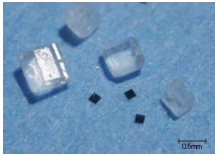


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By: Alex Vochin, Technology Editor



Hitachi via TFOT News

[Hitachi Develops World's Smallest RFID Chip](#)

The "μ-Chip", at just 0.4 x 0.4 mm

RFID is becoming an increasingly important technology nowadays, as it can prove extremely helpful in tracking certain items, providing identification data (as for example, biometric passports) and much more. And in order to boost the larger-scale integration of RFID solutions, the Japanese Hitachi company has developed what really seems to be the world's smallest Radio Frequency Identification (RFID) chip, measuring just 0.4 x 0.4 mm.

Thus, according to [Sarah Gingichashvili for TFOT News](#), the new chip, officially known as the "μ-Chip", but apparently nicknamed "powder" or "dust", features a 128-bit ROM (Read Only Memory) that can store a 38-digit number. The significant reduction in size was possible due to a very innovative manufacturing process called Silicon-on-Insulator (SOI), where an insulation layer and a monocrystalline silicon layer are formed upon the silicon base substrate, and the transistor is then formed on this SOI substrate.

Furthermore, the SOI technology provides other advantages as well, besides the size reduction. Thus, it would seem that parasitic capacitance and current leakage are also significantly reduced, while the risk of interference between two devices of this type found in close proximity to each other is also a bit lower (which means that there are lower chances of security breaches).

As most of the other RFID chips available on the market, the μ-Chip uses an external antenna to receive radio waves, which are then "translated" and broadcast as a unique ID number. The actual data is inscribed during the manufacturing process on the ROM chip, which means that it can't be overwritten, thus enhancing the chip's level of security.

The use of the new "μ-Chip" is quite extensive, ranging from the aforementioned biometric passports to thin paper sheets (paper money, for example), which could lead to a whole new level of security for the respective bills.

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