

Small Sized AMOLED Manufacturing Process Report

Ver. 6



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- 5.5 Module inspection and measurement process
- 5.6 Module process equipment layout



1. AMOLED structure

1.2 Foldable OLED panel structure

Small Foldable OLED Panel _Galaxy Z Fold5

From 'Galaxy Z Fold 3' to 'Galaxy Z Fold 5', two digitizers are placed on the left and right for use with the touch pen, and carbon fiber reinforced plastic (CFRP) is used to protect the digitizers.

- Until 'Galaxy Z Fold2', a polarizer was used to prevent reflection, but from 'Galaxy Z Fold3', color filter on encapsulation (COE) technology is being applied.
- UTG and PET were used for the cover window and back film, respectively.

Foldable OLED structure for 'Galaxy Z Fold5'



1. AMOLED structure

1.2 Foldable OLED panel structure

Medium to large size Foldable OLED panel _ThinkPad X1 Fold

- The cover window material of the foldable OLED laptop 'ThinkPad X1 Fold' is colorless PI, and a hard coating layer on the top and bottom protects the cover window.
- The add-on method was applied to the touch, and PI was used as the back film.
- The bottom of the back film is lined with metal foil and metal for shock prevention and heat dissipation. Plate is attached.

Foldable OLED structure for 'ThinkPad X1 Fold'



2. TFT manufacturing process

2.1 LTPS TFT basic manufacturing process

Flexible 7 Mask LTPS TFT manufacturing process



2. TFT manufacturing process

2.4 Galaxy Note20 Ultra HOP(LTPO) TFT manufacturing process

- Analyzed the basic structure and process of the LTPO TFT applied to the Galaxy Note20 Ultra .
- Because the process was analyzed by decapturing the actual structure , there may be differences from the actual process .

Galaxy Note20 Ultra HOP(LTPO) TFT structure



HOP(LTPO) TFT pixel circuit



3. OLED pixel and encapsulation manufacturing proces

3.3 Photolithography OLED (Applied Materials, eLEAP , VIP) Manufacturing Process

OLED pixel and encapsulation process



3. OLED pixel and encapsulation manufacturing proces

3.3 Photolithography OLED (Applied Materials, eLEAP , VIP) Manufacturing Process

OLED pixel and encapsulation process

OLED pixel and encapsulation process and equipment

Process		Materials	Equipment
	—	ITO, Cathode, HTL, EML, HBL	—
	—	ITO, Cathode, HTL, EML, HBL, Encapsulation	—
	—	ITO, Cathode, HTL, EML, HBL, Encapsulation	—
	—	ITO, Cathode, HTL, EML, HBL	—

3. OLED pixel and encapsulation manufacturing proces

3.4 Photolithography OLED (Semiconductor Energy Laboratory) Manufacturing Process

OLED pixel and encapsulation process



3. OLED pixel and encapsulation manufacturing proces

3.4 Photolithography OLED (Semiconductor Energy Laboratory) Manufacturing Process

OLED pixel process

Photolitho OLED Pixel Process and Equipment

Process		Materials	Equipment
	1	ITO	PECVD
	2	ITO	PECVD
	3	ITO, Mg:ITO	PECVD
	4	ITO, Mg:ITO	PECVD

4. Cell manufacturing process

4.4 Color Filter on Encapsulation manufacturing process

- Black matrix coating and patterning

Color filter on encapsulation manufacturing process and equipment

Process		Materials	Equipment
			
			
			
			
			
			

