

Seamless Touch Screen Integration

Jabil | Green Point developed three technologies that provide seamless integration of the touch screen into molded plastic cover lenses for greatly improved 3D mobile phone designs, offering OEMs high-performance, state-of-the-art solutions with outstanding aesthetics and functional benefits for creating innovative and differentiated products:

- UV Glue Lamination
- Insert Molded Touch Screen (IMTS)
- Three Dimensional Overlay Method (TOM)

Jabil | Green Point collaborated closely with JTouch to co-develop these innovative technologies. By joining their areas of expertise to deliver a combined solution, both companies have accelerated the availability of this advanced integration technology, while simplifying supply chain management via a one stop shop approach instead of multiple component interaction. OEMs can now more easily and quickly address emerging trends and the hottest styles, and deliver the reliable high-performance and functionality that global consumers want.

Advantages

- Seamless design - no gap or seam line between touch lens and cover
- 3D design - the lens can be flat or a continuous curved surface as the cover
- Minimal thickness for thinner smart phones
- Improved seamless design due to better transparency of glue and thin film sensor
- Higher reliability
- Better hardness - surface hardness > 4H on the lens area



1. UV GLUE LAMINATION

Using proprietary UV-cured glue lamination for attaching the touch sensor to the A-cover lens, this new technology gives OEMs greatly expanded design flexibility and higher yields than existing competitive materials.

The technology does not have the significant drawbacks of traditional approaches. It utilizes the UV-cured glue with specialized equipment to smoothly laminate the touch screen onto the curved plastic A-cover. This produces a seamless result that protects against water and dust and provides a high level of light transmission. Unlike optically clear adhesive (OCA), which is designed for flat covers and may leave air bubbles on curved surfaces, the UV glue seamlessly adapts to the shape of the cover. Also, liquid UV-cured glue permits rework prior to curing for higher yields.

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Advantages of Using Glue for Lamination

- 3D cover lamination possible
- Higher yield: >90%
- Superior humidity resistance
- Seamless structure is water and particle proof
- Good optical characters
- Rework possible
- Improved capability to cover gap/flash/step by printing or molding
- No high press pressure so no risk of damaging the screen surface
- Glue material is better than OCA in seamless structure application

| | OCA | Glue |
|------------------|-----------------|-------------------|
| Shape | 2D | 3D in fashion |
| Step Coverage | Up to 7 μ m | Up to 100 μ m |
| Yield | 80%~90% | >90% |
| Transmittance | 83%~86% | 85%~87% |
| Thickness | Fixed by Film | Process Variable |
| Refraction index | 147 | 152 |
| Haze | Normal | Good |
| Reworkable | No | Yes |
| Contamination | Often | Can be filtered |

2. INSERT MOLDED TOUCH SCREEN

Insert Molded Touch Screen (IMTS) integration is achieved by insert molding the film sensor into the cover lens, forming a seamless touch function cover with minimal thickness for ultra-thin smart phone design.

Advantages

- Superior hardness >6H
- Good flatness
- Suitable for decoration
- Less birefringence
- Insert mold on A-cover



3. THREE DIMENSIONAL OVERLAY METHOD (TOM)

Advantages

- Smooth surface
- Less shrinkage
- Good for decoration
- Ultra thin
- PET/PC/PMMA film possible
- Liquid Crystal Module (LCM) assembly possible

