

AMOLED

AMOLED

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Introduction

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Application

 Active-Matrix OLED (Active-matrix organic light-emitting diode or AMOLED) is a display technology

- AMOLED is the type of OLED.
- OLED describes specific type of thin display technology and Active Matrix refers to the technology behind the addressing of pixels.



What is AMOLED?

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Application:

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- AMOLED is a display technology used in some of the most popular mobile devices available today, including various android handsets and tablets.
- AMOLED is a new display technology that is rapidly becoming viable for many applications.
- AMOLED is a self light emitting technology composed of a thin, multi-layered organic film placed between an anode and cathod.
- In contrast to LCD/TFT technology,AMOLED does not require a backlight.



HISTORY

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The first EL from an organic molecule was reported by pope and coworkers in 1963.

2 The active matrix technology is invented by Bernard Lechner in 1975.



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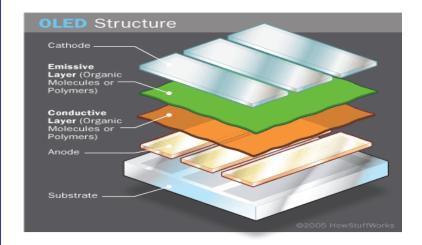


Figure: OLED structure





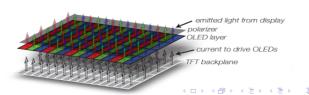
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Working

■ The AMOLED display consist of a matrix of OLED pixels, each having an anode, cathod and a layer of organic material between them.

- These pixels are activated by a thin film transistor which control each current pixel.
- Typically two transistors are used for each pixel-one to turn the change to the pixel on and off, and second provide constant current





AMOLED

Comparison

Comparison:

Shorter overall lifetime

	AMOLED	LCD		PLASMA
٠	Potentially the lowest cost.	Medium cost.	٠	Highest cost
	Consumes lowest power	Lower Power consumption than plasma		Highest power consumption
	Self emissive.	Requires backlight.		Requires backlight.
	Displays wider color range.	Color range not good.		Displays a very deep black.
	No screen burn notential	No screen burn notential		Screen burn potential

Backlight bulb typically

requires replace at around

8/16

Half life ~60k hours

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■ The biggest part of manufacturing AMOLED is applying the organic layers to the substrate. This can be done in three ways:

- Vaccum Deposition or Vaccum thermal evaporation(VTE)
- Organic Vapor Phase Deposition(OVPD).
- Inkjet Printing



Manufacturing of AMOLED

AMOLED

Features Of **AMOLED**

 High brightness is achieved at low drive voltages/current densities.

- Self luminescent so no requirement of backlighting.
- Materials do not need to be crystalline, so easy to fabricate.
- High contrast



APPLICATIONS

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Advantages

- Higher contrast radio and sun readability.
- Thinner and Flexible
- Lighter weight
- Large viewing angle
- Brightness
- Less power consumption
- Faster response





Advantages

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Advantages

■ Thinner, lighter and more flexible.

plastic substrates rather than glass.

Do not require backlight, auto generated.

low voltage, low power

Brighter-good daylight visibility.

High resolution.



Disadvantages

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Advantage

- Low Lifetime
- Efficiency of Blue OLED.
- Susceptible of Water.



CONCLUSION

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Limited use caused by degradation of materials.

- AMOLED will replace current LED and LCD technologies.
- Flexibility and thinness will enable many applications.



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