

FORWARD WAVE AMPLIFIER

LAI6-2

Application: Low power amplifier, broadband.

Frequency: 'J' band.

Construction: Unpackaged.

This data should be read in conjunction with GENERAL OPERATIONAL RECOMMENDATIONS—MICROWAVE DEVICES: INTRODUCTION and FORWARD WAVE AMPLIFIERS which precede this section of the handbook.

CHARACTERISTICS

	Min.	Max.	
Frequency band	11.5	18	Gc/s
Gain (low power level)—over frequency band	20	—	dB
*Noise factor	—	28	dB
Saturation power output	1.0	—	mW
Attenuation (at $I_k = 0\text{mA}$)	40	—	dB

CATHODE

Indirectly heated

V_h 8.5 V

I_h 400 mA

TYPICAL OPERATION

As an input amplifier using a periodic permanent magnet system of approved design.

f	15	Gc/s
$V_{\text{collector}}$	1.7	kV
V_{helix}	1.6	kV
V_{g3}	150	V
V_{g2}	350	V
V_{g1}	-120	V
$I_{\text{collector}}$	450	μA
Gain	32	dB
*Noise factor	23	dB
Power output	10	μW

*Using a solenoid of approved design, up to 6dB improvement in noise factor can be obtained.

ABSOLUTE MAXIMUM RATINGS

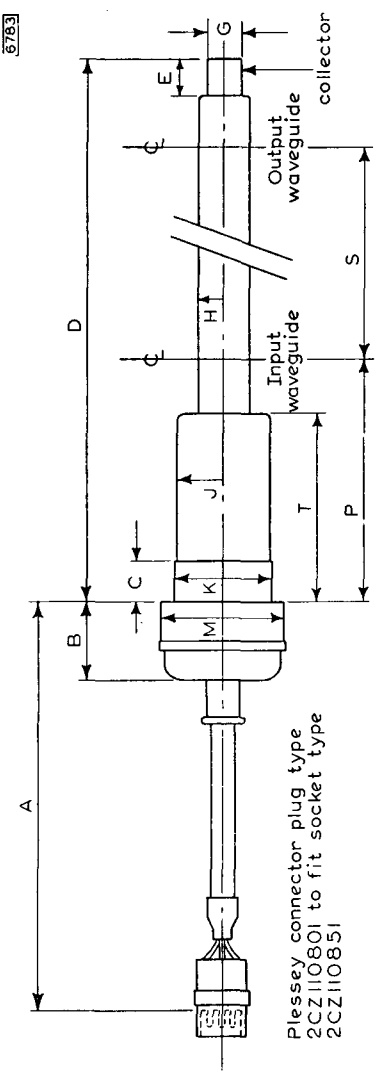
$V_{\text{collector}}$ max.	1.85	kV
$I_{\text{collector}}$ max.	500	μA
$P_{\text{collector}}$ max.	800	mW
V_{helix} max.	1.75	kV
I_{helix} max.	60	μA
V_{g3} max.	200	V
I_{g3} max.	20	μA
V_{g2} max.	450	V
I_{g2} max.	20	μA
$-V_{g1}$ max.	150	V
I_{g1} max.	10	μA
$P_{\text{in (signal)}}$ max.	300	mW
V_{h-k} max.	50	V

