

# General Purpose Linear Amplifier Module

## Features

- 34.5 dB Typical Gain @ 100 MHz
- Silicon Bipolar Technology
- Class A Operation
- Typical ITO = +44 dBm @ 200 MHz
- Unconditionally Stable Under All Load Conditions

## Applications

- Driver Amplifier in 50 Ohm Systems Requiring High Linearity
- Instrumentation Amplifiers
- Return Path Amplifier on CATV Systems Operating in the 10 to 200 MHz Frequency Range
- Possible Replacement for CA2830C

## Description

- 24 Vdc Supply, 10 to 200 MHz, General Purpose Linear Amplifier Module
- Replaced MHW1345. There are no form, fit or function changes with this part replacement.
- RoHS Compliant

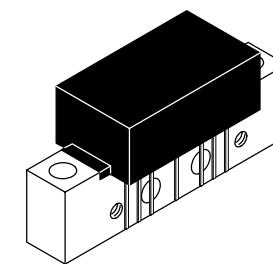
**MHW1345N**

**10-200 MHz**

**34.5 dB**

**800 mW**

**GENERAL PURPOSE  
LINEAR AMPLIFIER MODULE**



**CASE 1302-01, STYLE 1**

**Table 1. Maximum Ratings**

| Rating                           | Symbol           | Value       | Unit |
|----------------------------------|------------------|-------------|------|
| DC Supply Voltage                | V <sub>CC</sub>  | 28          | Vdc  |
| RF Power Input                   | P <sub>in</sub>  | +5          | dBm  |
| Operating Case Temperature Range | T <sub>C</sub>   | -20 to +100 | °C   |
| Storage Temperature Range        | T <sub>stg</sub> | -40 to +100 | °C   |

**Table 2. Electrical Characteristics** (T<sub>C</sub> = 25°C, V<sub>CC</sub> = 24 V, 50 Ω system unless otherwise noted)

| Characteristic  | Symbol           | Min  | Typ   | Max  | Unit |
|---|------------------|------|-------|------|------|
| Frequency Range   | BW               | 10   | —     | 200  | MHz  |
| Gain Flatness (f = 10 - 200 MHz)  | G <sub>F</sub>   | —    | ±0.5  | ±1   | dB   |
| Power Gain (f = 100 MHz)  | G <sub>p</sub>   | 33.5 | 34.5  | 35.5 | dB   |
| Noise Figure, Broadband (f = 200 MHz)   | NF               | —    | 3.8   | 4.5  | dB   |
| Power Output — 1 dB Compression (f = 10 - 200 MHz)  | P <sub>1dB</sub> | 630  | 800   | —    | mW   |
| Power Output — 1 dB Compression (f = 10 - 200 MHz, V <sub>CC</sub> = 28 V)                    | P <sub>1dB</sub> | 1000 | 1260  | —    | mW   |
| Third Order Intercept (See Figure 2, f <sub>1</sub> = 200 MHz)                                | ITO              | 43   | 44    | —    | dBm  |
| Input/Output VSWR (f = 10 - 200 MHz)  | VSWR             | —    | 1.5:1 | 2:1  | —    |
| Second Harmonic Distortion (Tone at 100 mW, f <sub>2H</sub> = 150 MHz)                        | d <sub>so</sub>  | —    | -60   | -50  | dB   |
| Peak Envelope Power (Two Tone Distortion Test — See Figure 2) (f = 10 - 200 MHz @ -32 dB IMD) | PEP              | 600  | 800   | —    | mW   |
| Supply Current  | I <sub>CC</sub>  | 270  | 310   | 330  | mA   |

Table 3. S-Parameters (Biased at 24 Volts, T = 25°C Z<sub>o</sub> = 50Ω)

| Frequency<br>(MHz) | S11   |      | S21  |       | S12   |       | S22   |       |
|--------------------|-------|------|------|-------|-------|-------|-------|-------|
|                    | Mag   | Ang  | Mag  | Ang   | Mag   | Ang   | Mag   | Ang   |
| 10                 | -19.3 | 45.5 | 34.6 | -0.6  | -47.0 | 2.3   | -14.5 | 76.8  |
| 50                 | -15.6 | 35.0 | 34.2 | -56.7 | -47.5 | -30.3 | -12.6 | 45.0  |
| 100                | -13.2 | 34.4 | 33.9 | -114  | -47.9 | -62.9 | -10.8 | 10.7  |
| 200                | -11.1 | 30.1 | 33.5 | 134   | -48.3 | -128  | -14.9 | -42.6 |

Magnitude in dB, Phase Angle in degrees.

