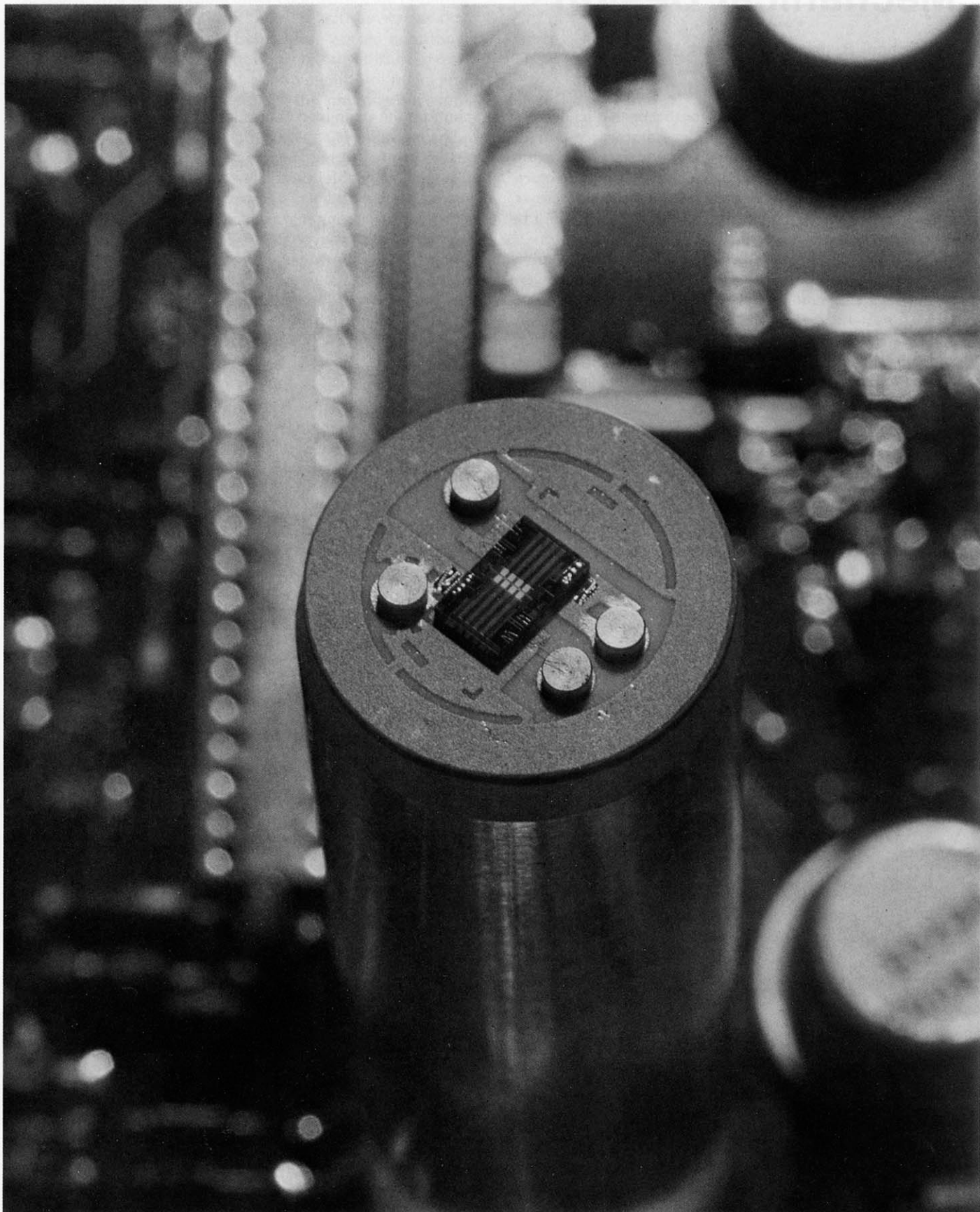


# HEWLETT-PACKARD JOURNAL

DECEMBER 1985



# Internally Modular Signal Generator Mechanical Design

by Michael B. Jewell and Mark W. Johnson

ONE of the principal goals for the mechanical design of the HP 8642A/B Signal Generator was to provide effective shielding to ensure high performance without sacrificing serviceability or ease of manufacture. This ruled out "stiff" RF gaskets, large numbers of screws, retaining nuts for RF connectors, and covers that can't be removed without unsoldering components.

The design that realizes these goals divides the circuitry into functional blocks or modules. These modules are treated as small, complete instruments that have well-defined input and output specifications, require minimum external inputs (power, digital control, and RF signals), and can be completely built and tested before final assembly, which then requires a minimum of testing and adjust-

ments for the assembled instruments to meet specifications.

