

EPD6501 is designed as a single chip which integrate the display driver with 1920 channels and touch control driver with 960 channels, it is used for automotive display. It supports Low Temperature Poly Silicon (LTPS) and a-Si TFT LCD with in-cell touch panel technology.

EPD6501 architecture combines the Source Driver (SD), Timing Control circuit (TCON), gate driver control, power supply circuit and the touch controller, the host send the display command and data input via display serial interface (SPI, I²C, LVDS), and ESWIN touch system protocol to connect the system of host processor via a standard inter integrated circuit bus (I²C) or Serial Peripheral Interface (SPI).

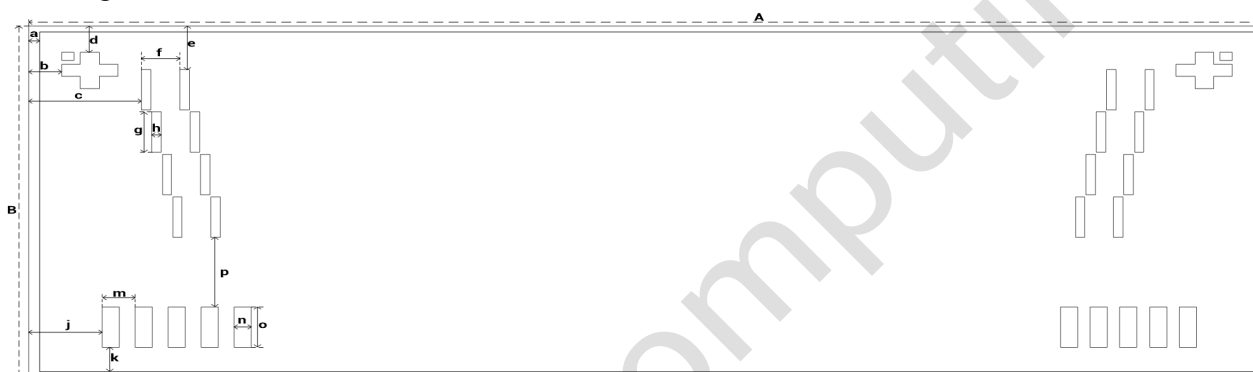
EPD6501 touch controller combines with time division and channels division scanning technology. It greatly reduces the scanning time of in-cell touch panel, so it can achieve LH 120Hz report rate at 60Hz display. It has high Signal to Noise Ratio (SNR), and can achieve up to 10 fingers touch.

EPD6501 can support various automotive display application requirements:

- Automotive AEC-Q100 Grade 2
- Support LTPS and a-Si LCD display
- Chip on Glass (COG) packaging
- Support 24-bit or 18-bit per pixel resolution
- Support cascade mode: from 1 chip to 3 chips
- Support MUX1/MUX2/MUX3/MUX6 for LTPS display
- Support panel resolution with column (source channels): 2-pixel step selectable and row (gate lines): 1-line step selectable
- Support single gate/dual gate/triple gate for a-Si Display
- Operate temperature range: -40°C~105°C
- Support temperature sensor with an external thermistor for accuracy of $\pm 10^{\circ}\text{C}$
- Support both Gate on Array (GOA) and gate driver IC application
- Support LVDS Interface to send display data
- Display video data support DE mode, HS+VS mode, DE+HS+VS mode
- Display command is sent by I²C or 3 wire/4 wire SPI interface
- Support 1dot, 2dot, column, Zig-Zag inversion
- Support Built in Self-Test (BIST) function
- One external power mode: VDD1 2.7V ~ 3.6V
- Three external power mode: VDD1, VSP, VSN (VSP 5V~7V, VSN -7V~-5V)
- Five external power mode: VDD1, VSP, VSN, VGH, VGL (VGH 8V~19V, VGL -16V~-9V)
- VCOM -3V~0.1V
- Internal or external OTP programming voltage: PVPP 5.75V
- Support CAB/CTA/DGC/DEA/SRE function
- Support OSD function

- Support fail defect function
- 32-bit RISC-V MCU
- Support 960 touch channels
- Support touch data communication with system via I²C and SPI interface
- Report rates up to 120Hz LH mode at 60Hz display
- Provide High Signal to Noise Ratio (SNR) AFE design to improves touch performance
- Support waterproof
- Support 10 fingers touch
- Support glove mode

PAD Configuration



Bump Information

Item	No.	Size (um)
Input Pad	Pad Width (n)	20
	Pad Height (o)	135
	Pad Pitch (m)	39
	Pad to Edge H (j)	175.5
	Pad to Edge V (k)	199.7
Output Pad	Pad Width (h)	13.5
	Pad Height (g)	110
	Pad Pitch (f)	43
	Pad to Edge H (c)	203.25
	Pad to Edge V (e)	199.9
Input to Output	Input to Output Pad (p)	600
Alignment Mark	Mark to Edge (b)	46
	Mark to Edge (c)	148.9

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