



# The Advantages of Flex Plus Flex PCB for Automotive Lightings

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Overall control the flatness of whole flex PCB Panel.

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The design for peeling point is production friendly.



# Overall control the flatness of whole FPC Panel.

The impact from panel flatness will be huge. From very beginning we thinking over the shrinkage consistency from the raw materials, fully release the stress of flex PCB during processing, eventually apply it in production:

- 1 Improve the design of Pin back Hard tooling to prevent pulling, which will cause deformation during production.**
- 2 Leveling process after aluminum sheet forming. Provide excellent processability, which will help the automatic assembling on customers' side.**





# The accuracy of solder pads is high and truly reliable

Flex PCB for auto lighting modules, Flex Plus always improve its techniques of production to ensure the soldering pads performing well on customers' side

1

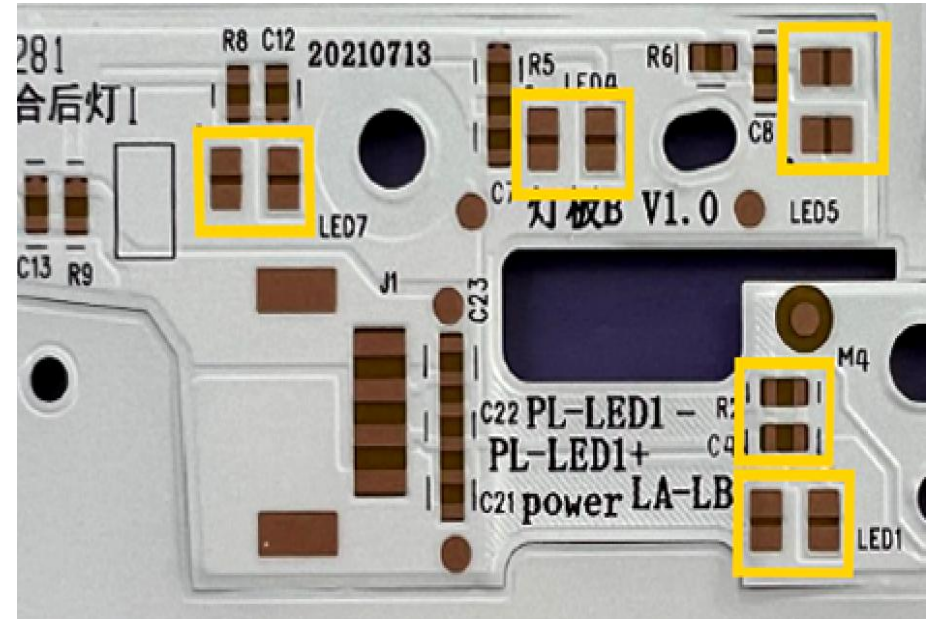
## Improve the design for avoiding the solder pad being lift off.

Cover-lay openings are designed mechanically support for the exposed connecting lines to the solder pad.

Making coverlay openings into one, guarantee the stripping resistance of solder pads.

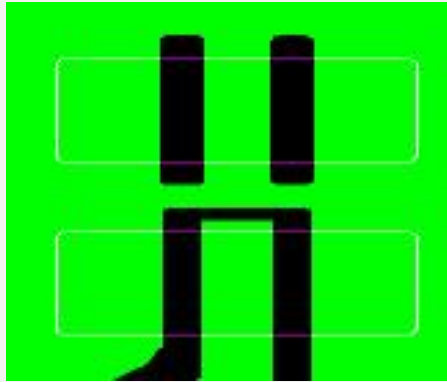
2

Control the position accuracy of solder pads, white cover-lay laser compensate the material shrinkage, change the spot points to sheet points to prevent any movement during the operation process.





