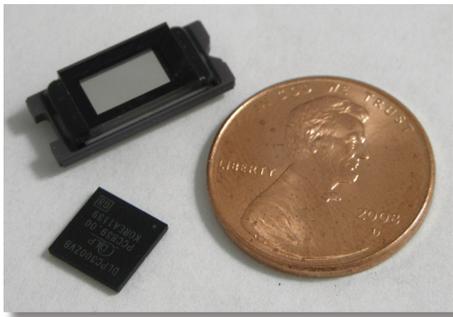




DLP 0.3 WVGA Chipset

DLP3000 and DLPC300

Harness the power of DLP Technology from Texas Instruments. At the heart of every DLP Chipset is the Digital Micromirror Device (DMD): a digitally controlled spatial light modulator (SLM). When integrated with an illumination source and optics, DLP Chipsets enable users to control binary light patterns with speed, precision, and efficiency.



DLP Benefits

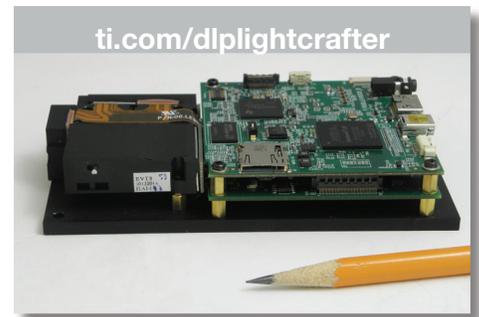
DLP technology offers developers the ability to spatially and sequentially control discrete points of light with speed and precision. Fast micromirror switching speeds found in DLP chipsets support high bit-depth displays and synchronized light patterns. Optical system designs are simplified because the DMD is inherently polarization independent. In commercial production since 1995, DLP technology provides developers with a reliable and robust technology for integration into a multitude of light processing applications.

DLP 0.3 WVGA Chipset

The 0.3 WVGA Chipset is in the family of DLP Technology offered from TI and includes these two devices:

- DLP3000—0.3 WVGA DMD
- DLPC300—DLP3000 Digital Controller

The 0.3-inch diagonal micromirror array enables compact, bright light engines for wide aspect ratio pattern or video display. This chipset supports up to 4000 Hz binary and 120 Hz 8-bit grayscale pattern rates, which can be synchronized with cameras, sensors, stepper motors, or other external devices. Compact package size, side illumination architecture, and low power consumption make this chipset well-suited for applications where small form factor, portability, and lower cost are important. Example end equipment are 3D scanning or metrology systems using structured light, biometric scanners, chemical analyzers, medical instruments and embedded display. Supporting software and reference design for the 0.3 WVGA chipset are available on ti.com.



Getting Started Quickly

DLP® LightCrafter™ is a versatile development module for integrating projected light into industrial, medical, and scientific applications. It enables faster development cycles for end equipments requiring small form factor, lower cost and intelligent, high-speed pattern display. Developers can easily create, store, and project high-speed pattern sequences through a USB-based API and easy-to-use host GUI. In addition, DLP LightCrafter features a 20 lumen RGB LED light engine, configurable I/O trigger, and powerful DM365 processor running embedded Linux.

Additional information about software and tools for the 0.3 WVGA chipset are available on ti.com:

- DLPLIGHTCRAFTER—Evaluation Module
- DLP3000-C300REF—Reference Design
- DLPR300—Configuration Firmware

DLP3000 Key Features

- 608x684 micromirror array
- 0.3-inch array diagonal
- Up to WVGA (854x480) image display
- 7.6µm micromirror pitch
- Side illumination for compact optics

DLPC300 Key Features

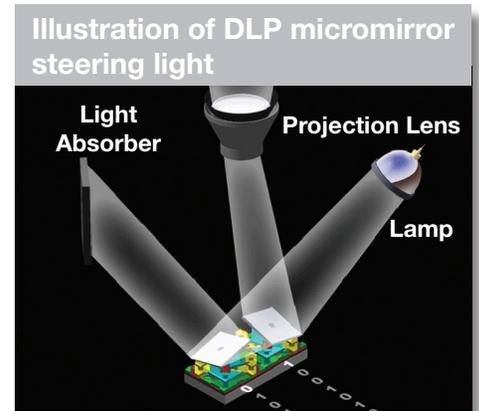
- Pattern rates up to 4000 Hz binary, 120 Hz grayscale
- Output trigger for camera or peripheral synchronization
- Low power consumption (93mW typical)

