Abstracts

Design of high-speed master-slave D-type flip-flop in InP DHBT technology (Dec. 2002 [T-MTT])

A.-E. Kasbari, P. Andre, A. Konczykowska, M. Riet, S. Blayac, H. Ouslimani and J. Godin. "Design of high-speed master-slave D-type flip-flop in InP DHBT technology (Dec. 2002 [T-MTT])." 2002 Transactions on Microwave Theory and Techniques 50.12 (Dec. 2002 [T-MTT] (Special Issue on 2002 International Microwave Symposium)): 3064-3069.

In this paper, we present some design problems of high-speed master-slave D-type flip-flop (MS D-FF). Essential to the long-haul optical-fiber communication systems, this circuit is critical since it operates at the highest clock frequency for a given bit rate. We discuss specific aspects of electrical design of such a circuit and underline some important points for the layout of gigabit circuits. In particular, we tackle the problem of ringing, which can appear in emitter-follower structures using the fast transistors necessary for high-speed operation. We have pointed out also some difficulties of circuit layout, particularly certain connections that can cause serious ill functioning. The MS D-FF was fabricated in our self-aligned InP double heterojunction-bipolar-transistor technology. On-wafer characterizations at 40 Gb/s show 75% horizontal and 68% vertical eye opening.

❑ Return to main document.