The module design is illustrated in Fig. 1. Each consists of two printed circuit boards sandwiched between three die castings for shielding. The printed circuit boards have ground planes on both sides extending to the edges and between all sections that need shielding from each other. Through these areas are many closely spaced plated holes connecting the two sides of the board, thereby effectively forming a continuous ground plane, which prevents RF energy in the board material from escaping. These ground plane areas are also the places where the cast base and cast covers make electrical contact through the main RF gasket material.

All RF connectors and power or control feedthrough fil-

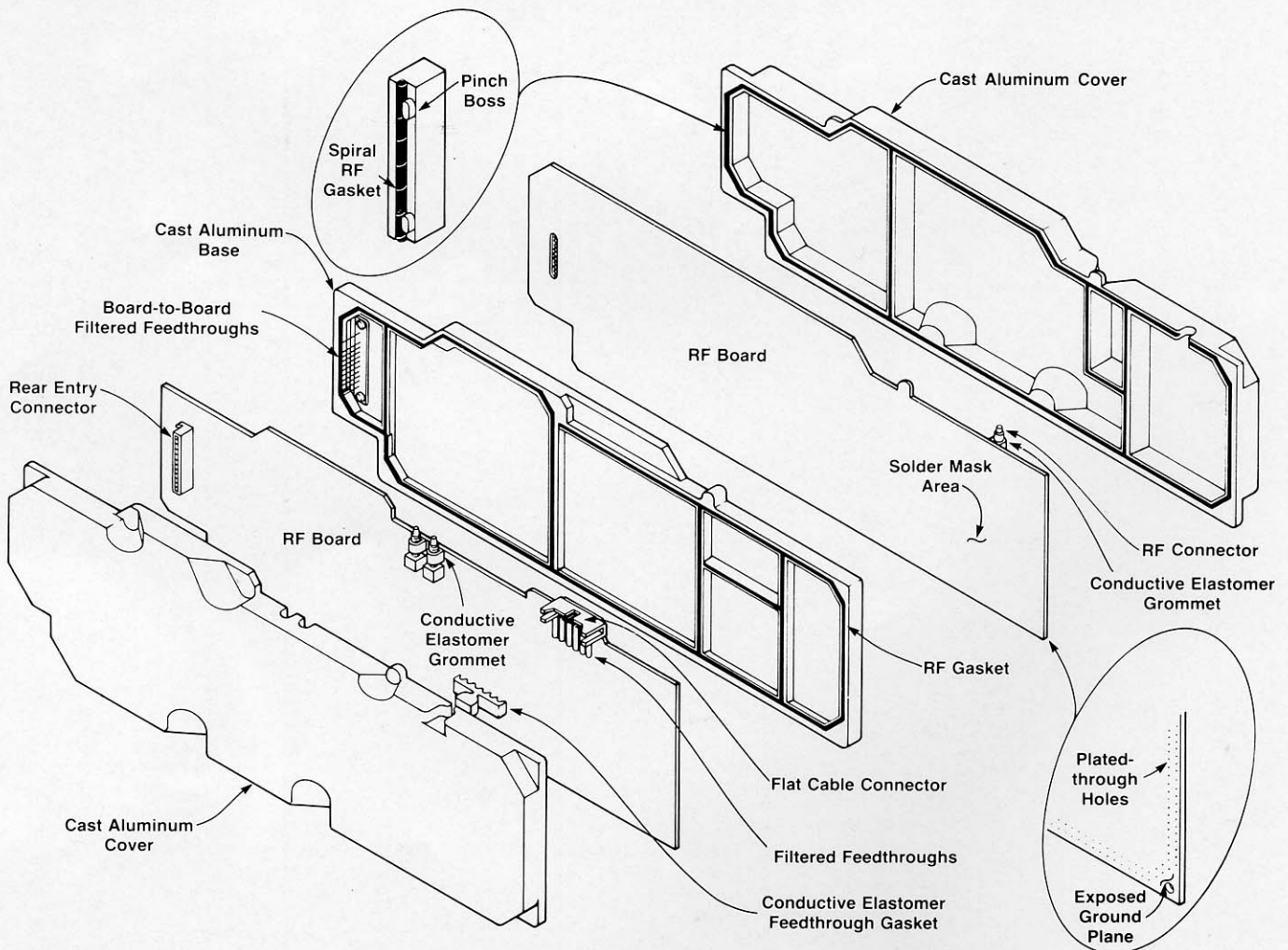


Fig. 1. HP 8642A/B functional module construction.

