

8. Literatura

- [1] J. Helszajn, Microwave Planar Passive Circuits and Filters, John Wiley & Sons, 1994
- [2] K. C. Gupta, R. Garg, I.J. Bahl, Microstrip Lines and Slotlines, Artech House, 1979
- [3] vlastní měření autora
- [4] K.C. Gupta, R. Garg, R Chadha, Computer-aided Design of Microwave Circuits, Artech House, 1981
- [5] H. A. Wheeler, "Transmission Line Properties of a Strip Line Between Parallel Planes," IEEE Transactions on Microwave Theory and Techniques, vol. MTT-26, No. 11, pp. 866-876, November 1978.
- [6] M. V. Schneider, "Microstrip Lines for Microwave Integrated Circuits." The Bell Systems Technical Journal, 48, 1969, 5, pp. 1421-1444
- [7] J. Svačina, soubor přednášek z mikrovlnné techniky, soukromý dar autorovi
- [8] R. P. Owens and M. H. N. Potok, "Analytical Methods for Calculating the Characteristic Impedance of Finite-Thickness Microstrip Lines," International Journal of Electronics, vol. 41, No. 4, 1976, pp. 399-403
- [9] B. C. Wadell, Transmission Line Design Handbook, Artech House, 1991
- [10] E. O. Hammerstad and F. Bekkadal, Microstrip Handbook, The University of Trondheim, ELAB report STF44 A74169, February 1975
- [11] E. O. Hammerstadt, "Equations for Microstrip Circuit Design", Proc. European Microwave Conf., 1975, pp. 268-272
- [12] W. J. Getsinger, "Microstrip Dispersion Model," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-21, 1973, pp. 34-39
- [13] T. C. Edwards, R. P. Owens, "2-18 GHz Dispersion Measurements on 10 - 100 Ω Microstrip Line on Sapphire", IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-24, 1976, No. 8, pp. 506-513
- [14] E. Hammerstad, O. Jansen, "Accurate Models for Microstri Computed-Aided Design. 1980 IEEE MTT-S International Microwave Symposium Digest. Washington D. C., pp. 407-409
- [15] R. P. Owens, "Predicted Frequency Dependence of Microstrip Characteristic Impedance Using the Planar-Waveguide Model", EL, Vol.12, 1976, No. 11, pp. 269-270

- [16] B. Bianco, et. al., "Frequency Dependence of Microstrip Parameters," *Alta Frequenza*, Vol. 43, 1974, pp. 413-416
- [17] C. E. Smith and R. S. Chang, "Microstrip Transmission Line with Finite-Width Dielectric and Ground Plane," *IEEE Transactions on Microwave Theory and Techniques*, Vol. MTT-33, No. 9, September 1985, pp. 835/839
- [18] S. B. Cohn, "Slotline on a Dielectric Substrate," *IEEE Transactions on Microwave Theory and Techniques*, Vol. MTT-17, 1969, 768-778
- [19] R. Garg and K. C. Gupta, "Expression for Wavelength and Impedance of Slotline," *IEEE Transactionson on Microwave Theory and Techniques*, Vol. MTT-24, 1976, p.532
- [20] R. Janaswamy and D. H. Schaubert, "Characteristic Impedance of a Wide Slotline on Low/Permittivity Substrates," *IEEE Transactions on Microwave Theory and Techniques*, Vol. MTT-34, No. 8, August 1986, pp. 900-902
- [21] M. E. Davis, E. W. Williams, A. C. Celestini, "Finite-Boundary Corrections for the Coplanar Waveguide Analysis," *IEEE Transactions on Microwave Theory and Techniques*, Vol. MTT-21, No. 9, September 1973, pp. 594-596
- [22] Hatsuda, T., "Computation of Coplanar-Type Strip Line Characteristics by Relaxation Method and its Applications to Microwave Circuits," *IEEE Transactions on Microwave Theory and Techniques*, Vol. MTT-21, 1973, pp. 594-596
- [23] Hoffmann K., Divina L., "Koplanární vedení-nové vztahy pro korekci na tloušťku pokovení.", In. sborník konference Radioelektronika 95, Vysoké Učení Technické v Brně, 26. a 27. dubna 1995, str. 224-227
- [24] Veyer, C., and Fouad-Hanna, V.: "Extension of the application of conformal mapping techniques to coplanar lines with finite dimensions", *International Journal of Electronics*, Vol. 48, No. 1, 1980, pp. 47-56
- [25] Ghione, G., Naldi, C.: "Analytical Formulas for Coplanar Lines in Hybrid and Monolithic MICs", *Electronics Letters*, Vol. 20, No. 4, February 1984, pp. 179-181
- [26] Kitazawa, T., Hayashi, Y., "Quasistatic characteristic of a coplanar waveguide with thick metal coating", *IEE Proceedings*, Vol. 133, Pt.H, No. 1, February 1986, pp. 18-20
- [27] Knorr, J.B., and Kuchler K.D., "Analysis of Coupled Slots and Coplanar Strips on Dielectric Substrate, "IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-23, 1975, pp. 541-548
- [28] Yamashita, E. and Atsuki K., "Analysis of Microstrip-Like Transmission Lines by Nonuniform Discretization of Integral Equations,"*IEEE Transactions on Microwave Theory and Techniques*, Vol. MTT-24, 1976, pp.195-200

