Patent Abstracts

These Patent Abstracts of recently issued patents are intended to provide the minimum information necessary for readers to determine if they are interested in examining the patent in more detail. Complete copies of patents are available for a small fee by writing: U.S. Patent and Trademark Office, Box 9, Washington, D.C. 20231.

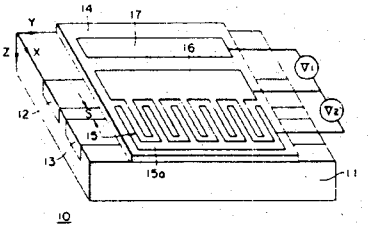
4,645,293 Feb. 24, 1987

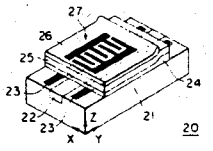
Optical Waveguide Coupler Having a Grating Electrode

Inventors: Taizo Yoshida, Akihito Tanji, Masamitsu Masuda, and Jiro Koyama.
Filed: Jan. 28, 1985.

Abstract—An optical coupling device comprising an electrooptical substrate, a pair of optical waveguides formed in the surface of the substrate and a grating electrode is provided. The grating electrode is so disposed to extend along one of the pair of optical waveguides at least partially. Thus, when a suitable voltage is applied to the grating electrode, a periodically changing structure of refractive index is formed within the one of the paired optical waveguides to couple the paired optical waveguides, thereby allowing to transfer a light signal from one waveguide to the other.

16 Claims, 5 Drawing Figures





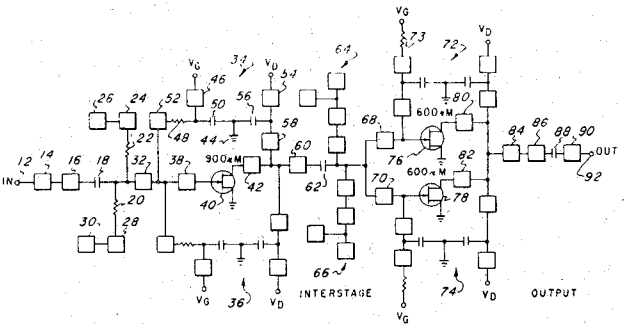
4,646,028 Feb. 24, 1987

GaAs Monolithic Medium-Power Amplifier

Inventor: Charles D. Palmer.
Assignee: Texas Instruments Incorporated.
Filed: Aug. 27, 1984.

Abstract—A single-ended, bandpass, two stage monolithic (integrated) medium power amplifier is disclosed. The first stage of the amplifier includes a field effect transistor (FET) amplifier having a gate width of about 900 microns and the second stage a "split" field effect transistor (FET), i.e. two parallel connected FETs having gate widths of about 600 microns. The amplifiers of both stages have symmetrical biasing circuits providing the option of biasing the power amplifier from either side of the chip. The "split" (1200 micron) FET of the second stage decreases source inductance and reduces the thermal impedance.

6 Claims, 5 Drawing Figures



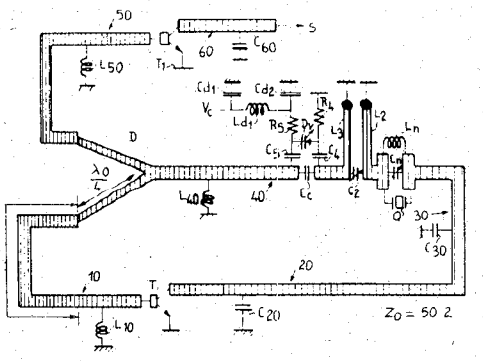
4,646,034 Feb. 24, 1987

Very High Frequency Quartz Oscillator

Inventors: Jacques Chauvin and Patrice Canzian.
Assignee: Compagnie d'Electronique et de Piezo-Electricite.
Filed: Oct. 11, 1984.

Abstract—The invention concerns a very high frequency quartz oscillator. The feedback loop of the oscillator comprises a compensation network of a quartz at the frequency of the oscillator, and a low-pass filter eliminating the frequencies lower than that of the oscillator. A power divider having two branches allows to send the signal issuing from the feedback loop, on the one hand, to the amplifier input of the oscillator and, on the other hand, to the output amplifier. Two-port networks Q_1 to Q_6 match the impedances at the input and at the output of the amplifier of the oscillator, of the feedback loop and of the output amplifier.

9 Claims, 13 Drawing Figures



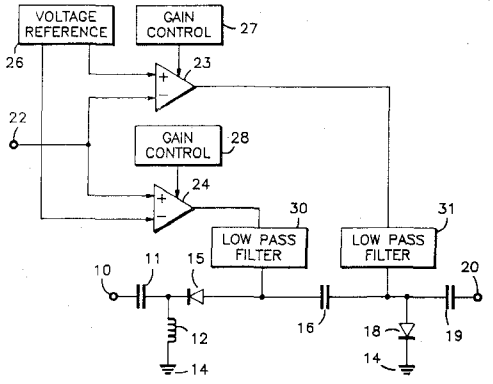
4,646,036 Feb. 24, 1987

Signal Attenuation Circuit

Inventor: Mark J. Brown.
Assignee: Motorola, Inc.
Filed: Dec. 23, 1985.

