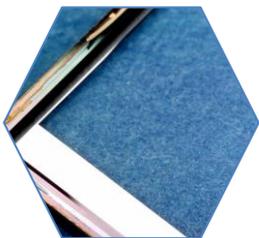
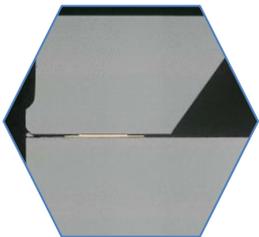
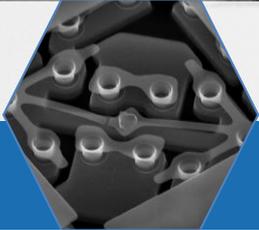


Texas Instruments DLP5531 DMD Automotive

First high-definition digital micromirror device for headlight automotive applications.



Title: Texas Instruments DLP5531 DMD Automotive

Pages: 97

Date: January 2021

Format: PDF & Excel file

Price: EUR 3,990

Reference: SPR21586

The latest Yole Développement [Automotive Advanced Front-Lighting Systems](#) report issued in 2019 estimated that the global LED headlamp market would be worth around \$13B in 2020. The market is dominated by basic full LED headlamps, whose share is more than 80%. But matrix pixel LED headlamps are emerging and digital micromirror device (DMD)-based systems are expected to secure significant market share thanks to their 1.3M pixel resolution.

DLP5531-Q1, developed by Texas Instruments, is a DMD for automotive headlights. This full reverse costing study has been conducted to provide its technology data, manufacturing cost and selling price.

The DLP5531-Q1 is a Micro-Opto-Electro-Mechanical System (MOEMS) using an array of micromirrors, with 1.3 Mpixel resolution in 1153 x 1153 format. This DMD has been selected by Audi for its high-end e-tron and A6 cars and by Mercedes for the latest Maybach.

The micromirror device is protected by a wafer level package. The component is assembled on a large ceramic pin grid array package to allow low and high temperature operation. The MOEMS is

manufactured by Texas Instruments. Technologies for high temperature operation are used to seal the cavity and enhance the vacuum inside the component.

This reverse costing study provides insights into technological data, manufacturing cost, and selling price of the DLP5531-Q1 MEMS DMD. Detailed optical and SEM pictures with comments and dimensions help to understand the technology and the manufacturing process flow.

Analysis of the supply chain and the manufacturing environment is used to calculate the manufacturing cost and price.

COMPLETE TEARDOWN WITH

- Detailed photos
- Precise measurements
- Materials analysis
- Manufacturing process flow
- Supply chain evaluation
- Manufacturing cost analysis
- Explanation of device operation
- Estimated sales price

TABLE OF CONTENTS

Overview/Introduction

- Executive Summary
- Reverse Costing Methodology

Company Profile

- Texas Instruments

Market Analysis

- Ecosystem and Forecast

Physical Analysis

- Physical Analysis Methodology
- Package
 - ✓ Package views, dimensions and marking
 - ✓ Package opening
- MEMS DMD Die
 - ✓ Views, dimensions and marking
 - ✓ MEMS opening
 - ✓ Cross-section
 - ✓ ROIC characteristics
 - ✓ Process characteristics

Manufacturing Process

- Overview
- MEMS Front-End Process
- MEMS Wafer Fabrication Unit
- Package Assembly Unit
- Back-End: Final test

Cost Analysis

- Summary of the Cost Analysis
- Yields Explanations and Hypotheses
- MEMS DMD
 - ✓ Front-end cost
 - ✓ Wafer and die cost
- Components
 - ✓ Back-end : packaging and final test cost
 - ✓ Component cost

Price Estimation

- Definition of Prices
- Manufacturer Financial ratios
- Estimated Manufacturer price

AUTHORS



Sylvain Hallereau has been Project Manager at System Plus Consulting since 2000. He is in charge of costing analyses for Integrated Circuits, Power semiconductors and LEDs. He has significant experience in the modeling of manufacturing costs for electronics components, Sylvain holds a Master degree in Microelectronics from the University of Nantes, France.

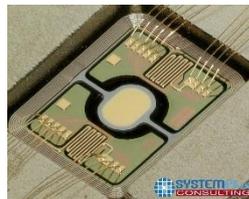


Véronique Le Troadec has joined System Plus Consulting as a laboratory engineer. Coming from Atmel Nantes, she has extensive knowledge in failure analysis of components and in deprocessing of integrated circuits.

