

Thermal Products

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Class-D Solution Improves Thermoelectric Cooling

Thermoelectric coolers (TECs) provide a unique semiconductor solution to thermal management applications, using the venerable diode to transfer heat to or from a source — using no moving parts.

Based on the principal of the “Peltier Effect,” a direct current applied to a TEC will either remove or add heat to a device, depending on the direction of the DC current flow. Temperature is managed by TEC controllers that regulate the direction and magnitude of DC current to the TEC.

Growing Applications

TECs are particularly useful where space limitations, reliability, EMI concerns or the elimination of moving mechanical parts (such as a fan) are desired. Thermoelectric cooling applications can be found in consumer, computer, automotive, medical, satellite and telecommunications systems.

Some are as simple as quickly heating or cooling an automotive seat, or cooling a power supply, while others are as complex as tuning a telecommunications laser diode, thereby enabling major increases in data capacity over existing fiber lines.

As integrated circuit clock speeds and chip densities increase, removing their excess heat becomes critical to the reliability and life of these costly devices. Thermoelectric coolers offer a unique solution, especially when these integrated circuits are located in environments where fans cannot be used for noise or electromagnetic interference (EMI) considerations.

Microsemi TEC Controllers

Microsemi offers a family of highly efficient Class-D controllers providing thermal management solutions ideal for many of these TEC applications. Their pulse width modulated



(PWM) architecture provides current to the TEC more efficiently, thereby minimizing excess power and heat dissipation.

The Microsemi family of LX1810™, LX1811™ and LX1682™ controllers includes full bridge to half bridge devices with operational supply voltages from +3.3VDC to +12VDC. For more information, call 800-713-4113.