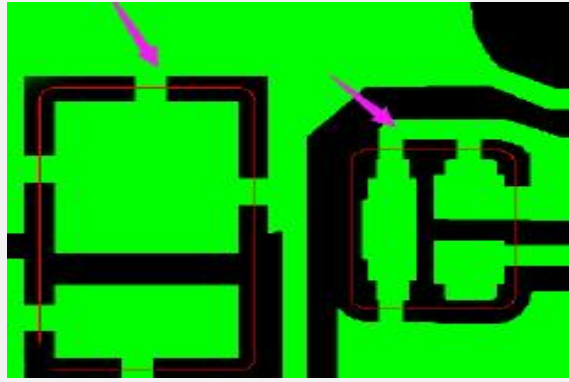
# Cover-lay openings ensure the solderabilities of Pads



Method

01

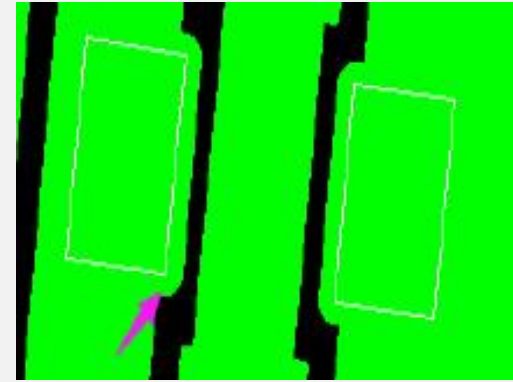
Connecting the two separated coverlay openings, narrow the width of coverlay openings, preventing the solder pads being lift off, make sure the solder pads are encapsulated with coverlay.



Method

02

Cover-lay openings cover on the connecting lines.

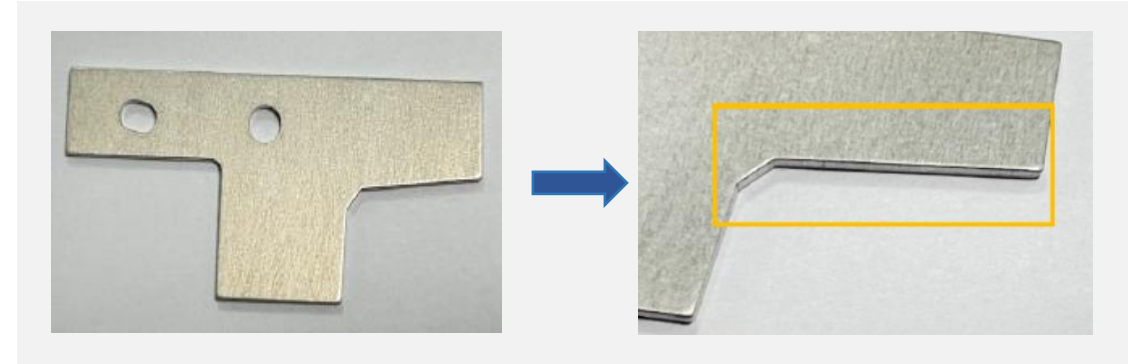
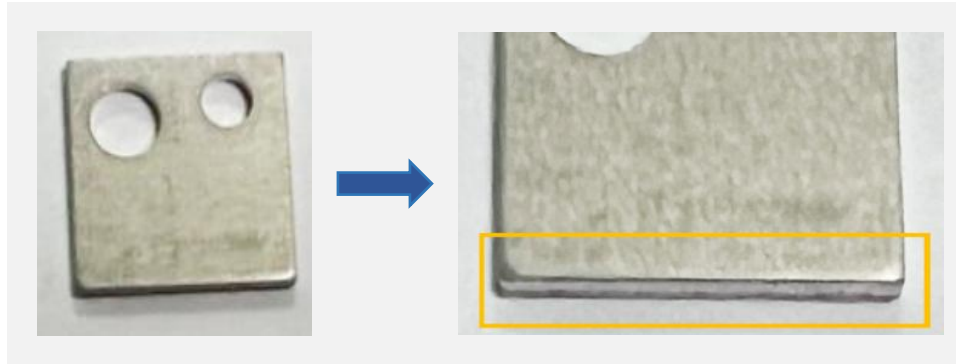


Method

03

Enlarge the solder pads for ensuring soldering on customers' side.

