



# SM750

## LynxExp Embedded Graphics Processor

The SM750 is a PCI Express 2D multimedia mobile display controller device, packaged in a 265-pin BGA. Designed to complement needs for the embedded industry, it provides video and 2D capability. To help reduce system costs, it supports a wide variety of I/O, including analog RGB and digital LCD Panel interfaces, two Zoom Video interfaces, and Pulse Width Modulation (PWM). There are additional GPIO bits that can be used to interface to external devices as well.

The 2D engine includes a front-end color space conversion with 4:1 and 1:8 scaling support. The video engine supports two different video outputs (Dual Monitor), at 8-bit, 16-bit, or 32-bit per pixel and a 3-color hardware cursor per video output. The LCD panel video pipe supports a back-end YUV color space conversion with 4:1 and 1:212 scaling. A Zoom Video (ZV) port is also included to interface to external circuitry for MPEG decode or TV input.

### APPLICATIONS

- Thin Client
- Server
- IPC / POS / MFP / DVR
- Factory Automation (HMI)
- Medical Device
- Handheld / Portable Device
- Gaming Machine
- Test Instrument
- Digital Signage
- All Other Embedded Graphics Applications



## FEATURES

- **PCI-Express x 1 Architecture**
  - X86 processors
  - ARM, MIPS, PPC, and ARC processors
- **16MB Integrated Video DDR Memory**
  - Embedded 16MB DDR only
  - Embedded 16MB DDR (32Bit I/F) + external 16MB DDR (32Bit I/F)
  - External up to 64MB DDR (64bit I/F)
- **Low Power Consumption < 1.5W**
- **Cost-Effective Multi-Display/Panel Supports**
  - Dual 300 MHz DAC supports up to 1920x1200 resolution
  - Dual 18-bit DVO interface for TMDS or LVDS transmitter supports up to 1920x1200 resolution
  - Independent resolution and refresh rates for dual display types
- **Quick-Rotation Features**
  - Allow for 90°, 180°, and 270° rotation of on-screen images
- **2D Graphic Accelerator**
  - 128-bit 2D graphic engine
  - ROP3's, BitBLT, transparent BLT, pattern BLT, color expansion, and line drawing
  - YUV-16/32-bit RGB conversion
- **Video Display Layers**
  - Support 7 layers of display frames (2 hardware cursors, primary graphic, video, video alpha, alpha, and secondary graphic)
- **Zoom Video Port**
  - Two 8-bit ports or one 16-bit video capture port supports ITU601 and ITU 656 specifications
  - V-16/32-bit RGB conversion

- **Serial EEPROM Interface**
- **DMA Controller**
- **GPIO/I2C/SSP Interface**

## SPECIFICATION

|                              |                                                                                                                        |
|------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Graphics Engine</b>       | 2D                                                                                                                     |
| <b>Host Interface</b>        | PCIe x 1                                                                                                               |
| <b>Int. Memory</b>           | 16MB DDR (option)                                                                                                      |
| <b>Ext. Memory</b>           | 64MB DDR (max)                                                                                                         |
| <b>Resolution</b>            | 1920 x 1200 (max)                                                                                                      |
| <b>Software Support</b>      | WinCE, WinXP, Win7, Win8, Win8.1,<br>Win2008(32-bit/64-bit),Win2012(32-bit/64-bit),<br>Linux Enterprise(32-bit/64-bit) |
| <b>CPU Platform</b>          | Intel, AMD, ZFMicro, Freescale PPC, AMCC,<br>STMicro, Marvell, Loongson and other PCIe                                 |
| <b>Operation Temperature</b> | C-Temp & I-Temp                                                                                                        |
| <b>Package</b>               | 265-pin BGA MCM (17mm x 17mm)                                                                                          |