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Title:	To design a microwave balanced resonator
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Abstract:	The electromagnetic scattering data of a linear microstrip resonator are formulated.Now we have here compared the results of 2 port gap resonators and 3 port gap resonators The resonator layout consists of a middle microstrip separated from the source and out- put masses through dielectric gaps. The gaps of the resonator are represented through capacitively coupled networks that is one manner or we can construct symmetrical L-fashioned resonator pairs, shorted stubs which has critical coupling or a gap The middle frequency of the proposed device may be tuned from through converting the lengths of the resonator pairs. It is carried out at the Taconic CER- 10 with dielectric constant ε = 10, substrate height = 0.63mm. The dielectric constant of substrate is frequency established and the microstrip traces have been designed of width w = 0.65 mm and trace thickness 0.015mm with a view to have the function impedance of the lines, Zo same to 50 ohms and in the end it's ends are connencted to sma/smp connectors. However, this layout desires a extra extensive and especially extra complex fabrication process. So theres a theory, in general, predicts the following: because the order of the resonant mode will increase, the height depth will increase and the Q de- creases. whilst the gap separation will increase.Despite the unpromising signs the effects show, suggestions had been recommend about better coupling factor which have the ca- pability to nevertheless make the layout attractive. While those factor nevertheless baring the tendencies of a quicker and much less complicated fabrication. So another design of a resonator is a 3 port gap resonator which we can design so now to achieve decoupling, between the two of the three excited modes are chosen such that there is low mutual spatial overlapping between their field intensities and then, a third mode is imposed such that its field components are perpendicular to the other two modes and then we calculate the S pa- rameters So we use S parameters because it is not possible to calculate Voltage and current for frequency range in Rf So the design involves with ends of 4 mm resonators of 6 mm and 9.2mm and middle port 5 mm with gaps 0.45m and fabricated on Cer 10 substrate for a 3 port gap resonator
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