# ➤➤➤ The control to aluminum lamination process



There is no burr and flanging on the edge of the heatsink after punching, ensures that the heatsink and the flex PCB are more tightly bonded together.

The heatsink is formed by one-time stamping(punching) with hard tooling. The material of hard tooling is SKD-11

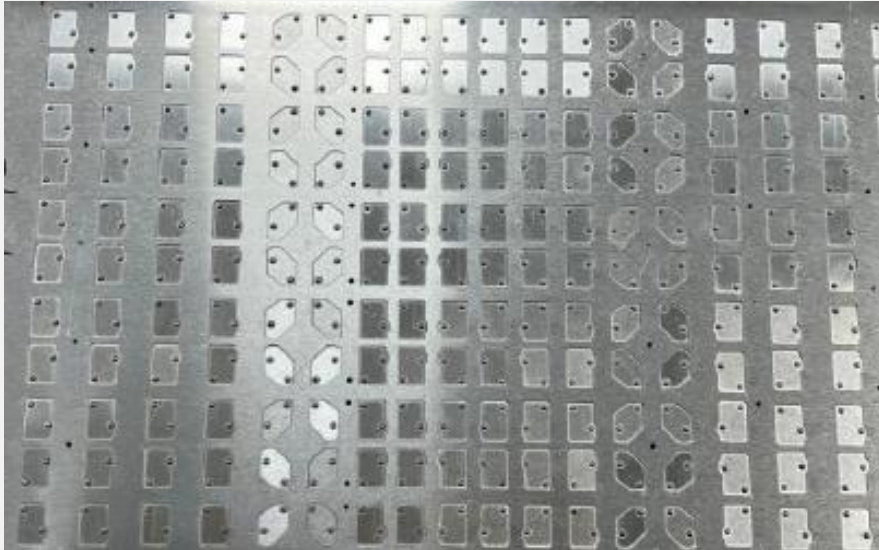
Perform well when hightemperature strength	Toughness	Wear resistance	Easy to get the perfect outline: burr-less, smooth
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After vacuum heat treatment, the hard tooling will be:

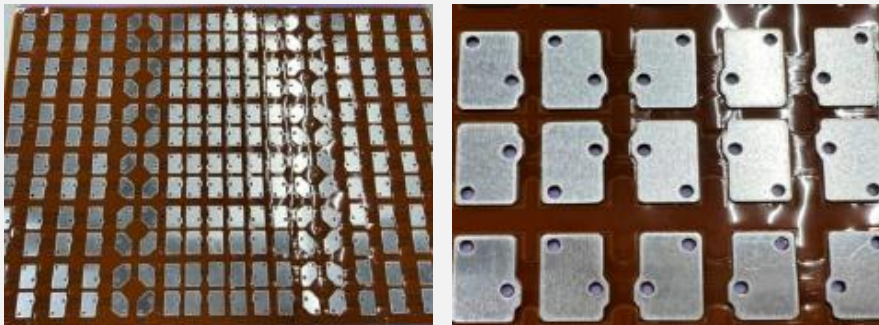
Much more stable performance	Longer life	Easy to process	The deformation caused after heat treatment will be limited
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# The control to the aluminum lamination



Special fixing jig developed by Flex Plus



## 01

**Applying the special fixture jigs for heatsink aluminums, developed by Flex Plus**

- Specially design the fixture pins to compensate the moving and shifting positions
- Aligning holes positioning+ Trenching Cover for best aligning. Help the tolerance of laying up heatsinks aluminum to be limited to  $\pm 0.1\text{mm}$

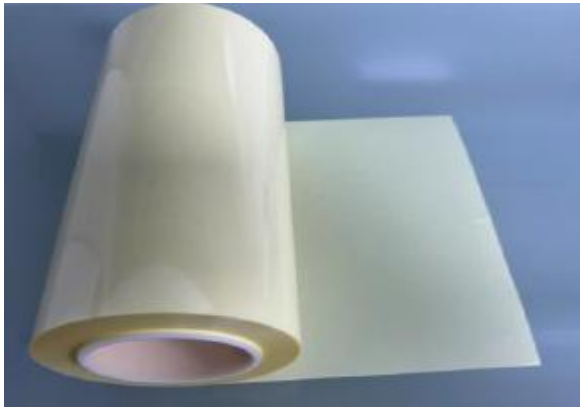
## 02

**The precision between flex PCB holes and aluminum holes is under strictly controlled so that product will be performing best on customers' assembling lines.**

