



Japan Display Inc.

**World's First  
eLEAP+HMO Display**

December 3, 2024



# **PersonalTech For A Better World**

## **1 World's First eLEAP + HMO Display**

### **1.1 eLEAP**

### **1.2 HMO (High Mobility Oxide)**

## **2 eLEAP + 2VD**

## **3 Future of Automotive Interiors**

## **4 Extremely Broad Use Case Opportunities**

## **1** World's First eLEAP+HMO Display

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### **1.2** HMO (High Mobility Oxide)

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**eLEAP**  
×  
**HMO**

- World's First Lithographic Maskless Deposition OLED
- World's First HMO (High Mobility Oxide) Backplane



New eLEAP+HMO Technology Cuts Power Consumption by 76%,  
While Increasing Display Resolution by 12%, Brightness by 15%,  
& Contrast by 690X

	JDI Automotive-Grade LCD	JDI Automotive-Grade eLEAP	Underlying Technologies
Spec Outline	LCD 32 inches	eLEAP 32 inches	eLEAP Lithographic Maskless Deposition  &  HMO High Mobility Oxide
Resolution	5760 x 1080 pixels 183 ppi	6460 x 880 pixels 205 ppi	
Backplane Technology	LTPS	HMO	
Brightness	870 cd/m <sup>2</sup>	1,000 cd/m <sup>2</sup>	
Power Consumption	58 W *1	14 W *2	
Contrast Ratio	1,450:1	1,000,000:1	

Copyright 2024 Japan Display Inc. All Rights Reserved. \*1) LCD 3.5W + Backlight 54.5W (Variations in pixel-on/off ratio have negligible impact)  
\*2) Calculated using a standardized pixel-on/off ratio of 30%/70%

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# eLEAP

***e**nvironment positive*

***L**ithography with maskless deposition*

***E**xtrême long life, low power, and high luminance*

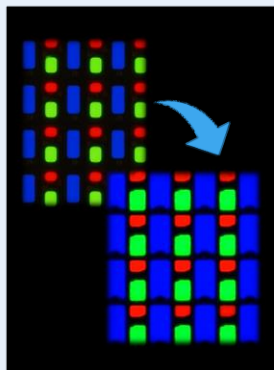
***A**ny shape **P**atterning*





## Breakthrough OLED Technology Delivering an Unparalleled User Experience

### High Brightness & Resolution



High Aperture & Resolution  
Unachievable with  
Conventional OLED

### Free-Form



Absence of Metal  
Masks Enable Large  
Sizes and Free-Form

### High Reliability



Optimized for Long  
Product Lifetime

### GreenTech



World's First  
Lithographic Maskless  
Deposition OLED

**Maskless OLED deposition is a breakthrough, environment positive production process that eliminates mask cleaning chemicals  
150k tons p.a. of CO2 emission reduction via deployment at JDI Mobara**



**150k tons of yearly CO2 emissions =**

**CO2  
Absorption  
Volume  
of 17M  
cedar trees**



**Cedar forest  
the size of  
3.7k Tokyo  
Domes**



CO2 emissions are JDI's calculations based on G6 Mobara plant at 30 k sheets/month

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## Silicon Breakthrough

From **Amorphous Silicon**  
(a-Si or “Amo”) to  
**Poly-crystalline silicon**  
(LTPS or “Poly”)

1962~  
**a-Si**

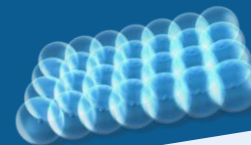
1998~  
**POLY-Si**  
LTPS

2012~  
**TAOS**  
IGZO



From **Amorphous Oxide Semiconductors (TAOS)** to **Poly-crystalline Oxide (HMO!)**

