



## HUGGINS LABORATORIES, INC.

999 East Arques Avenue · Sunnyvale, California  
PHONE 408-736-9330      TWX 408-737-9992

Here is the data you requested on Huggins' products.

If, after reviewing this material, you find that your requirement demands a special design, the Huggins' sales representative in your area will welcome the opportunity to assist you, or please feel free to contact us directly if you wish.

Thank you for your interest. We look forward to fulfilling your microwave and infrared needs.

Cordially,

HUGGINS LABORATORIES, INC.

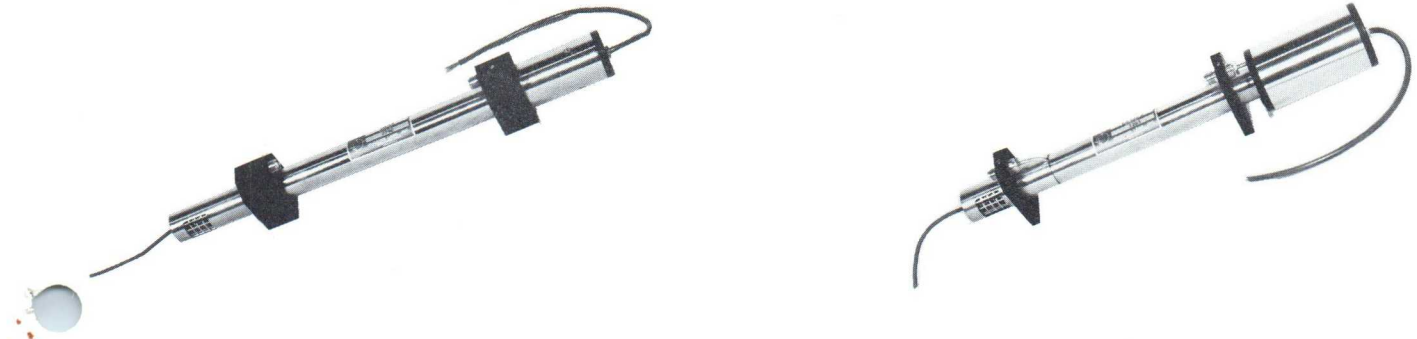
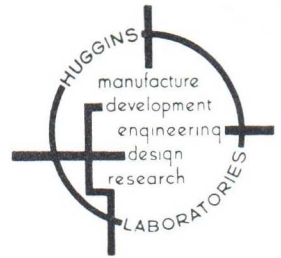
Huggins' sales representative in your area is:

INTERNATIONAL DIVISION  
750 THIRD AVENUE,  
NEW YORK, 17, N. Y.

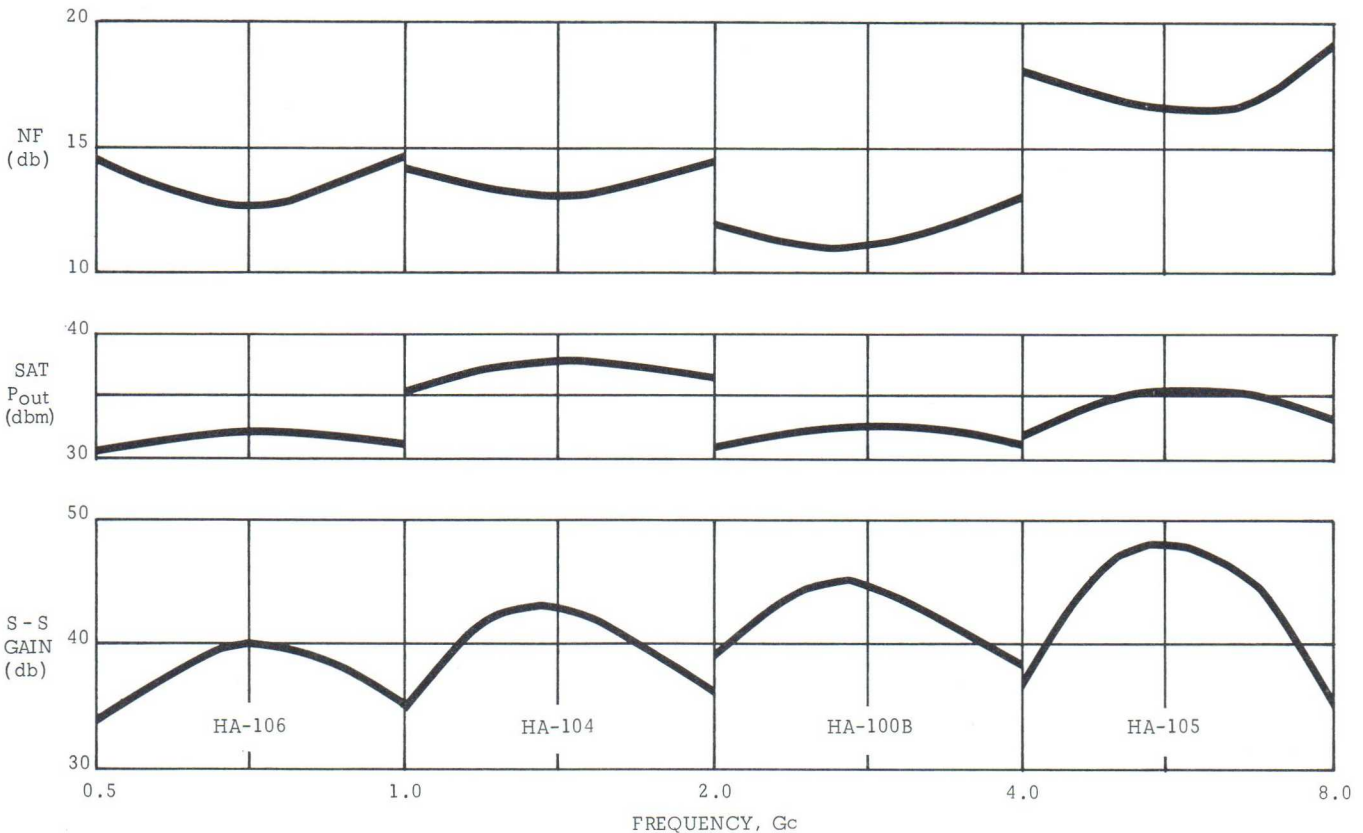
HUGGINS offers a broad spectrum of capabilities ... TUBES: TWTs, BWOs, and High Vacuum Rectifiers; INSTRUMENTATION:  $\mu$ W Sweep and Nanosecond Pulse Generators,  $\mu$ W Amplifiers, Power Supplies, Transient Detectors, and Infrared; FERRITES: Circulators, Isolators, Modulators, and Phase Shifters.

