OD6631

AMOLED product brief

New Full High Definition 144 Hz AMOLED Driver for Smartphone Displays

OMNIVISION Display Solutions' OD6631 AMOLED display driver integrated circuit (DDIC) leverages OMNIVISION's proven image algorithm, high quality and stable supply chain, helping tier-one AMOLED panel manufacturers speed time-to-market. The OD6631 supports higher performance display with much lower power consumption.

OD6631 enables SPR 1280 pixel full high definition (WFHD+) resolution with up to 144 Hz display frame rate for smartphones.

Upgraded from the OD6630, which is in mass production in tier-one AMOLED panel manufacturers, OD6631 is pin-to-pin compatible with the OD6630 and is held to the same high quality standards for customers.

Find out more at www.ovt.com.

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OD6631

Ordering Information

- **OD6631-B0H-EHV30Z-0** (general 3 inch tray)
- **OD6631-B0H-EHV40B-0** (general 4 inch tray)

Applications

- smartphones

Product Features and Benefits

- single chip FHD+ (up to 1280 x 2800 with SPR) MUX 1:1 / MUX 1:2 AMOLED solution with 1/3 display RAM

- flexible resolution, X:1080+4N (max: 2560ch source channel), Y:1920+2N

- 40ch programmable GIP control signals
  - support dual power domain for LTPO panel
  - individually configurable power domain
  - individually configurable slew-rate
  - individually configurable EQ time

- SPR
  built-in GGRB / Diamond sub-pixel rendering function

- display mode
  - up to 144 fps dynamic frame rate control with QSYNC (ver.D) / MSYNC (ver.1.10) / OSYNC (ver.3.0) support
  - command mode with internal 1/3 or 1/3.75 compressed GRAM (1280*2800*24bpp*1/3 or 1280*2800*30bpp*1/3.75)

- VESA DSC 1.2a decompression function

- interface
  - up to 1.5 Gbps*4 lane (D-PHY)
  - up to 1.1 Gsps*3 trio (C-PHY)
  - support SWIRE / I2C interface for external PMIC
  - dual SWIRE interface: A-SWIRE and E-SWIRE
  - support 1-bit/2-bit/4-bit SPI-flash interface

- round corner / notch / hole process

- local HBM for round shape and region

Product Features and Benefits (continued)

- separate gamma and gamma transition for customized local HBM region and shape

- IR-drop compensation
  - dynamic global IR-drop compensation
  - static local IR-drop compensation
  - content adaptive IR-drop compensation

- gamma
  - individual gamma curve for R/G/B
  - separate gamma table for LHBM/HBM
  - gamma interpolation for transition zone

- brightness control
  - PWM brightness control
  - DC brightness control
  - gamma interpolation with DBV support
  - digital data mapping

- support AOD mode with internal generated ELVDD/ELVSS

- over drive
  - support frame base over drive
  - block size 2x2/4x1/4x2/4x4 and shared SRAM with demura

- power saving function
  - ACL (auto current limitation)
  - dynamic ELVSS control
  - blanking off

- color enhancement
  - color space management
  - color temperature adjust
  - saturation enhancement
  - sharpness enhancement
  - brightness enhancement
  - skin-tone and local hue adjustment

- RGB 3D-LUT

- 16KB built-in OTP memory

- supply voltage
  - I/O supply voltage range for VDDIO to VSS: 1.62V ~ 1.98V
  - I/O supply voltage range for VDD to VSS: 0.99V ~ 1.21V
  - analog supply voltage range for VCI to VSSA: 2.65V ~ 3.6V
  - analog supply voltage range for AVDD to AVSS: 5.0V ~ 8.0V

- package: COP

Functional Block Diagram

Version 1.0, January 2024

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