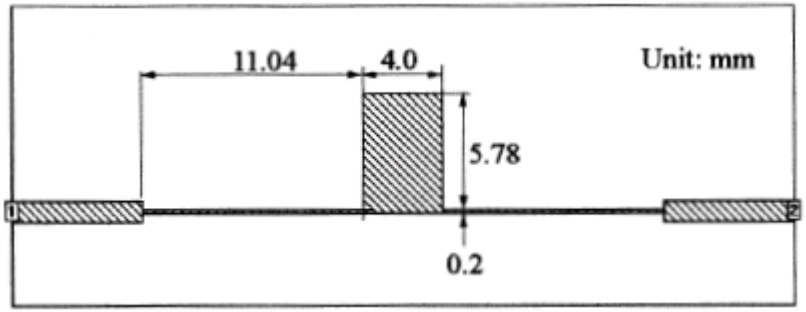
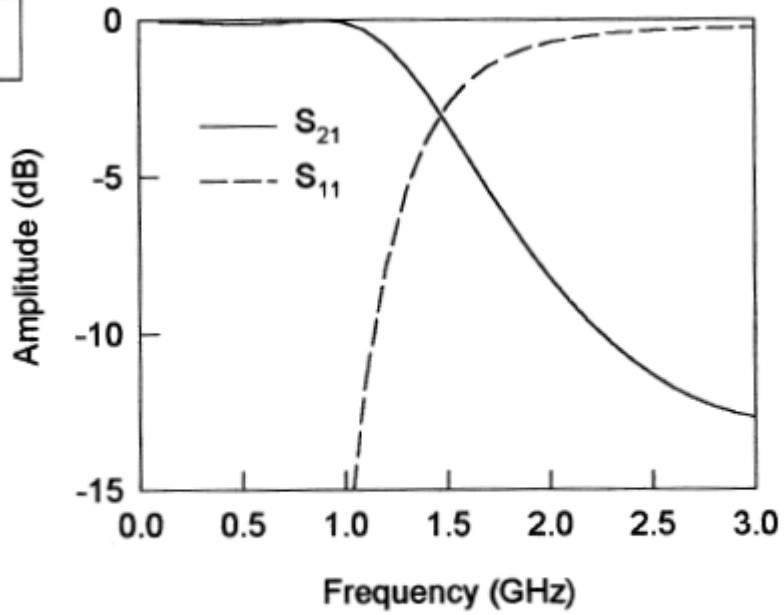
Microwave Filter Design Examples

1. Microstrip Filters

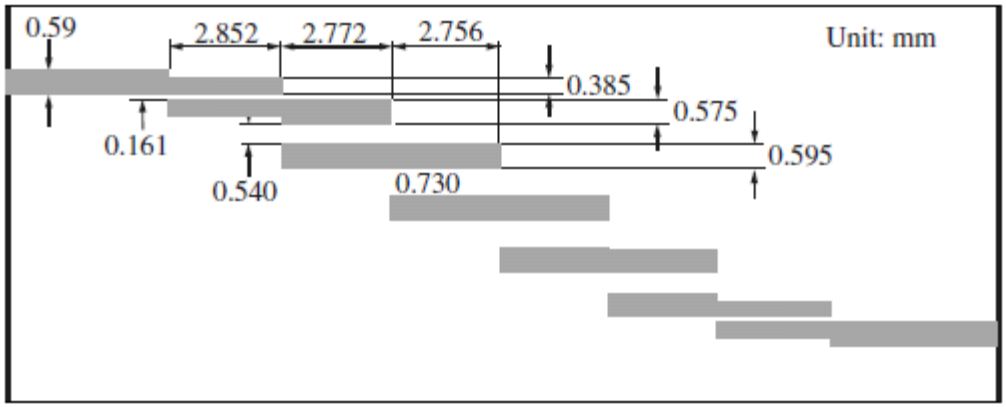
J.-S. Hong and M. J. Lancaster, *Microstrip Filters for RF/Microwave Applicaitons*



