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# ANALYSIS OF A FILLING COPPER PILLAR BASED ON A THERMAL HOLE GLASS SUBSTRATE FOR A LED CHIP

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***ABSTRACT***

***The glass substrate is drilled thermal holes by UV Laser and then is filled copper pillar on a thermal hole. The taper angles of 5o between top-side via hole and bottom-side via hole are 300 μm in thickness and 1 mm in length for a LED chip. The samples have the diameter/space ratio at 1/2 and 1/4 are fabricated by UV laser and the diameter of 100 、200 、300 μm. The made samples filled copper pillar model is used by numerical analysis. The minimum thermal conduction resistance is 3.178 ℃/W when a 2x2 array glass copper pillar substrate with 300 μm in diameter and 600 μm in spacing. By finite element method (FEM), the minimum thermal conduction resistance is 3.608 ℃/W at the same condition. Thermal conduction resistance of glass substrate is 214.2 ℃/W. The minimum thermal conduction resistance is decreased 98.5 % the thermal conduction resistance based on glass substrate. The numerical analysis results are similar with FEM simulated results. Its tolerance is almost 13.5 %.***

***KEYWORD: Laser Drilling, Thermal Hole, Finite Element Method (FEM), Numerical Analysis***

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