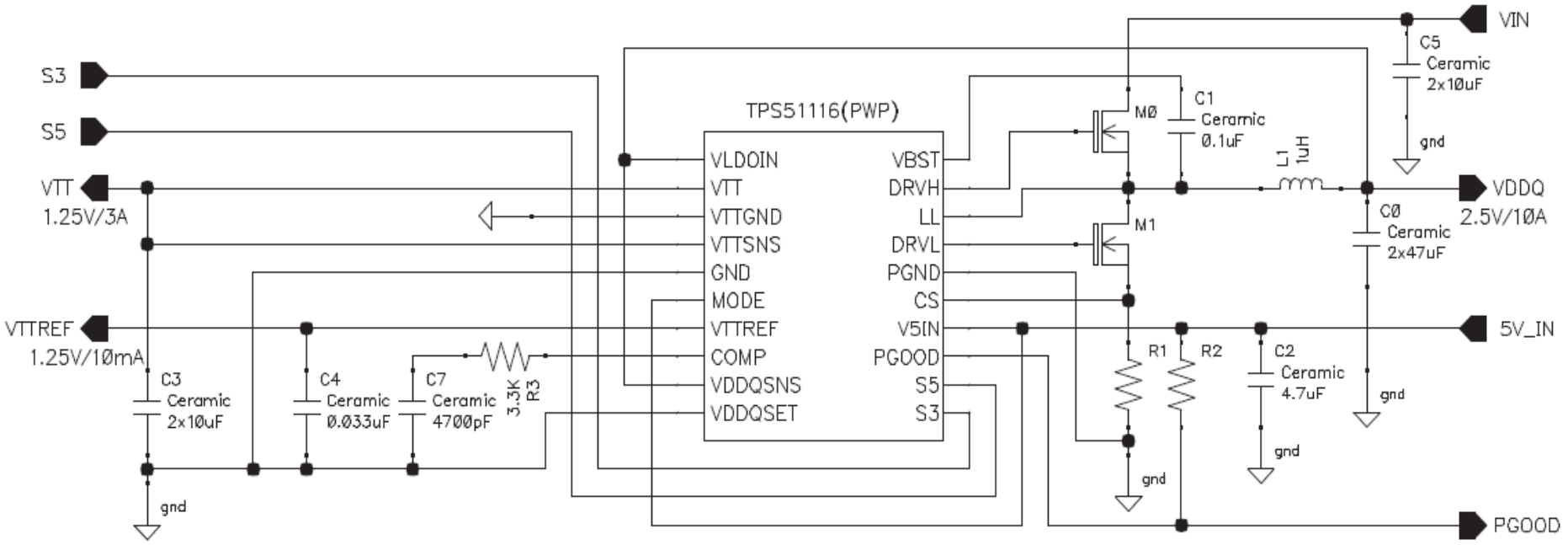
Data Sheet 24page TPS51116 Schematic



VDDQ=2.5V (DDR), Current mode, Rsense, No Discharge

Figure 6. Current Mode, PWP Package