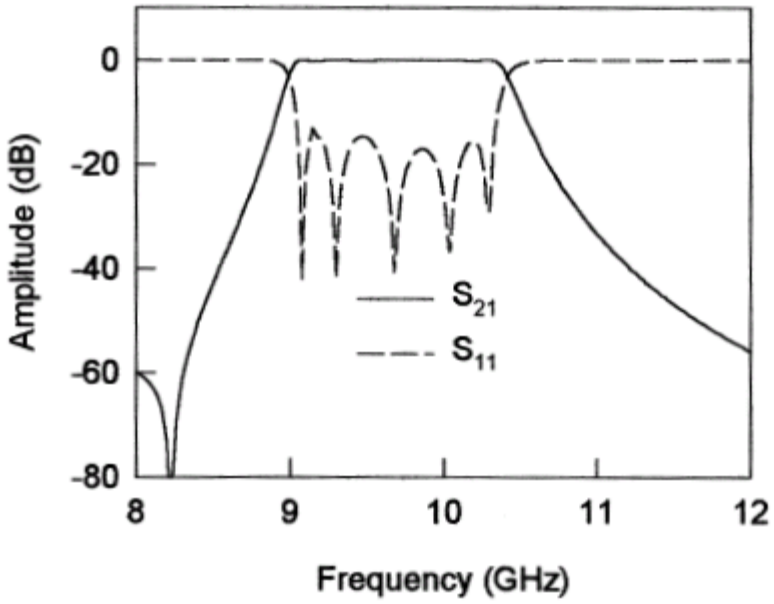


(*b*)

FIGURE 5.3 (*a*) Layout of a 3-pole microstrip lowpass filter using open-circuited stubs on a substrate with a relative dielectric constant of 10.8 and a thickness of 1.27 mm. (*b*) Full-wave EM simulated performance of the filter.

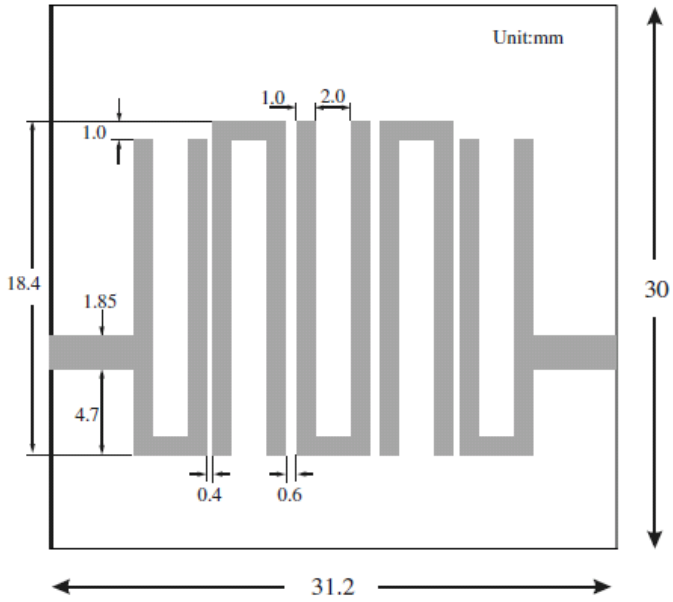


(*a*)

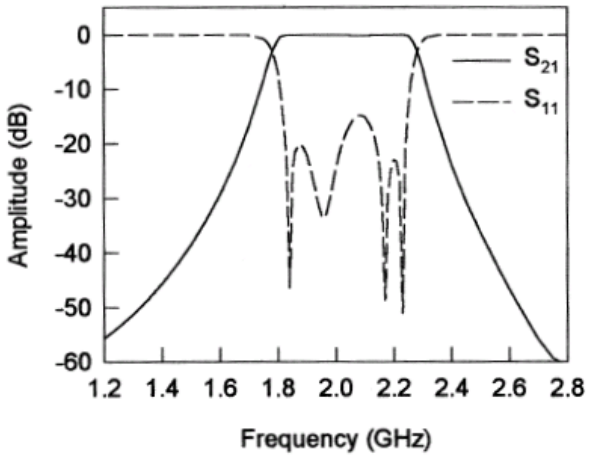


(*b*)

FIGURE 5.12 (*a*) Layout of a five-pole microstrip bandpass filter designed on a substrate with a relative dielectric constant of 10.2 and a thickness of 0.635 mm. (*b*) Frequency responses of the filter obtained by full-wave EM simulations.