MOUNTING POSITION

Any

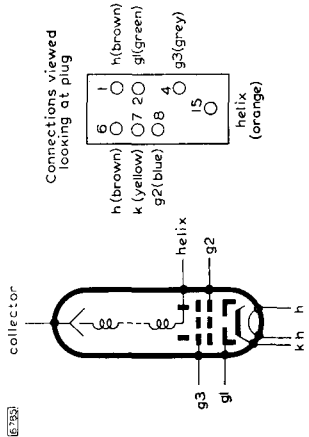
ACCESSORIES

Mount	Permanent magnet	P16L-1
	Solenoid	S16L-1

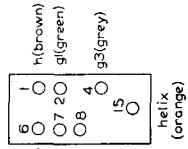


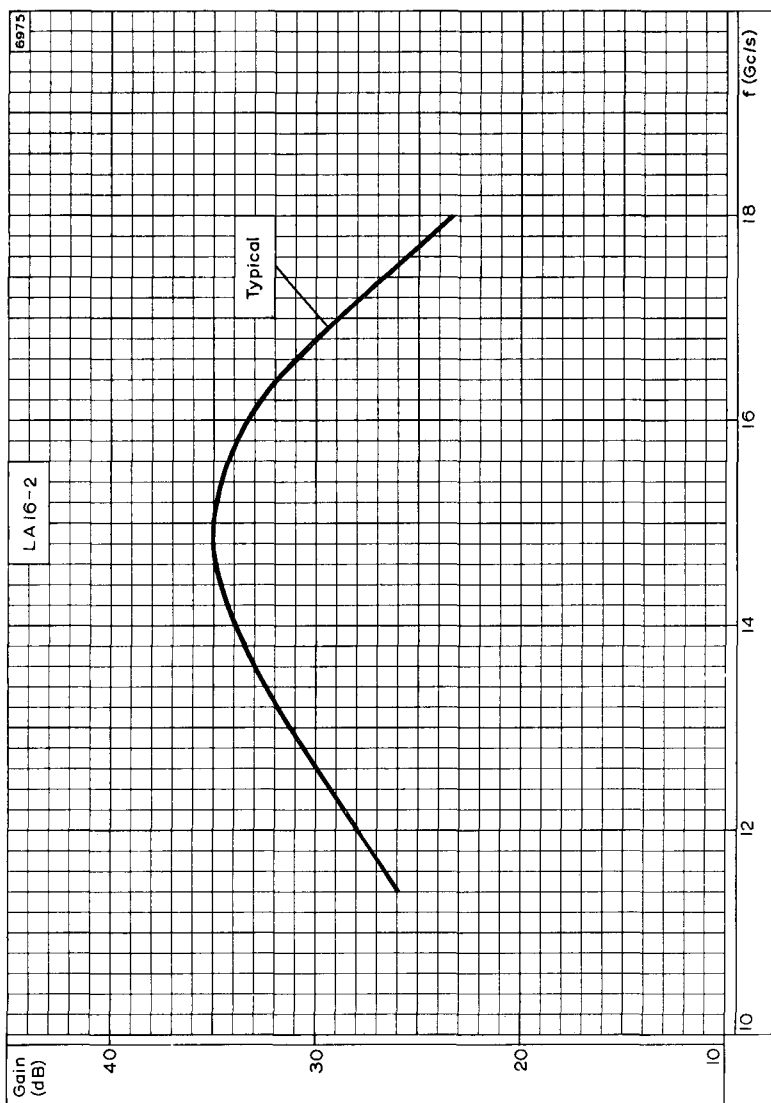
Waveguide dimensions 0.622 x 0.311 in., 15.78 x 7.90 mm.

	Inches	Millimetres
A	4.409 ± 0.197	112 ± 5
B	1.299	33
C	0.650	16.5
D	12.756 ± 0.118	324 ± 3
E	0.394	10
G	0.081	2.05
H	0.108	2.75
J	0.5	12.7
K	1.063	27
M	1.259	32
P	2.614 ± 0.008	66.5 ± 0.2
S	8.130 ± 0.004	206.5 ± 0.1
T	2.283	58

