Structured Electronic Design

Design of the Bandwidth
of
Negative Feedback Amplifiers

Anton J.M. Montagne

Bandwidth definition

Bandwidth definition

$$A_f = A_{f\infty} \frac{-L}{1-L}$$

Bandwidth definition

$$A_f = A_{f\infty}\frac{-L}{1-L}$$

Source-to-load transfer

Bandwidth definition

$$A_f = A_{f\infty}\frac{-L}{1-L}$$

Source-to-load transfer

Asymptotic gain equals ideal gain (proper lgRef selection)

Bandwidth definition

$$A_f = A_{f\infty} \frac{-L}{1-L}$$

Loop gain

Source-to-load transfer

Asymptotic gain equals ideal gain (proper lgRef selection)

Bandwidth definition

$$A_f = A_{f\infty}\frac{-L}{1-L}$$

Loop gain

Source-to-load
transfer

Asymptotic gain
equals ideal gain
(proper lgRef selection)

Servo function
deviates from unity
as a result of a finite loop gain

Bandwidth definition

$$A_f = A_{f\infty} \frac{-L}{1-L}$$

Loop gain

Source-to-load transfer

Asymptotic gain equals ideal gain (proper lgRef selection)

Servo function deviates from unity as a result of a finite loop gain

1. Desired filter characteristic designed with the ideal gain

Bandwidth definition

$$A_f = A_{f\infty} \frac{-L}{1-L}$$

Loop gain

Source-to-load transfer

Asymptotic gain equals ideal gain (proper lgRef selection)

Servo function deviates from unity as a result of a finite loop gain

1. Desired filter characteristic designed with the ideal gain
2. Bandwidth definition decoupled from desired filter characteristic

Bandwidth definition

$$A_f = A_{f\infty} \frac{-L}{1-L}$$

Loop gain

Source-to-load transfer

Asymptotic gain equals ideal gain (proper lgRef selection)

Servo function deviates from unity as a result of a finite loop gain

1. Desired filter characteristic designed with the ideal gain
2. Bandwidth definition decoupled from desired filter characteristic
3. Bandwidth will be defined as difference between low-pass -3dB and high-pass -3dB frequencies of servo function

Bandwidth definition

$$A_f = A_{f\infty}\frac{-L}{1-L}$$

Loop gain

Source-to-load transfer

Asymptotic gain equals ideal gain (proper lgRef selection)

Servo function deviates from unity as a result of a finite loop gain

1. Desired filter characteristic designed with the ideal gain
2. Bandwidth definition decoupled from desired filter characteristic
3. Bandwidth will be defined as difference between low-pass -3dB and high-pass -3dB frequencies of servo function