- [29] Pintzos, Sotirios G., "Full-Wave Spectral-Domain Analysis of Coplanar Strips," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-39, No. 2, February 1991, pp. 239-246
- [30] Majidi-Ahy R., K. Weingarten, M. Riazat, D. Bloom, and B. Auld, "Electrooptic sampling measurements of dispersion characteristics of slotline and coplanar waveguide even and odd modes," in 1988 IEEE MTT-S Int. Microwave Symp. Dig., May 1988, pp. 301-304
- [31] Riazat M., Reza Majidi-Ahi, and I-Jaung Feng, "Propagation Modes and Dispersion Characteristics of Coplanar Waveguides," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-38, No. 3, March 1990, pp. 245-251
- [32] Hilberg W. "From Approximations to Exact Relations for Characteristic Impedances. IEEE Transactions on MTT, Vol. MTT-17, No. 5, May 1969, pp. 259-265
- [33] Cohn S. B., "Shielded Coupled-Strip Transmission Line," IRE Transactions -Microwave Theory and Techniques, Vol. MTT-3, October 1955, pp. 29-38
- [34] Wheeler, H. A., "Formulas for the Skin Effect," Proc.IRE, Vol. 30, Sept. 1942, pp. 412-424
- [35] Pregla, R., "Calculation of the Distributed Capacitances and Phase Velocities in Coupled Microstrip Lines by Conformal Mapping Techniques," AEU, Vol. 26, 1972, pp. 470-474
- [36] Bryant, T.G. and J.A. Weiss, "Parameters of Microstrip Transmission Lines and of Coupled Pairs of Microstrip Lines." IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-16, 1968, pp. 1021-1027
- [37] Young, L. and H. Sobol, Advances in Microwaves, Vol. 8, New York: Academia Press, 1974, pp. 295-320
- [38] Krage, M.K. and G.I. Hadadd, "Characteristics of Coupled Microstrip Transmission Lines-I: Coupled-Mode Formulation in Inhomogeneous Lines, II: Evaluation of Coupled-Line Parameters," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-18, 1970, pp. 217-228
- [39] Bergandt, H.G. and R. Pregla, "Calculation of Even-andOdd-Mode Capacitance Parameters for Coupled Microstrips," AEU, Vol. 26, 1972, pp. 153-158
- [40] Kowalski, Ga and R. Pregla, "Calculation of the Distributed Capacitances of Coupled Microstrips Using a Variational Integral," AEU. Vol. 27, 1973, pp. 51-52
- [41] Gunston, M.A.R. and J.R. Weale, "Variation of Microstrip Impedances with Strip Thickness," Electron Letters, Vol. 5, 1969, pp. 697-698
- [42] Getsinger, W.J., "Dispersion of Parallel-coupled Microstrip," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-21, 1973, pp. 144-145

