

ABSTRACT OF THE DISCLOSURE

ULTRASONICALLY JOINING APPARATUS,

ULTRASONICALLY JOINING METHOD AND COOLING DEVICE

A cooling device has a radiator plate and a corrugated fin for cooling an electrical component. In a manufacturing process of the cooling device, a symmetrically constructed tool section
5 presses the radiator plate and the fin against an anvil. The radiator plate has an attaching portion where an electrical component is attached. Knurled surface for preventing a slide is formed on the tool section only at a surrounding area to prevent a deformation of the attaching portion. The tool section and the
10 radiator plate vibrate ultrasonically in a longitudinal direction of corrugations of the fin to prevent a crack on the fin.

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