

ABSTRACT

ROOM TEMPERATURE METAL DIRECT BONDING

A bonded device structure including a first substrate having a first set of metallic bonding pads, preferably connected to a device or circuit, and having a first non-metallic region adjacent to the metallic bonding pads on the first substrate, a second substrate having a second set of metallic bonding pads aligned with the first set of metallic bonding pads, preferably connected to a device or circuit, and having a second non-metallic region adjacent to the metallic bonding pads on the second substrate, and a contact-bonded interface between the first and second set of metallic bonding pads formed by contact bonding of the first non-metallic region to the second non-metallic region. At least one of the first and second substrates may be elastically deformed.

Figure 1A