



## **Simple to Use Synchronous Forward Controller Shrinks 25W to 400W Power Supply Footprints**

MILPITAS, CA – May 6, 2014 – Linear Technology Corporation announces the [LT3753](#), a primary side, current-mode PWM controller optimized for use in a synchronous forward converter with active clamp reset. The LT3753 operates over an input voltage range of 8.5V to 100V, delivers up to 95% efficiency and is targeted for power levels up to 400W. A programmable volt-second clamp provides a safeguard for transformer reset that prevents saturation and protects the MOSFET. This function allows for transformer and MOSFET optimization, resulting in a reduced solution size.

The device output voltage regulates to  $\pm 5\%$  without the use of an optocoupler. When an optocoupler is used,  $\pm 1.5\%$  regulation can be realized. The LT3753 sends a control signal via a pulse transformer to a secondary-side MOSFET driver for the synchronous rectification timing. It can also be used in self-driven applications (when operating over a narrow input voltage range) where the secondary-side MOSFETs are controlled by the power transformer pulses. Furthermore, the LT3753 can be used in nonsynchronous designs, typically required for higher output voltage applications.

When the volt-second clamp is set above the natural duty cycle of the converter, it provides a duty cycle guardrail to limit primary switch reset voltage and prevent transformer saturation during load transients. The volt-second clamp also limits maximum  $V_{OUT}$  if the opto path breaks open or, alternatively, defines  $V_{OUT}$  in no-opto applications. For non-isolated high

step-down ratio applications, the LT3753 contains a voltage error amplifier, allowing a very simple non-isolated fully regulated synchronous forward converter. Additional features include programmable overcurrent protection, adjustable input undervoltage and overvoltage lockout along with built-in thermal shutdown. The LT3753 has a programmable 100kHz to 500kHz operating switching frequency and can be synchronized to an external clock, allowing the use of a wide range of output inductor values and transformer sizes.

The LT3753 is available in a TSSOP-38 package with several pins removed for high voltage spacing. The LT3753 E- and I-grade versions operate from a -40°C to 125°C junction temperature. The LT3753 H-grade is guaranteed to operate from a -40°C to 150°C operating junction temperature. The LT3753 MP grade is guaranteed to operate from -55°C to 150°C operating junction temperature. The 1,000-piece price starts at \$3.19 each. For more information, visit [www.linear.com/product/LT3753](http://www.linear.com/product/LT3753)

**Photo Caption:** Active Clamp Synchronous Forward Controller

### Summary of Features: LT3753

- Wide  $V_{IN}$  Range: 8.5V to 100V
- Active Clamp Transformer Reset
- No Optocoupler Required
- High Efficiency Synchronous Rectification
- Programmable MOSFET Turn-On Delays
- Short-Circuit Protection
- Programmable Volt-Second Clamp
- Selectable Fixed Operating Frequency from 100kHz to 500kHz
- Synchronizable to External Clock
- Programmable OVLO & UVLO with Hysteresis
- Extended & Industrial Grades: -40°C to 125°C Operating Junction Temp
- Automotive Temp Grade: -40°C to 150°C Operating Junction Temp
- Military Temp Grade: -55°C to 150°C Operating Junction Temp

## 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,  $\mu$ Module<sup>®</sup> subsystems, and wireless sensor network products. For more information, visit [www.linear.com](http://www.linear.com)

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