ABSTRACT

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Through vias in a substrate are formed by creating a trench in a top side of the substrate and at least one trench in the back side of the substrate. The sum of the depths of the trenches at least equals the height of the substrate. The trenches cross at intersections, which accordingly form the through vias from the top side to the back side. The through vias are filled with a conductor to form contacts on both sides and the edge of the substrate. Contacts on the backside are formed at each of the trench. The through vias from the edge contacts. Traces connect bond pads to the conductor in the through via. Some traces are parallel to the back side traces. Some traces are skew to the back side traces. The substrate is diced to form individual die.

Figure 5