

# Progress in Switching-Cell-Array Power Conversion Research

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## Abstract

Switching cell arrays, which consist of a matrix arrangement of switching cells, each cell formed by a single power transistor with antiparallel diode plus ancillary circuitry, can be used as building blocks to implement any desired type of power conversion (dc-dc, dc-ac, ac-ac) at a wide voltage and current rating range. Thus, they enable a systematic and modular design of power converters, taking advantage of scale economies, and could promote a paradigm shift in power converter design leading to a higher degree of standardization, lower design and implementation costs, increased power density, and superior converter and system performance. After initially reviewing the basics of this novel configurable power electronics device, this presentation will review the latest progress in the research of this technology at cell, array, and converter levels. In particular, at the cell level, the introduction of extended functionality such as an intelligent electronic fuse and the measurement of cell temperature will be discussed.

## REFERENCES

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## FIGURES

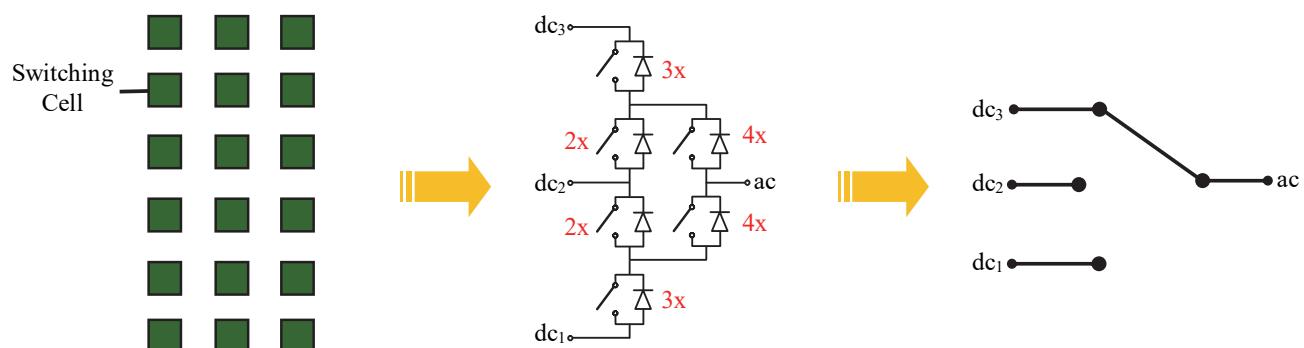


Figure 1: Configuration of single-pole multiple-throw switches for power conversion from switching cell arrays.