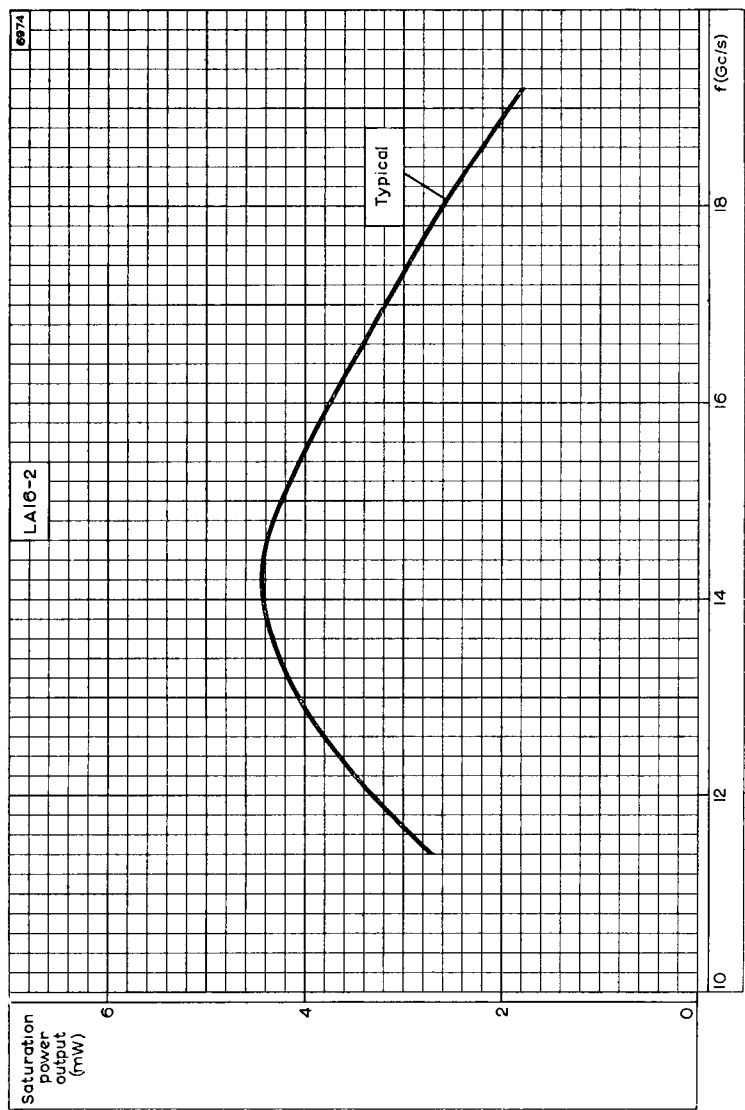


Connections viewed looking at plug

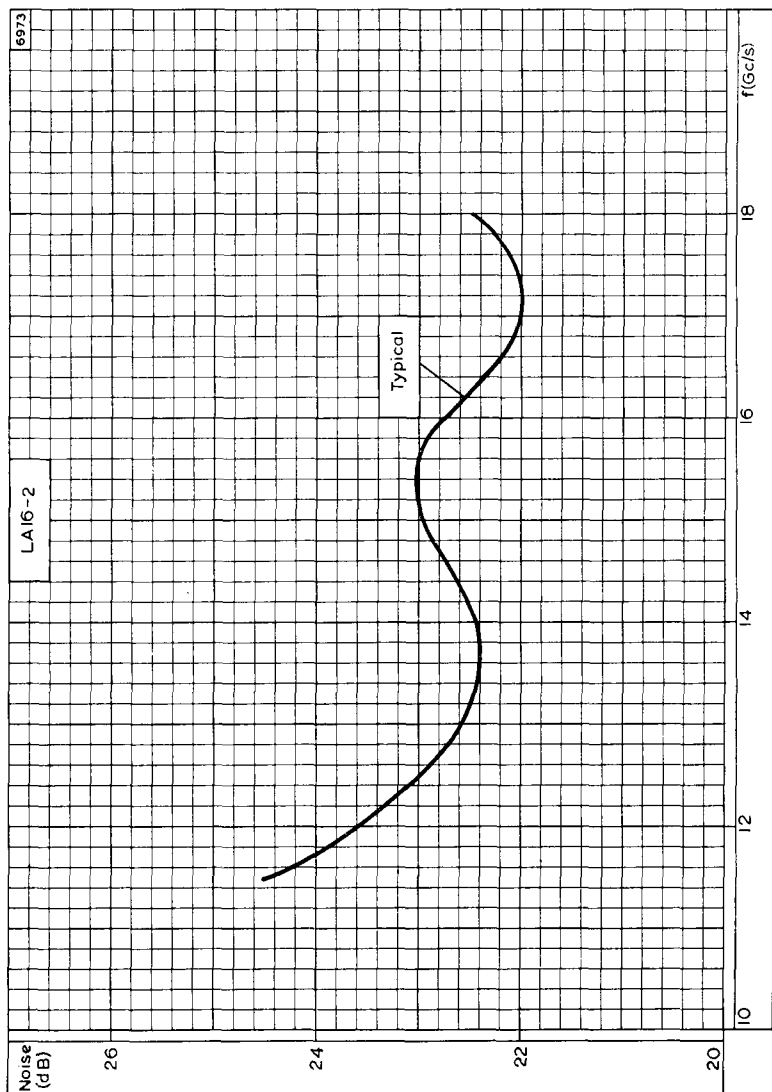




TYPICAL GAIN PLOTTED AGAINST FREQUENCY



SATURATION POWER OUTPUT PLOTTED AGAINST FREQUENCY



TYPICAL NOISE FACTOR PLOTTED AGAINST FREQUENCY USING A PERMANENT-MAGNET MOUNT