Abstract—A circuit which attenuates an RF signal in response to a voltage level of a control signal is disclosed. A first PIN diode resides in series with an RF signal path, and a second PIN diode shunts the RF signal path to ground. A first differential amplifier responsive to the control signal drives the first PIN diode, and a second differential amplifier responsive to the control signal drives the second PIN diode. Gain and maximum current output for each of the amplifiers are independently controlled. Additionally, separate reference voltage sources may apply to one input of each of the differential amplifiers.

10 Claims, 3 Drawing Figures



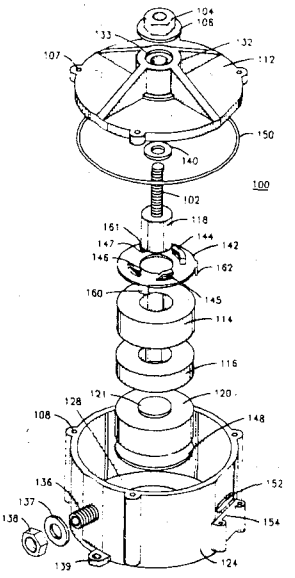
4,646,038 Feb. 24, 1987

Ceramic Resonator Filter with Electromagnetic Shielding

Inventor: Ronald J. Wanat.
Assignee: Motorola, Inc.
Filed: Apr. 7, 1986.

Abstract—Transmitter combining apparatus includes up to five RF filters (100) coupled to a microstrip combiner (300) for combining up to five input signals for application to a common antenna. The RF filter (100) includes a ceramic resonator (116) sandwiched between first and second compensating discs (114 and 120) and first and second shield plates (142 and 148) for temperature compensation, low loss mounting and heat sinking of the ceramic resonator (116). Good thermal contact between the ceramic resonator (116), discs (114 and 120) and shield plates (142 and 148) is produced by a compressive force exerted by springs (144–147) of shield plate (142) when the top cover (112) is attached to the aluminum housing (124). The resonant frequency of the RF filter is tuned by means of an aluminum tuning shaft (102) and ceramic tuning core (118) which are positioned by brass bushing (133) in top cover (112). Input signals are coupled to each RF filter via respective input coupling loops (122) and output signals are coupled via corresponding output coupling loops (311) to the microstrip combiner (300). The microstrip combiner (300) includes a circuit board (310) having five transmission lines (601–605) and a short-circuited tuning transmission line (610), all coupled to a junction (620). The microstrip combiner (300) is tuned by means of a variable impedance produced by varying the position of a dielectric tuning plate (630) with respect to the tuning transmission line (610).

24 Claims, 9 Drawing Figures



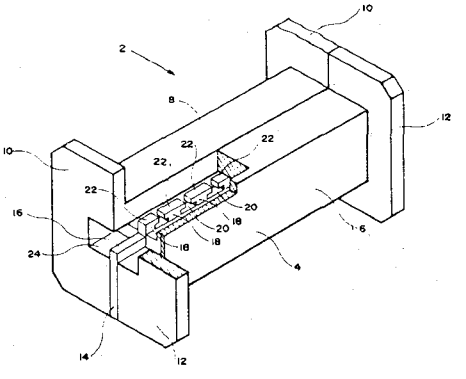
4,646,039 Feb. 24, 1987

Low-Pass Filters with Finite Transmission Zeros in Evanescent Modes

Inventor: Abdelmegid K. Saad.
Assignee: Com Dev Ltd.
Filed: Nov. 2, 1984.

Abstract—A waveguide low-pass filter operates in at least two evanescent modes. The filter has successive ridges with a space between said ridges. The ridges are associated with parallel capacitance and a space between them is associated with series inductance in the TE_{10} mode. Each ridge is top-loaded so that series capacitance can occur in a TM_{11} mode in parallel to said series inductance. The filters of the present invention can be made smaller than previous evanescent low-pass filters and can achieve improved results.

10 Claims, 19 Drawing Figures



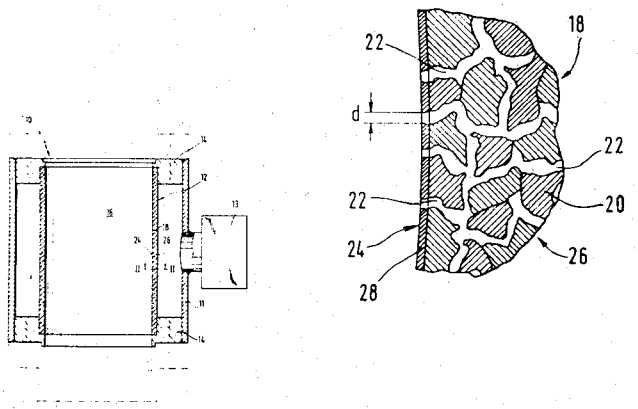
4,646,040 Feb. 24, 1987

Gas-Permeable Sintered Waveguide Wall

Inventor: Wilhelm Spensberger.
Assignee: Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V.
Filed: July 1, 1985.

