

Letters

Comments on "The Effect of Fringing Fields on the Resistance of a Conducting Film"

M. S. LEONG

We have read with great interest the above-mentioned paper¹ and commend the authors for the meticulous manner in which they compare their results for the resistance with other available published results. We would like to draw their attention to our earlier related work [1], in which we formulated the same resistance problem directly without going via the resistance-capacitance analogue relation $RC = \epsilon/\sigma$. A generalization of the same problem to account for a slab having an inhomogeneous resistivity profile can be found in [2].

We wish to further add that an extension of the same problem, in which we allow for the existence of contact resistance at the

source disk electrode/slab interface, has also been solved by us [3].

Our interest in the problem has been motivated by the need to account for the effects on the resistance of (i) the nonfinite thickness of the semiconductor sample during correction of the raw spreading data in the spreading resistance technique [4] and (ii) the effect of contact resistance modeled by a resistive film of zero thickness.

We feel that these comments deserve to be aired, as cross-fertilization among diverse disciplines in research is useful.

REFERENCES

- [1] M. S. Leong, S. C. Choo, and K. H. Tay, "The resistance of an infinite slab with a disc electrode as a mixed-boundary-value problem," *Solid-State Electron.*, vol. 19, pp. 397-401, 1976.
- [2] M. S. Leong, S. C. Choo, and L. S. Tan, "The spreading resistance of an inhomogeneous slab with a disc electrode as a mixed-boundary-value problem," *Solid-State Electron.*, vol. 22, pp. 527-531, 1979.
- [3] S. C. Choo, M. S. Leong, and W. C. Low, "The contact resistance at the interface between a disc electrode and an infinite slab: Mixed-boundary-value solutions," *Solid-State Electron.*, vol. 29, pp. 535-543, 1986.
- [4] D. C. D'Avanzo and R. D. Rung, "Spreading resistance for impurity profiles," Integrated Circuits Laboratory, Stanford Electronics Laboratories, Stanford University, CA, Tech. Rep. 5013-2, Feb. 1977.

Manuscript received October 26, 1986.

The author is with the Department of Electrical Engineering, National University of Singapore, Kent Ridge, Singapore 0511.
IEEE Log Number 8714408.

¹S. M. Schwarzbek and S. T. Ruggiero, *IEEE Trans. Microwave Theory Tech.*, vol. MTT-34, pp. 977-981, Sept. 1986.