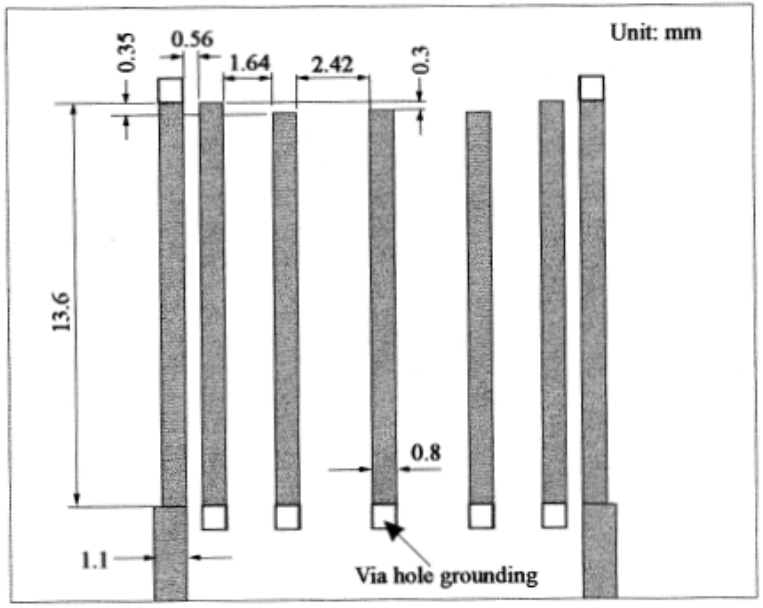


(*a*)

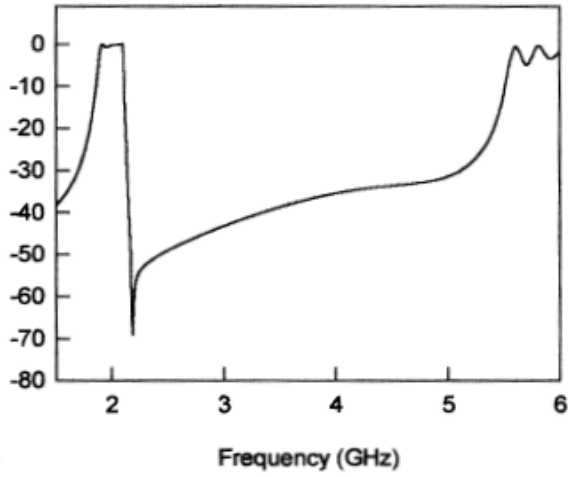


(*b*)

FIGURE 5.14 (*a*) Layout of a five-pole, hairpin-line microstrip bandpass filter on a 1.27-mm-thick substrate with a relative dielectric constant of 6.15. (*b*) Full-wave simulated performance of the filter.

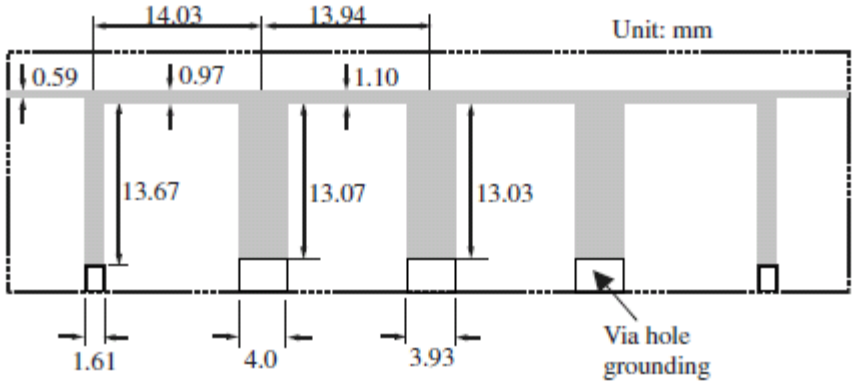


(*a*)

