# FORWARD WAVE AMPLIFIER

# LA9-3B

*Application:* *Broadband low power amplifier.*
*Frequency:* *'X' band.*
*Construction:* *Packaged, periodic permanent magnet focussed.*

## PRELIMINARY DATA

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 $I_k$ = 0mA) | 40 | | — | dB |
| Input match—broadband (v.s.w.r.) | — | | 3.5 | |
| Output match—broadband (v.s.w.r.) | — | | 3.5 | |

## CATHODE

Indirectly heated

| | | |
|---|---|---|
| $V_h$ | 6.3 | V |
| $I_h$ | 500 | mA |
| $t_{h-k}$ | 5.0 | min |

## TYPICAL OPERATION

| | | |
|---|---|---|
| f | 9.0 | Gc/s |
| $V_{collector}$ | 1.4 | kV |
| $V_{helix}$ | 1.3 | kV |
| $V_{g3}$ | 135 | V |
| $V_{g2}$ | 155 | V |
| $V_{g1}$ | –85 | V |
| $I_{collector}$ | 550 | μA |
| Gain | 30 | dB |
| Noise factor | 20 | dB |
| Power output | 50 | μW |
| Input match (v.s.w.r.) | 3.0 | |
| Output match (v.s.w.r.) | 3.0 | |

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### ABSOLUTE MAXIMUM RATINGS

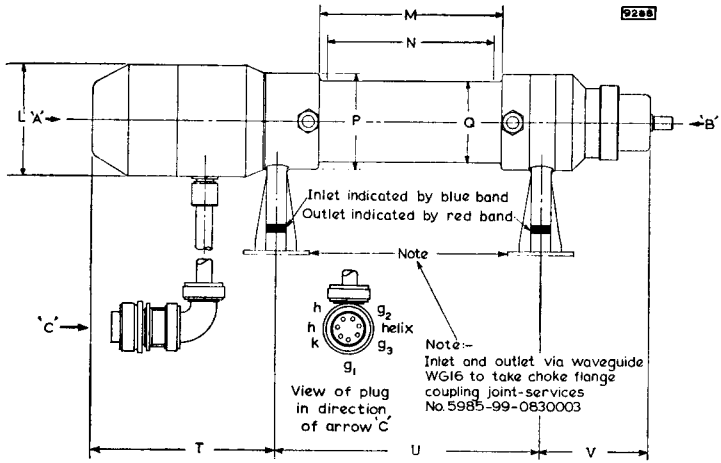
| | | |
|---|---|---|
| $V_{collector}$ max. | 1.55 | kV |
| $I_{collector}$ max. | 600 | μA |
| $P_{collector}$ max. | 900 | mW |
| $V_{helix}$ max. | 1.45 | kV |
| $I_{helix}$ max. | 50 | μA |
| $V_{g3}$ max. | 400 | V |
| $I_{g3}$ max. | 10 | μA |
| $V_{g2}$ max. | 200 | V |
| $I_{g2}$ max. | 10 |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

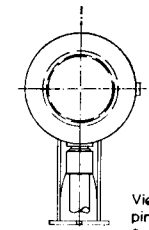
### MOUNTING POSITION

Any

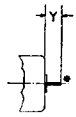
### DIMENSIONS

| | *Inches* | *Millimetres* | |
|---|---|---|---|
| L | 2.39 | 86 | max. |
| M | 5.275±0.039 | 134±1 | |
| N | 5.00 | 127 | min. |
| P | 2.795±0.039 | 71±1 | |
| Q | 2.401±0.008 | 61±0.2 | |
| T | 5.40 ±0.12 | 137±3 | |
| U | 7.828±0.008 | 198.84±0.2 | |
| V | 3.11 ±0.08 | 79±2 | |
| W | 1.77 | 45 | max. |
| X | 3.976±0.020 | 101±0.5 | |
| Y | 0.398±0.08 | 10±2 | |



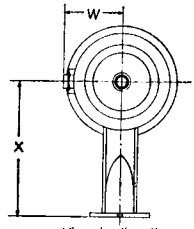



View in direction of arrow 'A'

