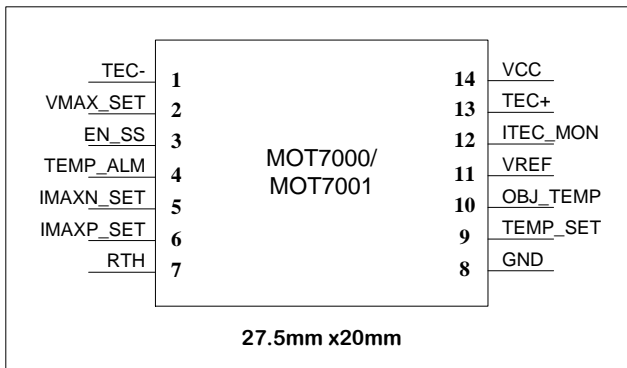




- $\pm 2A$, ± 2.5 , & $\pm 3A$ Maximum TEC Current
- Temperature Stability Better than $0.002^{\circ}C$
- Adjustable TEC Voltage Limit
- Adjustable TEC positive & negative currents (MOT7001-xx) & MOT3000-25
- Voltage Programmable TEC Current Set
- Slow Start Circuit for TEC Protection
- Very Low Noise and Low Ripple Design
- TEC Current Monitor
- TEC Temperature Monitor
- Over- and Under-temperature Alarm
- Precision Reference Voltage Output
- Single Supply Operation (3.3 – 5V)
- Low Power Consumption
- Small Footprint (20mm x 27.5mm)
- $-40^{\circ}C$ to $85^{\circ}C$ Operation



Description

The MOT700x and MOT3000 series are precision Thermoelectric Cooler (TEC) controllers, used for driving Peltier modules (TECs) where high accuracy temperature control is a prime requirement. These electronic modules incorporate all the necessary components, including an internal control loop compensation network, to minimize end equipment design. Extensive filtering and unique ripple-cancellation techniques optimize component size and efficiency while reducing noise. Differential design has been used throughout in order to maintain better than $\pm 0.002^{\circ}C$ temperature stability. Output current, rather than voltage is directly controlled to eliminate current surges.

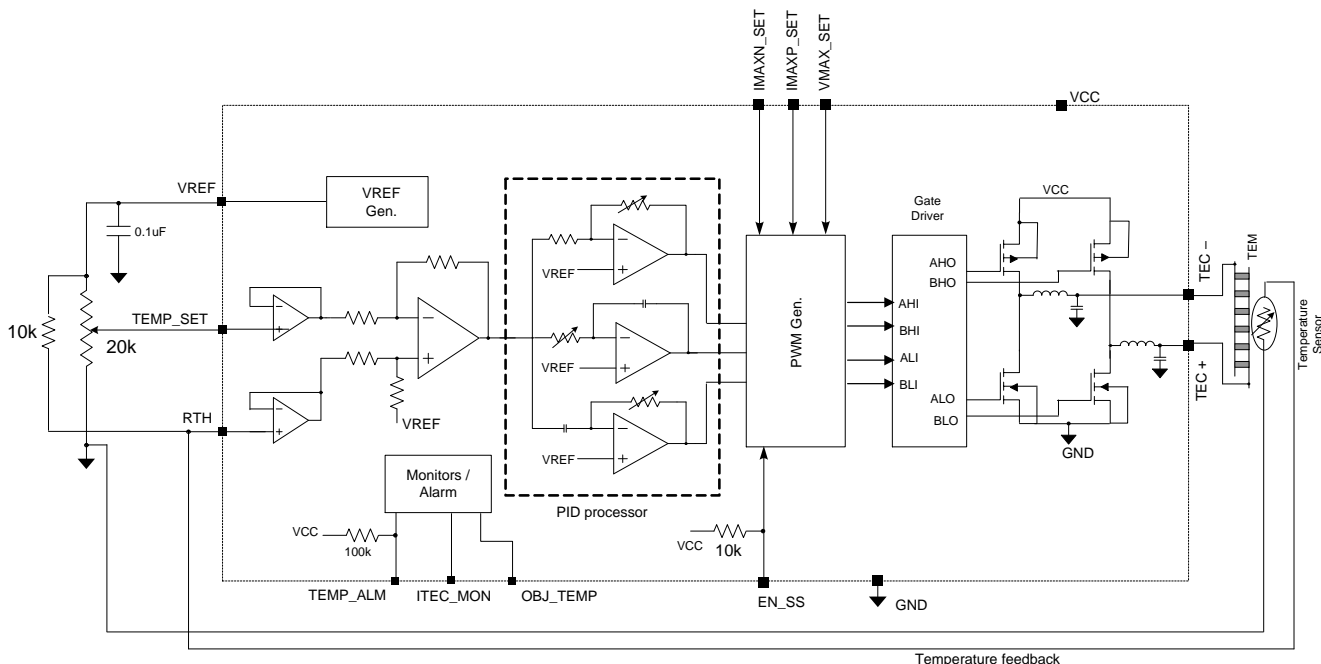
Individual heating and cooling current and voltage limits provide the highest level of TEC protection. All variants in the MOT7000 series operate from a single supply and provide bipolar output currents. True bipolar operation controls temperature without “dead zones” or other nonlinearities at low load currents. An analog control signal precisely sets the TEC current.

A proportional-integral-derivative (PID) controller is used to stabilize the temperature control loop. Internal loop compensation is optimized for driving laser assemblies or other low-frequency TECs applications. An internal instrumentation amplifier can interface to an external NTC or PTC thermistor, thermocouple, or semiconductor temperature sensor for temperature monitoring. Analog outputs are provided to monitor TEC temperature and current. In addition, over-temperature and under-temperature outputs indicate when the TEC temperature is out of range. An on-chip voltage reference provides bias for a thermistor bridge, control potentiometer or external DAC.

The MOT70x_xxTEC OEM board is available to allow quick and easy evaluation and verification of the these controllers and your chosen laser diode. Please visit our website for complete specifications and additional information about the MOT700x and MOT3000-25 series and the MOT70x_ OEM boards.



Block Diagram



Selection Table:

Part #	Descriptions
MOT7000-20	±2A Output Current
MOT7000-30	±3A Output Current
MOT7001-20	±2A Output Current
MOT7001-30	±3A Output Current
MOT3000-25	±2.5A Output Current

OEM versions of the module are also available, pre-mounted on a printed circuit board. Please refer to the website for further information on the MOT70x_xxTEC OEM.

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