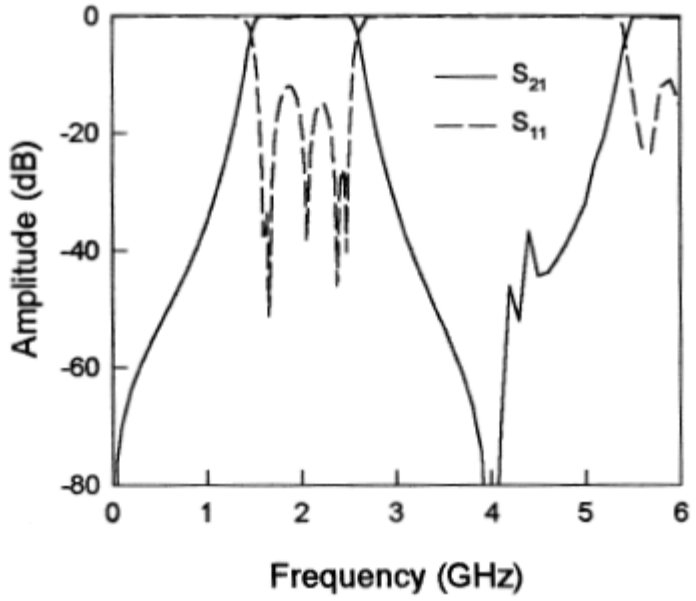


(*b*)

FIGURE 5.21 (*a*) Layout of the designed microstrip combline bandpass filter on a 1.27 mm thick substrate with a relative dielectric constant of 10.8. (*b*) Full-wave EM simulated performance of the filter.

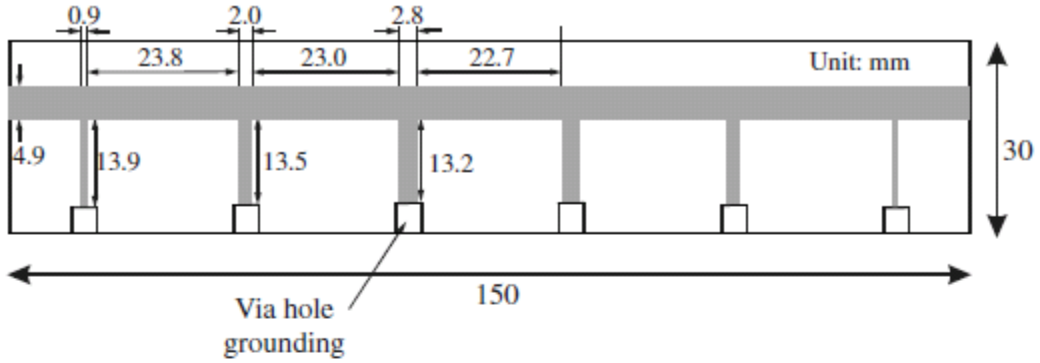


(*a*)