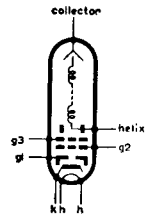


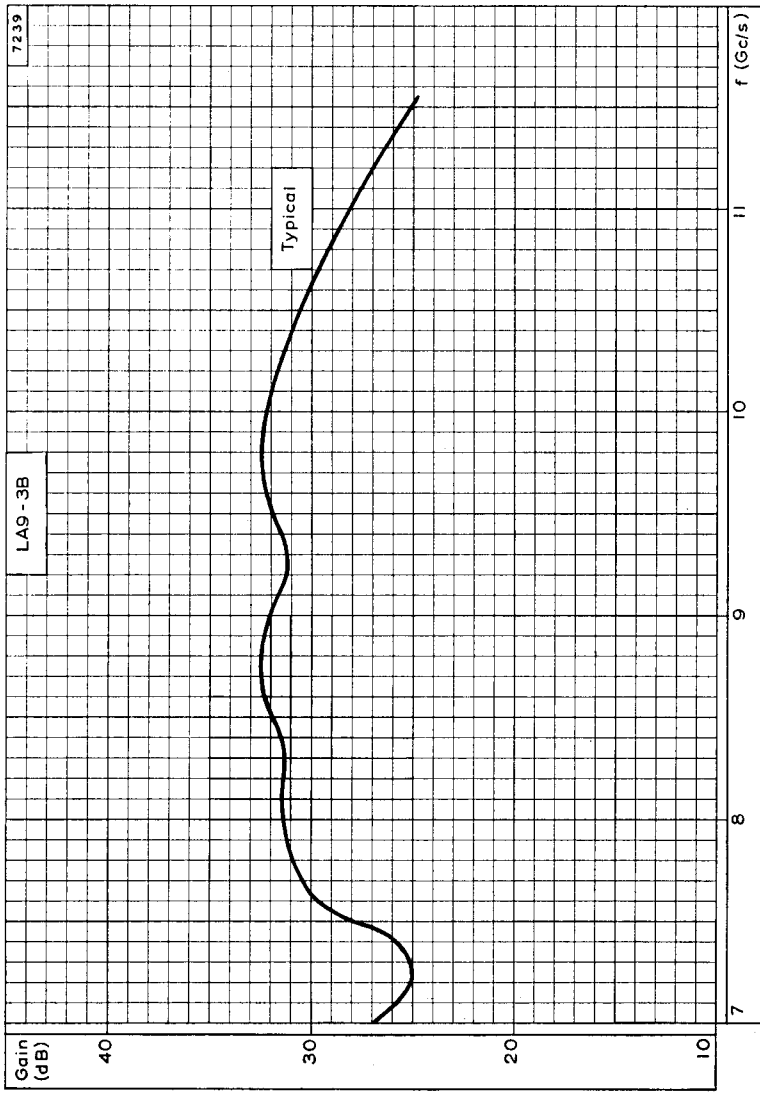

View of collector socket-pin with protector removed

* This collector socket-pin is silver-plated and is intended for a soldered connection

