1. I generated a Mathcad sheet for datasheet example. Then updated it with my design. I am noticing that my High line (275vac and 400vdc) Frequency at current limit , I am above 130khz or close to it, However in datasheet example high line frequency is only 62khz. Is there any general guidelines need to be followed here?
Since max frequency is 130khz I assume for higher frequency requirements, after turn off, the delay extends until 130khz is met and next cycle start. The losses associated with ringing is the only drawback here waiting for 13okhz?

Datasheet example

$$Freq\_127 := \frac{1}{\left(Ipk \cdot Lp \cdot \left(\frac{1}{Vdcmin} + \frac{1}{((Vout + Vf) \cdot Nps)}\right)\right) + Td}$$

$Freq\_127 = 44.725\ kHz$

$$Freq\_325 := \frac{1}{\left(Ipk \cdot Lp \cdot \left(\frac{1}{Vdcmax} + \frac{1}{((Vout + Vf) \cdot Nps)}\right)\right) + Td}$$

$Freq\_325 = 62.645\ kHz$

ower at Current limit

My design Example

For steady state 60vac max power is only 15v x 60mA. for start up ,need to charge 3500u cap to 15v

$$Freq\_60 := \frac{1}{\left(Ipk \cdot Lp \cdot \left(\frac{1}{Vdc60} + \frac{1}{((Vout + Vf) \cdot Nps)}\right)\right) + Td}$$

$Freq\_60 = 60.345\ kHz$

For steady state 60vac max power is only 15v x 2A. for start up, need to charge 3500u cap to 15v

$$Freq\_85 := \frac{1}{\left(Ipk \cdot Lp \cdot \left(\frac{1}{Vdc85} + \frac{1}{((Vout + Vf) \cdot Nps)}\right)\right) + Td}$$

$Freq\_85 = 74.925\ kHz$

For steady state 275vac max power is only 15v x 2A. for start up need to charge 3500u cap to 15v

$$Freq\_275 := \frac{1}{\left(Ipk \cdot Lp \cdot \left(\frac{1}{Vdc275} + \frac{1}{((Vout + Vf) \cdot Nps)}\right)\right) + Td}$$

$Freq\_275 = 126.796\ kHz$

For steady state 85vac max power is only 15v x 2A. for start up need to charge 3500u cap to 15v
.At 400v startup will not happen, but short ciruit can happen which can activate pulse by pulse I limit

$$Freq\_400 := \frac{1}{\left(Ipk \cdot Lp \cdot \left(\frac{1}{Vdc400} + \frac{1}{((Vout + Vf) \cdot Nps)}\right)\right) + Td}$$

$Freq\_400 = 144.192\ kHz$

2. In Lm5023 datasheet Eq 33 introduces the term Freq_comp
3. In layman's terms , Can anyone explain the purpose of calculating Freq-comp
4. In my design the comp value iam getting is >130khz. Can I proceed with R external and Rff calculations with the value (196khz) I am getting ?

Datasheet Example

$$Freq\_Comp := \frac{4}{\left(\sqrt{(4 \cdot Td) + \frac{2 \cdot Lp \cdot Pout\_127 \cdot (Vout + Vf + (Nsp \cdot Vdcmax))^2}{\eta \cdot Vdcmax^2 \cdot (Vout + Vf)^2}} + \frac{\sqrt{2} \cdot Lp \cdot (Vout + Vf + (Nsp \cdot Vdcmax)) \cdot \sqrt{\frac{Pout\_127}{\eta \cdot Lp}}}{Vdcmax \cdot (Vout + Vf)}\right)^2}$$

$$Freq\_Comp = 85.363\ kHz$$

My Design

$$Freq\_Comp := \frac{4}{\left(\sqrt{(4 \cdot Td) + \frac{2 \cdot Lp \cdot Pout\_85 \cdot (Vout + Vf + (Nsp \cdot Vdc400))^2}{\eta \cdot Vdc400^2 \cdot (Vout + Vf)^2}} + \frac{\sqrt{2} \cdot Lp \cdot (Vout + Vf + (Nsp \cdot Vdc400)) \cdot \sqrt{\frac{Pout\_85}{\eta \cdot Lp}}}{Vdc400 \cdot (Vout + Vf)}\right)^2}$$

$$Freq\_Comp = 243.654\ kHz$$