Capacitor Dynamic Compensation Regulator

Can Miller capacitors compensate LDR at different load ranges?
By utilizing different Miller capacitorsto compensate the LDR at different load ranges,the proposed DMC technique can extend the loop bandwidth and enhance the transient performances. The DMC scheme is simple and effective. A proof-of-concept LDR with DMC is designed in a 0.18-um CMOS process.

Can a capacitor-multiplier compensate a low-voltage low-dropout voltage regulator?
Abstract: This paper presents a low-voltage, low-quiescent current, low-dropout voltage regulator (LDO) with a novel capacitor-multiplier frequency compensation technique. The proposed compensation strategy can make the LDO stable under the entire load-current range without relying on an ESR zero.

What is active compensation capacitor management (ACCM)?
Active compensation capacitor management (ACCM) With the proposed ASSF, the power-efficient fast loop is achieved by pushing pGATE adaptively. The precision-adjusted loop is also optimized to improve load transient recovery time and middle-frequency PSR by the proposed ACCM.

What is the function of R in a LDO capacitor?
R is a pseudo-ESRthat functions like the ESR on the LDO output capacitor. Because the resistance value of R is certain,the introduced zero point is fixed. When the load of the LDO changes,the pole position of the output terminal will change. If the fixed zero point compensation is continued,the stability of the LDO will decrease.

How is dynamic compensation achieved?
In Ref. ,the dynamic compensation is achieved through the addition or subtraction of capacitanceto extend the bandwidth and improve the PSR. However,this capacitor compensation management may potentially introduce output voltage spikes when the capacitance is reconnected to the loop.

Can a ceramic capacitor be used in a LDO regulator?
It must be noted that large (>= 1 uF) ceramic capacitors typically have very low ESR values (< 20 m?), and will cause most LDO regulators to oscillate if connected directly to the output (except the LP2985). A ceramic capacitor can be used if some external resistance is added in series with it to increase the effective ESR.

The active capacitor compensation management (ACCM) is proposed to solve the charge-sharing problem caused by the floating capacitors in the dynamic capacitor compensation circuit. The proposed OCL-LDO has been designed and fabricated in 22-nm CMOS technology. It can stabilize with load current ranging from 0 to 12 mA while consuming only 4.8 ...

Hybrid VAR compensators make it possible to isolate capacitors from the higher harmonics and ensure smooth regulation, which is achieved by active filter introduction to the reactive power ...

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Transient response improvement of a capacitor-less low-dropout regulator with input current-differencing is presented in this paper. The Miller compensation technique with series resistance is used to establish the stability and reduce the on-chip capacitor. As a result, the on-chip compensation capacitor of the proposed LDO is reduced to 4 pF which makes it ...

In this paper, an NMOS output-capacitorless low-dropout regulator (OCL-LDO) featuring dual-loop regulation has been proposed, achieving fast transient response with low power consumption. An event-driven charge ...

The proposed compensation strategy can make the LDO stable under the entire load-current range without relying on an ESR zero. By eliminating cascode structure or buffer stage, the proposed LDO facilitates low voltage operation. Moreover, the capacitor-multiplier circuit reduces the on-chip compensation capacitor greatly and can be ...

The active capacitor compensation management (ACCM) is proposed to solve the charge-sharing problem caused by the floating capacitors in the dynamic capacitor ...

This work presents a novel, fully integrated low-dropout (LDO) regulator optimized for low-power applications with a wide load current range. By utilizing dynamic biasing to improve transient response, the LDO regulator achieves impressive performance with 0.26 uV/mA load regulation (LDR) and 19.92 uV/V line regulation (LNR). It also features a fast 8.6 ...

Abstract: A transient-enhanced output-capacitor-free low-dropout regulator (LDR) based on dynamic Miller compensation (DMC) is presented in this brief. By utilizing different Miller capacitors to compensate the LDR at different load ranges, the proposed DMC technique can extend the loop bandwidth and enhance the transient performances. The DMC ...

In order to improve the stability and transient response of the proposes LDO with high current handling capabilities, this paper proposed a dynamic pseudo equivalent series resistance (DPESR) zero compensation scheme.

In order to improve the stability and transient response of the proposes LDO with high current handling capabilities, this paper proposed a dynamic pseudo equivalent series ...

Enhanced active feedback frequency compen-sation is employed to improve the frequency response. The proposed LDO is capable of providing high stability for current loads up to 150 mA with or without loading capacitors. The proposed LDO voltage regulator provides a loop ...

A big advantage of NPN regulators is that they are unconditionally stable (most require no external

capacitors). An LDO does require at least one external capacitor on the output to ...

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A big advantage of NPN regulators is that they are unconditionally stable (most require no external capacitors). An LDO does require at least one external capacitor on the output to reduce the loop bandwidth and provide some positive phase shift. Quasi-LDOstypically require some output capacitance,

The proposed adaptive G m cell compensation (AGCC) technique replaces the traditional capacitor compensation, ensuring stability across the full load range while preserving bandwidth. The design resolves the trade-off between bandwidth and power consumption by integrating adaptive biasing and substrate driving techniques, achieving fast ...

Selecting the best capacitor for a switching voltage regulator"s output filter is not a trivial task. However, a good starting point is to estimate the maximum ESR and minimum capacitance for a given output voltage ripple. The ESR can be calculated from the formula: And the minimum output capacitance (C OUT) can be estimated from the following equation: ...

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