

DLP471TP .47 4K UHD DMD

1 Features

- 0.47-Inch diagonal micromirror array
 - 4K UHD (3840 × 2160) display resolution
 - 5.4-μm micromirror pitch
 - ±17° micromirror tilt (relative to flat surface)
 - Bottom illumination
- High-speed serial interface (HSSI) input data bus
- Supports 4K UHD at 60 Hz
- Supports 1080p up to 240 Hz
- LED operation supported by DLPC6540 display controller, DLPA3005 power management IC (PMIC) and LED driver

2 Applications

- [Mobile smart TV](#)
- [Mobile projector](#)
- [Digital signage](#)

3 Description

The DLP471TP digital micromirror device (DMD) is a digitally controlled micro-electro-mechanical system (MEMS) spatial light modulator (SLM) that enables bright 4K UHD display systems. The TI DLP® products 0.47" 4K UHD chipset is composed of the DMD, [DLPC6540](#) display controller, and [DLPA3005](#) PMIC and LED driver. The compact physical size of the chipset provides a complete system solution that enables small form factor 4K UHD displays.

The DMD ecosystem includes established resources to help the user accelerate the design cycle, which include [production ready optical modules](#), [optical module manufacturers](#), and [design houses](#).

Visit the [Getting started with TI DLP® Pico™ display technology](#) page to learn more about how to start designing with the DMD.

Device Information⁽¹⁾

PART NUMBER	PACKAGE	BODY SIZE (NOM)
DLP471TP	FQQ (238)	25.65 mm × 16.9 mm

(1) For all available packages, see the orderable addendum at the end of the data sheet.

Simplified Application

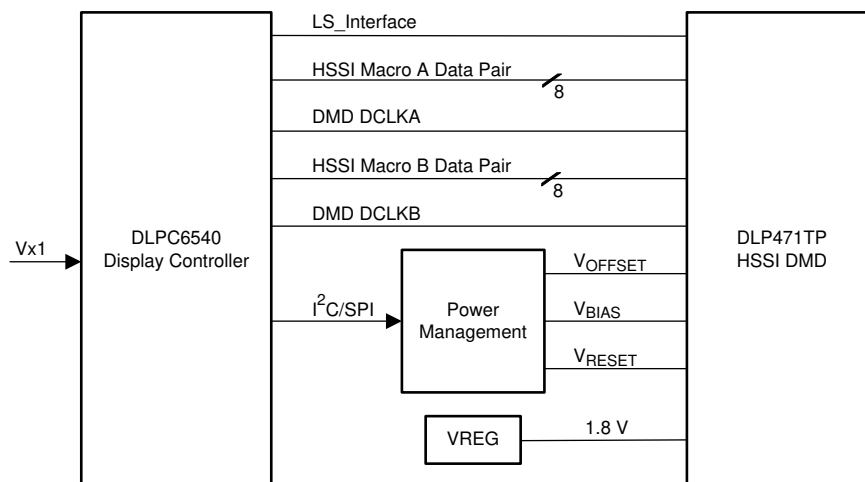


Table of Contents

1 Features	1	5.2 Documentation Support	4
2 Applications	1	5.3 Support Resources	4
3 Description	1	5.4 Trademarks	4
4 Revision History	2	5.5 Electrostatic Discharge Caution	4
5 Device and Documentation Support	3	6 Mechanical, Packaging, and Orderable Information	5
5.1 Device Support.....	3		

4 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

DATE	REVISION	NOTES
April 2020	*	Initial release.

