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HIGH-VOLTAGE MULTIPHASE SEMICONDUCTOR CONVERTERS WITH REDUCED ENERGY ACCUMULATION FOR GAS-DISCHARGE INSTALLATIONS

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Abstract

A new concept has been developed for constructing of the high-voltage multiphase semiconductor converters with reduced energy storage for gas-discharge installations. The concept is developed on the basis of the creation of parallel-connected synchronous symmetric non-phase semiconductor structures with a reduced accumulation of energy in the output circuits. This approach allows the creation of converters which realize without the use of energy-intensive filters both low level of output voltage ripples and non-oscillatory pulse current change at low multiplicity and a non-current pause during the impulse decrease of the load

resistance. Using the structural-analytical transformation and simulation modeling, it was justified that the variety of structural schemes of such multiphase converters can be reduced to an equivalent single-phase scheme that greatly simplifies their modeling, analysis and design of necessary feedback devices, as well as the determination of stability regions and the required dynamics of the entire system. References 12, figures 6.

Key words: semiconductor converter, voltage, current, pulse, non-phase semiconductor structures, symmetry, stabilization, gas discharge installation, nonstationary regimes.

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