

## **Small-signal AC modeling technique of Buck converter with DSP based Proportional-Integral-Derivative (PID) controller**

Control applications of switched mode power supplies have been widely explored. The main objective of research and development (R&D) in this field has always been to find the simplest method to analyze and model the DC/DC converter and the most suitable control method to be implemented in various DC/DC converter topologies. This paper presents a simple and systematic approach to the design of a practical Digital Signal Processing (DSP) based Proportional-Integral-Derivative (PID) voltage controller for Buck converters. A simple and easy-to-follow design procedure is demonstrated. Experimental results are presented to illustrate the design procedure.