

## BI-DIRECTION TRANSMISSIBLE GATE DRIVER ON ARRAY

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### 1. Background

In recent years, gate driver using amorphous silicon (a-Si) technology for the TFT-LCD has become the main stream due to the mature manufacturing, low-cost processing, and elimination of the gate driver ICs [1],[2]. However, it's still three challenges of design the integrated gate driver by a-Si encounters which are the low field-effect mobility, low reliability issue under high voltage stress, and the lack of P-type transistor.

### 2. Operation of the proposed circuits

Figure 1 shows the circuit schematic and correlated timing diagram. In the proposed circuit, VGH (Voltage Gate High) and VGL (Voltage Gate Low) are defined as VDD and VSS, respectively. The clock signals are four non-overlap different phases, which means the proposed circuit is driven by 25% duty cycle clock. In forward transmission event, we designate VDD\_F as VDD and VDD\_R as VSS. If there is a requirement for backward transmission event, first is to reverse the clock order, and re-designate VDD\_F as VSS and VDD\_R as VDD. Second is to input the start pulse (VSTART) to trigger the last stage (Stage[n]). Then, the stages in the gate driver could operate in backward sequence.

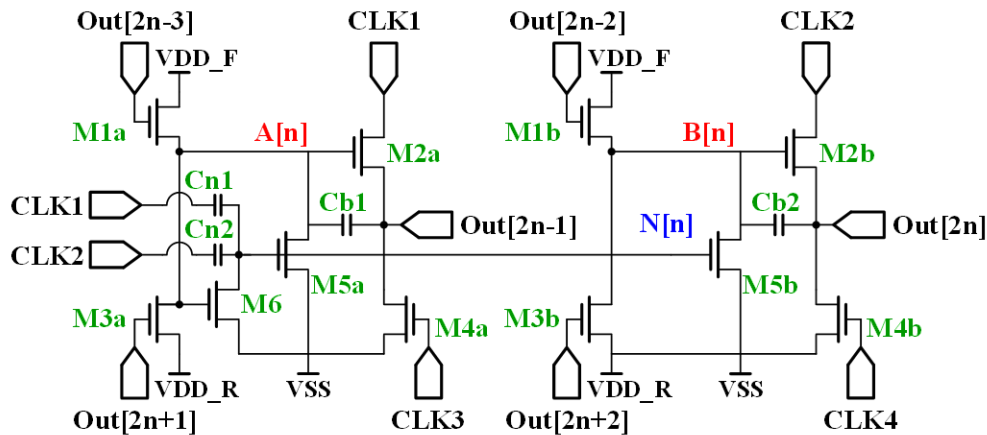


Fig. 1 The circuit schematic