Application Report
SNVA734–June 2015

LMZ35003 Protects Against 60-V Line Transients

SVA - Simple Switcher

Wide input voltage applications must be designed for both the typical operating input voltage and the maximum transient voltage that the power supply will be subject to. Some applications have a fairly tight regulated input voltage range, while other applications have large input voltage changes due to line transients caused by an inductive load switching or by load dump.

When selecting a power supply for applications with line transients, the design is specified at a typical operating input voltage, but it must also have a wide enough input voltage rating to handle the increased input voltage during the line transient. In some cases, the line transient greatly exceeds the typical operating voltage. Figure 1 shows an input voltage and output voltage waveform of an application with a typical input voltage of 12 V and a line transient of about 60 V. During the line transient, the output voltage remains in regulation.

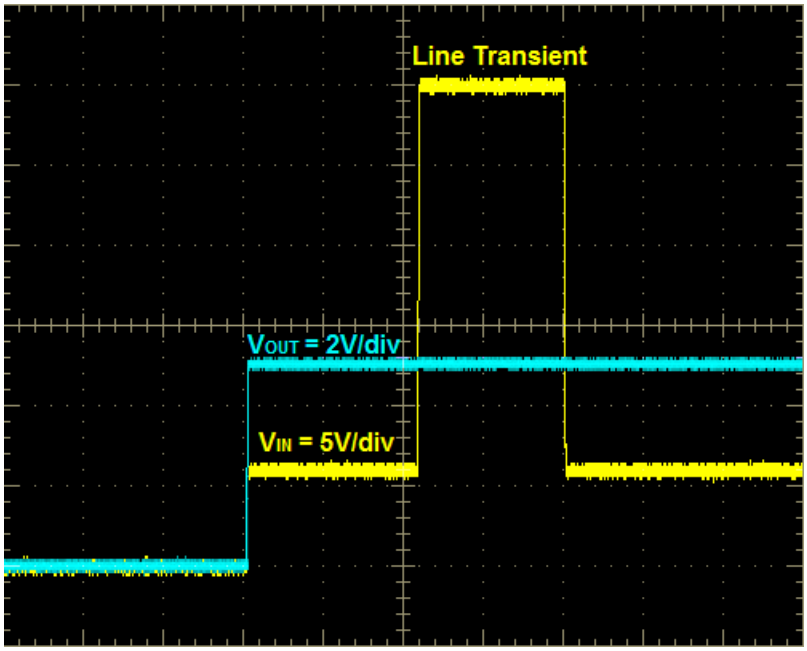

Figure 1. Line Transient Waveform

The LMZ35003 wide input voltage, 2.5-A Simple Switcher® power module is designed for typical operating input voltages of 7 V to 50 V. However, with a 65-V absolute maximum input voltage rating, the LMZ35003 can be used in applications where the input voltage exceeds 50 V during line transients. The 7 V to 50 V operating input voltage range of the LMZ35003 is recommended for the best performance including efficiency and output voltage ripple during steady-state input voltage operation. However, during line transients the LMZ35003 can sustain input voltages as high as 60 V.

By designing for an application's typical input voltage, the LMZ35003 power module has great performance during steady-state input voltage operation. Also, applications subject to line transients up to 60 V can benefit from the maximum input voltage rating of the LMZ35003 without the need for additional protection components. For more information about device function, please see the device data sheet (SNVS988).

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