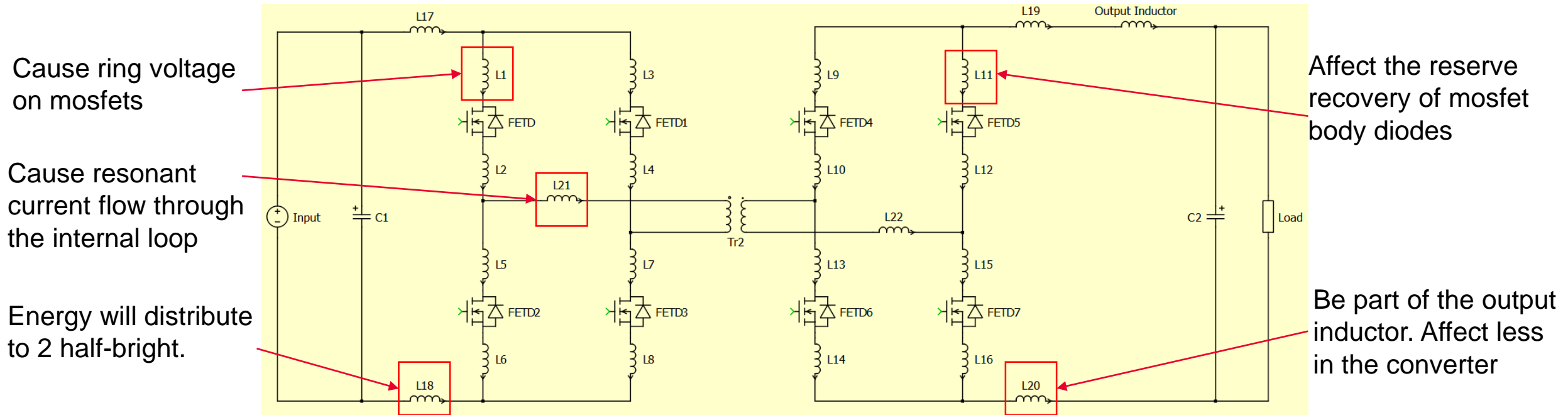


# Parasitic Parameter Simulation for Full-bridge Converter



# How parasitic parameter of PCB affect the performance of full-bridge converter

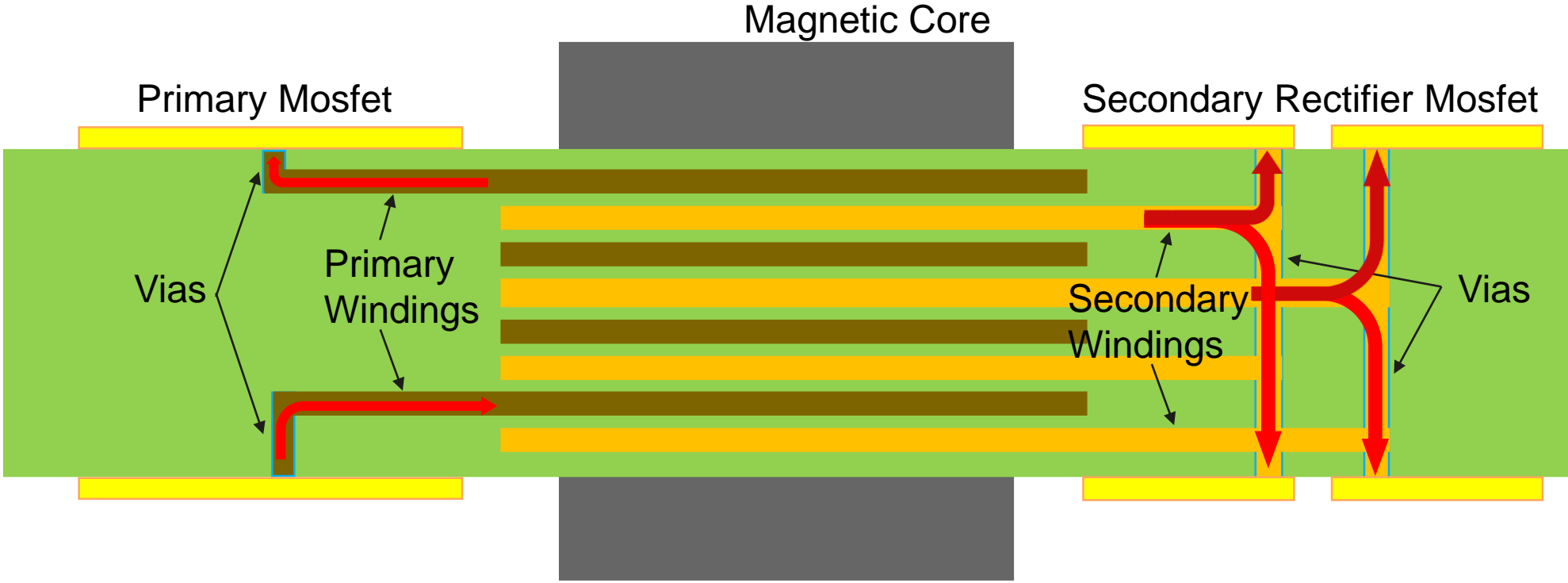
L1~L22 are the leakage inductors of PCB. Different inductors will affect the converter performance in different ways. Nearly all inductors generate more losses.