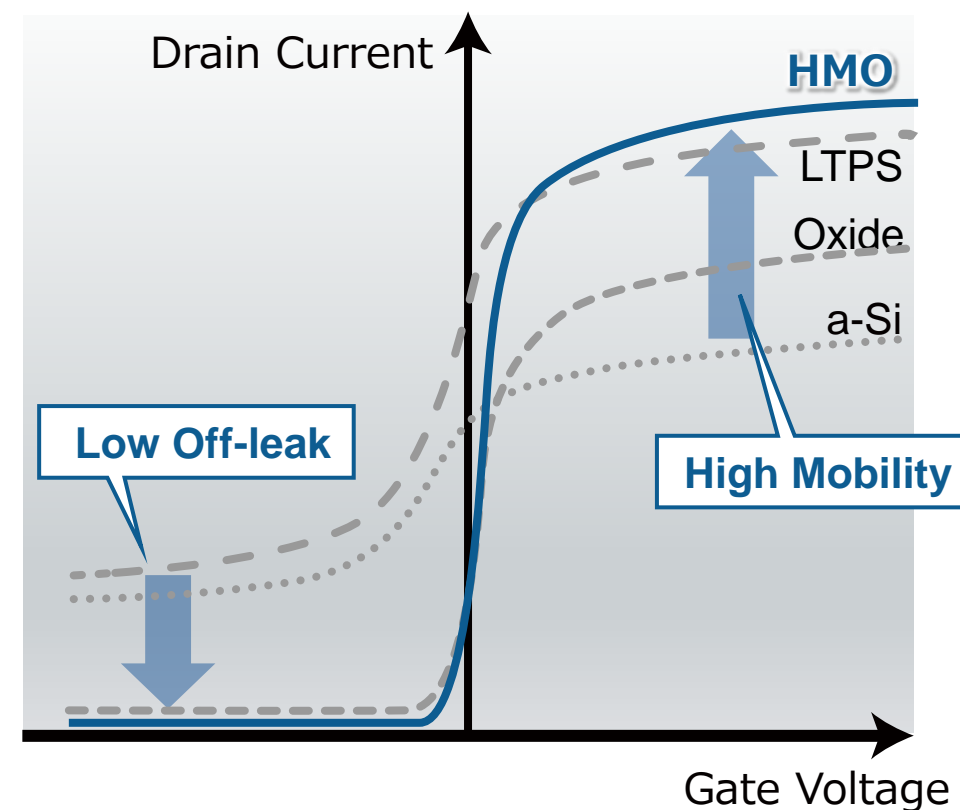
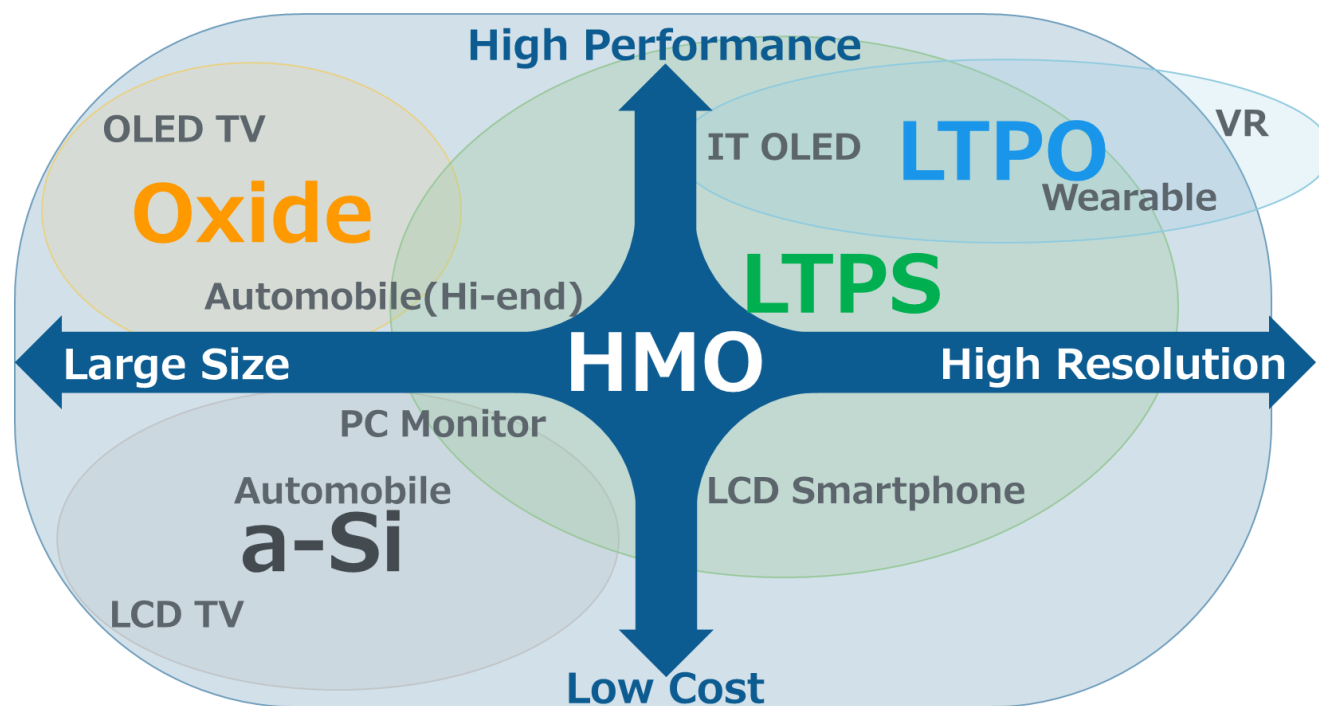
**HMO**



