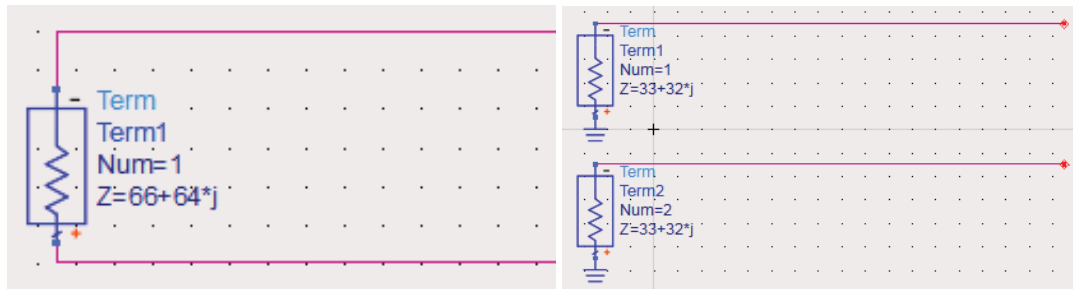




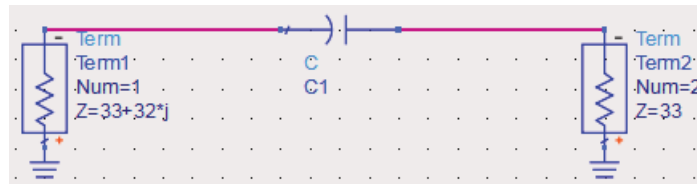
## Differential Pair Trace



The CC2538 differential impedance is shown in the left-hand side of above diagrams. This impedance can also be described as the right-hand side diagram if the reference plane changes to ground and the coupling is omitted.

## Matching the impedance from 66 + j64 Ohm to 66 Ohm

If we focus on one trace of the differential pair and the ground plane is used as reference. The Term1 and Term2 are matched if we can find a C1 which has impedance -j32 @ 2.45Ghz. The CC2538 RF center operation frequency is 2.45Ghz.



We know that

$$L = \frac{X_L}{\omega} = \frac{X_L}{2\pi f}$$
$$C = \frac{1}{\omega X_C} = \frac{1}{2\pi f X_C}$$

So

$$C1 = \frac{1}{2 * \pi * (2.45 * 10^9) * 32} = 2.030037539 * 10^{-12} F \approx 2 pF$$

The matching result is plotted on the smith chart: