



Triple 10A Step-Down μ Module Regulator Delivers Full Output Current at Over 50°C Ambient, with No Airflow or External Heat Sink

MILPITAS, CA – October 31, 2013 – Linear Technology has launched the [LTM4633](http://www.linear.com/product/LTM4633), a triple output 10A step-down μ Module® (micromodule) regulator in a 15 x 15 x 5.01mm BGA package with integrated heat sink for enhanced heat dissipation. Combined with bypass capacitors and three resistors, the LTM4633 solution fits within 4.5cm² on a dual-sided PCB. The LTM4633's integrated heat sink (previously introduced in the dual 13A LTM4620A) enables each of the three outputs to deliver 10A at 1.8V_{OUT} from 12V_{IN} with 88% efficiency at 52°C ambient without any external heat sink or airflow. With an external heat sink and 200LFM airflow, the operating ambient temperature improves to 67°C. The LTM4633 includes the DC/DC controllers, power switches, inductors and compensation in a single package. The regulated output voltages are adjustable from 0.8V to 1.8V on two channels and from 0.8V to 5.5V on the third channel, with $\pm 1.5\%$ accuracy over line, load and temperature.

The LTM4633's three switchers have separate input power pins and operate from input voltages between 4.7V to 16V. With the addition of an external bias supply above 4.5V, the minimum operating input voltage decreases to 2.375V. The three switchers, operating from the same internal or optional external clock signal, are internally phase shifted by 120° to minimize input ripple. For loads in excess of 10A, channels 1 and 2 can be paralleled to support up to 20A. Output overvoltage and overcurrent fault protections are included in the regulator. The LTM4633's internal temperature can be observed via two internal temperature diode monitors located next to the power stages.

The LTM4633 is available with guaranteed performance over the -40°C to +125°C or -55°C to +125°C internal temperature range. The μ Module regulator is available for immediate delivery from stock, priced starting at \$35.95 each for 1,000 piece quantities. For more information, visit www.linear.com/product/LTM4633


Photo Caption: Triple 10A DC/DC Step-Down μ Module® Regulator in BGA with Integrated Heat Sink

Summary of Features: LTM4633

- Triple 16V_{IN}, 10A DC/DC Step-Down Solution in Less than 4.5cm²
 - Only 10 Capacitors & Three Resistors Required for a Complete Solution
- 15 x 15 x 5.01mm BGA Package with Integrated Heat Sink
- All Three Outputs Deliver Up To 10A at 52°C Ambient with No Airflow or External Heat Sink
- 4.7V to 16V Operating V_{IN} Range with Separate Inputs for Each Channel
 - As Low as 2.375V_{IN} with External Bias Supply
- User Adjustable V_{OUT} Between:
 - Channel 1: 0.6V to 1.8V
 - Channel 2: 0.6V to 1.8V
 - Channel 3: 0.6V to 5.5V
- Channel 1 & Channel 2 Can Be Paralleled to Deliver up to 20A

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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Press Contacts:

North America / Worldwide

John Hamburger, Director Marketing
Communications
jhamburger@linear.com
Tel: 408-432-1900 ext 2419

Doug Dickinson, Media Relations Manager
ddickinson@linear.com
Tel: 408-432-1900 ext 2233

UK & Nordic

Alan Timmins
alan@ezwire.com
Tel: +44-1-252-629937