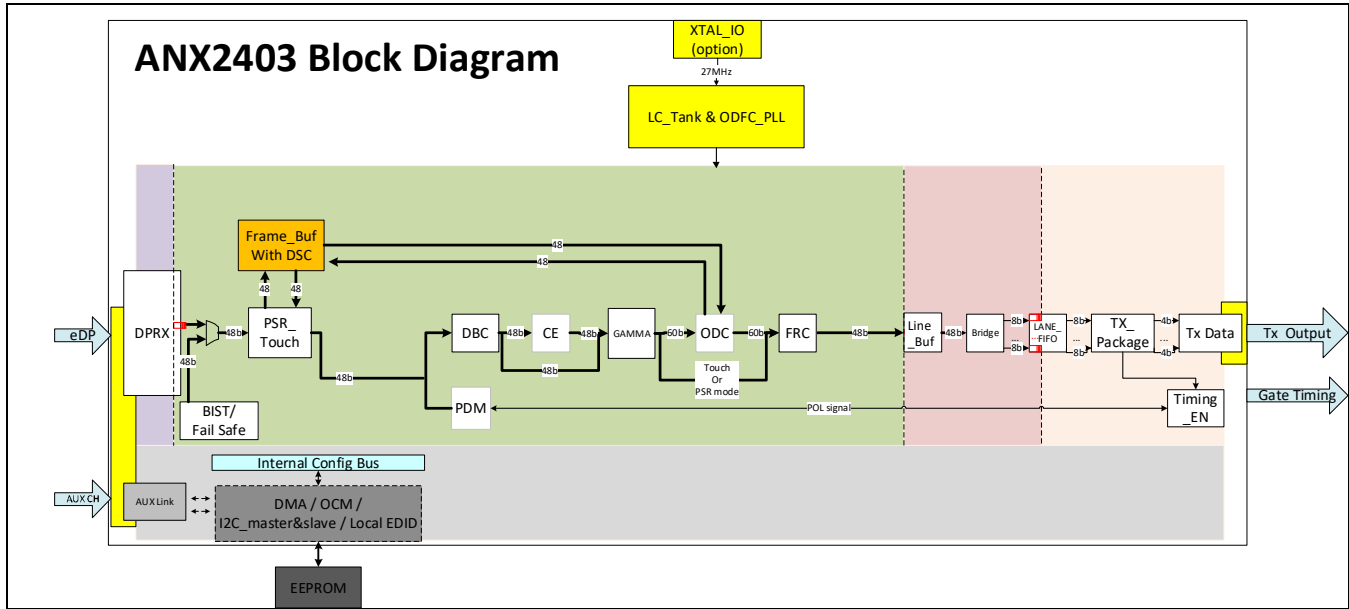# ANX2403 FullHD eDP1.4 TCON with In-cell Touch

ANX2403 is the world's lowest power two-lane embedded DisplayPort™ (eDP) 1.4 compliant TCON with Panel Self Refresh (PSR) and Selective update PSR (PSR2) functions. ANX2403 supports Microsoft and Wacom in-cell pen and finger touch functions. It also supports Intel HDR400, which meets ST.2084 and BT.2020 standards.

Features

- eDP receiver
  - Integrated high-speed DP-Rx compliant with DisplayPort standard eDP v1.4
  - Up to 2 lanes @2.7Gbps, 2.16Gbps, 2.43Gbps and 1.62Gbps
  - PSR/MBO/PSR2 function through built-in SRAM
- Source IC interface: CEDS/iSP/EPI/ATPI
  - Up to 12 pairs to support 6-channel 2D/1C or 12-channel 1D/1C configuration
  - CEDS/iSP/EPI/ATPI transmitter up to 2.0Gbps configuration
  - Various swap modes: inter-port swap, intra-port swap, p/n swap, RGB swap, odd/even pixel swap, etc.
  - Scan direction swap
  - Supports Z-inversion (column inversion), and N-line inversion
  - Dual gate mode combined with Z-inversion and non-Z inversion mode
  - CEDS/iSP/EPI/ATPI test pattern mode
- TCON functions
  - HD (1366x768), HD+ (1600x900), FHD (1920x1080), 1920x1280
  - eDP TCON color depth: 18/24bpp input (30bpp input for HDR), 18/24bpp output
  - Programmable fail-safe mode control
  - Configurable BIST pattern
  - 10-bit Gamma correction table for each color
  - Multiple FRC pattern configurations
  - 8bit->6bit, 9bit->6bit, 10bit->8bit and 10bit->6bit FRC modes
  - 0-D dimming control (DBC) function for backlight low power
  - Color-engine for hue and saturation control
  - LCD overdrive to reduce motion blur in high-performance mode
  - Direct drive G-sync, Free sync, and Adaptive sync
  - eDP sDRRS power saving function
  - Splash-screen feature
  - In-cell Touch function combined with PSR
  - Microsoft/Wacom In-cell timing requirement
- On-chip SSCG
  - CEDS/EPI/iSP/ATPI 1.6G ＜Fceds ≤2G (Max. +/-0.5% with 0.25% step, 10/20/30/40KHz, center spreading)
  - CEDS/EPI/iSP/ATPI Fceds≤1.6G (Max. +/-1% with 0.25% step, 10/20/30/40KHz, center spreading)
- Intel HDR400
  - EOTF ST.2084 Decoder
  - BT.2020 to sRGB color space mapping
  - 10-bit input and 8-bit output
  - DPCD handshake
- Pattern detection
- EEPROM shared for EDID and configuration
- In-cell touch support for Microsoft and Wacom
- PWM generator, PWM pass-through and PWM product modes
- TSMC 28nm HPC+ process
- Lowest power from 60mW to 80mW (depending on whether PSR is on or off)
- Power supply: 1.8V/0.9V (internal 3.3V for HPD)
- Package: BGA-91 (5x9mm), LGA-74 (5x12mm)

Chip	Process	1920x1080 Power (PSR off/Touch off)
Analogix ANX2403	28nm	63mW
Other TCONs	40nm	130~150mW

ANX2403 Block Diagram