## Oxide Breakthrough

# HMO

## Revolutionary New Technology Combining All Strengths of Existing Backplane Technology with Low Off-Leak Voltage and Low Power Consumption

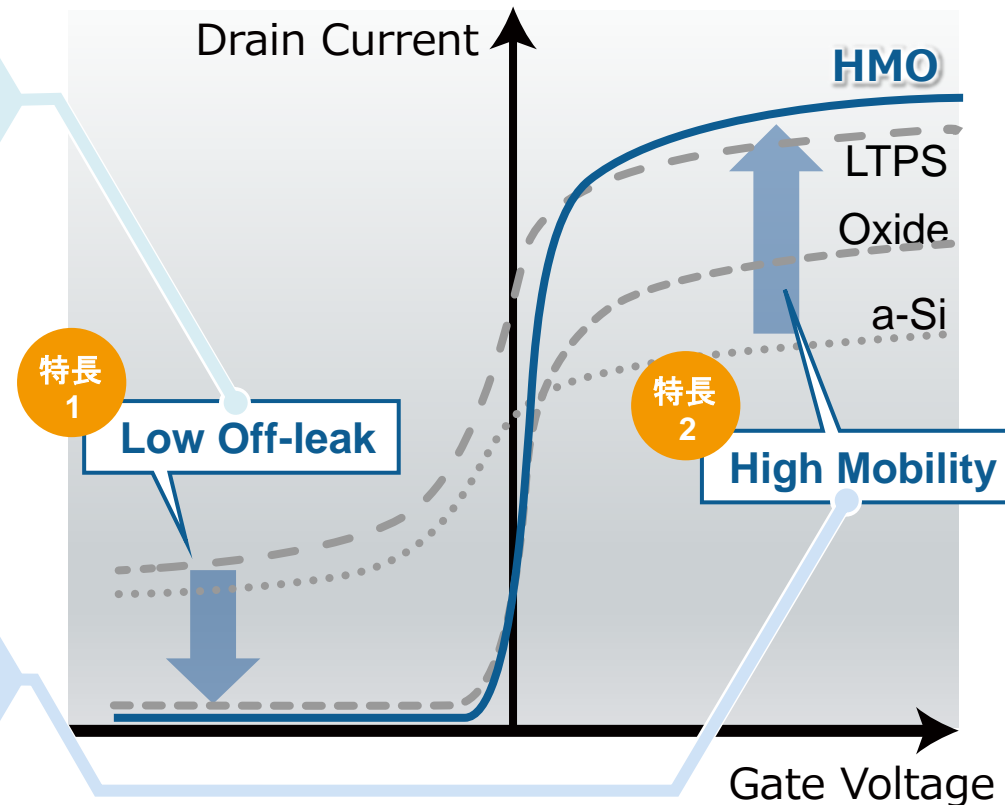


## Advantage 1: Low Off-Leak Voltage

- ✓ Low Power Consumption  GreenTech
- ✓ Can Vary Driving Frequency Per Side

## Advantage 2: High Mobility

- ✓ Enables High Resolutions
- ✓ Robust Voltage & Current Tolerance



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## 2VD Technology Enables Displaying Different Content to the Driver and Passenger Seats

