

# **Dual-Output Wireless Power Delivery System for Small Size Large Volume Wireless Memory Card**

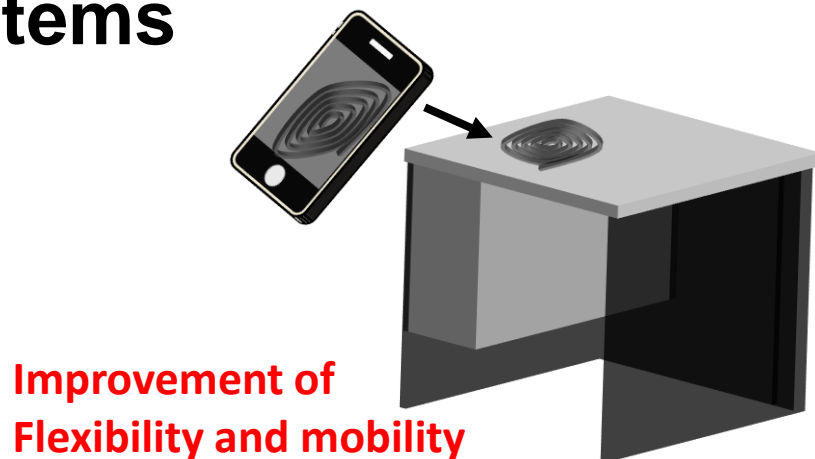
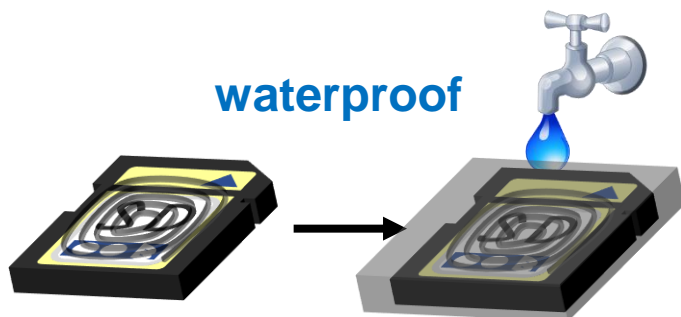
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# Background and Research purpose

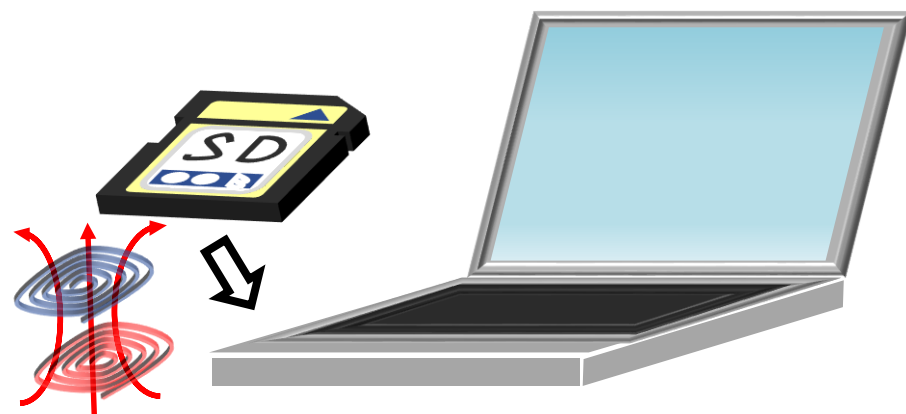
## ■ Advantage of Wireless systems

- ◆ Improved reliability
- ◆ Flexibility of layout design



## ■ For NAND Memory Card

- ◆ No battery and external inductor
- ◆ Requires high voltage and middle voltage