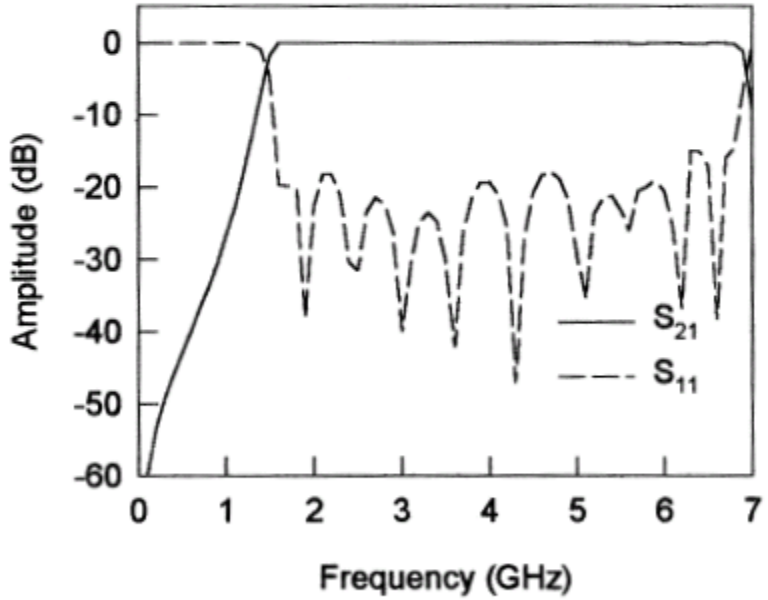


(*b*)

FIGURE 5.27 (*a*) Layout of the designed microstrip bandpass filter with quarter-wavelength short-circuited stubs on a 0.635 mm thick substrate with a relative dielectric constant of 10.2. (*b*) Full-wave EM simulated performance of the filter.

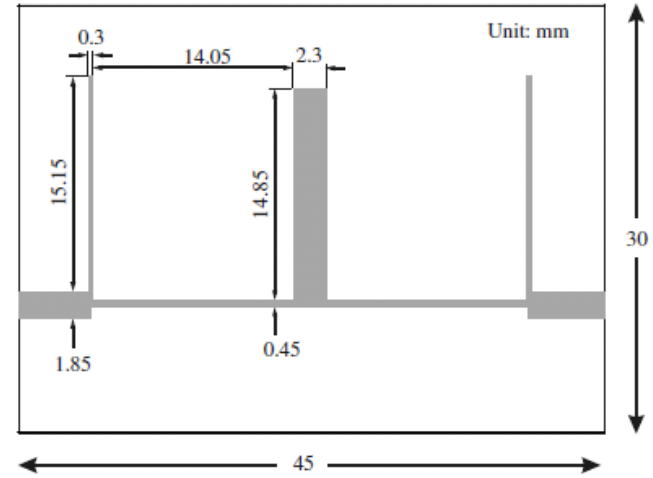


(*a*)

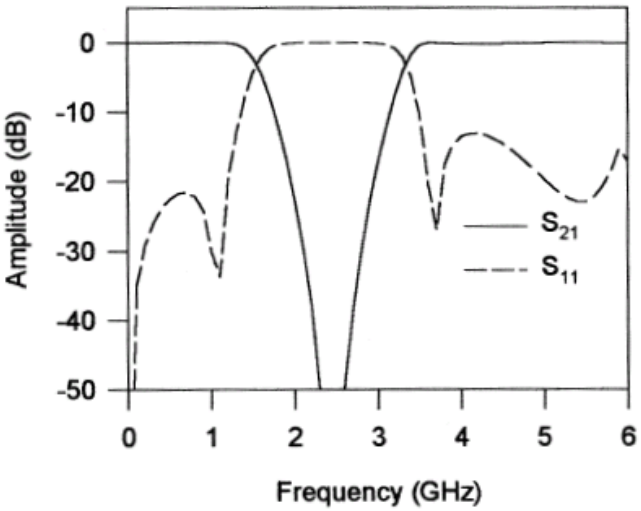


(*b*)

FIGURE 6.4 (*a*) A microstrip optimum highpass filter on a substrate with a relative dielectric constant of 2.2 and a thickness of 1.57 mm. (*b*) EM simulated performance of the microstrip optimum highpass filter.



(*a*)



(*b*)

FIGURE 6.13 (*a*) Layout of a wide-band microstrip bandstop filter on a substrate with a relative dielectric constant of 6.15 and a thickness of 1.27 mm. (*b*) Full-wave EM simulated frequency responses of the filter.