voltage[2]	V_S or V+	5 to 30		VDC	
Quiescent Current		220		mA	
Minimum Current Rating		1.1 * (I_{TEC} + Quiescent Current)		A	
TEMPERATURE SENSORS					
Sensor Compatibility		Thermistor, RTD, IC Sensors			
Sensor Input Voltage Range		0 to (V_S – 1.5) 0 to 5.5		V	V_S < 7 VDC V_S = 7 to 30 VDC
Sensor Input Damage Threshold		5.5		V	
BIAS CURRENT					
Bias Current Selection		10 µA, 100µA, 1 mA, 10 mA			
Bias Current Accuracy		±0.2%	±0.5%		over full temperature range
Bias Current Temperature Coefficient		25 10		ppm / ºC	V_S < 7.5 VDC V_S > 7.5 VDC
EXTERNAL SETPOINT AND MONITORS					
External Setpoint Voltage Range (Ext TEMP SET)		0 to 5 0 to 6.2		V	V_S < 7 VDC V_S = 7 to 30 VDC
External Setpoint Damage Threshold		< -0.5 or > 7.2		V	
SetT MON Output Voltage Range		0 to 6.2		V	V_S = 7 to 30 VDC
ActT MON Output Voltage Range		0 to 6		V	V_S = 7 to 30 VDC
Sensor Voltage to Act T MON Accuracy		1		mV	
Set T MON to Act T MON Accuracy		1		mV	
FEEDBACK LOOP					
Proportional Gain Range		5 to 40		A / V	
Integrator Time Constant		1.5	1.8	A / V-s	can be changed at factory

[1] When using resistive heaters, stability can only be consistently achieved when specified temperatures are 10°C or more above ambient.

[2] The PTCEVAL is equipped with over-, under-, and reverse-voltage protection.