

FORWARD WAVE AMPLIFIER

LA9-3

Application: Broadband low power amplifier.

Frequency: 'X' 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	7.0	to 11.5	Gc/s
Gain (low power level)—over frequency band	20	—	dB
*Noise factor	—	25	dB
Saturation power output	4.0	—	mW
Attenuation (at $I_k = 0$ mA)	40	—	dB
Input match in recommended mount —broadband (v.s.w.r.)	—	3.5	
Output match in recommended mount —broadband (v.s.w.r.)	—	3.5	

CATHODE

Indirectly heated

V_h	6.3	V
I_h	500	mA
t_{hk}	5.0	min

TYPICAL OPERATION

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

f	9.0	Gc/s
$V_{\text{collector}}$	1.4	kV
V_{helix}	1.3	kV
V_{g3}	135	V
V_{g2}	155	V
V_{g1}	-85	V
$I_{\text{collector}}$	550	μ A
Gain	30	dB
*Noise factor	20	dB
Power output	50	μ W
Input match in recommended mount (v.s.w.r.)	3.0	
Output match in recommended mount (v.s.w.r.)	3.0	

*Using a solenoid of approved design, up to 5dB improvement in noise factor can be obtained.

ABSOLUTE MAXIMUM RATINGS

$V_{\text{collector max.}}$	1.55	kV
$I_{\text{collector max.}}$	600	μA
$P_{\text{collector max.}}$	900	mW
$V_{\text{helix max.}}$	1.45	kV
$I_{\text{helix max.}}$	50	μA
$V_{g3 \text{ max.}}$	400	V
$I_{g3 \text{ max.}}$	10	μA
$V_{g2 \text{ max.}}$	200	V
$I_{g2 \text{ max.}}$	10	μA
$-V_{g1 \text{ max.}}$	100	V
$I_{g1 \text{ max.}}$	10	μA
$P_{\text{in(signal) max.}}$	500	mW
$V_{h-k \text{ max.}}$	50	V

