

Abstract

SEMICONDUCTOR DEVICE AND METHOD OF FORMING DIRECTIONAL RF COUPLER WITH IPD FOR ADDITIONAL RF SIGNAL PROCESSING

A semiconductor device has a substrate and RF coupler formed over the substrate. The RF coupler has a first conductive trace with a first end coupled to a first terminal of the semiconductor device, and a second conductive trace with a first end coupled to a second terminal of the semiconductor device. The first conductive trace is placed in proximity to a first portion of the second conductive trace. An integrated passive device is formed over the substrate. A second portion of the second conductive trace operates as a circuit component of the integrated passive device. The integrated passive device can be a balun or low-pass filter. The RF coupler also has a first capacitor coupled to the first terminal of the semiconductor device, and second capacitor coupled to a third terminal of the semiconductor device for higher directivity. The second conductive trace is wound to exhibit an inductive property.

(Fig. 6)