

Two Limiting Values of the Capacitance of Symmetrical Rectangular Coaxial Strip Transmission Line (Jul. 1981 [T-MTT])

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This paper determines the first two terms in two different expansions for the total capacitance of rectangular coaxial strip transmission line which are of interest in an improved approximation for the characteristic impedance of rectangular coaxial line. For this purpose, expansions which express the total capacitance of the rectangular coaxial strip transmission line exactly and explicitly in terms of its dimensions are introduced. As a by-product, it is shown how these expansions may be terminated after a few terms to obtain approximations of sufficient accuracy for most purposes. In the Appendix, certain results from the theory of elliptic functions, that are required in this paper but are not presented in the literature on this problem, are reviewed and in some cases extended.

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