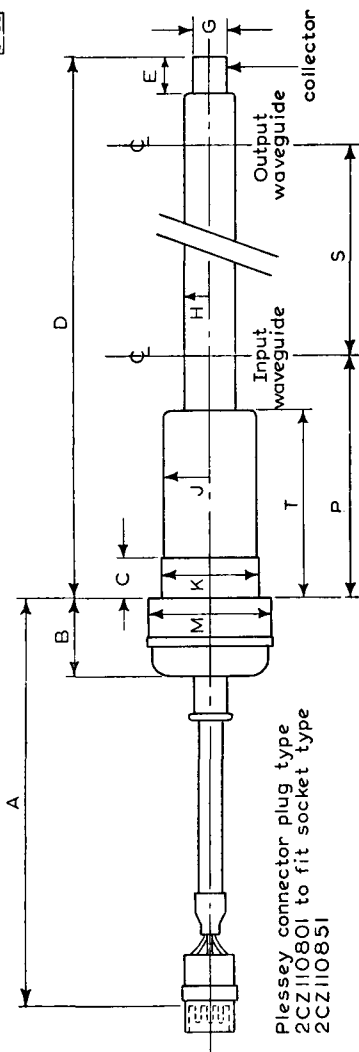
MOUNTING POSITION

Any

ACCESSORIES

Mount	Permanent magnet	P9L-1
	Solenoid	S9L-1

6783

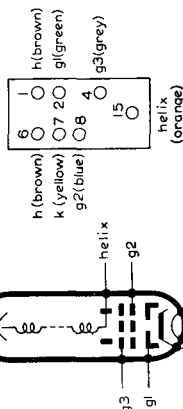


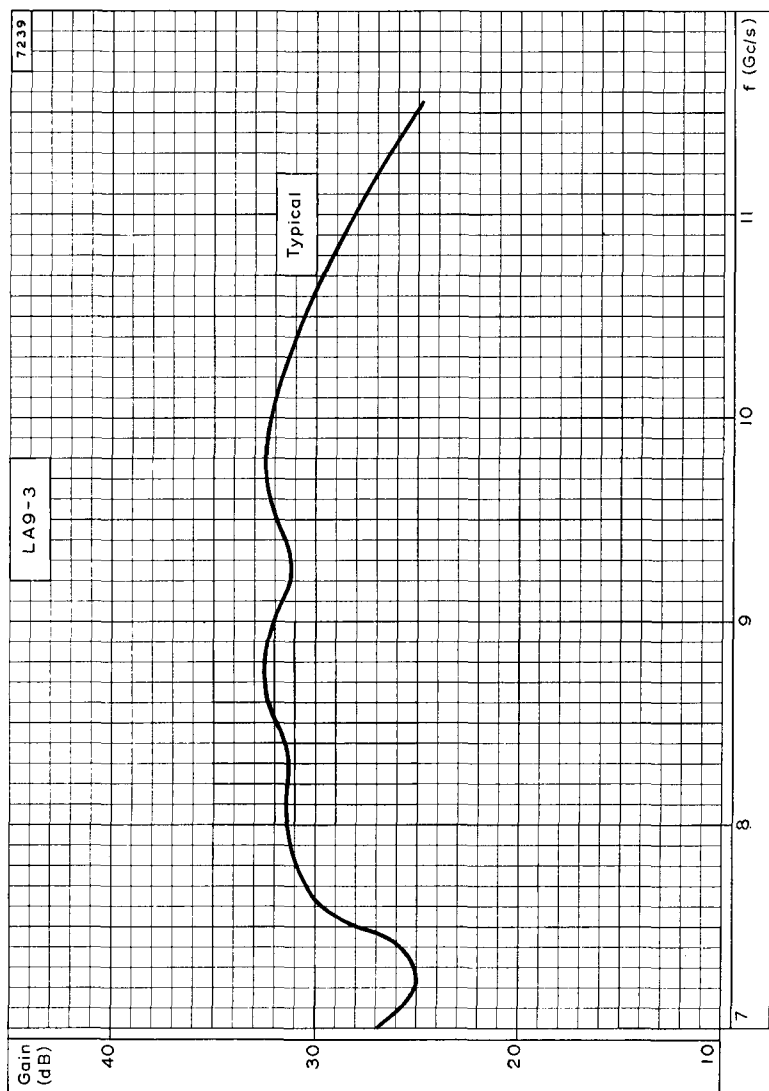
Plessey connector plug type
2CZ110801 to fit socket type
2CZ110851

Waveguide dimensions 0.900×0.079 inches, 22.86×2.00 millimetres

	Inches		Millimetres	
A	4.331	min.	110	min.
B	1.299	max.	33	max.
C	0.650	max.	16.5	max.
D	12.638	max.	316	max.
E	0.394		10	
G	0.167 ± 0.002		5.0 ± 0.05	
H	0.125		3.17	
J	0.472		12	
K	1.063		27	
M	1.260		32	
P	2.835 ± 0.008		72 ± 0.2	
S	8.150 ± 0.004		207 ± 0.1	
T	2.126	max.	54	max.

