



40A Scalable μ Module Regulator Protects Load by Tripping Upstream Power Source

MILPITAS, CA – February 8, 2017 – Linear Technology Corporation introduces the [LTM4636-1](#), a 40A to 240A scalable step-down μ Module switching regulator. The part incorporates protection circuitry that trips a circuit breaker in the event of overvoltage or overtemperature fault conditions to protect itself, the PCB and loads such as high current low voltage processors, FPGAs, GPUs and ASICs. An output crowbar function quickly clamps the output to protect the load during an overvoltage condition. The LTM4636-1 benefits from an innovative BGA package construction in which the inductor is exposed on top and is used as a heat sink, permitting direct contact with airflow from any direction for more effective cooling.

By stacking the inductor on top of a 16mm x 16mm BGA package, the LTM4636-1 can deliver 40W with only 40°C rise over the ambient temperature (12V_{IN}, 1V_{OUT}, 40A, 200LFM). Full-power 40W is delivered up to 83°C ambient and half-power 20W is supported at 110°C ambient.

The LTM4636-1 operates at 92%, 90% and 88% efficiency, delivering 15A, 30A and 40A, respectively, to a 1V load from 12V_{IN}. The μ Module regulator is scalable, so four LTM4636-1s in parallel can deliver 160W with only 40°C rise and 88% efficiency (12V_{IN}, 1V_{OUT}, 200LFM).

Total device height is 7.07mm with a 16mm x 16mm BGA footprint. In addition to dissipating heat from the top, the LTM4636-1 is designed to uniformly disperse heat from the bottom of the package to the PCB with 144 BGA solder balls, with banks of solder balls assigned as GND, V_{IN} and V_{OUT} where high current flows. The LTM4636-1 μ Module regulator provides impressive DC/DC conversion efficiency, enhanced heat dispersion and safety circuitry, ensuring enhanced thermal performance, as well as voltage and thermal protection in a small package. The LTM4636-1 operates from 4.7V to 15V input supply and regulates an output voltage from 0.6V to 3.3V. Total DC output voltage accuracy is $\pm 1.3\%$ from -40°C to 125°C . 1,000-piece price starts at \$44.11 each. For more information, visit www.linear.com/product/LTM4636-1.

Photo Caption: 40A μ Module Regulator with Overvoltage & Overtemperature Protection

Summary of Features: LTM4636-1

- 4.7V to 15V Input
- 0.6V to 3.3V Output, 40A Current Limit
- Load Protection with Overvoltage & Overtemperature Monitoring & Tripping of Circuit Breaker (Hot Swap)
- Stacked Inductor Acts as Heat Sink: Exposed Inductor on Top of Package (3D Construction)
- Scalable Up to 2 to 6 Devices for 80A to 240A Load Current

Pricing shown is for budgetary use only and may differ due to local duties, taxes, fees and exchange rates.

About Linear Technology

Linear Technology Corporation, a member of the S&P 500, has been designing, manufacturing and marketing a broad line of high performance analog integrated circuits for major companies worldwide for over three decades. The Company's products provide an essential bridge between our analog world and the digital electronics in communications, networking, industrial, automotive, computer, medical, instrumentation, consumer, and military and aerospace systems. Linear Technology produces power management, data conversion, signal conditioning, RF and interface ICs, μ Module[®] subsystems, and wireless sensor network products. For more information, visit www.linear.com

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