Capacitive matrix for continuous voltage output (Ramot)
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Abstract

A direct current (DC) to DC converter, including: input ports for receiving an input DC voltage; output ports for outputting an output DC voltage; a first matrix of capacitors and switches; a second matrix of capacitors and switches; and a control circuit, coupled to the switches of the first and second matrices, configure d to repetitively: (i) configure the first matrix to a charge configuration and couple the first matrix to the input ports while configuring the second matrix to a discharge configuration and coupling the second matrix to the output ports; (ii) maintain the charge and discharge configurations for a first period of time; (iii) configure the second matrix to the charge configuration and couple the second matrix to the input ports while configuring the first matrix to the discharge configuration and couple the first matrix to the output ports; and (iv) maintain the charge and discharge configurations for a second period of time; (a) wherein the charge configuration and the discharge configurations of each matrix out of the first and second matrices differ from each other by a replacement of serial connections of capacitors of the matrix to parallel connections of capacitors of the matrix; (b) wherein the charge configuration and a discharge configuration of each of the first and second matrices are responsive to required conversion ratio between the input DC voltage and the output DC voltage; and (c) each matrix of the first and second matrices comprises at least four capacitors.

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