

How Secure Is A Circuit Against Optical Probing? Developed Countermeasures, In Progress Countermeasures Development, and the Future Works

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There exist many attacks against electronic systems to hijack on-chip secret information or disrupt the system's normal operation. Though many of these attacks are well-studied and many researchers have proposed various ways of dealing with such attacks, contactless optical probing (OP) attack is much less studied. In recent years, it has been shown that OP can serve as a powerful to attack chip, and the state-of-art chips are mostly not protected against such attacks. In this talk, we will go through the countermeasures developed for OP in the literature, and then discuss our work on securing chips against OP attacks. To further solidify our countermeasures, we tape out a chip with more than 400 test structures to study OP. Next, based on our findings from performing an OP attack on our fabricated chip, we will propose better countermeasures and a simulator to perform OP without fabricating the chip. Our simulator reduces the design time of an OP secure chip and it is cost-effective for the design house.

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