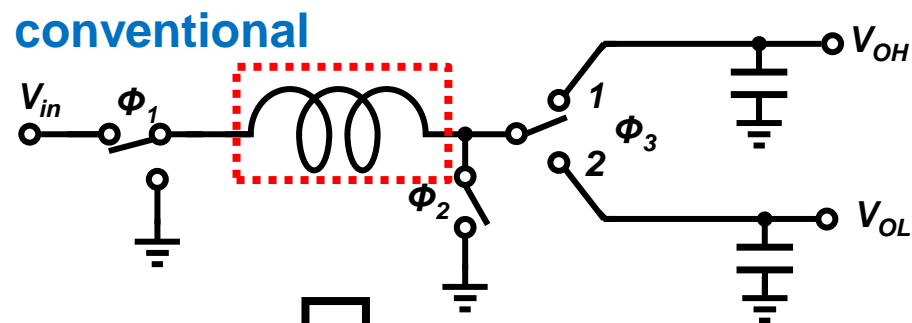


**1 pair of inductor and Dual output**

# Proposed circuit

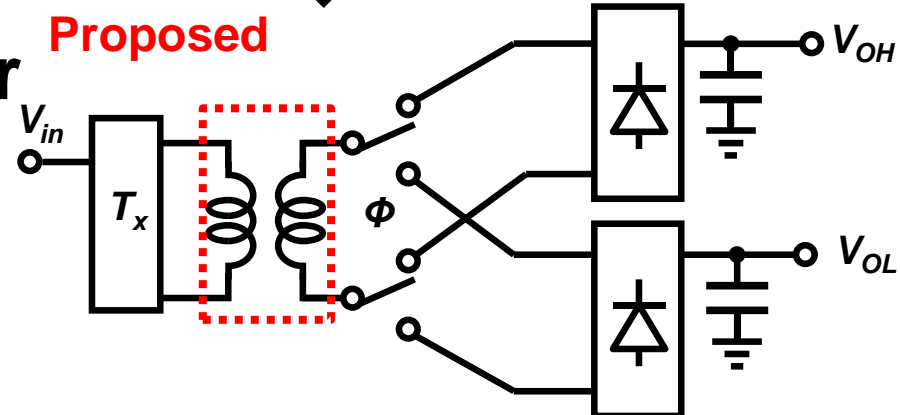
## ■ SIDO DC-DC converter

- ◆ Very simple structure of dual output DC power supplier