# ALL NEW ...

## 1 to 5 WATT PPM LOW-NOISE TWTs



PPM FOCUSED - LIGHTWEIGHT - RUGGED  
 UHF THROUGH C-BAND - LIBERAL WARRANTY  
 AIR OR CONVECTION COOLED CONFIGURATIONS



ALSO...

HA-107 : 1-2 Gc, 30 db S-S Gain, 5 w P<sub>out</sub>, 20 db NF

HA-100 : 2-4 Gc, 35 db S-S Gain, 1 w P<sub>out</sub>, 15 db NF

# HUGGINS LABORATORIES, INCORPORATED

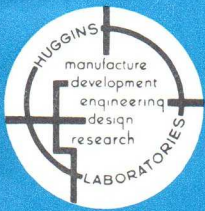
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TYPE

HA — 100B

LNT

S-BAND

13 DB NF

## PPM-FOCUSED HIGH-POWER, LOW-NOISE S-BAND AMPLIFIER

### PERFORMANCE CHARACTERISTICS

FREQUENCY . . . . .	2.0 TO 4.0 GC
MINIMUM SMALL -SIGNAL GAIN . . . . .	35 DB
MINIMUM SATURATION POWER OUTPUT . . . . .	30 DBM
MAXIMUM NOISE FIGURE* . . . . .	13 DB
MINIMUM COLD ATTENUATION (INPUT TO OUTPUT) . . . . .	60 DB
MAXIMUM VSWR: INPUT, OUTPUT (BEAM OFF) . . . . .	2 : 1