Data Sheet 31page

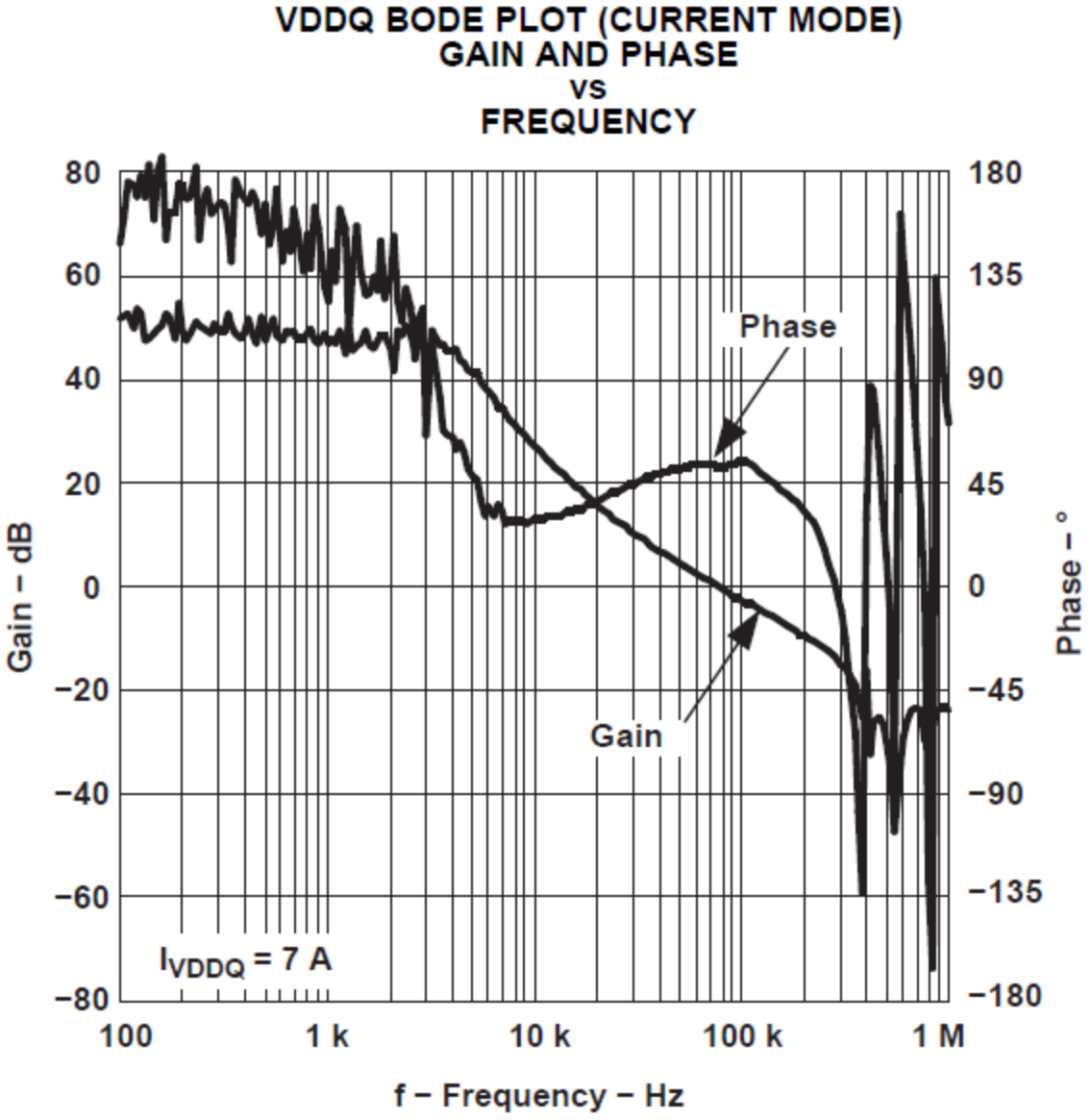


Figure 34.

Total open loop transfer function of the whole system is given by Equation 6.

