

# MN83875

## Liquid Crystal Display Panel Source Driver

### ■ Overview

The MN83875 converts digital display data from a personal computer or engineering workstation into analog signal voltages for driving thin-film transistor color LCD panels.

### ■ Features

- Driver capable of displaying 260,000 colors with built-in D/A converter accepting 6-bit digital inputs
- Maximum operating frequency of 55 MHz
- 300 drive outputs
- Seven-segment gamma correction
- Data settings of 01 and 3E in addition to 00, 07, 17, 27, 37, and 3F for output voltage inflection points
- No need for an external multilevel gradation voltage generator circuit
- Drive system that does not require precharging
- Supports serial cascade connections
- Automatic clock suspension after reading in specified data volume
- Choice of shift register shift directions (left/right)
- RGB voltage shifts supported
- Single 3.3-volt power supply

### ■ Applications

- Personal computers and workstations

■ Block Diagram

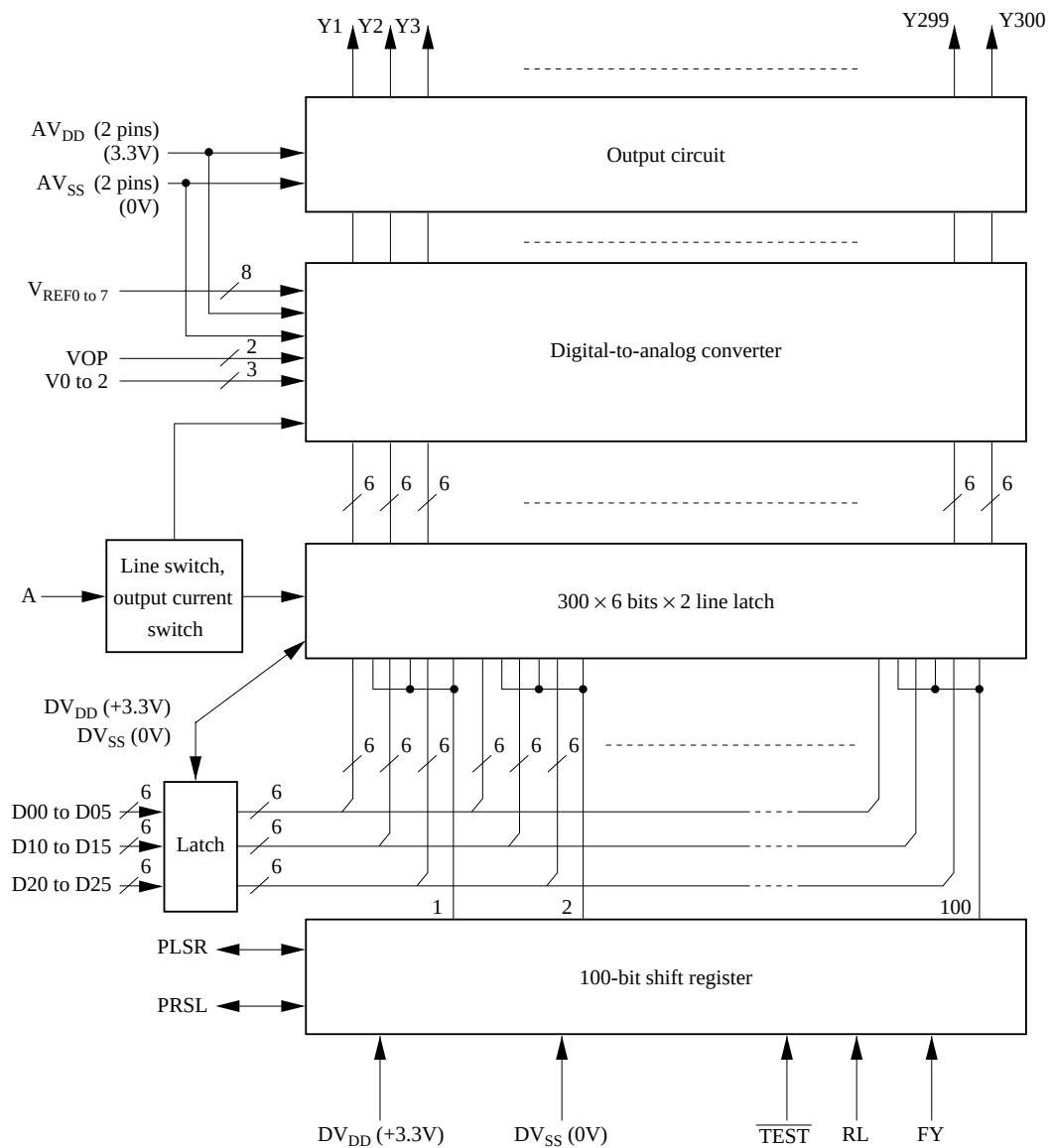


Figure 10 is a detailed schematic of the LCD panel driver circuit. It includes two +3.3V (AVDD) power supply regulators. The first is an operational amplifier-based voltage follower, and the second is a standard linear regulator. Both are decoupled with Tantalum-electrolytic (10µF) and Ceramic (0.1µF) capacitors. The output of the second regulator is VOP (+VDD/2). A series of gamma correction resistors, totaling approximately 1 kΩ, are connected to the +3.3V supply, with nodes labeled VREF6 through VREF1. These nodes are connected to the LCD panel. The LCD panel is an 800 x 600 pixel panel. A Gate driver provides Control signals to the LCD panel. A Display controller provides Display data (18 lines) and Control signals (3 lines) to the LCD panel. The Display controller also receives H, V, CLK signals and D0 (5:0), D1 (5:0), and D2 (5:0) signals. The Display controller's functions are: Generating LCD synchronization signals and controlling conversion to AC signals (data inversion).

Note: Supply independently each RGB shift potential to match the desired specifications. If RGB shifting is not used, connecting the V0, V1, and V2 pins to VOP supplies voltages equal to  $V_{DD}/2$  and eliminates the need for RGB shift potentials.