IR11688 calculations (based on Infineon app. note)

SR mosfet parameters	**FDD86250_F085**	
C_{iss} [F]	1.90E-09	*Input capacitance*
R_{gFET} [Ω]	0.5	*Gate resistance*
Q_g [C]	37.00E-09	*Total gate charge (max.)*
Q_{gd} [C]	7.00E-09	*Gate to drain (Miller) charge*
Q_{gs} [C]	11.00E-09	*Gate to source charge*
V_{gs} [V]	10	*Gate to source voltage*
V_m [V]	5.5	*Gate plateau voltage*
V_F [V]	1.2	*Body diode forward voltage drop (max.)*

CF-DIC parameters		
$f_{sw, max}$ [Hz]	31,000	*Push-pull switching frequency*
Gate trace length [mm]	12	
L_g [H]	12.00E-09	*Trace loop inductance (1 nH/mm)*
$T_{IC, amb}$ [°C]	50	*Ambient temperature (i.e. PCB temperature)*
V_{cc}	6.5	*Supply voltage*
I_{out} [A]	5	*Max. Output current*

IR11688 parameters		
R_{up} [Ω]	6	*Pull up resistance*
R_{down} [Ω]	1.5	*Pull down resistance*
I_{QCC} [A]	500.00E-06	*Quiescent current (max.)*
$V_{g, high}$ [V]	11.9	*Gate high voltage, typical*
T_{b1} [s]	250.00E-09	*Approx. equal to T_{Don}*

Minimum recommended gate resistor			
$R_{g, loop} > 2 * sqrt (L_g / C_{iss})$			5.0
$R_g = R_{g, loop} – R_{gFET} – R_{down}$			3.0
R_g [Ω]		*Selected resistor*	**3.3**

Gate resistor and IC power loss calculation			
$C_{sync} = (Q_g – Q_{gd} - Q_{gs}) / (V_{gs} - V_m)$		4.22E-09	4.22 nF
$I_{cc} = I_{QCC} + 2 * f_{sw, max} * C_{sync} * V_{cc} + (0.285 * V_{cc} – 0.425) * 1E-9 * f_{sw, max}$		2.25E-03	2.25 mA
$P_{dr} = C_{sync} * V_{cc}$ ^2 $* F_{sw, max}$		5.53E-03	5.53 mW
$R_{sink} = 2 * R_{down}$	3		
$R_{source} = 2 * R_{up}$	12		
$P_{Rgext} = [(R_g + R_{gFET}) / (R_g + R_{gFET} + R_{source}) + (R_g + R_{gFET}) / (R_g + R_{gFET} + R_{sink})] * P_{dr} / 2$		2.21E-03	2.21 mW
$P_{IC} = V_{cc} * I_{cc} – 2 * P_{Rgext}$		10.18E-03	10.18 mW

SR MOSFET power loss calculation			
$I_{SPK} = Pi / 2 * I_{out}$		7.85E+00	
$I_{S1} = I_{SPK} * sin(2 * Pi * f_{sw, max} * T_{b1})$		382.30E-03	
$P_{body1} = 1 / 2 * T_{b1} * f_{sw, max} * V_F * I_{S1}$		1.78E-03	1.78 mW

Supply voltage filtering			
Δ_{vcc} [V]	0.1	*Acceptable ripple*	
R_{cc} [Ω]	10	*Selected resistor*	
$C_{dc, min} = I_{cc} / (f_{sw, min}) * \Delta_{Vcc}$		7.24454E-07	0.72 µF