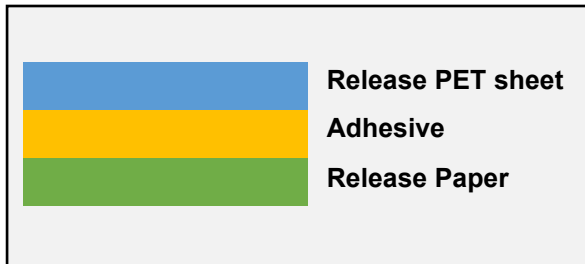


# Special Adhesive for aluminum – easy detachment, great solderability

(Detachment: separate the solder Pads and other wastes on panel)



Adhesive



material structure

Considering the stability and the heat resistance when flex PCB laying up with heatsink aluminum, Flex Plus had developed one series of special adhesive for this process.



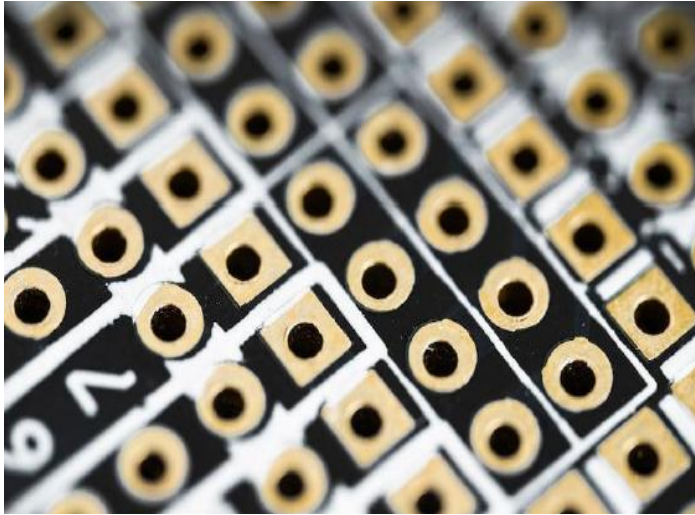
- Decent adhesive strength
- Acid/Alkali resistance
- Good Heat resistance
- Effective Electrical insulation

The high strength of heatsinks after Epoxy PSA (pressure sensitive adhesive) and flex PCB bounded together, ensuring that there will be non bubble and peeling issues occur on the heatsink areas during 260°C soldering process.



