

Designing Smaller Mobile Projection and Display Applications with DLP Pico Products



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Consumers today are clamoring for brighter, larger displays from their mobile, portable and in-home devices. But designing for high brightness and high resolution often means creating bulky devices that consume a lot of power.

The new TI DLP® Pico™ 0.23-inch chipset enables even smaller, lower-power portable devices with high definition (HD) and full HD resolution displays. The DLP Pico 0.23-inch chipsets enable a wide variety next-generation, ultra-portable displays devices, such as smart home displays, mobile accessory Pico projectors, smart displays, and augmented reality glasses. Get started today with the affordable [DLP LightCrafter™ Display 230NP EVM](#) (shown in [Figure 1](#)) compatible with virtually any low-cost processors. The EVM supports I2C and 18-bit parallel RGB video interfaces and it is Raspberry Pi compatible out of the box.

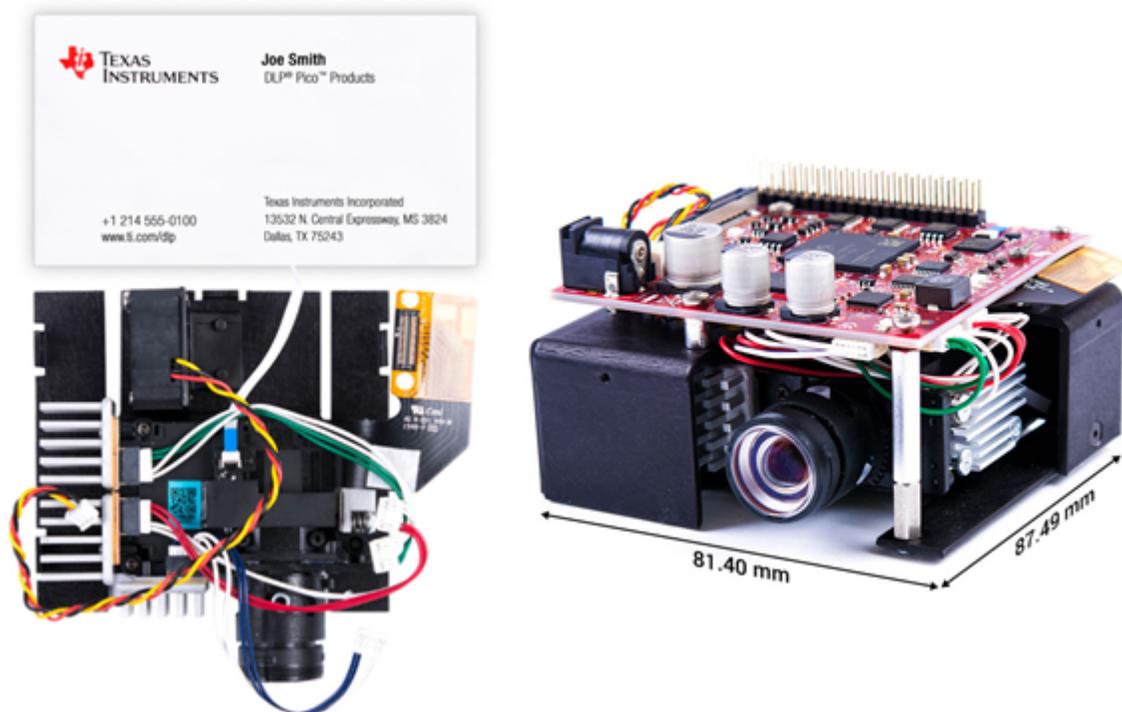


Figure 1. The DLP LightCrafter Display NP230NP EVM

High Brightness in the Smallest Chipsets

When designing small devices, you don't want to compromise on resolution or brightness in your display. Higher brightness capabilities facilitate a crisper HD image, larger projected displays and better visibility in a variety of lighting conditions, including bright ambient light. Because the DLP Pico 0.23-inch family includes our smallest full HD display chipsets to date, you can create ultra-low-power, mobile pico projectors that can fit inside a shirt pocket. The brightness efficiency can support 20-inch to 40-inch displays (with a brightness of up to 200 lumens) and with a form factor of less than 78mm x 78mm x 15 mm (100 lumens). [Figure 2](#) shows one example of a projected display in a portable on-demand smart display.



Figure 2. Smart Speaker with Display Projection

Lower Power Consumption Means Longer Battery Life

Have you ever experienced a projector shutting down just when you were in the middle of a movie? DLP TRP 5.4 μm reflective technology enables high-efficiency projection applications and extends the battery life of mobile projectors. DLP products require no polarization, so you can focus all of the light source energy to enable a brighter display, without using more energy. TRP technology includes the [DLP IntelliBright™ suite of image processing algorithms](#) that allow you to reduce your device's power consumption by 50% or increase its brightness by 50%. The display controller and digital micromirror device (DMD) consume less than 240 milliwatts of power.

Enabling HD and qHD Quality Display

The DLP230NP is the smallest chipset on the market that enables full HD-quality display projection. The DLP230GP allows you to design with the same size chipset as the HD offering at a lower price point, but with qHD (960X540) resolution.

The following table summarizes of .23-inch chipset offerings:

Table 1. DLP Pico qHD, HD and Full HD Chipsets Including DMD and Controller

Resolution	Digital Micromirror Device (DMD)	Display controller
qHD (960X540)	DLP230GP	DLPC3432
HD (1280X720)	DLP230KP	DLPC3434
Full HD (1920x1080)	DLP230NP	DLPC3436

These chipsets are paired with a PMIC designed to simplify and integrate all power management needed for the DMD, display controller, and LEDs. Three PMICs offer a variety of LED maximum current drive performance: [DLPA2000 \(0.75A\)](#), [DLPA2005, \(2.4A\)](#) and [DLPA3000 \(6A\)](#)

You only need a processor that supports up to 24-bit RGB parallel video interface and I²C to drive and control the DLP Pico display. Both display controllers include image optimization benefits, such as 1-D keystone correction, active power management processing and color coordinate adjustments to simply your display design effort. Start designing today with our [high resolution DMD](#).

Additional Resources

- Check out the ultra-mobile, low-power [DLP Pico qHD reference design](#).
- [Get started today](#) with our display products.
- Learn more about [our smallest DMD](#).
- Learn more about [DLPDLCR230NPEVM](#).

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