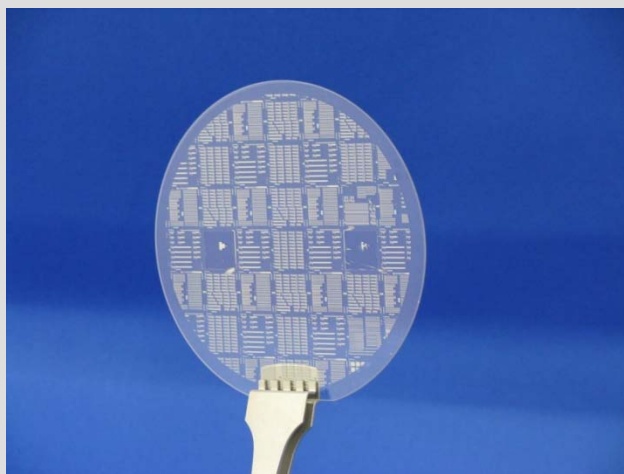


## Electronics field

Central Research Laboratory  
Nano-process Research Department

Hitachi, Ltd., web site【7<sup>th</sup> Dec. 2010 News Release】<http://www.hitachi.co.jp/New/cnews/month/2010/12/1207d.html>

### A rectifier circuit technology for 13.56MHz radio waves using oxide semiconductor thin film transistors



A developed rectifier circuit using oxide semiconductor thin film transistors

Hitachi, Ltd. has developed a rectifier circuit technology by using oxide semiconductor thin film transistors, which enables the fabrication of thin, light and flexible film-like wireless devices.

The rectifier circuit is able to convert a radio wave of 13.56MHz (used in RFID tags and IC cards) received by an antenna into a direct-current power required for device operation. This is a requisite technology for further development of film-like wireless devices in the future.

#### ■ Characteristics

- (1) Metal composition of the oxide semiconductor material was improved in order to increase the operation speed.
- (2) Power loss at the junction of the oxide semiconductor material and metal wiring material was reduced in order to increase output power.

#### ■ Applications

Development of film-like wireless devices equipped with RFIDs and sensors.

#### ■ Conference presentation

This technology was presented at the IEEE International Electron Devices Meeting in San Francisco U.S.A. (held from 6<sup>th</sup> December) on the 7<sup>th</sup> December.

#### ■ A word from the development team

We will work on the development of a better material and improve power transmitting/receiving techniques so as to achieve wireless power supply at a practical level .