- [43] Kirschning, Manfred, and Rolf H. Jansen, "Accurate Wide-Range Design Equations for the Frequency-Dependent Characteristic of Parallel Coupled Microstrip Lines," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-32, No. 1, January 1984, pp. 83-90
- [44] Rama Rao, B., "Effect of Loss and Frequency Dispersion on the Performance of Microstrip Directional Couplers and Coupled Line Filters," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-22, 1974, pp. 747-750
- [45] Tysl V., Obvody velmi vysokých kmitočtů II, skriptum ČVUT Praha, Fakulta elektrotechnická, Vydavatelství ČVUT, 1976
- [46] Rehnmark, S., "High Directivity CTL-Couplers and a New Technique for the Measurements of CTL-Coupler Parameters," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-25, No. 12, December 1977, pp. 1116-1121
- [47] Howe H. Jr., Stripline Circuit Design, Artech House, 1974
- [48] Lange J., "Interdigitated Stripline Quadrature Hybrid," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-17, December 1969, pp. 1150-1151
- [49] Ou W. P., "Design Equations for an Interdigitated Directional Coupler," IEEE Transactions on Microwave theory and Techniques, Vol. MTT-23, No. 2, February 1975, pp. 253-255
- [50] Osmani R. M. "Synthesis of Lange Couplers," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-29, No. 2, February 1981, pp. 168-170
- [51] Hinden, H. J. and Rosenzweig, A., " 3 dB Couplers Constructed from Two Tandem Connected 8,34 dB Asymetric Ciuplers", IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-16, No.2, February 1968, pp. 125-126
- [52] Cristal, E. G., and Young, L., "Theory and Tables of Optimum Summetrical TEM Mode Coupled Transmission Line Directional Couplers," IEEE Transactions on Microwave Theory and Techniques, Vo. MTT-13, No. 5, September 1965, pp. 544-558
- [53] Levy, R., "General Synthesis of Asymetric Multi-Element Directional Couplers, IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-11, No. 4, July 1963, pp. 226-237
- [54] Levy, R., "Tables for Asymetric Multi-Element Coupled Transmission Line Directional Couplers, IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-12, No. 3, May 1964, pp. 275-279
- [55] Reed, J., and G. J. Wheeler, "A Method of Analysis of Symetrical Four-Port Networks," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-4, No. 4, October 1956, pp. 246-252

- [56] Feldštejn, A. L., Javič L. R., Sintez četyrchpolusnikov i vosmipolusnikov na svč, Svjaz, Moskva 1971
- [57] Malorackij, L. G. Javič, L. R., Proektirovanie i rasčet svč elementov na poloskovych linijach, Sovetskoe radio, Moskva, 1972
- [58] Zehentner, J., Mikrovlnná integrovaná technika, skriptum ČVUT FEL, Praha 1983
- [59] Pon, C. Y., "Hybrid Ring Directional Couplers for Arbitrary Power Division," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-9, No. 6, November 1961, pp. 529-535
- [60] de Ronde, F. C., "A New Class of Microstrip Directional Couplers," In. 1970 G-MTT International Microwave Symposium Digest of Technical Papers 70.1,(1970 MWSYM), pp. 184-189
- [61] Schienk, B., "Hybrid Branchline Couplers - A Useful New Class of Directional Couplers," IEEE Transactions on Microwave Techniques, Vol. MTT-22, No. 10, October 1974, pp. 864-869
- [62] Schienk, B., and J. Koehler, "Improving the Isolation of 3-dB Couplers in Microstrip-slotline Technique," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-26, No. 1, January 1978, pp. 5-7
- [63] Hoffmann, R. K., and J. Siegel, "Microstrip-Slot Coupler Design-Part I: S-Parameters of Uncompensated and Compensated Couplers," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-30, No. 8, August 1982, pp. 1205-1210
- [64] Hoffmann, R. K., and J. Siegel, "Microstrip-Slot Coupler Design-Part II: Practical Design Aspects," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-30, No. 8, August 1982, pp. 1211-1216
- [65] Wilkinson, E., "An N-Way Hybrid Power Divider," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-8, No. 1, January 1960, pp. 116-118
- [66] Parad, L. I., and Moynihan, R. L., "Split TEE Power Divider,," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-13, No. 1, January 1965, pp. 91-95
- [67] Cohn, S., "A Class of Broadband Three-Port TEM-Mode Hybrids," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-16, No. 2, February 1968, pp. 110-118
- [68] Terman, F. E. , Radio Engineers' Handbook, McGraw/Hill, New York, 1945, p. 51
- [69] Greenhouse, H. M., "Design of Planar Rectangular Microelectronic Inductors," IEEE Transactions on Parts, Hybrids, and Packaging, Vol. PHP-10, No. 2, June 1974, pp. 101-109

