

What is a feedforward capacitor?

Battery Power Applications A common method to improve the stability and bandwidth of a power supply is to use a feedforward capacitor, which is a capacitor placed across the high-side feedback resistor. This capacitor adds a zero and a pole (f_Z < f_P) to the control loop, which can be strategically placed to improve the phase margin and bandwidth.

Does load capacitance affect phase margin?

Fig. 17 shows the post-layout simulation results of phase margin with load capacitance under 20 mA load current, and the phase margins are almost unaffected and greater than 41° ; under 0-100 pF load capacitance, which further validates the previous analysis.

Can a capacitor-less LDO maintain low quiescent current under light load conditions?

In another study, a capacitor-less LDO based on a flipped voltage follower (FVF) with adaptive biasing is presented to maintain low quiescent current under light load conditions. This design also introduces active capacitor compensation management to address charge sharing issues related to floating capacitors in dynamic compensation.

What is a low power capacitor-less LDO?

Low-power, output capacitor-less LDOs find wide application across mobile devices, portable electronics, sensor networks, wireless modules, and embedded systems. Current research focuses on enhancing power efficiency, improving performance, increasing integration, ensuring chip reliability, and exploring new application domains.

What frequency should a feedforward capacitor be placed at?

Because the feedforward capacitor does not have an effect at frequencies higher than 100 kHz (see Section 3), choose R such that the frequency of the zero is at least greater than 100 kHz. To completely eliminate the effect of the zero's phase response, the zero must be placed one decade above the gain crossover frequency.

What is a 910 nA quiescent current capacitor-less LDO?

A recent study introduces a 910 nA quiescent current capacitor-less LDO, utilizing a transient enhancement circuit that includes a transient signal input stage, a current subtractor, and a current amplifier.

The calibration methods for FPP systems can be divided into two categories: geometric calibration methods and phase-height mapping methods. In the geometric calibration method [[4], [5], [6]], the projector is generally regarded as an inverse camera, which obtains the intrinsic parameters, extrinsic parameters, and distortions of the camera and projector by fringe assistance, and ...

With the development of portable electronic products, the requirement for chargers is also getting higher. In this paper, a highly accuracy CC/CV AC-DC flyback converter is proposed, and a novel ...

In [1], [15], the Q-reduction compensation scheme is proposed, it has the advantage of a high phase margin at heavy output-load current, while a pair of complex poles with a higher Q factor is generated at light output-load current and the total value of the on-chip compensation capacitor is 6 pF. In [2], it is achieved with the zero (Z ESR) generated by the ...

The gyro employs the time-multiplexed to reduce gain and phase errors [54] and directly eliminate the influence of parasitic capacitance on the SFN [25]. The geometry of HRG and its closed-loop control system schematic are depicted in Fig. 1. The inner surfaces of the resonator and electrode base are coated with a thin layer of platinum, where the electrode base is ...

It makes more sense to use tuned compensating capacitors to reduce the reactive power required to reduce the inrush current. The primary focus of this work is the selection, calculation, and ...

This paper presents a systematic analytical comparison of the single-Miller capacitor frequency compensation techniques suitable for three-stage complementary ...

1. Compensation capacitors can be added for filtering effects. The compensation capacitor may be used to reduce bandwidth, for example in a case where that signal frequency is not needed and the designer wishes to reduce noise. As ...

4 ???· A study presents an active capacitor frequency compensation method with push-pull charging capability to reduce on-chip compensation capacitance. This method, coupled with ...

In the actual design process, the size of the external compensation capacitor C_{comp} affects the stability and rapidity of the system . In order to determine the size of the ...

Abstract--This paper discusses reactive power compensators from the point of stored energy in the capacitor, and proposes a single-phase full-bridge configuration of semi-conductor ...

Abstract:Thermal drift is a key factor that influences the practical effectiveness of MEMS accelerometer. The modeling and compensation of thermal drift are necessary for improving the precision and expanding the use scope this paper, the characteristics of thermal drift were analyzed according to the temperature cycling test. Thermal drift prognosis and ...

A novel parasitic resistance based high precision capacitive MEMS accelerometer temperature compensation method is proposed. The performance of MEMS accelerometer is severely affected by ...

In order to simulate the compensation capacitor in a wide range of voltage measurement and high current feedback applications, this paper designs a four-terminal analog compensation capacitor based on a self-feedback resistance-capacitance phase shift circuit, which consists of voltage attenuation sampling circuit, phase conversion circuit and power ...

Miller compensation is implemented by introducing a compensation capacitor between the first stage's output and the second stage's input. This integration allows: ... Phase Margin Optimization: Ensures a phase margin greater than 60°; ... Precision Amplification: Used in sensors, data acquisition systems, ...

In grid connected systems, a critical component of the converter's control system is the phase-locked loop (PLL) that generates the grid voltage's frequency and phase angle for the control to ...

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