

# Active Tail improving effects on the TFT character

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## 1. Introduction

In the process of LCD production, Some products are found various undesirable phenomena, such as H-Line, Crosstalk, Flicker, and so on. The TFT measurement results shows that leakage current is too large under the light state. This thesis intensive analysis aiming at this phenomenon. Through the analysis of the contrast test, finally we found the most effective method to improve the characteristics of TFT.

## 2. Analysis step

- (1) Compare TFT character of undesirable panel with the normal panel, the Photo Ioff is too large, the Photo Ioff should be reduced.
- (2) The direct method of improve the Photo Ioff is to make Active area under light is reduced.
- (3) To decrease the Active can reduce Act area under light. The experimentally measured Photo Ioff is proportional to the Act less (note: Active can not reduce endless)
- (4) To increase the Gate can reduce Active area under light. The experimentally measured Photo Ioff is inversely proportional to the increase in Gate (note: Gate can not increase endless)
- (5) Active tail shrinkage can also reduce Active area under light. The experimentally measured Photo Ioff proportional to Active tail shrinkage (note: Act tail can not shrink inside endless)
- (6) The above three methods can improve the Photo Ioff level (reduce the 70% or so), but the Active was smaller, with the below S/D overlap area is smaller, lead to actual W/L decreases, and Ion reduced accordingly (20%). Gate increased, TFT is applied to the pixel area can lead to product aperture ratio decreases.

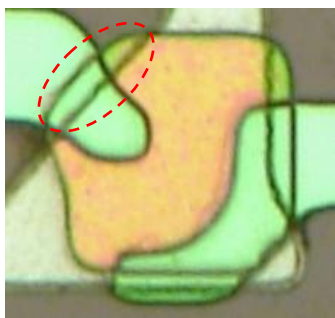


Fig. 1. Active Tail

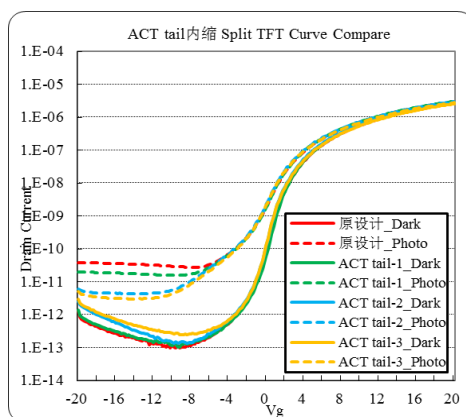


Fig. 2. TFT Curve

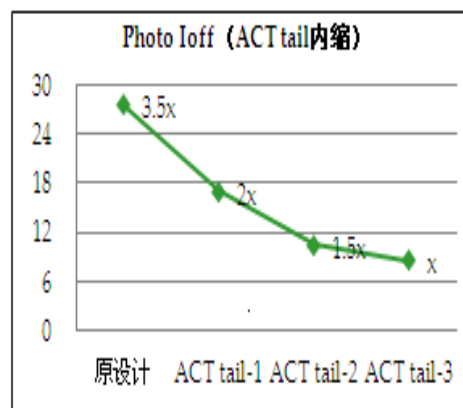


Fig. 3. Ioff Trend

## 3. Conclusion

Active tail shrinkage can be improved Photo Ioff, without lowering Ion, also won't reduce the A/R. Suggest Mask Design department to choose Act tail shrinkage as TFT improvement direction.

## Acknowledgment

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## References

1. Electrical Stability of Hexagonal a-Si : H TFTs(2010)
2. Liquid crystal materials and 3 d display(2012)
3. The technology of p-Si TFT-LCD for mobile phone(2001)