

# 9-Channel High Voltage TFT-LCD Logic Level Shifter with Gate Shaping Function

## ISL24111

The ISL24111 is a nine output channel high voltage TFT-LCD logic level shifter. The ISL24111 converts low power logic-level input timing signals, generated by the TFT-LCD timing controller (TCON), to high power level-shifted output signals used to drive a Gate-In-Panel (GIP) TFT-LCD. The high voltage level shifters can swing up to +60V, with peak output current of +460mA (source) and -730mA (sink).

The output channels are organized in two separate groups. Level shifter output channels OUT1 through OUT7 are powered from  $V_{ON1}$  and  $V_{OFF}$  (positive and negative supply voltage rails, respectively), while OUT8 and OUT9 output channels are powered from  $V_{ON2}$  and  $V_{OFF}$ . Each output features a low impedance output stage and achieves fast rise and fall times with minimal propagation delays. These features make the device ideal for driving highly capacitive loads in TFT-LCD applications.

The device features a gate shaping function that can be utilized to reduce overall LCD system power and improve image quality by reducing flicker. Outputs 1 through 6 can support gate shaping, while outputs 7 through 9 precisely track their respective input signal.

The ISL24111 is available in a thermally enhanced 24 Ld 4x4mm TQFN package. It is specified for operation over the -40°C to +85°C extended ambient temperature range.

## Features

- 9-Channel Logic Level Shifter
- 60V Operating Range ( $V_{ONx} - V_{OFF}$ )
- $V_{ON1}$  [OUT1-OUT7] and  $V_{ON2}$  [OUT8, OUT9] Positive Power Supplies,  $V_{OFF}$  Negative Supply
- Gate Shaping Function with FCLK Input for Control
- +460mA and -730mA Peak Output Current for [OUT1-OUT7]
- 50ns Propagation Delay (Typical Low to High)
- 300ns Rise, 200ns Fall Time for [OUT1-OUT7]
- 520ns Rise, 350ns Fall Time for [OUT8-OUT9]
- Pb-Free (RoHS Compliant)
- -40°C to +85°C Ambient Operating Range

## Applications

- Logic Level Shifter
- TFT-LCD TV, Monitor, Notebook, and Tablet
  - Gate-In-Panel (GIP)
  - Gate-On-Array (GOA)
  - Amorphous Silicon Gate (ASG)

## Typical Application

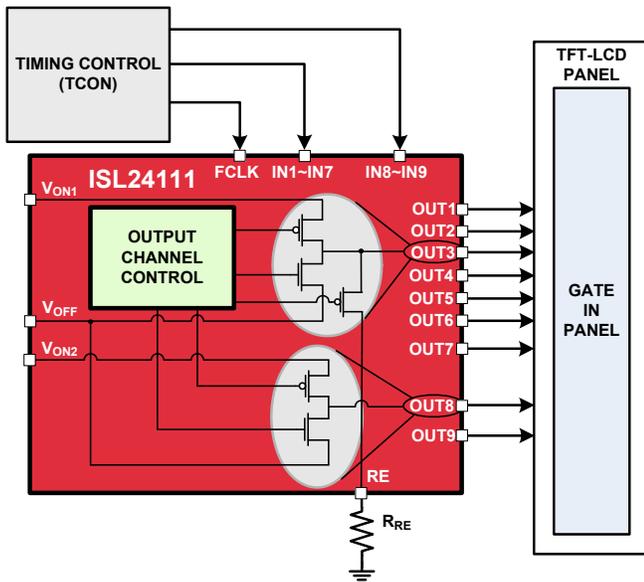


FIGURE 1. TFT-LCD GATE DRIVE LEVEL SHIFTER FOR GIP

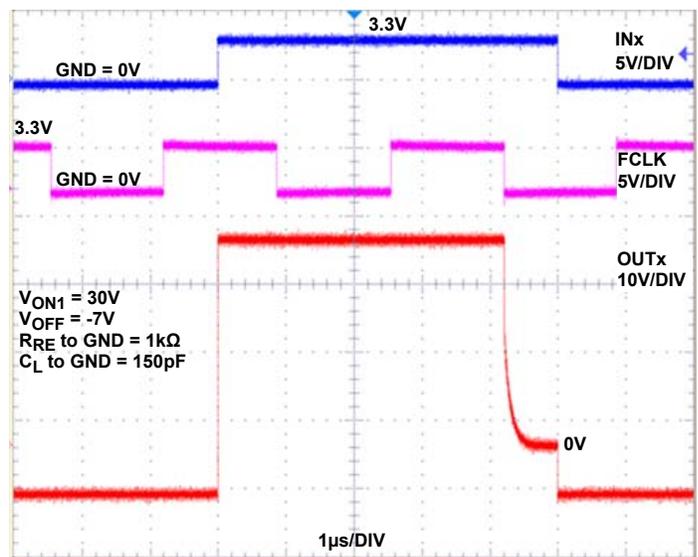


FIGURE 2. LEVEL SHIFTER WITH GATE SHAPING FUNCTION

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