

TAPPED INDUCTOR BOOST CONVERTER FOR NERVE STIMULATOR APPLICATION

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ABSTRACT

There is an increasing demand for transcutaneous electrical nerve stimulator (TENS) devices today as they are the more commonly used forms of electroanalgesia. This paper focuses on improving these devices using the tapped-inductor boost converter topology. Such topology offers a higher boosting capability resulting in an increase in converter efficiency for very low voltage input applications. The proposed topology also offers more flexibility because of the wider range of the output voltage catering to the varying skin impedance of the patients who will use them. The output current pulses are adjustable and are controlled using a microcontroller. The differences between the traditional and the proposed topology for this application are also presented in the paper.

Key words: tapped-inductor boost converter, TENS, nerve stimulator, medical electronics

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