Gate resistor calculation

Calculation based on: <https://www.ti.com/lit/ab/slla385a/slla385a.pdf?ts=1703426401381>

(retrieved on 24.12.2023)

Ein Bild, das Text, Diagramm, Reihe, Screenshot enthält.

Automatisch generierte Beschreibung

Calculating the source inductance Ls

The CISS of the DMN10H220LK3 is 384pF and a ring frequency of 4MHz

We need a quality factor Q between 0.5 and 1. A Value greater than 0.5 has a better dV/dt.  
Q is defined as follow:

With a Q of 0.7 we get a of:

To obtain the gate resistor, we need to subtract the gate resistor of the MOSFET (RG,I) and the resistor RHI or RLO of the gate driver. (RG = RHI or LO+RGATE+RG,I)

RGATE = 2.4Ohm (DMN10H220LK3)

Unfortunately, there is no reference to the RHI or RLO of the gate driver in the data sheet. We therefore assume that this is 0 ohms.

This results in a gate resistance of around 205 ohms.

Note: I have assumed that the ring frequency is 4 MHz. This value must be measured in order to obtain a correct result.