Abstract—A hollow waveguide element for waveguide systems for microwaves has a wall consisting at least partially of a sintered material to permit gas exchange between the interior and outer surroundings of the waveguide element. With highly loaded gas-filled waveguides this makes it possible to easily carry away discharge products caused by arcing in the interior of the waveguide.

8 Claims, 2 Drawing Figures



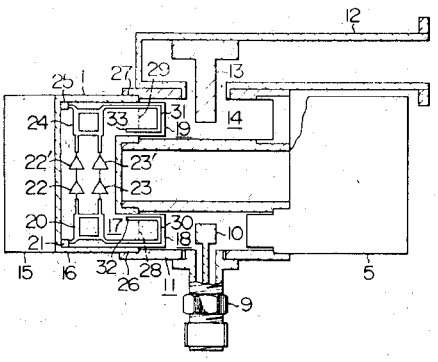
4,647,869 Mar. 3, 1987

Microwave Solid-State Amplifier

Inventors: Yoichi Kaneko, Kenji Sekine, Haruhiko Funaki.
Assignee: Hitachi, Ltd.
Filed: Nov. 15, 1985.

Abstract—Disclosed is a microwave solid-state amplifier arranged such that a plurality of amplifier units are used in combination of a radial cavity resonator so as to perform power dividing/combining, and that in order to make the microwave solid-state amplifier capable of performing a wide band operation and have less circuit loss, a coupling portion between the radial cavity resonator and each of the amplifier units is formed such that a loop-like conductor constituted by a stripline forming an input/output portion of the amplifier unit is removably inserted through a slot formed in a side wall surface of the cavity resonator.

2 Claims, 6 Drawing Figures



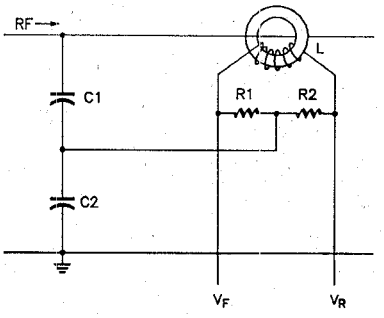
4,647,871 Mar. 3, 1987

Adaptive Impedance Mismatch Detector System

Inventor: Harvey N. Turner, Jr.
Assignee: Motorola, Inc.
Filed: Nov. 22, 1985.

Abstract—An adaptive impedance mismatch detector system is provided for determining whether or not a particular load impedance is matched or mismatched to the characteristic impedance of a transmission line. The detector system is capable of determining if a particular load impedance has a value outside of an impedance threshold circle having a center at a location other than at the center of the Smith chart. The system changes the radius and/or center of the threshold circle in response to changes in circuit operating conditions or parameters. This flexibility enables the detector to be more selective in determining improper load conditions.

22 Claims, 7 Drawing Figures



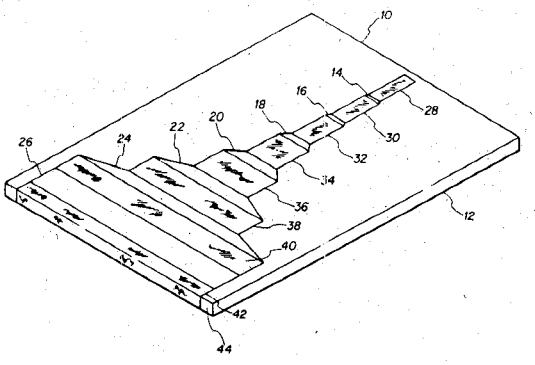
4,647,877 Mar. 3, 1987

Broad-Band Signal Termination Apparatus Comprising Series Cascade of Resistors and Transmission Lines

Inventor: William J. Thompson.
Assignee: Rockwell International Corporation.
Filed: Mar. 11, 1985.

Abstract—A signal termination device is illustrated using planar circuit technology for providing both broadband capabilities from dc to over ten gigahertz while maintaining small size and high power dissipation capabilities. This is accomplished by plating a series cascade of resistors and transmission lines such that the sum of the resistors is equal to the desired termination impedance and the impedance of the interconnecting transmission lines is equal to the sum of the remaining resistors between that point and ground. The use of the intervening transmission lines enhances the power handling capability of the resistor elements and enhances uniform power densities in the resistor elements.

11 Claims, 3 Drawing Figures



4,647,878 Mar. 3, 1987

Coaxial Shielded Directional Microwave Coupler

Inventors: Richard C. Landis, Edward L. Griffin, and Inder G. Bahl.
Assignee: ITT Corporation.
Filed: Nov. 14, 1984.

Abstract—A substrate for mounting electronic devices is provided with a capacitive coupler as an interconnecting means. The coupler comprises two partially co-extensive conductors surrounded by a shield. The substrate is made from a plurality of superimposed layers, each layer consisting of a dielectric, or a conductive material, or strips of conductive material separated by the dielectric to form a preselected profile.

7 Claims, 20 Drawing Figures