



FIG. 2.7 Thermal conductance as a function of temperature for solder, varnish, grease, and pressure joints. *The conductance is per square centimeter of contact area for the solder, varnish, and grease joints.* However, the curves for *pressure joints* give the total conductance of the joint, independent of the contact area, but dependent on the total *force* applied. Dashed lines are estimates of the conductance in temperature regions where no data were available, based on the bulk thermal conductivity of the solder materials. Approximate thickness of solder, varnish, and grease joints is indicated in micrometers. (Compiled by Radebaugh et al. 1977 from the following references: solder joints ($T < 1 \text{ K}$): Anderson and Peterson 1970 and Steyert 1967; solder joints ($1 \text{ K} < T < 4 \text{ K}$): Challis and Cheeke 1964 and Barnes and Dillinger 1966; solder joints (room temperature): Yovanovich and Tuarze 1969 and Yovanovich 1970; grease and varnish joints: Anderson and Peterson 1970, Ashworth et al. 1973, McTaggart and Slack 1969, Sauer et al. 1971a, and Sauer et al. 1971b; Pressure contacts: Colwell 1969, Berman and Mate 1958, Sauer et al. 1971a, Sauer et al. 1971b, and Gmelin 1967.)