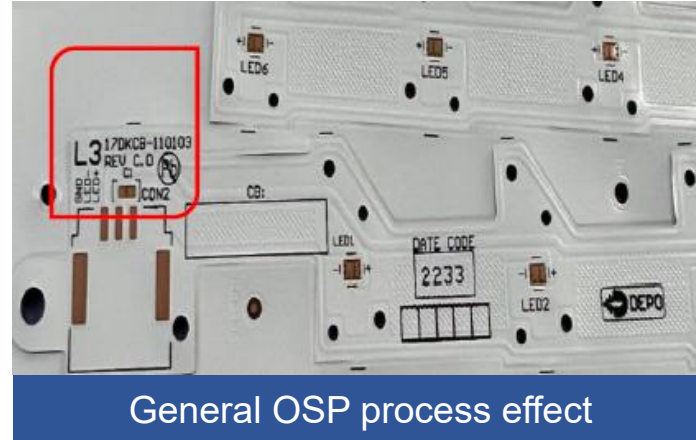


# Special OSP for surface treatment

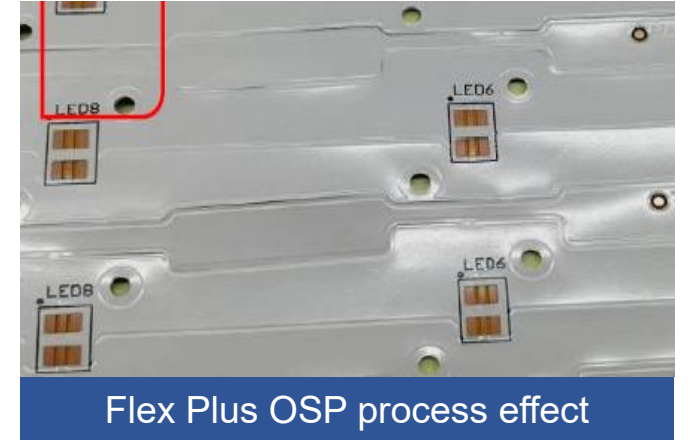


What is good when utilize OSP on surface finishing

- **Cost effective**
- **Simplify the production**
- **Good adaptation**
- **Great solderability**
- **Easy to rework**



General OSP process effect



Flex Plus OSP process effect

The drawbacks of regular OSP potion from other flex PCB factories are unable withstand to high temperature, poor thermal stability. Those facts will cause discolor or blackening the solder pads, which lead to poor soldering, produce wastes.

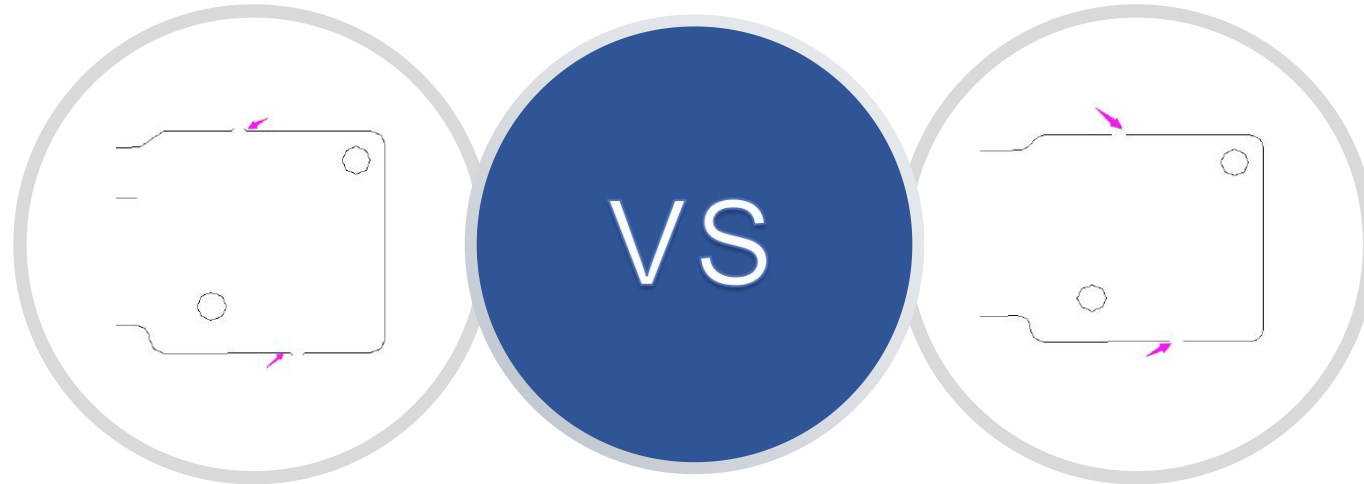
Flex Plus optimized its OSP potion for surface finishing, performing much better for assembling on customers' sides.

- **Better Potion ratio**
- **OSP potion works better on flex PCB solder pads**
- **Won't be discolored after high temperature soldering**



# Better breakpoints on outline for easier picking up

The Nonstop design will cause direct impact on the assembling process on customers' side.



## Special Design by Flex Plus

Flex Plus applies chamfer on the pickup points, line workers will pick up flex PCB easily from the panel, such design will be much more effective and save materials.

## Design from others

The design of outline from others are flat, which will cause more wastes and easily be damaged during picking up the flex PCB products from panel.

# You are most welcome to visit Flex Plus

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