I derived the small-signal response of the Active Clamp Forward (ACF) converter in voltage mode and presented it at APEC in 2014. Once this task was over, I tried to look at the ACF operated in current mode and see the type of response it could deliver. I still used the PWMVM switch model to which I added a duty ratio factory, generating the variable D in relationship to a voltage setpoint V_c and a sense element. Unfortunately, I did not find the time to derive the small-signal response in current mode. However, I was able to compare the ac response brought by my modeling approach to the ac response given by Simplis. The overall shape agrees well but the mismatch in the notch is probably due to an operating point difference. Not a big deal to fix but I had other on-going projects and I left the ACF operated in current mode aside

B3 $((V(Vc)-(I(VIC)^{*}{Ri^{*}N}+I(VLP)^{*}{Ri}))^{*}{Fsw})/({Stot}+{Ri^{*}N}^{*}V(a,c)/(2^{*}{L}))$

X2 PWMCCMVM Β4 D1 VIC L1 Voltage out mbrp30045ct 3.32V 47.4V 7.91V 0.5u 48.0V \mathbf{r} <Vout 3.87V 3.87V 3.87V V1 X1 {L2 C2 C1 lin ≻-D≯ 490mV XFMR RATIO = N 48 20u 0.2u 500u 93.5V D 0V 48.0V PWM switch VM P R2 VLP B2 50m {ron2}*I(VLP) Voltage 48.0V 0V Ŧ Vclp > ∕clp ⁺ B1 V5 Voltage 47.7V $({ron1}^{(UVLP)+(UV5)/V(D)))^{V(D)}$ parameters N=1/6 ron1=100m X3 93.5V σ L=500n PWMCCMVM PWM switch VM Fsw=500k D 620mV ron2=1 + B3 Ri=100m + V4 {Vc} AC = 1 Voltage Sm=(48/20u)*Ri $((V(Vc)-(I(VIC)^{*}{Ri^{*}N}+I(VLP)^{*}{Ri}))^{*}{Fsw})/({Stot}+{Ri^{*}N}^{*}V(a,c)/(2^{*}{L}))$ Sram=(2.5/(1/Fsw))*Ri Stot=Sram*100m+Se --D Vc=620m ÷

{ron1}*(I(VLP)+(I(V5)/V(D)))



