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(54) Title of the invention : Buck Converter with Soft Switching Cells for PV Panel Applications	
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(57) Abstract : The invention discloses a high-efficiency buck converter equipped with soft switching cells, specifically designed for photovoltaic (PV) panel applications. The converter utilizes advanced soft switching techniques such as zero-voltage switching (ZVS) and zero-current switching (ZCS) to significantly reduce switching losses, electromagnetic interference (EMI), and thermal stress during operation. These techniques improve overall energy conversion efficiency, enabling the converter to operate at high frequencies while maintaining minimal power loss. The system is optimized for handling the fluctuating voltage and current output of PV panels under varying environmental conditions, ensuring stable and efficient power delivery to downstream loads or storage systems. The compact and lightweight design of the converter makes it suitable for modern renewable energy systems, offering enhanced durability and extended component lifespan. This invention addresses the growing demand for reliable, energy-efficient power conversion solutions in PV systems, contributing to the advancement of renewable energy technologies.	
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