How the 0.3 WVGA Chipset Works

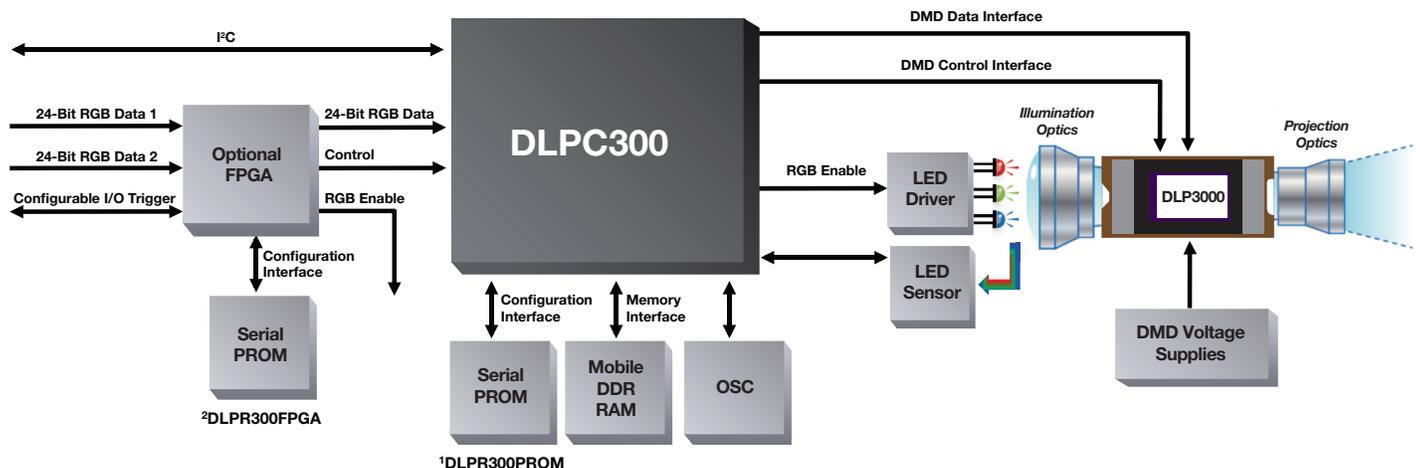
TI offers a dedicated DLP 0.3 WVGA Chipset which consists of a DLP3000 DMD and DLPC300 Digital Controller. The complete chipset is designed to give engineers fast, easy and reliable control of the DMD to speed product development. To further accelerate customer design cycles, TI also provides a flexible reference design that pairs the 0.3 WVGA Chipset with TI's powerful TMS320DM365 embedded processor.

The DMD is an electrical input, optical output memory device. Each micromirror of the DMD can be individually deflected about a hinged axis. The deflection angle of each micromirror ($\pm 12^\circ$) is controlled by changing the binary state of the underlying CMOS memory cell followed by application of a mirror reset pulse. Convenient and reliable operation of the DMD is orchestrated by the DMD controller, with micromirror driver circuitry integrated into the DMD.

In addition, TI offers firmware code for the Digital Controller to enable advanced control of the DMD for pattern and video display applications. An optional FPGA can be also included to enable maximum pattern rates, multiple data input paths, and configurable I/O synchronization with cameras, sensors, or other peripherals.



Block Diagram of System using 0.3 WVGA Chipset



Device	Description	Function	Benefit
DLP3000	0.3 WVGA DMD Digital Micromirror Device	Highly efficient, digitally controlled MEMS micromirror array capable of displaying binary patterns up to 4000 Hz	Fast and reliable spatial light modulation in a small form factor for lower cost, portable, embedded, and hand-held equipment
DLPC300	DLP3000 Digital Controller	Convenient interface for user electronics that ensures reliable operation of the DMD	Provides developers flexibility to control the micromirrors, light sources, and peripherals for high-speed and intelligent pattern or video display

¹ DLPR300PROM available from TI is configuration firmware for DLPC300

² DLPR300FPGA available from TI is configuration Firmware for optional FPGA

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