Customer Returns or Returning Customers?
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**IDDQ** test poses a serious dilemma for semiconductor manufacturers. It is known to detect several defects other tests miss. Thus complementing a test suite with IDDQ test can improve defect level of the shipped lot. The price paid for this is reduction in the apparent yield. Although generating test vectors for IDDQ test is relatively straightforward and a few vectors can achieve high defect coverage, the test economics is further complicated due to the slow test speed of IDDQ test. Spending a few milliseconds on the tester head, only to reject a chip that has (marginally) higher IDDQ does not sound a promising technique for yield manager. From yield manager perspective what matters is number of chips shipped out of door by the end of day. Unfortunately, cost of chips failing at the customer site that find their return path to the semiconductor manufacturer is often the last worry of the yield enhancement engineer.

Although not a high percentage of customers may return their failed chips to IC manufacturers, for those who do, it may be important to understand the long-term implications. Depending on the terms of contracts manufacturers may need to investigate whether failure was a result of a process glitch and whether that glitch might have impact on other chips from the same lot. With increasingly stringent reliability requirements this can no longer be considered a separate activity. To remain competitive, manufacturers must evaluate their options well and understand how their decisions link to long-term profits and reputation.

Integrating IDDQ test with the existing test suite can provide an edge over other competitors. The initial investment in IDDQ test and managing hiccups caused by reduction in apparent yield can payback by reduced customer returns, smaller failure analysis costs and improved customer image. Building reputation for reliable products is the key to remain competitive in today’s market and this is what can get a semiconductor manufacturer returning-customers.