Abstract

SEMICONDUCTOR DEVICE AND METHOD OF FORMING PREFABRICATED HEAT SPREADER FRAME WITH EMBEDDED SEMICONDUCTOR DIE

A semiconductor device is made by mounting a prefabricated heat spreader frame over a temporary substrate. The heat spreader frame includes vertical bodies over a flat plate. A semiconductor die is mounted to the heat spreader frame for thermal dissipation. An encapsulant is deposited around the vertical bodies and semiconductor die while leaving contact pads on the semiconductor die exposed. The encapsulant can be deposited using a wafer level direct/top gate molding process or wafer level film assist molding process. An interconnect structure is formed over the semiconductor die. The interconnect structure includes a first conductive layer formed over the semiconductor die, an insulating layer formed over the first conductive layer, and a second conductive layer formed over the first conductive layer and insulating layer. The temporary substrate is removed, dicing tape is applied to the heat spreader frame, and the semiconductor die is singulated. (Figure 4)