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Ideal Diode Controller Integrates 5A MOSFET to Replace Lossy Schottky Diodes

MILPITAS, CA – July 30, 2008 – Linear Technology announces the LTC4358, a single high voltage ideal diode controller utilizing an internal 5A MOSFET to provide a simple, low loss replacement to Schottky diodes in high current applications. The controller and 20m Ohm internal N-channel MOSFET perform the function of a low forward voltage diode. This provides a lower loss path compared to the Schottky diode that in high current applications provides higher efficiency and preserves precious board area by eliminating the need for heat sinking. The LTC4358 regulates the forward voltage drop across the internal MOSFET to ensure smooth switchover from one path to another without oscillation. A fast pull-down circuit minimizes reverse current transients in the event a power supply fails or is shorted. The LTC4358 can be viewed as a three terminal diode for general purpose applications such as reverse battery protection in automotive applications, or ORing power supplies together in applications that demand high system reliability.

The LTC4358 single ideal diode controller is useful in applications where multiple, redundant power supplies are paralleled to provide load sharing. In N+1 redundant systems, the LTC4358 provides a convenient method to OR together an additional supply to safeguard the system in the event one of the N supplies fail. This ORing technique provides necessary isolation for live insertion and removal of converters onto the power bus and to provide isolation from the bus during a hard short. If the power source fails or is shorted, the LTC4358 ensures a fast 500ns turn-off to minimize reverse current transients.

The LTC4358 joins a growing family of ideal diode-OR controllers, including the LTC4355 positive voltage ideal diode-OR, LTC4354 negative voltage ideal diode-OR, and the LTC4357 and LT4352 single ideal diode controllers. See table below for more details.

Specified over the commercial and industrial temperature ranges, the LTC4358 is offered in 4mm x 3mm 14-pin DFN and 16-lead TSSOP packages. Available today, pricing begins at \$2.10 each in 1,000 piece quantities.

	OR-ing Supply Range	Ideal Diode	Fault Monitoring	Package	Applications
LTC4358	9V to 26.5V	Single, Internal FET	No	4x3 DFN-14 TSSOP-16	N+1 Redundant Power Supplies Supply Hold-up High Availability Systems Telecom Infrastructure Automotive Systems Optical Networks -48V Distributed Power Systems AdvancedTCA Systems Computer Systems and Servers (RAID)
LTC4357	9V to 80V	Single	No	2x3 DFN-6 MSOP-8	
LTC4352	0V to 18V	Single	Yes	MSOP-12 3x3 DFN-12	
LTC4354	-4.5V to -80V	Dual	Yes	3x2 DFN-8 SO-8	
LTC4355	9V to 80V	Dual	Yes	4x3 DFN-14 SO-16	


Photo Caption: 5A Ideal Diode

Summary of Features: LTC4358

- Replaces a Power Schottky Diode
- Internal 20m Ohm N-Channel MOSFET
- 0.5us Turn-Off Time Limits Peak Fault Current
- Operating Voltage Range: 9V to 26.5V
- Smooth Switchover without Oscillation
- No Reverse DC Current
- 16-Lead TSSOP & 4mm x 3mm 14-Pin DFN Packages

About Linear Technology

Linear Technology Corporation, a manufacturer of high performance linear integrated circuits, was founded in 1981, became a public company in 1986 and joined the S&P 500 index of major public companies in 2000. Linear Technology products include high performance amplifiers, comparators, voltage references, monolithic filters, linear regulators, DC-DC converters, battery chargers, data converters, communications interface circuits, RF signal conditioning circuits, uModule™ products, and many other analog functions. Applications for Linear Technology's high performance circuits include telecommunications, cellular telephones, networking products such as optical switches, notebook and desktop computers, computer peripherals, video/multimedia, industrial instrumentation, security monitoring devices, high-end consumer products such as digital cameras and MP3 players, complex medical devices, automotive electronics, factory automation, process control, and military and space systems. For more information, visit www.linear.com.

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