$$H(s) = H_1(s) \times H_2(s) \times H_3(s) \tag{6}$$

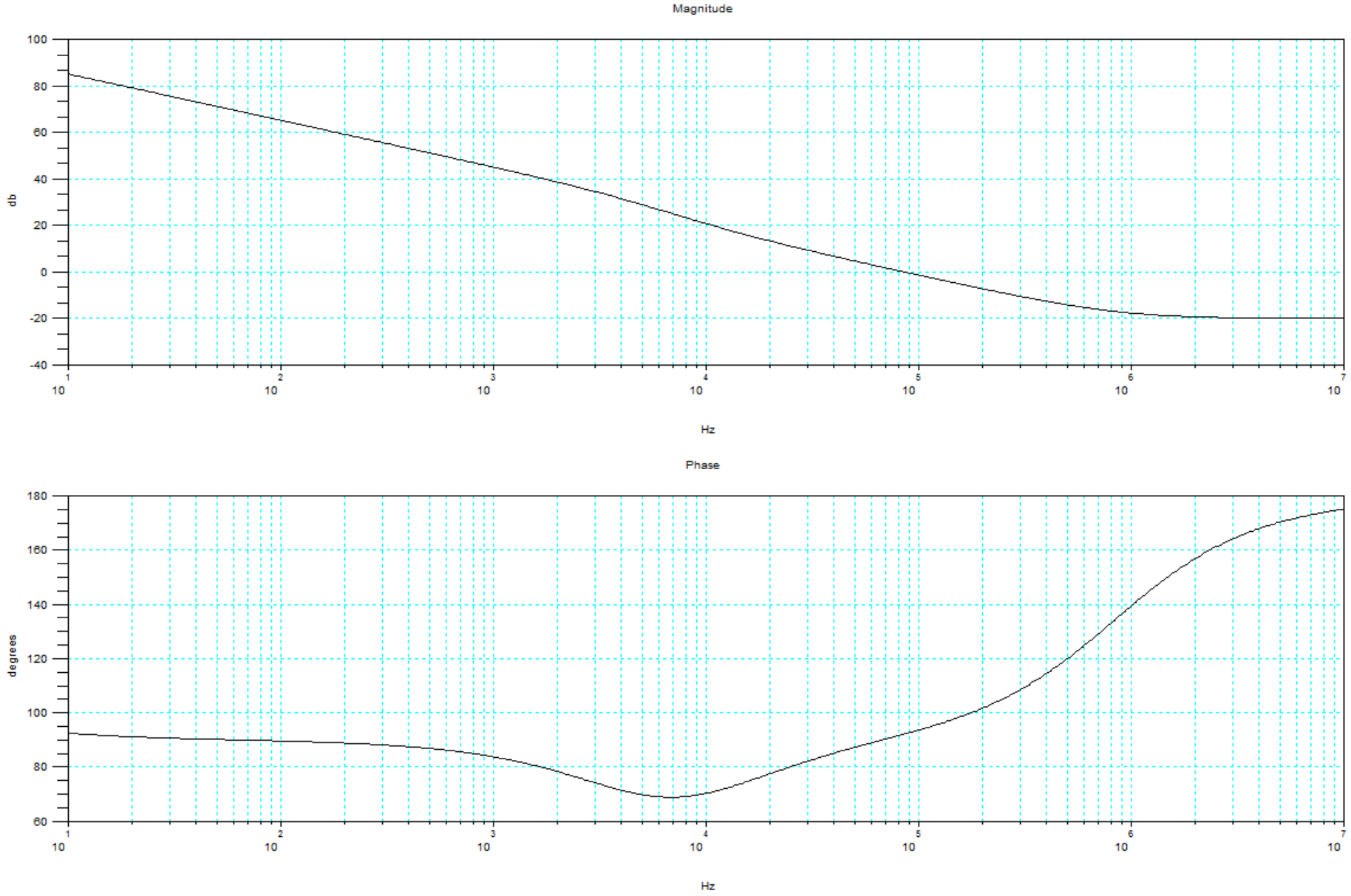
Assuming RL>>ESR, R_O>>R_C and C_C>>C_{C2}, each transfer function of the three blocks is shown starting with Equation 7.