- [70] Chaddock, R. E. "The Applications of Lumped Element Techniques to High Frequency Hybrid Integrated Circuits," Radio and Electronics Engg. (GB), Vol. 44, 1974, pp. 414-420
- [71] Grover, F. W., Inductance Calculations, Van Nostrad, Princeton, NJ, 1946; reprinted by Dover Publications, NY, 1962
- [72] Young, L., H. Sobol, Advances in Microwaves, Vol. 8., Academic Press, New York, 1974
- [73] Duked, J.M.C., Printed Circuits: Their Design and Application. London: Macdonald, 1961
- [74] Wheeler, H.A., "Simple Inductance Formulas for Radio Coils, " Proc. IRE, Vol. 16, Oct. 1928, pp. 1398-1400
- [75] Burkett F.S.Jr., "Improved Design for Thin Film Inductors," 21st Electronic Components Conference Proceedings, May 10-12, 1971, Washington, DC, pp. 184-194
- [76] Remke R. L., and G. A. Burdick, "Spiral Inductors for Hybrid and Microwave Applications, " 24th Electronic Components Conference Proceedings, May 13-15, 1974, Washington, DC, pp. 152-161
- [77] Miller, H. C., "Inductance Formula for a Single-Layer Circular Coil," Proceedings of the IEEE, Vol. 75, No2, February 1987, pp. 256-257
- [78] Dill, H.G., "Designing Indictors for Thin-Film Applications, " Electronic Design, February 17, 1967, pp. 52-59
- [79] U.S Department of Commerce, Circular of the National Bureau of Standards C74, Radio Instruments and Measurements, "Calculation of Inductance, "January 1, 1937
- [80] Wolff, I. and G. Kibuuka, "Computer Models for MMIC Capacitors and Inductors, "14 th European Microwave Conference Proceedings, Liège, 1984, Belgium, pp. 853-858
- [81] Goldfarb, M. E., and R. A. Pucel, "Modeling Via Hole Grounds in Microstri," IEEE Transactions on Microwave and Guided Wave Letters, Vol. 1, No. 6, June 1991, pp. 135-137
- [82] Hammerstad, E., "Computer-Aided Design of Microstrip Couplers with Accurate Discontinuity Models, "1981 IEEE MTT-S International Microwave Symposium Digest, pp. 54-56
- [83] Ozmehmet, K., "New Frequency Dependent Equivalent Circuit for Gap Discontinuities of Microstriplines," IEE Proceedings, Vol. 134, Pt. H., No3, June 1987, pp. 333-335
- [84] Alley, G. D., "Interdigital Capacitors and Their Applications to Lumped Element Microwave Integrated Circuits," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-18, No. 12, December 1970, pp. 1028-1033