## ■ Proposed wireless power receiver

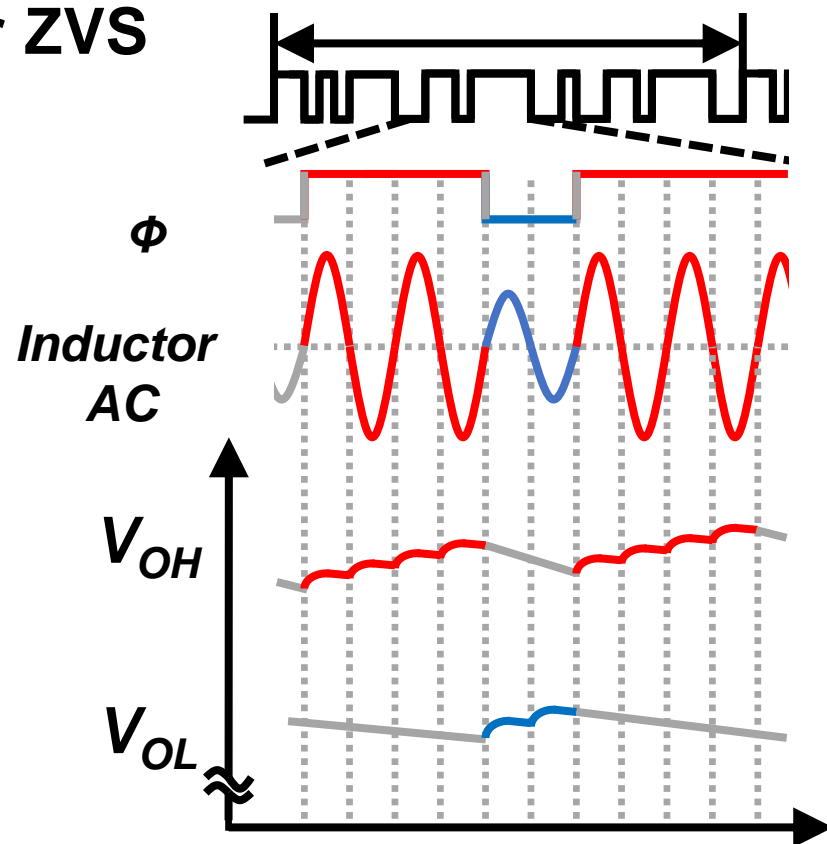
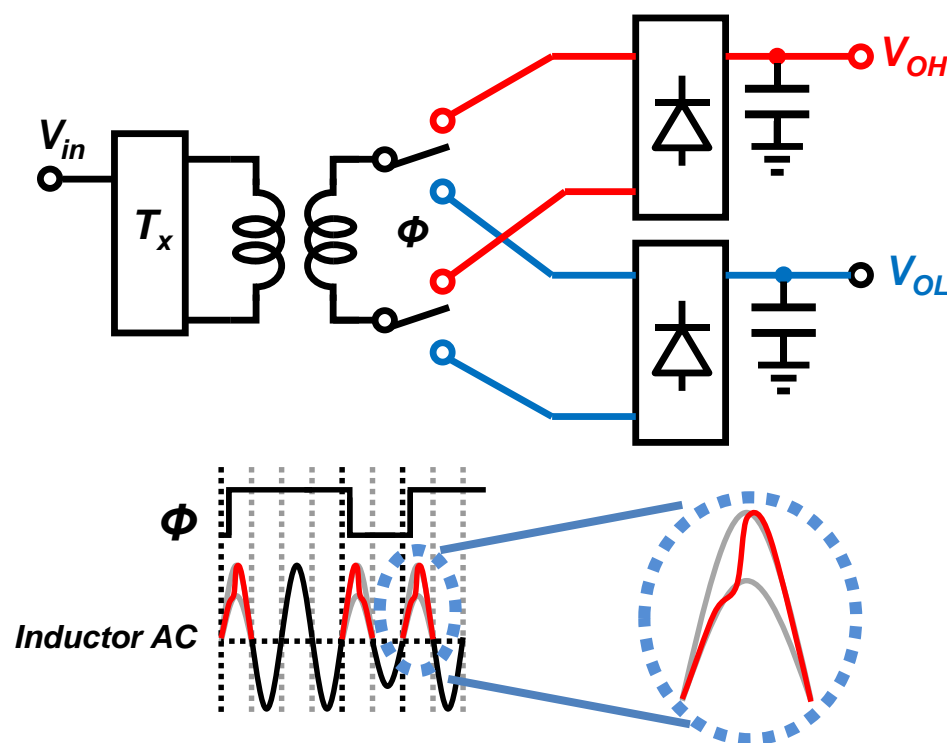
- ◆ switching of two rectifiers is connected with AC voltage induced in the inductor.