$$H_1(s) = \frac{R2}{(R2 + R1)} \tag{7}$$

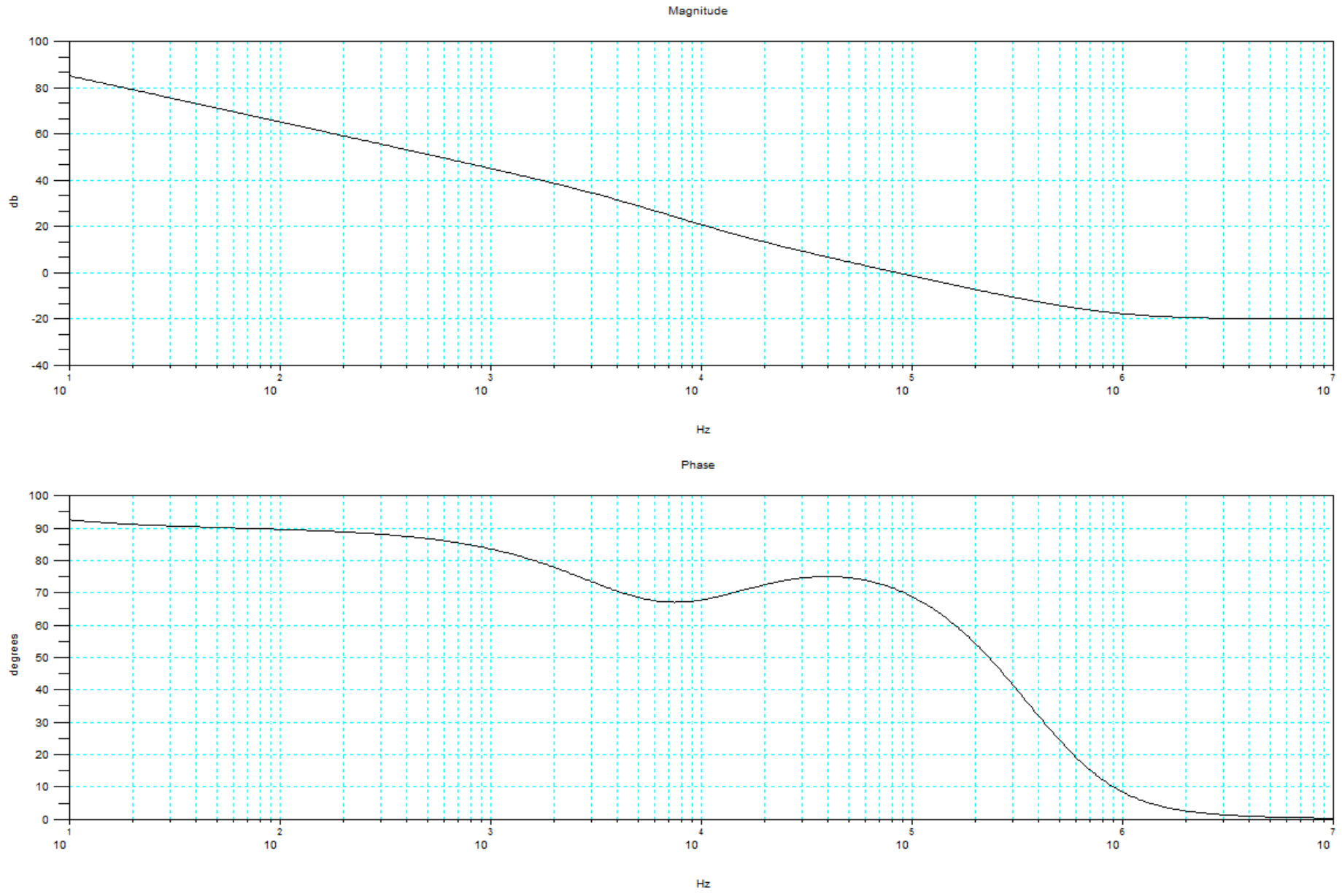
$$H_2(s) = -gm \times \frac{R_O\left(1 + s \times C_C \times R_C\right)}{\left(1 + s \times C_C \times R_O\right)\left(1 + s \times C_{C2} \times R_C\right)} \tag{8}$$

$$H_3(s) = \frac{(1 + s \times C_O \times ESR)}{\left(1 + s \times C_O \times RL\right)} \times \frac{RL}{R_S} \tag{9}$$

Calculated by inputting the transfer function of the data sheet Equation 6.
Vin=12V、Vout=2.5V、Iout=7A、fsw=400kHz
L=1μH、Cout=94μF、ESR=2mΩ、R3=3.3kΩ、C7=4700pF



Calculated by inputting the transfer function of the data sheet Equation 6 multiply $H(4) = exp^{-sT}$ T=0.7μs
Vin=12V、Vout=2.5V、Iout=7A、fsw=400kHz
L=1μH、Cout=94μF、ESR=2mΩ、R3=3.3kΩ、C7=4700pF