- [85] Hurt, J. C., "A Computer-Aided Design System for Hybrid Circuits," IEEE Transactions on Components, Hybrids, and Manufacturing Technolog, Vol. CHMT-3, No. 4, December 1980, pp. 525-535
- [86] Hoffmann, K., "Equivalent Circuit of SMD Resistors 0805-Influence of Mounting," In.: sborník konference COMITE'99, Pardubice, říjen 1999, str. 85-88
- [87] Watkins, J., "Circular Resonant Structures in Microstrip," Electronic Letters, Vol. 5, October 16, 1969, pp. 524-525
- [88] Wolff, I., and N. Knoppik, "Rectangular and Circular Microstrip Disk Capacitors and Resonators," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-22, No. 10, October 1974, pp. 857-864
- [89] Kirchhoff, G., Gesammelte Abhandlungen. Leipzig, Germany, 1882, pp. 101-113
- [90] Hammerstad, E. O., "Equations for Microstrip Circuit Design," in. Proc. 5th European Microwave Conference, Hamburg, 1975, pp. 268-272
- [91] Svačina, J., Základní mikrovlnné přenosové struktury a jejich vlastnosti, učební text postgraduálního studia "Mikrovlnná technika", Vysoké učení technické v Brně, Fakulta elektrotechnická, Brno 1987
- [92] Belohoubek, E., and E. Denlinger, "Loss Consideration for Microstrip Resonators," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-23, No. 6, June 1975, pp. 522-526
- [93] Lewin, L., "Radiation from discontinuities in strip line," Inst. Elec. Eng. Monograph #1358E, February 1960, pp. 163-170
- [94] Knoppik, N., "Der Guteffaktor von Mikrostrip-Resonatoren. AEU, 30 1976, No. 2, pp. 49-58
- [95] Abouzahra, M. D., and L. Lewin, "Radiation from Microstrip Discontinuities," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-27, No. 8, August 1979, pp. 722-723
- [96] Gopinath, A., "Maximum Q-Factor of Microstrip Resonators," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-29, No. 2, February 1981, pp. 128-131
- [97] Wu, Y. S., and F. J. Rosenbaum, "Mode Chart for Microstrip Ring Resonator," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-21, No. 7, July 1973, pp. 487-489
- [98] Owens, R. P., "Curvature Effect in Microstrip Ring Resonators," Electronic Letters, 12, 1976, 14, pp. 356-357

- [99] Kretzschmar, J. G., "The Elliptic Microstrip Ring Resonator," in Proceedings of the 7th European Microwave Conference, Microwave Exhibitions and Publishers, Sevenoaks, 1977, pp. 465-469
- [100] Plourde, J. K., and Chung-Li Ren, "Application of Dielectric Resonators in Microwave Components," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-29, No. 8, August 1981, pp. 754-770
- [101] Dielectric Resonators and Related Products, A Designers's Guide To Microwave Dielectric Ceramics, Trans-Tech, January 1996, Publication Number: 50080040 Rev. 4
- [102] Sethares, J. C., and S. J. Nauman, "Design of Microwave Dielectric Resonators," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-14, No. 1, January 1966, pp. 2-7
- [103] Abe, H., Y. Takayama, A. Higashisaka, H. Takamizawa, "IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-26, No. 3, March 1978, pp. 156-162
- [104] Kajfez, D., "Elementary Functions Procedure Simplifies Dielectric Resonator Design," Microwave System News, Vol. 12, June 1982, pp. 133-140
- [105] Fiedziusko, S., A. Jelenski, "Double Dielectric Resonator," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-19, No. 9, September 1971, pp. 779-780
- [106] Stiplitz, M., "Frequency Tuning of Rutile Resonators," Proc. IEEE, Vol. 54, March 1966, pp. 413-414
- [107] Aitchison C. S., I. D. Higgins, S. R. Longley, B. H. Newton, J. F. Wells, and J. C. Williams, "Lumped-Circuits Element at Microwave Frequencies," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-19, No. 12, December 1971, pp. 928-937
- [108] Vendelin, G. D., A. M. Pavio, U. L. Rohde: Microwave Circuit Design Using Linear and Nonlinear Techniques, John Wiley & Sons, 1990
- [109] Young, L., "Microwave Filters-1965," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-13, No. 5, September 1965, pp. 489-507
- [110] Wenzel, R. J., "Exact Design of TEM Microwave Networks Using Quarter-Wave Lines," IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-12, No. 1, January 1964, pp. 94-111
- [111] Matthaei, G. L., L. Young, E. M. T. Jones, Microwave Filters Impedance-Matching Networks, and Coupling Structures," McGraw-Hill, 1964