Connections viewed
looking at plug

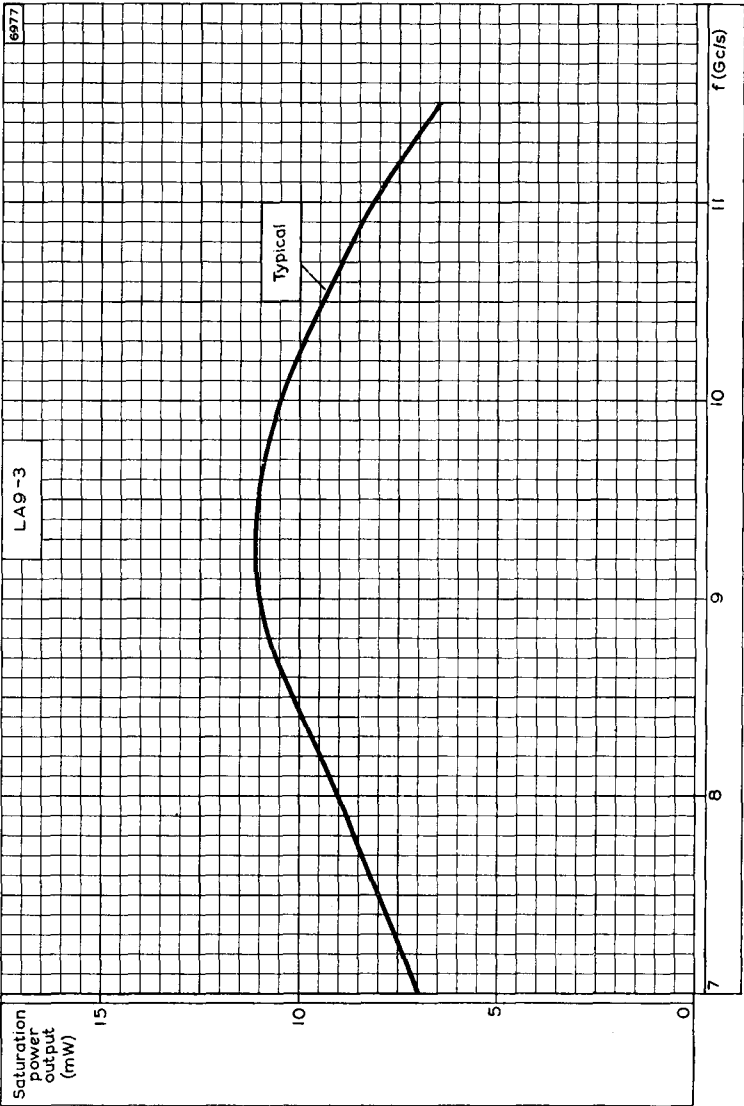




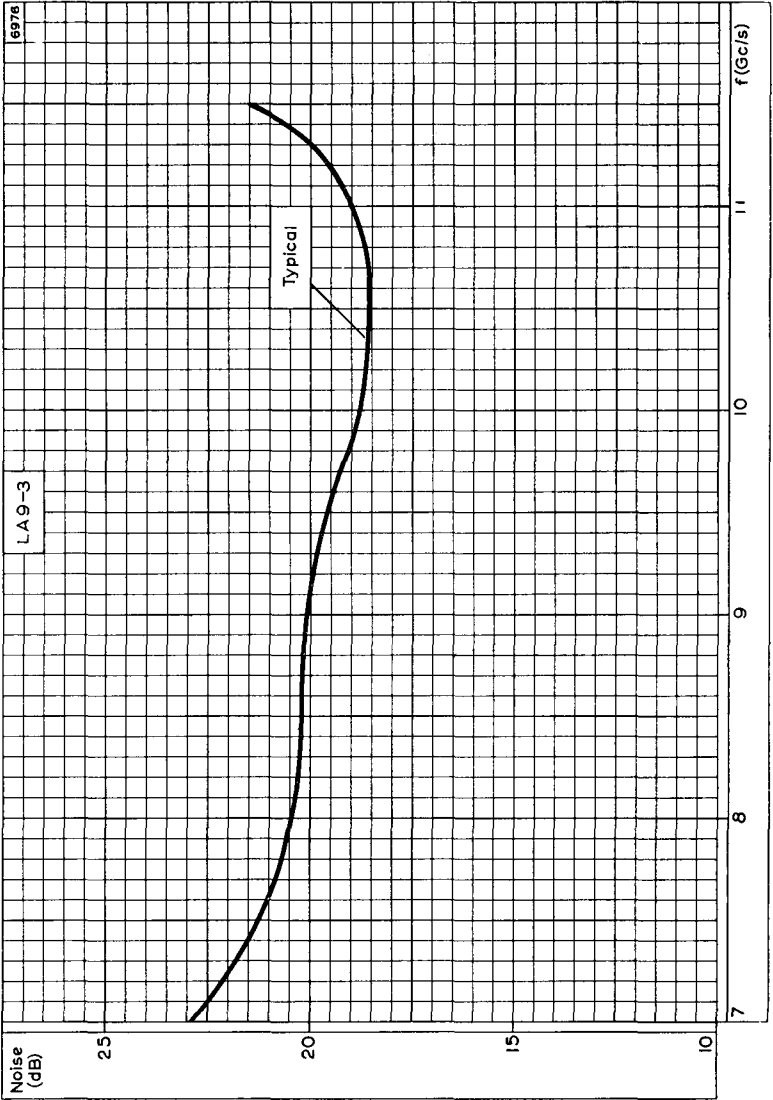
TYPICAL GAIN PLOTTED AGAINST FREQUENCY

LA9-3

FORWARD WAVE AMPLIFIER



SATURATION POWER OUTPUT PLOTTED AGAINST FREQUENCY



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