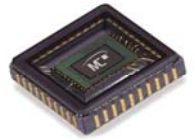


MagnaChip Imaging Solutions Division

WQVGA (240 × 432) driver for LTPS



Product Overview

The D54E4PA7551 is a driver for LTPS panel with timing controller, RAM, internal 5V booster.

Realizing WIDE-QVGA (WQVGA) display with one chip is possible with this driver just adding gate control and its HV power circuit in LTPS panel.

The MDDI ^{@QUALCOMM} which is RGB interface from the graphic controller, and serial and parallel interfaces from external MPU are available.

For the portable system like a cellular phone which needs to switch the display performance, this driver adopts the software commands to control the function like standby other than Normal display operation to minimize the power consumption of the mobile device.

120 channel source output ports are embedded and the display data level are outputted in the order of programming by SSD method (Shared Source Driving).

The display data is written to internal RAM from external controller so that the 64 gray-level driving per color is available

Key Features

- **Panel driving**
 - 120 source output (SX1~SX120), 6SSD(Shared source Driving) method
 - 260 thousand color (6bit = 64 gray color)
 - Output pitch : strait array : 56um(min), source : 67um
 - vertical 320 ~ 432 line selectable
 - panel control signal generation (gate driver / SSD switch, panel booster control signals)
 - Precharge ON / OFF by command
 - SSD driving sequence selection
 - inversion of left / right / up / down
- **Interface**
 - CPU I/F : parallel I/F I80/M68 series / bus-width 18/16/9/8-bit selectable.
 - MDDI I/F (250nps TBD)
 - EEPROM I/F
- **Internal EEPROM**
 - 16-bit space for VCOM(VCOMH, VCOML) set
 - Internal EEPROM for manufacture (Trimming for Magna Chip use, It is forbidden for users)
- **Others**
 - RAM control : internal RAM 1,866,240-bit (240x432x18-bit) = 233,280-byte Window access, partial display, screen scroll mode
 - Standby mode (RAM and register data are kept during Standby mode) : current in standby mode is less than 10 uA(TBD)
 - Auto Sequence by command (Standby IN and Standby OUT function)
 - Noise canceller on RESET line (discarded less than 2us)
 - internal oscillator 1.15 MHz ±8%
- **Low power consumption function**
 - 1 or 2-screen partial display + scan skip mode on non display partial area.
 - refresh rate control with 60 Hz and 30 Hz
 - 8-color mode display
 - driving power control for channel AMP by register setting
- **Power circuits to drive LCD**
 - 2 or 3 times booster(1)
 - controlled by resister setting and the output detection method circuits are adopted.
 - Output voltage range : 4.7 ~ 5.4V / 100mV step controllable
 - Load current : 2mA (TBD)
 - Power for source driver
 - Regulator for gamma circuits : 4.6 ~ 5.3V / 100mV step controllable
 - 2 or 3 times booster(2)
 - controlled by register setting and the output detecting method circuits are adopted.
 - Output voltage range : 4.7 ~ 5.3 V / 100mV step controllable
 - Load current : 2mA (TBD)
 - Power for Panel control level shifters
 - Power for VCOM related circuits
- **VCOM driver (3 kinds of driving is possible)**
 - VCOMH-VCOML switching method
 - VCOM-GND DC bias method
 - VCOMH regulator : 3~5V (depends on VGM voltage) / 20mV step controllable
 - VCOML/COMDC regulator : 02. ~ 3.2 V / 20mV step
- **Power**
 - analog power = 2.7V~3.4V
 - IO power = 1.6~3.4V
- **Gray output**
 - Fixed gamma method (independent blue gamma)
 - 6-bit DAC