5 Device and Documentation Support

5.1 Device Support

5.1.1 Device Nomenclature

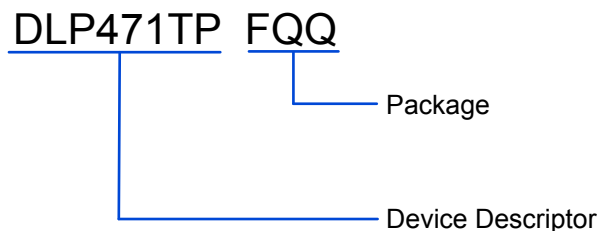


Figure 1. Part Number Description

5.1.2 Device Markings

The device marking includes both human-readable information and a 2-dimensional matrix code. The human-readable information is described in [Figure 2](#) and includes the legible character string GHJJJK DLP471TPFQQ. GHJJJK is the lot trace code and DLP471TPFQQ is the device marking.

Example: GHJJJK DLP471TPFQQ

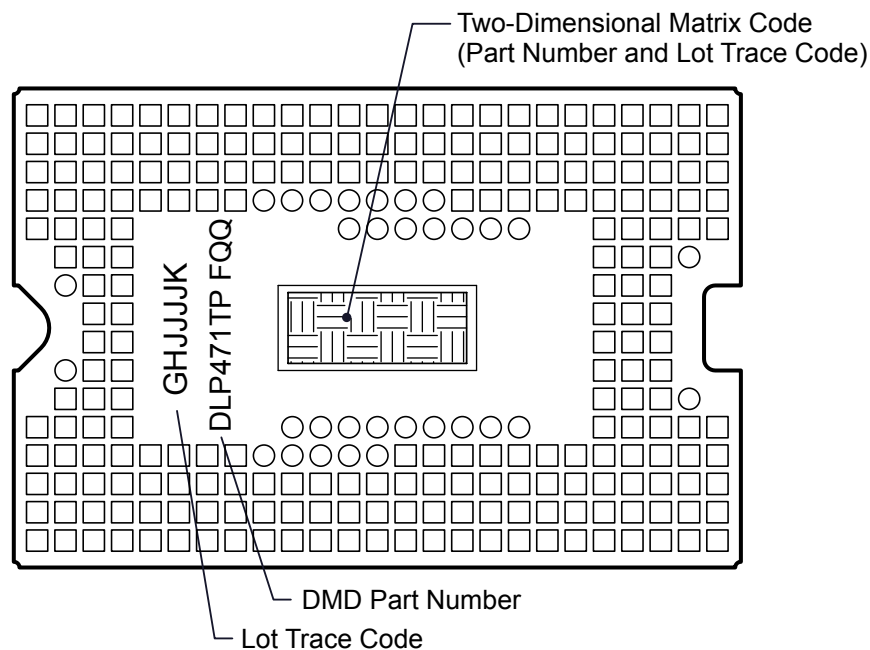


Figure 2. DMD Marking Locations

5.2 Documentation Support

5.2.1 Related Documentation

The following documents contain additional information related to the chipset components used with the DMD.

- [DLPC6540 Display Controller Data Sheet](#)
- [DLPA3005 PMIC/LED Driver Data Sheet](#)

5.3 Support Resources

TI E2E™ [support forums](#) are an engineer's go-to source for fast, verified answers and design help — straight from the experts. Search existing answers or ask your own question to get the quick design help you need.

Linked content is provided "AS IS" by the respective contributors. They do not constitute TI specifications and do not necessarily reflect TI's views; see TI's [Terms of Use](#).

5.4 Trademarks

Pico, E2E are trademarks of Texas Instruments.

DLP is a registered trademark of Texas Instruments.

5.5 Electrostatic Discharge Caution



These devices have limited built-in ESD protection. The leads should be shorted together or the device placed in conductive foam during storage or handling to prevent electrostatic damage to the MOS gates.

6 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
XDLP471TPFQQ	ACTIVE	CLGA	FQQ	270	54	TBD	Call TI	Call TI	0 to 70		Samples

(1) The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

(2) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".

RoHS Exempt: TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.

Green: TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

Important Information and Disclaimer: The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to TI's Terms of Sale (www.ti.com/legal/termsofsale.html) or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2020, Texas Instruments Incorporated