Is it better to have a large compensation capacitor capacity

Should I use a bigger capacitor?

This is where the problem lies. All capacitors are not equal in their performance. Using a bigger cap is not always the best answer. Ideally,the capacitor should be sized for the amount of charge needed to supply transient current to the circuit for which the capacitor is filtering or decoupling.

What is the purpose of a compensation capacitor?

Objective of compensation is to achieve stable operation when negative feedback is applied around the op amp. Miller - Use of a capacitor feeding back around a high-gain,inverting stage. Miller capacitor only Miller capacitor with an unity-gain buffer to block the forward path through the compensation capacitor. Can eliminate the RHP zero.

What is the difference between larger capacitors and smaller capacitors?

Larger caps have the tendency to respond well to DC-type signals whereas smaller value chip caps have a much higher frequency response (see Figure 1). The key is to know your environment and use a combination of smaller capacitors in parallel with the larger capacitors if possible -- especially in your board development.

What are the disadvantages of a bigger capacitor?

The main downside of a bigger capacitor is that the switch on rise time and switch off fall time will be greater. That means more stress on the regulator during startup and in extreme cases may even cause an overcurrent shutdown of the regulator. It can also cause problems for loads which don't handle undervoltage very well.

Are all capacitors equal?

In combating this,it is often helpful to use large capacitors with large capacitance reservoirs of charge. This idea of employing a large capacitive reservoir is a great idea,provided the reservoir is capable of discharging in a fast transient environment. This is where the problem lies. All capacitors are not equalin their performance.

Should a big filtering capacitor be bigger than a BFC?

There are cheaper ways of improving this by a factor of two than doubling the size of the Big Filtering Capacitor (BFC). The downside to a larger BFC is that it will draw larger,shorter current pulses from the input transformer and rectifier. This can cause a number of problems,though most are small,or can be mitigated.

compensation capacitor Anything downstream of a large capacitor will need to have significant Power Supply Rejection Ratio (PSRR) to cope with the ripple. There are cheaper ways of ...

Common polarized capacitors include aluminum electrolytic capacitors and tantalum electrolytic capacitors. Electrolytic capacitors are generally relatively large in capacity. It is not so easy to make a large-capacity

non-polarized capacitor, because the volume will become very large. This is why there are so many polarized capacitors in the ...

A new method to compensate three-stage amplifier to drive large capacitive loads is proposed in this paper. Gain Bandwidth Product is increased due to use an attenuator in the path of miller compensation capacitor. Analysis demonstrates that the gain bandwidth product will be improved significantly without using large compensation capacitor. Using a feedforward ...

However, there are also large-capacity, high-voltage non-polar capacitors, mainly used for reactive power compensation, motor phase shift, and frequency conversion power phase shift. Different capacity - capacitors that ...

Using a bigger cap is not always the best answer. Ideally, the capacitor should be sized for the amount of charge needed to supply transient current to the circuit for which the capacitor is filtering or decoupling.

Are there any important differences in how the capacitors behave if one is physically larger by a significant amount? A big factor that affects size/volume (if the capacitance is held constant) is the voltage rating. So, if both capacitors (small and large) have the same capacitance then one will (more than likely) work up to a larger voltage.

Anything downstream of a large capacitor will need to have significant Power Supply Rejection Ratio (PSRR) to cope with the ripple. There are cheaper ways of improving this by a factor of two than doubling the size of the Big Filtering Capacitor (BFC).

This article, with the help of two design examples, explores two popular compensation techniques for circuits using high-speed amplifiers to drive large capacitive loads. The two techniques which are explained in detail are out-of ...

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