High Voltage Surge Stopper with Current Limit Shields Sensitive Electronics from Transients Beyond 100V

MILPITAS, CA – January 16, 2012 – Linear Technology Corporation introduces the LT4363, an overvoltage protection controller that provides overvoltage and overcurrent protection to high-availability electronic systems. Supply voltages surge whenever currents flowing through long inductive power buses change abruptly. Also, automotive batteries experience a condition known as load-dump, where the voltage can stay elevated for many milliseconds. Traditional protection circuitry relies on bulky inductors, capacitors, fuses, and transient voltage suppressors. Instead, the LT4363 creates a robust, adaptable, and space-efficient design with simple control of an N-channel MOSFET. Only the controller and the MOSFET suffer the high voltage surge; downstream components can afford lower voltage ratings, thereby saving costs.

The LT4363 controller builds on Linear's popular first-generation LT4356 device by extending overvoltage protection capabilities beyond 100V without sacrificing overcurrent protection. The LTC4363 reacts quickly to overcurrent and short-circuit faults at the load, limiting the current to a safe value set by a sense resistor.

Armed with a 100V maximum rating and operational capability down to 4V (cold-crank), the LT4363 makes for an ideal barrier against badly behaving supplies. A simple clamp on the controller supply extends protection beyond the native 100V. It even survives reversed battery connections to -60V. During voltage surges, the output is regulated to a voltage set by a resistive divider, allowing the load to operate safely and smoothly through transient events. Overvoltage and undervoltage comparator inputs ensure that the LT4363 remains off outside a user-defined voltage range. To limit the thermal stress on the power MOSFET, the LT4363 uses a VDS–accelerated fault timer. If the fault persists, a warning is issued before the MOSFET is shut off. By limiting the MOSFET gate slew-rate with a resistive-capacitive (RC) network, the controller can be adapted for inrush control in Hot Swap™ applications. In the shutdown state the LT4363 sips just 7µA of supply current, preserving battery life. A built-in thermal shutdown occurs around 150°C.

The LT4363 is available in two options: the LT4363-1 latches off after a fault, whereas the LT4363-2 will retry after a long cool-down period. Specified over the full commercial and industrial temperature ranges, the LT4363 is offered in 12-pin DFN (4mm x 3mm) and MSOP packages, and a 16-pin SO package with enhanced high-voltage pin spacing. Pricing begins at $2.48 each for 1,000-piece quantities and the device is now available in production quantities. For more information, visit www.linear.com/product/LT4363 [1].

http://www.ecnmag.com/products/2012/01/high-voltage-surge-stopper-current-limit-shields-sensitive-electronics-transients-beyond-100v

Links:
[1] http://www.linear.com/product/LT4363