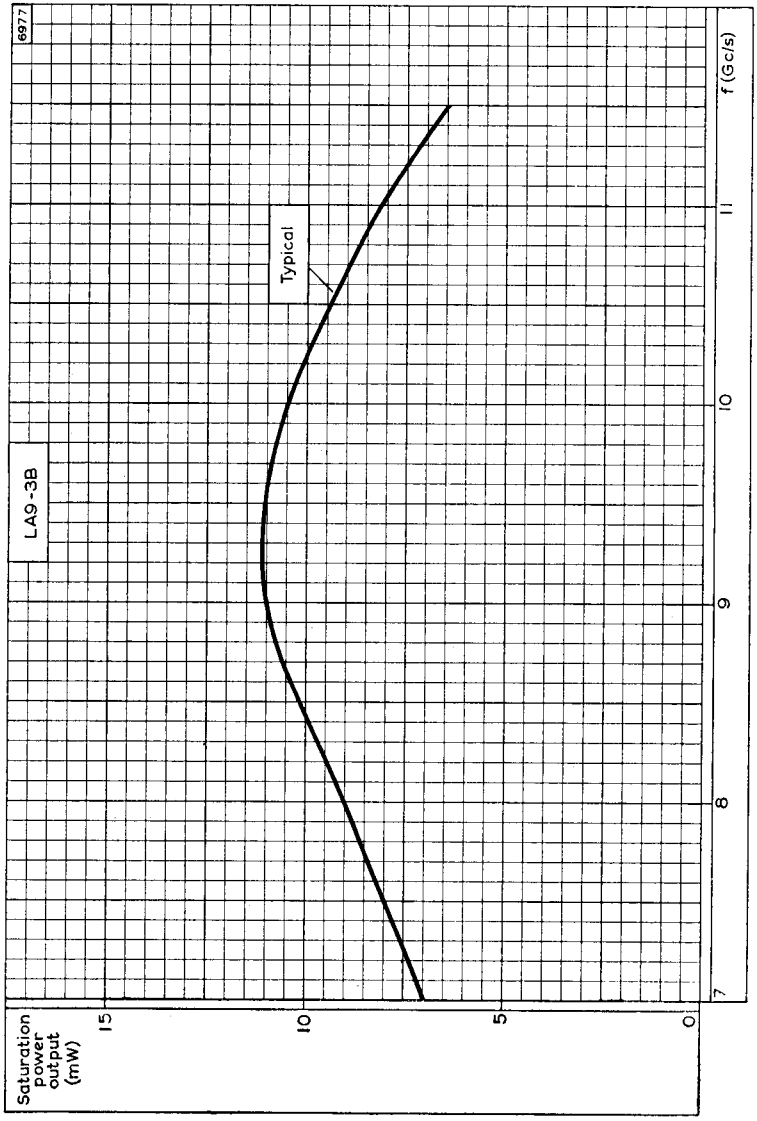



View in direction of arrow 'B'

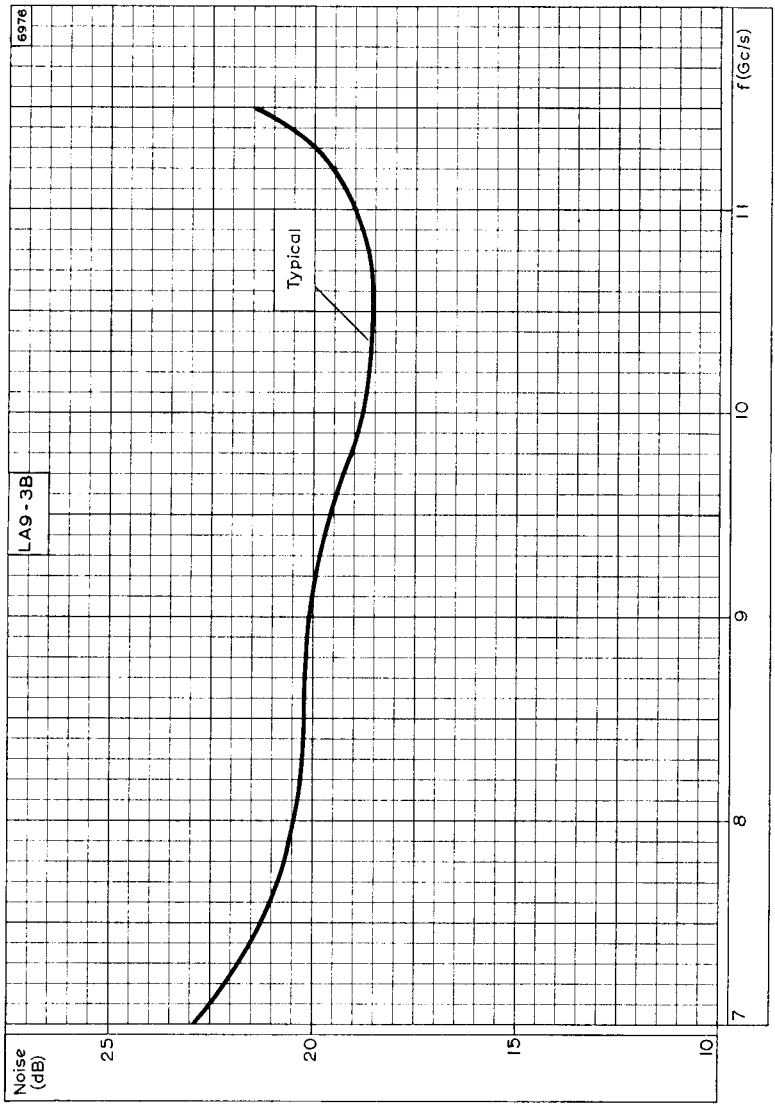





TYPICAL GAIN PLOTTED AGAINST FREQUENCY




SATURATION POWER OUTPUT PLOTTED AGAINST FREQUENCY




TYPICAL NOISE FACTOR PLOTTED AGAINST FREQUENCY