RELATED REPORTS



IRay Technology 12µm and 17µm Thermal Sensors
Comparison between 12µm and first and second generation 17µm LWIR microbolometers from Chinese manufacturer IRay Technology's.
 August 2020 - EUR 3,990*

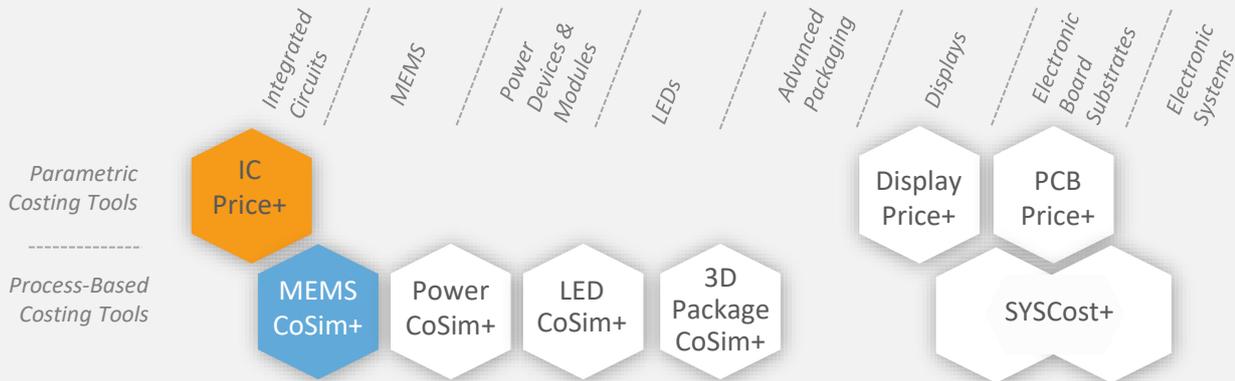


Intel Realsense L515 MEMS-Based Solid-State LiDAR Camera
A high-resolution LiDAR sensor featuring a bi-axial MEMS mirror scanner associated with an infrared laser and a RGB camera.
 September 2020 - EUR 3,990*



Automotive Advanced Front-Lighting Systems 2019
Headlamp digitalization is driving automotive lighting's growth and technological evolution.
 November 2019 - EUR 6,490*

COSTING TOOLS



Our analysis is performed with our costing tools IC Price+ and MEMS CoSim+.

System Plus Consulting offers powerful costing tools to evaluate any process or device, the production cost and selling price, from single chip to complex structures. All these tools are on sale under corporate license.

MEMS CoSim+

Cost simulation tool to evaluate the cost of any MEMS process or device.

IC Price+

The tool performs the necessary cost simulation of any Integrated Circuit: ASICs, microcontrollers, memories, DSP, smartpower...

ABOUT SYSTEM PLUS CONSULTING

WHAT IS A REVERSE COSTING®?

Reverse Costing® is the process of disassembling a device (or a system) in order to identify its technology and calculate its manufacturing cost, using in-house models and tools.



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- **TEARDOWN TRACKS**
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- **COSTING SERVICES**
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TERMS AND CONDITIONS OF SALES

1. INTRODUCTION

The present terms and conditions apply to the offers, sales and deliveries of services managed by System Plus Consulting except in the case of a particular written agreement.

Buyer must note that placing an order means an agreement without any restriction with these terms and conditions.

2. PRICES

Prices of the purchased services are those which are in force on the date the order is placed. Prices are in Euros and worked out without taxes. Consequently, the taxes and possible added costs agreed when the order is placed will be charged on these initial prices.

System Plus Consulting may change its prices whenever the company thinks it necessary. However, the company commits itself in invoicing at the prices in force on the date the order is placed.

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The quoted prices already include the rebates and discounts that System Plus Consulting could have granted according to the number of orders placed by the Buyer, or other specific conditions. No discount is granted in case of early payment.

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System Plus Consulting delivered services are to be paid within 30 days end of month by bank transfer except in the case of a particular written agreement.

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System Plus Consulting remains sole owner of the delivered services until total payment of the invoice.

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The transport costs and risks are fully born by the Buyer. Should the customer wish to ensure the goods against lost or damage on the base of their real value, he must imperatively point it out to System Plus Consulting when the shipment takes place. Without any specific requirement, insurance terms for the return of goods will be the carrier current ones (reimbursement based on good weight instead of the real value).

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