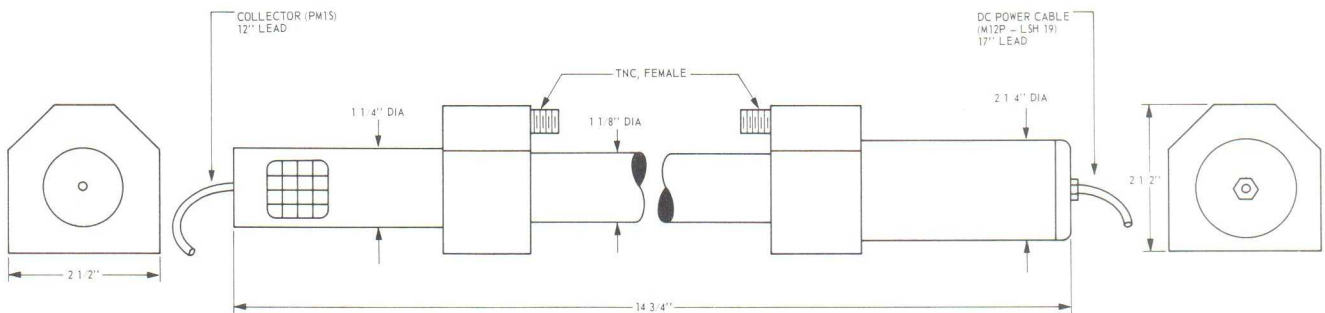
### POWER SUPPLY REQUIREMENTS

ELEMENT	REQUIRED RANGES	
	VOLTAGE	CURRENT
COLLECTOR <sup>1</sup>	800 TO 1000 V	0 TO 25.0 MA
HELIX	800 TO 1000 V	0 TO 3.0 MA
ANODE 1	50 TO 300 V	0 TO 0.001 MA
ANODE 2	100 TO 400 V	0 TO 0.001 MA
ANODE 3	200 TO 600 V	0 TO 0.001 MA
ANODE 4 <sup>2</sup>	-500 TO -200 V	0 TO 0.001 MA
CATHODE <sup>3</sup>	0 V	0 TO 25.0 MA
HEATER	7.0	0 TO 1.2 AMP

<sup>1</sup> Insulated.    <sup>2</sup> Can be used for gating, noise figure may increase.    <sup>3</sup> Voltage reference.

FOCUSING . . . . . PERIODIC PERMANENT MAGNET

### MECHANICAL CHARACTERISTICS



AUXILIARY COOLING REQUIRED . . . . . 5 CFM @ 1/2" H<sub>2</sub>O

MOUNTING POSITION . . . . . ANY

ENVIRONMENT . . . . . CAN BE MANUFACTURED TO MIL SPECS

WEIGHT . . . . . 5-1/4 LBS

\* A lower noise figure can be achieved by optimizing the tube for narrowband operation.

TYPE  
**HA - 100B**  
 LNT

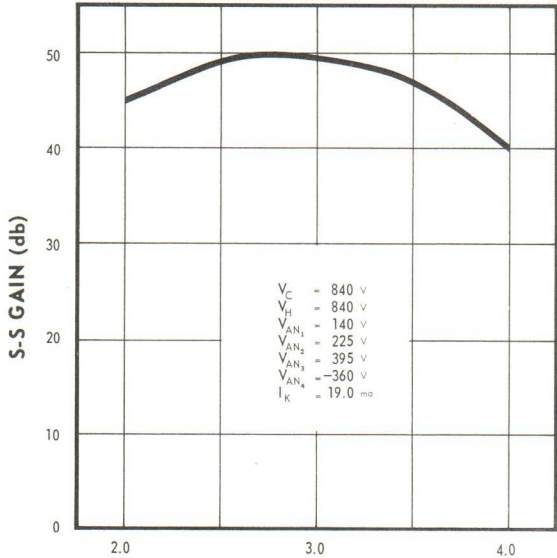
S-BAND 13 DB NF

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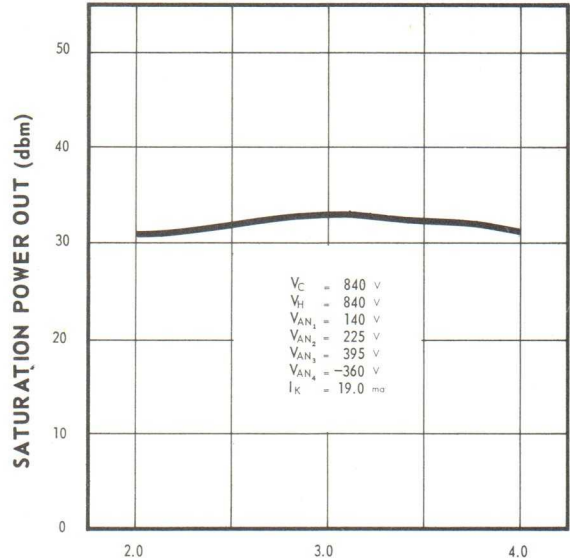
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## TYPICAL OPERATING CHARACTERISTICS



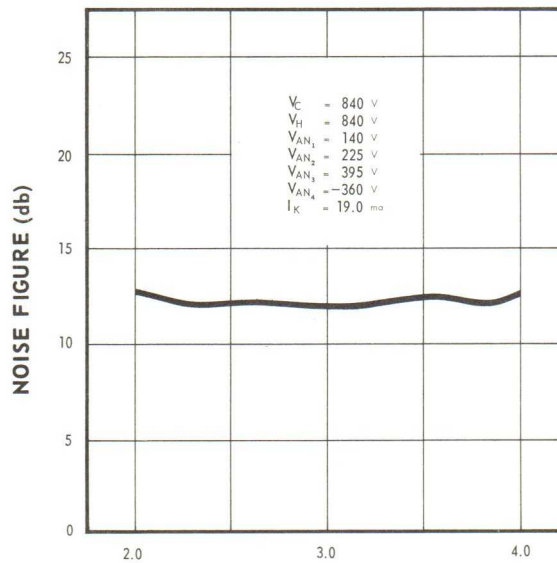
FREQUENCY, Gc

SMALL-SIGNAL GAIN



FREQUENCY, Gc

POWER OUTPUT



FREQUENCY, Gc

NOISE FIGURE