The parasitic resistance isn't showed in this circuit. But it will also affect the losses a lot. It need to be considered.

The leakage capacitor will also affect the performance. But in order to make the analysis easier, the caps can be ignored.

# How parasitic parameter of PCB affect the performance of full-bridge converter



Here is the diagram of the planar transformer PCB. In the previous project, the characteristic of windings and core is simulated. But the vias or terminal windings as the red arrows are not considered. These are the parasitic parameter showed in page2. It also need to be considered and optimized.

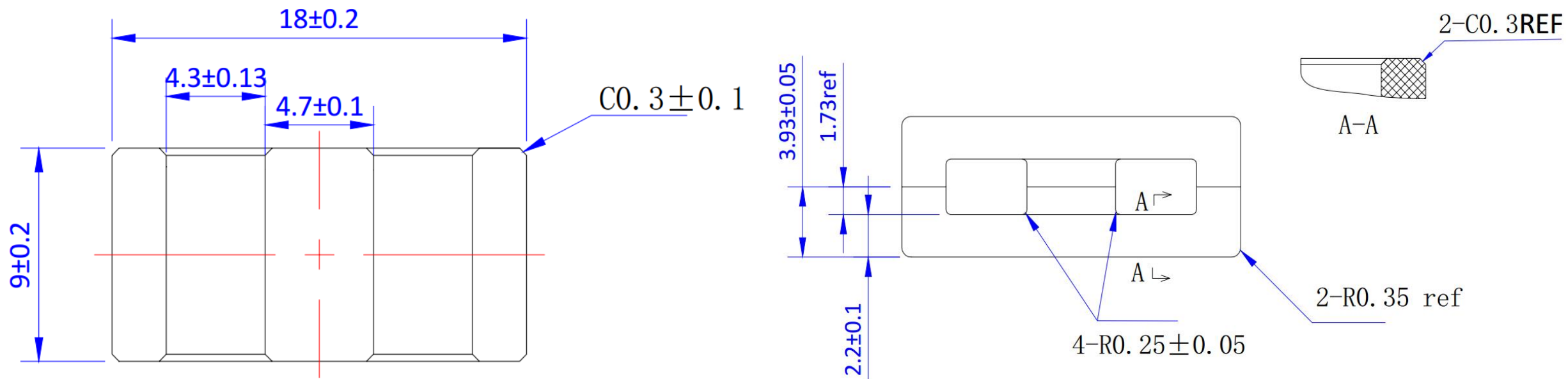
# Research Topic

Object	Parameter	Unit	Note
Layers	12		The layers of whole PCB are 14. The top and bottom layer can't be used for windings. So there are 12 layers for windings
Thickness of copper	4	oz	No limitation of interconnection vias. Plating Through Hole, Blind Via Hole and Buried Via Hole can all be used in the PCB.
Thickness of core	4	mil	
Thickness of PP	5	mil	
Transfer ratio	3:1		
Input voltage	36~72	V	
Output voltage	12	V	
Power	600	W	
Recommended Mosfet	ISC022N10NM6 IQE013N04LM6		

The transformer designed in the existing topic will be used as the planar transformer in the new topic. Please use the recommended mosfets, inductor and this transformer to design a smallest converter system in the 12 layers PCB. Then simulate the parasitic parameter of this PCB and analyse how it affect the losses of the converter. Provide a report to compare the losses between this real design converter and the ideal converter.

# Size of Reference Magnetic Core

- The core below is only for reference same as the previous project.



# Standards of PCB layout

- All size below means the smallest distance between each components.
- The components in the diagram are on one side for showing. But they can be put on both side, top and bottom.
- The vias are not solid copper. The circle inside is insulated resin. Only the annulus is copper.