Data Sheet 18page Figure 2. Linearizing the Modulator

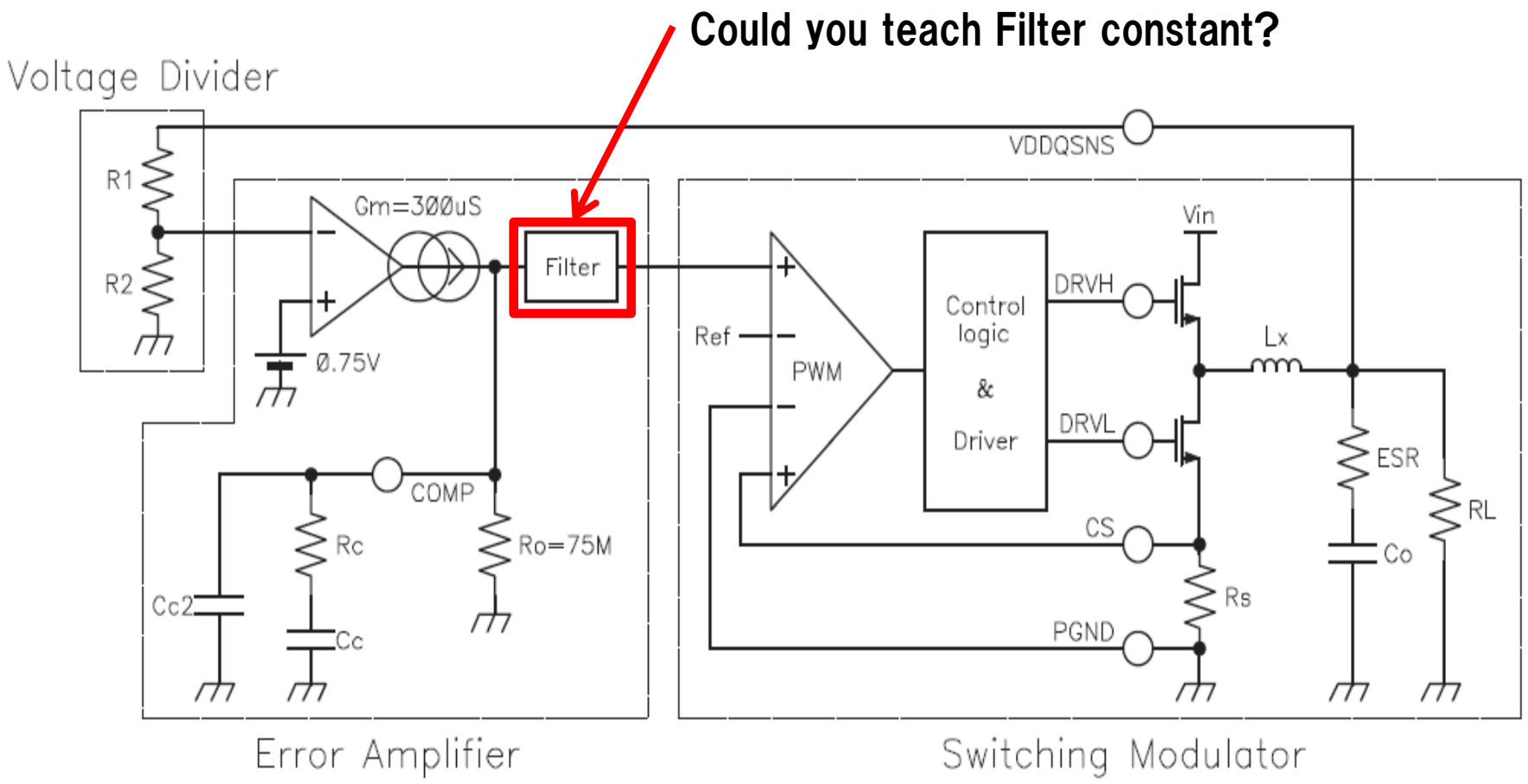


Figure 2. Linearizing the Modulator

Calculated by inputting the transfer function of the data sheet Equation 6 multiply $H4(s) = exp^{-sT}$ T=0.7μs multiply $H5(s) = \frac{1}{(Rf \times Cf \times s+1)}$ Filter Rf=10kΩ、Cf=5pF

Vin=12V、Vout=2.5V、Iout=7A、fsw=400kHz、L=1μH、Cout=94μF、ESR=2mΩ、R3=3.3kΩ、C7=4700pF