

Single Inductor Multiple Output DC-DC Converters for Integrated Systems

Franco Maloberti, University of Pavia and University of Macau

Abstract—Future integrated systems will use multiple supply voltages for optimal power performance. High resolution and high amplitude signals require relatively high voltage. Still, low power circuits impose using low voltage, while a power amplifier for data transmission requires a supply voltage that matches the signal amplitude. The result is the need for an efficient generation of multiple voltages. The optimal solution is to use low-drop voltage regulators biased by single inductors-multiple-output (SIMO) converters. The presentation will focus on the methods for achieving the goal. The author will detail some past implementations of IC, namely, dual outputs boost and Buck converters, a four output Buck, a more recent sophisticated circuit with Buck, boost, and floating voltage, and a bipolar voltages generator.