Appendix

The Olavsbråten Parasite model equations

$$L_g = 0.004444 * \left(W_{gate}\right)^{0.509}$$

$$R_g = 2 * \frac{0.0048 * W_{gate} + \frac{598.7}{W_{gate}}}{N_{fingers}} + 0.45 * (\frac{1}{N_{fingers}} - 0.5)$$

$$C_{gd} = 1.317 * 10^{-4} * W_{gate} * \frac{N_{fingers}}{2}$$

$$C_{ds} = \left(4.708 * 10^{-4} * W_{gate} + 10^{-3}\right) * \frac{N_{fingers}}{2}$$

$$R_{ds} = \frac{1.3 * 10^{-4} * W_{gate} + \frac{702}{W_{gate}}}{N_{fingers}} * 2 + 0.0015 * (N_{fingers} - 2)$$

$$L_d = 0.004754 * \left(W_{gate}\right)^{0.5} + 5.1 * 10^{-4}$$

Cree Foundry Parameters

Conducive metal parameters

	Sheet Resistance $[m\Omega/\boxdot]$			DC Current $[mA/\mu m]$
	Min	Typ	Max	Max
Metal1	7.3	8.3	9.3	15
Metal2	7.3	8.3	9.3	15

Microstrip transmission lines

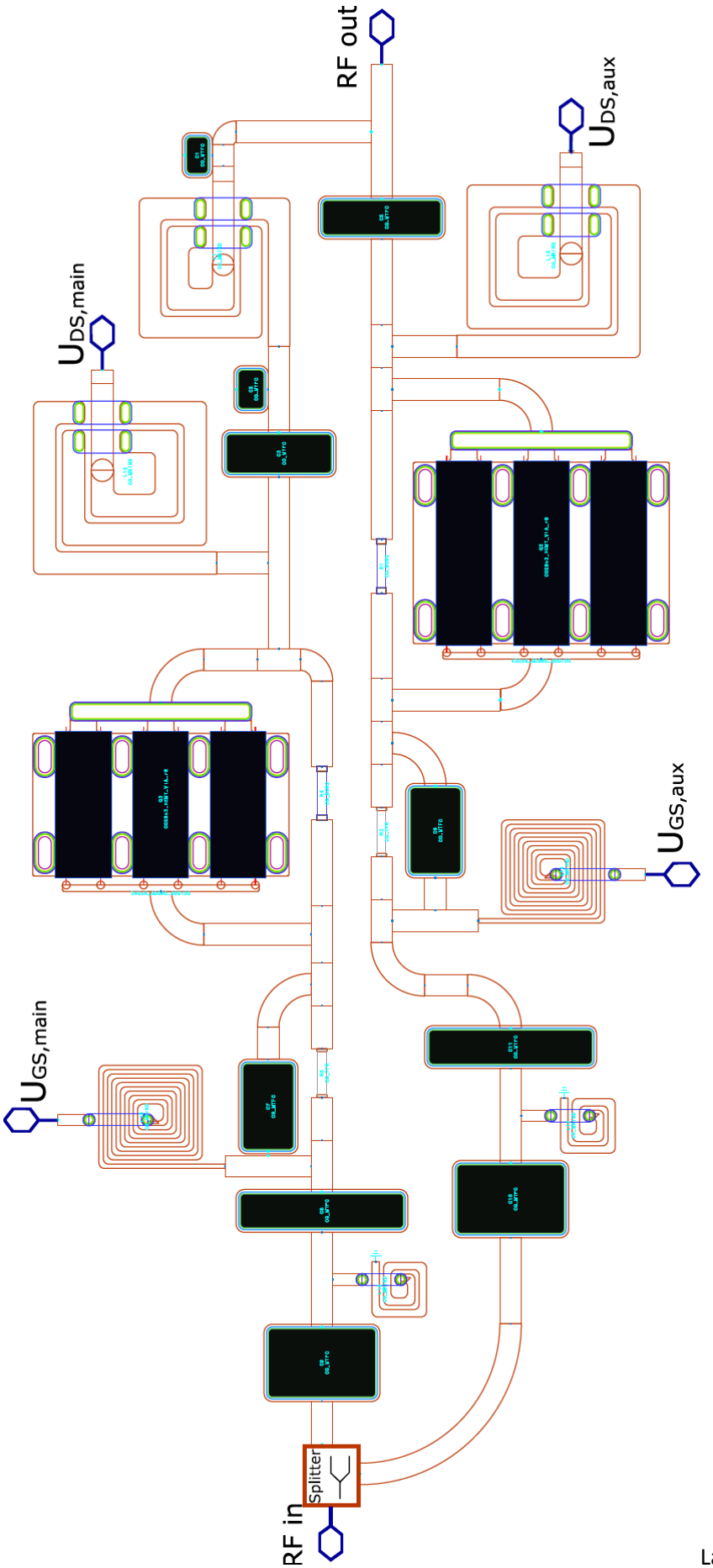
	Min width $[\mu m]$	
	Dimension	Tolerance
Metal1	6	± 1

MMIC Resistors

	R_{square} [Ohm/sq]			Min Width [um]
	Min	Typ	Max	
Thin Film Resistor	10.5	12	13.5	8
BGR1	45	70	110	10
BGR2	375	414	455	10

MMIC MIM Capacitor

	C_A [pF/mm^2]		
	Min	Typ	Max
MIM Capacitor	162	180	198



Layout of MMIC circuit