JDI has Dramatically Enhanced 2VD Image Quality to Meet Demanding Automotive Quality Requirements



**Driver's Viewpoint**



1

2

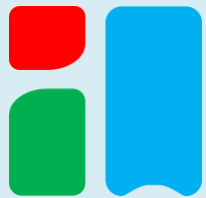


**Passenger's Viewpoint**



# JDI's Breakthrough eLEAP+HMO Can Be Combined with 2VD to Deliver a More Immersive and Higher-Quality User Experience

Achieving bright & clear images with any shape, doubling peak brightness or tripling lifespan in a wide light-emitting area



## eLEAP

World's First  
Lithographic Maskless  
Deposition OLED



## JDI Has Developed an eLEAP+2VD Display that Delivers a Radically New & Gamechanging User Experience

### Large Size & Free-Form eLEAP+2VD Application



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# Evolving Expectations for Automobiles

As the evolution of autonomous driving and EVs progress, our perception of automobiles is shifting. They are no longer seen as just modes of transport, but are becoming comfortable spaces where we can relax during our journeys

In this new era, the emphasis is on ensuring safe travel while enhancing the comfort of the in-car environment

From merely serving as information display devices,



displays have evolved to become indispensable components within cars. **For drivers, they offer an added layer of safety, while for passengers, they are expected to serve as a source of entertainment and information**





**In addition to cockpits featuring multiple displays, there is a growing trend towards simple and smart design**

**A key aspect of vehicle development now focuses on minimizing structural elements within the car, including displays, in order to make effective use of space**

**The role of displays in car interior design is extremely significant, with a growing trend towards integrated functionality**

**JDI is working not only to supply displays to the automobile market, but also to become a display solution provider that realizes safety and comfort through world-first technologies**



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1

ICD \*1

&



Cluster & CID \*2

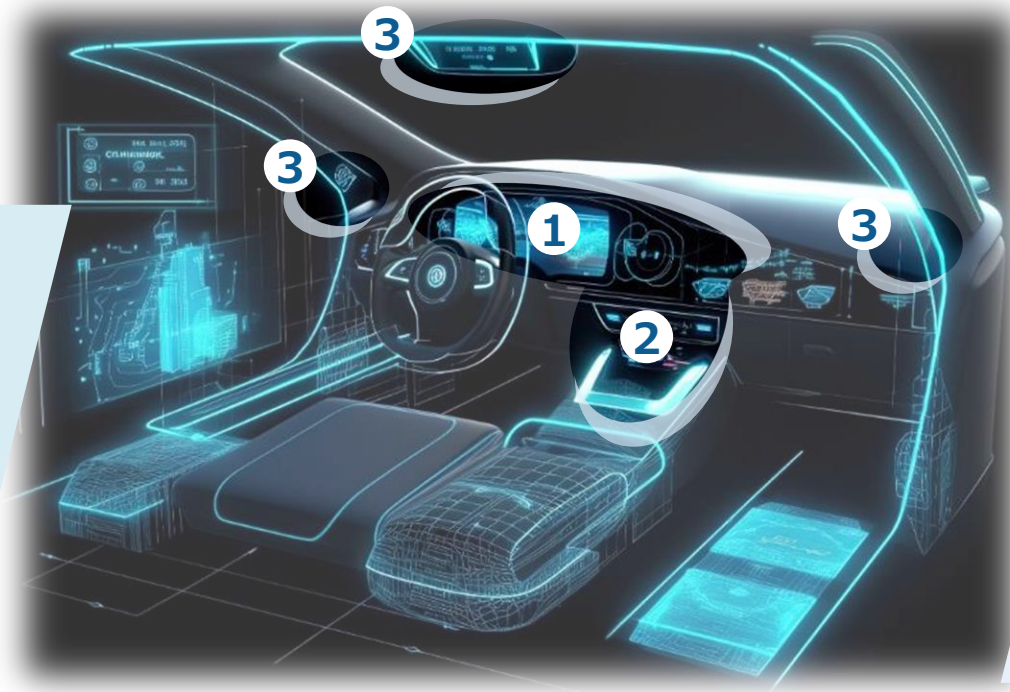
2

CID \*2



3

Mirror





**Smart Home Devices**



**Smart Museums**



**Signage**







# Thank You!

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