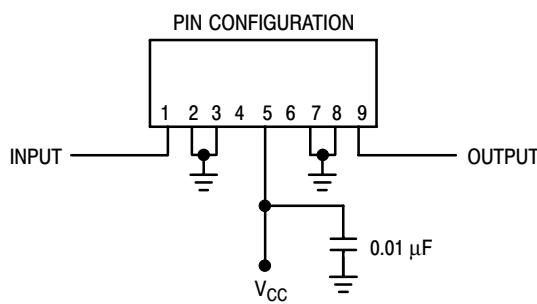
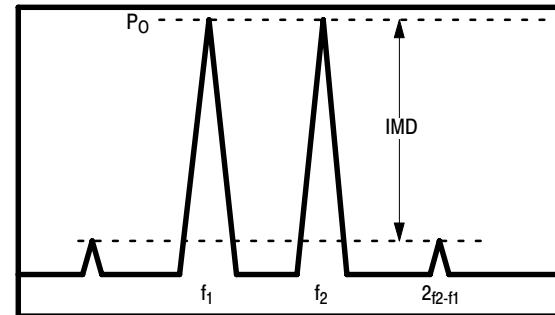


Figure 1. External Connections

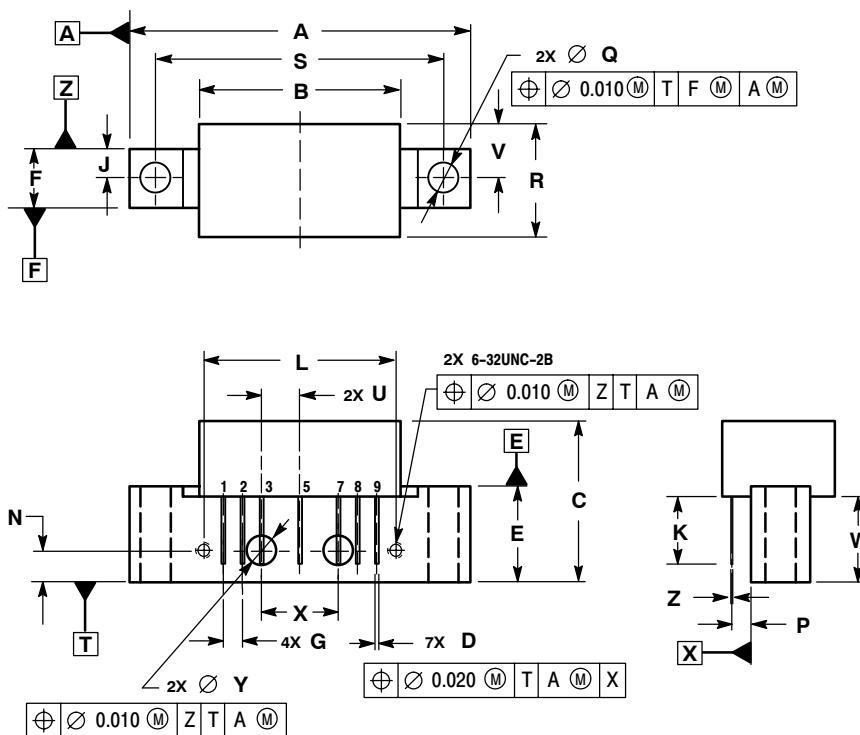


$$\text{ITO} = P_0 + \frac{\text{IMD}}{2} \text{ @ IMD} > 60\text{dB}$$

$$\text{PEP} = 4X P_0 \text{ @ IMD} = -32\text{dB}$$

Figure 2. Intermodulation Test

## PACKAGE DIMENSIONS



## NOTES:

1. DIMENSIONS ARE IN INCHES.
2. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M, 1994.

| DIM | INCHES |       | MILLIMETERS |        |
|-----|--------|-------|-------------|--------|
|     | MIN    | MAX   | MIN         | MAX    |
| A   | ---    | 1.775 | ---         | 45.085 |
| B   | ---    | 1.085 | ---         | 27.559 |
| C   | ---    | 0.840 | ---         | 21.336 |
| D   | 0.015  | 0.021 | 0.381       | 0.533  |
| E   | 0.465  | 0.510 | 11.811      | 12.954 |
| F   | 0.300  | 0.325 | 7.62        | 8.255  |
| G   | 0.100  | BSC   | 2.540       | BSC    |
| J   | 0.156  | BSC   | 3.962       | BSC    |
| K   | 0.315  | 0.355 | 8.001       | 9.017  |
| L   | 1.000  | BSC   | 25.400      | BSC    |
| N   | 0.165  | BSC   | 4.191       | BSC    |
| P   | 0.100  | BSC   | 2.540       | BSC    |
| Q   | 0.148  | 0.168 | 3.759       | 4.267  |
| R   | ---    | 0.600 | ---         | 15.24  |
| S   | 1.500  | BSC   | 38.100      | BSC    |
| U   | 0.200  | BSC   | 5.080       | BSC    |
| V   | ---    | 0.250 | ---         | 6.350  |
| W   | 0.435  | ---   | 11.049      | ---    |
| X   | 0.400  | BSC   | 10.160      | BSC    |
| Y   | 0.152  | 0.163 | 3.861       | 4.140  |
| Z   | 0.009  | 0.011 | 0.229       | 0.279  |

STYLE 1:  
 1. RF INPUT  
 2. GROUND  
 3. GROUND  
 4. DELETED  
 5. VDC  
 6. DELETED  
 7. GROUND  
 8. GROUND  
 9. RF OUTPUT

CASE 1302-01  
 ISSUE E

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