



8 μ A I_Q Surge Stopper Protects Electronic Systems from Overvoltage & Overcurrent Transients

MILPITAS, CA – April 25, 2016 – Linear Technology Corporation introduces the [LTC4380](#), an ultralow quiescent current (I_Q) surge stopper, providing compact overvoltage and overcurrent protection for always-on 4V to 72V electronics in automotive, industrial and avionic systems. The LTC4380 replaces traditional shunt circuits composed of bulky inductors, capacitors, transient voltage suppressors (TVS), and fuses with a simple IC and series N-channel MOSFET solution, saving board space and enabling continuous operation through transient voltage or current surges. The LTC4380 protects downstream electronics from input overvoltage up to the MOSFET rating, while also protecting the power supply from output overload. Device current consumption is a mere 8 μ A in normal operation and 6 μ A in shutdown mode, prolonging battery run and standby time. The low current allows a large filtering resistor to the device supply pin, enabling operation through automotive cold crank and overvoltage transients above 100V.

During an input voltage surge, such as automotive load dump, the LTC4380 drops the excess voltage across the external MOSFET while clamping its gate and therefore the output to a safe voltage. This enables the use of lower voltage rated electronics downstream, saving costs. The clamp voltage is pin-selectable for 12V and 24V systems, or adjustable with an input Zener diode. During an output overload or short-circuit, the LTC4380 regulates the forward path to a current limit set by a sense resistor. For sustained overvoltage or overcurrent conditions, a MOSFET stress-accelerated timeout ensures safe turn-off of the MOSFET. In contrast, traditional protection circuits may blow a fuse or burn out the TVS, requiring repairs.

The LTC4380 withstands a reversed input, such as an incorrectly inserted battery, to –60V. Adjustable input undervoltage lockout threshold blocks start-up for out-of-range voltages, avoiding deeply discharged batteries. The device also controls inrush current during hot plug of a circuit board's power supply.

The LTC4380 is available in four options: the LTC4380-1 and LTC4380-2 have a pin-selectable clamp voltage, whereas the LTC4380-3 and LTC4380-4 clamp voltage is set with an

input Zener diode. After a fault, the LTC4380-1 and LTC4380-3 latch the MOSFET off, while the LTC4380-2 and LTC4380-4 automatically turn on with a 0.1% duty cycle. Specified over the 0°C to 70°C commercial, –40°C to 85°C industrial and –40°C to 125°C automotive temperature ranges, the LTC4380 is offered in 10-pin MSOP and 3mm x 3mm DFN packages. 1,000-piece pricing starts at \$2.48 each. Device samples and evaluation circuit boards are available online or from your local Linear Technology sales office. For more information, visit www.linear.com/product/LTC4380.

Photo Caption: 8 μ A Quiescent Current Surge Stopper


Summary of Features: LTC4380

- Protects Against Supply Voltage Surges Up to MOSFET Rating
- Low Quiescent Current: 8 μ A Operating, 6 μ A Shutdown
- Wide Operating Range: 4V to 72V
- Pin-Selectable & Adjustable Output Clamp Voltage
- Protects Against Reversed Input to –60V
- Overcurrent Protection
- Adjustable Fault Timer with MOSFET Stress Acceleration
- Latchoff (LTC4380-1/-3) & Automatic Retry (LTC4380-2/-4) Options
- Low 0.1% Retry Duty Cycle During Persistent Faults (LTC4380-2/-4)
- –40°C to 125°C Operating Temperature Range
- 10-Pin MSOP & 3mm x 3mm DFN Packages

The USA list pricing shown is for budgetary use only. International prices 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, µModule[®] subsystems, and wireless sensor network products. For more information, visit www.linear.com

 , LT, LTC, LTM, Linear Technology, the Linear logo and µModule are registered trademarks of Linear Technology Corp. All other trademarks are the property of their respective owners.

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