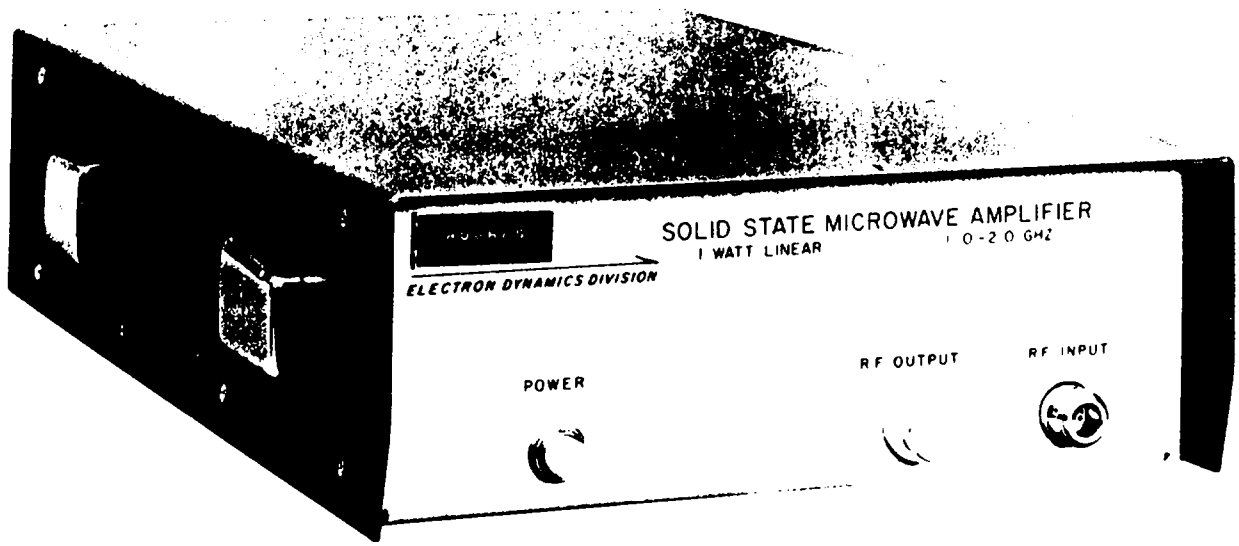
HUGHES

HUGHES AIRCRAFT COMPANY

ELECTRON DYNAMICS DIVISION

FEATURES:

- 1.0 GHz to 2.0 GHz Frequency Range
- 30 dB of Gain
- Self Contained Regulated Power Supply
- 50 dB Dynamic Range
- Short and Open Circuit Protection



DESCRIPTION

The Hughes Model 1403H is a Class A linear all solid-state microwave power amplifier. It was designed as a direct replacement for a one watt L-band traveling-wave tube amplifier. It provides a minimum gain of 28 dB and one watt minimum power output over the frequency range between 1.0 GHz and 2.0 GHz.

The amplifier features transistorized RF hybrid microstrip circuitry and includes an integral ac to dc regulated power supply. Operation is from a 115 Vac source. Optional operation from a 230 Vac source may be specified as Model 1403H-001. A conservative design through low operating device junction temperatures and voltages is used. No forced-air cooling is required. Stable RF device operation is insured through a unique combination of bias voltage and current regulators.

The amplifier is mechanically simple. Only one illuminated power control switch is required. No other controls or indicators are necessary. Weight is ten pounds nominal. Mounting may be in either of two positions and optional rack mounting adapters are available. Overall dimensions are 10.1 inches wide by 14.5 inches deep and 3.9 inches high.

SPECIFICATIONS

Microwave Performance

Frequency (instantaneous bandwidth)	1.0 to 2.0 GHz
Power Output into 50 Ohm Load with 1.6 mW Input Power	1 W minimum, 2 W typical
Power Output at 1 dB Gain Compression	1.0 W typical
Gain at 1 Watt Minimum Output Power	28 dB minimum, 31 dB typical
Small Signal Gain	33 dB typical
Gain Variation at 1.6 mW Input Power	3 dB typical
Input Power (without damage)	20 mW maximum
Noise Figure	10 dB typical
Dynamic Range	50 dB typical
Input and Output Impedance	50 ohms nominal
Input VSWR @ 1.6 mW Input Power	3:1 maximum, 2:1 typical
Load VSWR①	2:1 maximum
Temperature Range	$0^{o}C$ to $+50^{o}C$

Power Requirements

Model 1401H	108-132 V, 50-60 Hz, 40 VA maximum or +22 to +32 Vdc @ 1 A maximum②
Model 1401H-001	198-255 V, 50-60 Hz, 40 VA maximum or +22 to +32 Vdc @ 1 A maximum②

Mechanical

Weight	10 pounds (approximate)
RF Connectors	type N female

① The amplifier can be operated into an infinite VSWR without damage. A 2:1 Load VSWR will cause a 10% reduction in power output but will not affect other performance parameters.

② The negative dc input line is internally connected to the amplifier chassis.