

## POWER FACTOR CORRECTION USING AN IMPROVED SINGLE-STAGE SINGLE- SWITCH ( $S^4$ ) TECHNIQUE

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### ABSTRACT

*Regulated power supplies are needed for most analog and digital electronic systems such as microprocessors, computers, telecommunication systems, LCD monitors and robotics, and thereby forms major share of the load on utility. Most power supplies are designed to meet some requirements like regulated output or isolation or multiple outputs. In addition to these requirements, common objectives are to reduce power supply size, weight and improve their efficiency. Traditionally, linear power supplies have been used. Traditional SMPS consists of a diode bridge rectifier followed by a capacitor filter, if isolation and variable output voltage required, a flyback or a forward converter is used as output stage. These power supplies suffer from peaky input currents because of the diode bridge and a capacitor filter at the input stage, resulting in low order harmonics. Passive filters can reduce harmonics but size of these filters will be high. Also, performance decreases with supply frequency variations and ageing. Single-stage converters are suitable for low power applications. In these converters PFC stage and DC/DC output stage are integrated into one-stage. Single-stage PFC converters with DC bus voltage feedback, are popular. These converters reduce DC bus (bulk capacitor) voltage to below 450 V. The main objective is to integrate the feedback winding with the primary of the output DC/DC converter stage itself. The resulting PFC AC/DC converter should have higher efficiency and more compact than the existing PFC AC/DC converter.*

**KEYWORDS:** Regulated Power Supply, SMPS, Harmonics, Passive Filters, Single-Stage Converters

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