

C015533 : MAJOR ELECTRICAL ENGINEERING

KEY WORD : QUASI-RESONANT CONVERTER/SWITCHING POWER SUPPLY/ZERO CURRENT SWITCH

BOONCHAI UDOMSWANGCHOKE : A 200-W HIGH-POWER DENSITY SWITCHING POWER SUPPLY FOR MICROCOMPUTERS. THESIS ADVISOR : ASSO.-PROF. GOTHOM ARYA,
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In designing switching dc-dc converters, the effort to increase operating frequency to reduce weight, size, and cost of magnetic and filter elements is constantly hampered by higher switching losses. To overcome these obstacles, the concept of the "resonant switch" is proposed. There are two types of resonant switch, zero-current switch and zero-voltage switch. In this thesis the zero-current switch is chosen because voltage stress is to be avoided. This kind of switch includes a series inductor and a parallel capacitor which help shape current waveform to swing to zero at turn off. The use of resonant switches always converters to operate at higher frequencies up to one megahertz. This thesis presents the design, construction and testing of a 200-W switching power supply with conventional switches operating at 96 kHz and using asymmetrical bridge configuration and a 100-W power supply with resonant switch operating at the maximum frequency 286 kHz using half bridge configuration. The resonant switch circuit can operate at higher frequencies efficiency is almost same.