# Synchronous SIDO WPD receiver

## ■ Proposed technique

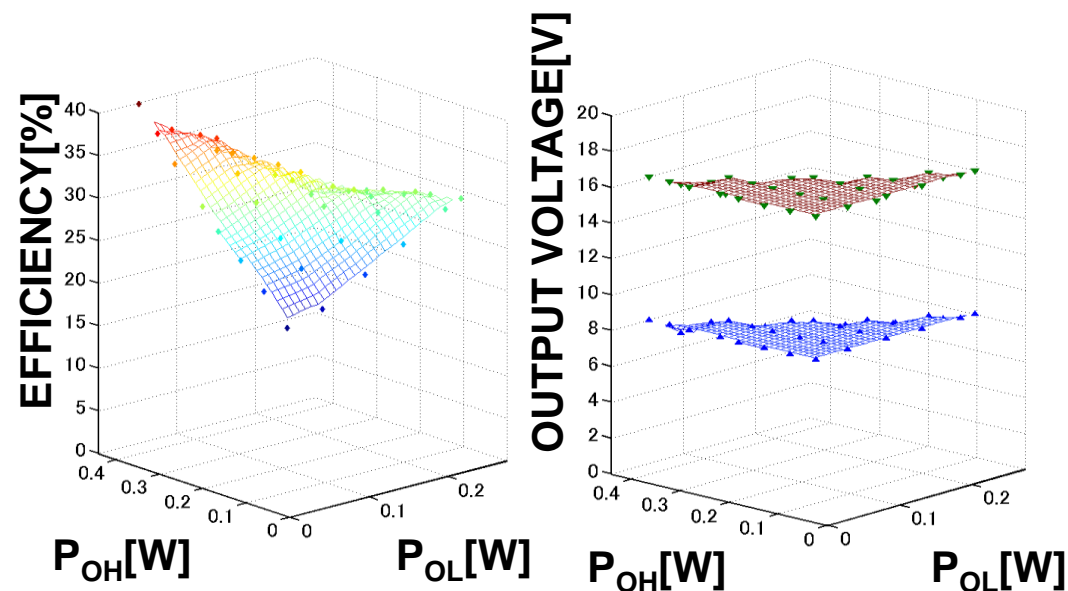
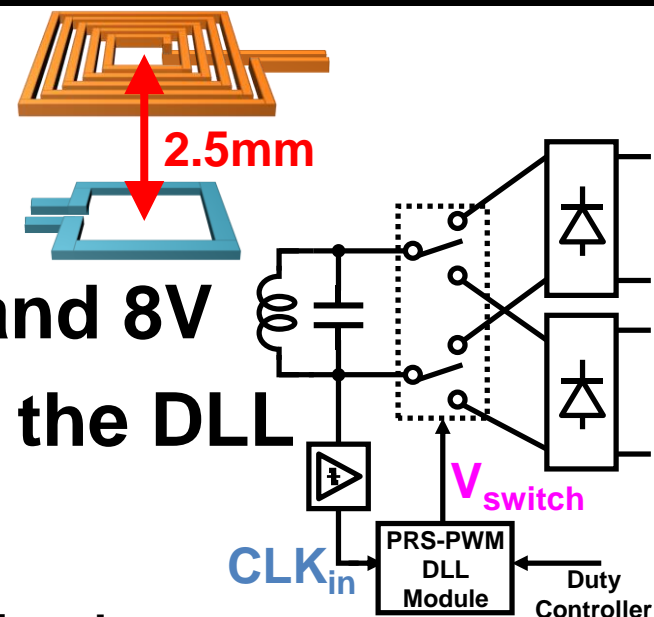
- ◆ Synchronous switching for ZVS
- ◆ PRS-PWM



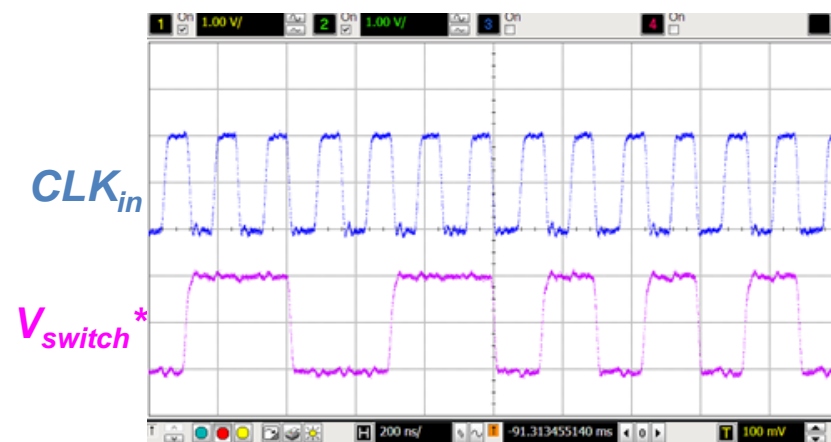
ZVS: Zero Voltage Switching  
 PRS: Pseudo-Random-Sequence  
 PWM: Pulse-Width Modulation

# Measurement result

- Transfer distance is 2.5mm
- Max power efficiency is 40%
- Output voltage regulate at 16V and 8V
- $CLK_{in}$  and  $V_{switch}^*$  are aligned by the DLL



DLL signal



# Conclusion

- **SIDO wireless power receiver with synchronous PRS-PWM switched rectifiers has been proposed**
- **Synchronous switching with inductor voltage has been achieved by DLL**
- **The Output voltages are regulated at 16V and 8V, with 40% total power efficiency.**