Thermoplastic Polyimide (TPI) Adhesive Technology for RF Circuits

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Abstract

Thermoplastic polyimide (TPI) adhesive provides robust bonding between substrates with a bondline thickness of only 2-8um (0.08-0.3 mil), even when the substrates have a severe CTE-mismatch (say, silicon on aluminum) and are repeatedly thermal shocked. TPI is compatible with surfaces of semiconductor, ceramic, metals (except unpassivated copper) and plastics. Like other polymeric bond lines, the TPI polymer can be filled with a high loading of inorganic material, such as silver flake (electrically conductive) or BN powder (thermally conductive, while electrically insulating, 140V/um). In its B-staged form, TPI thermo-compression bonding of semiconductor die to heat sinks or spreaders can be done in seconds.