

Production of portable 12v power supply





Overview

Is this DC power supply project a good learning experience?

This DC power supply project was a fantastic learning experience; it brought classroom concepts to life and gave us hands-on insight into circuit design and testing. While it performed well for what it is, it's important to note that this design isn't meant for serious, high-stakes applications.

How to calculate a 6-0-6v transformer maximum output voltage in RMS?

This is perfect for our 6-0-6V transformer maximum output voltage of 12V in RMS. Using the formula for ripple factor, $r = \frac{V_r (pp)}{V_{dc}}$ $V_r (pp) = r \times V_{dc}$ we can determine the value of the filter capacitor, given a ripple factor r of 3% or 0.03, and output DC voltage V_{dc} of 12V.

Why do portable batteries need a buck conversion?

In order to maintain battery life, portable applications require both high conversion efficiency and low standby power dissipation. Multi-cell battery packs may require step-down (buck) conversions and single cell batteries often require step-up (boost) conversions to maintain consistent power levels while the batteries discharge.

What is the % voltage regulation of a 7812?

The $V_{NL} (DC)$ used in computing the % voltage regulation is 11.9 V. Looking at the tables, the LM7812 did a great job keeping the output mostly steady at 12V, even when we threw in some wild input voltage swings.



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In this project, we'll teach you making a simple 12v power supply circuit. DC-12V is the standard voltage, or nominal voltage for the North American side of AC electrical power. It is ...

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