



**Title:** Bi-Directional High Step-Up/Step-Down DC–DC Converter with Shared Series Capacitors

**Abstract:** This presentation introduces a bi-directional high step-up/step-down DC–DC converter featuring shared series capacitors. The proposed topology combines a double step-up converter and a double step-down converter. By simply swapping the input and output terminals, it operates as  $V_{OUT} = 2DV_{IN}$  step-down and  $V_{OUT} = 2V_{IN}/(1-D)$  step-up. A key advantage of this design is its scalability; the conversion ratio (CR) can be easily increased by adding additional series capacitor converter cells. The laboratory prototype was developed and experimentally evaluated, and the corresponding results are presented.