

- + 6 V is recommended for the gate drive.
- It is recommended to start with a turn-on gate resistor in the range between **20Ω to 47Ω**, and then adjust the resistor to achieve the desired slew rate
- GaN enhancement mode HEMT devices have a **positive temperature coefficient on-state resistance** which helps to balance the current.
- However, in practical circuit safety margin must be considered: for GS66508 typical 50-100ns is chosen for dead time.
- For gate, clamping diode will be helpful to protect GaN from spikes.
- Recommend $R_{G(ON)}/R_{G(OFF)} \geq 5-10$ ratio for controlling the miller effect
- $L_s = 0.05nH$

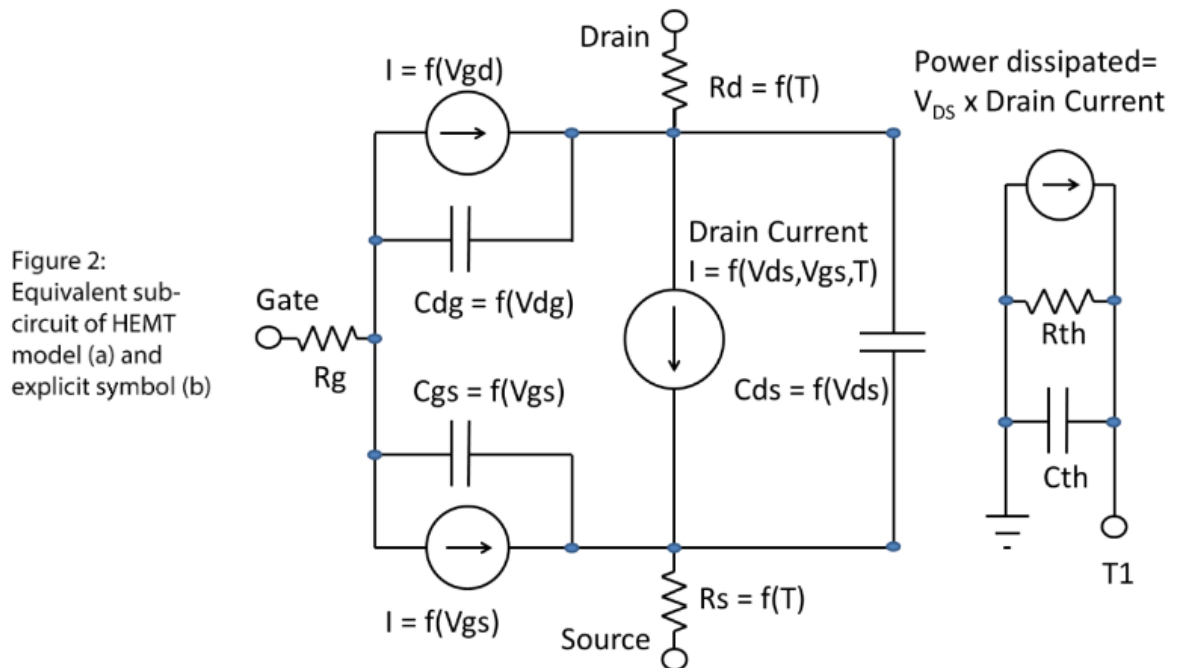


Figure 1: Gate Leakage Currents are also modeled

Set up the simulation parameters:

.option temp=25 ; Junction temperature setting, adjust between 25 and 150C

.param VBUS = 400; DC bus voltage
.param ISW = 30; Switching Current
.param RGON =10; Turn-on Gate Resistor
.param RGOFF = 2; Turn-off Gate Resistor

Switching test parameters

.param VDRV_P = 6; Turn-on gate voltage
.param VDRV_N = 3; Turn-off negative gate voltage

.param DT = 100n; dead time

.param T_ON = 2U; Turn-on period

.param L_DPT = VBUS * (T_ON-2*DT) / ISW ; calculated L for switching current setting

.param T_P = 2.5U; total period

.param L_GATE =3N; gate inductance

.param LS_EX= 10p; external source inductance

.param L_DS =3N; power loop inductance

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