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# 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

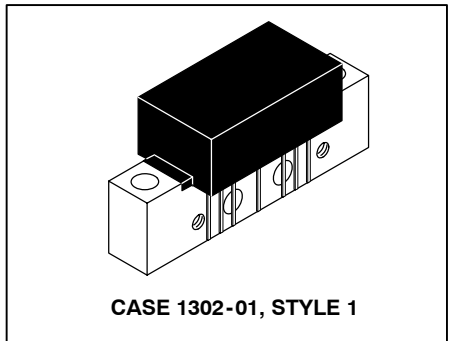
- Driver Amplifier in 50 Ohm Systems Requiring High Linearity
- Instrumentation Amplifiers
- Return Path Amplifier on CATV Systems Operating in the 10 to 200 MHz Frequency Range
- Possible Replacement for CA2830C

## 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**



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**Table 1. Maximum Ratings**

Rating	Symbol	Value	Unit
DC Supply Voltage	$V_{CC}$	28	Vdc
RF Power Input	$P_{in}$	+5	dBm
Operating Case Temperature Range	$T_C$	- 20 to +100	°C
Storage Temperature Range	$T_{stg}$	- 40 to +100	°C

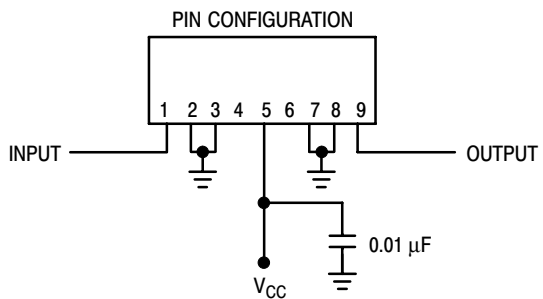
**Table 2. Electrical Characteristics** ( $T_C = 25^\circ\text{C}$ ,  $V_{CC} = 24\text{ V}$ , 50  $\Omega$  system unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Frequency Range	BW	10	—	200	MHz
Gain Flatness (f = 10 - 200 MHz)	$G_F$	—	$\pm 0.5$	$\pm 1$	dB
Power Gain (f = 100 MHz)	$G_p$	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)	$P_{1dB}$	630	800	—	mW
Power Output — 1 dB Compression (f = 10 - 200 MHz, $V_{CC} = 28\text{ V}$ )	$P_{1dB}$	1000	1260	—	mW
Third Order Intercept (See Figure 2, $f_1 = 200\text{ MHz}$ )	ITO	43	44	—	dBm
Input/Output VSWR (f = 10 - 200 MHz)	VSWR	—	1.5:1	2:1	—
Second Harmonic Distortion (Tone at 100 mW, $f_{2H} = 150\text{ MHz}$ )	$d_{so}$	—	- 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	$I_{CC}$	270	310	330	mA

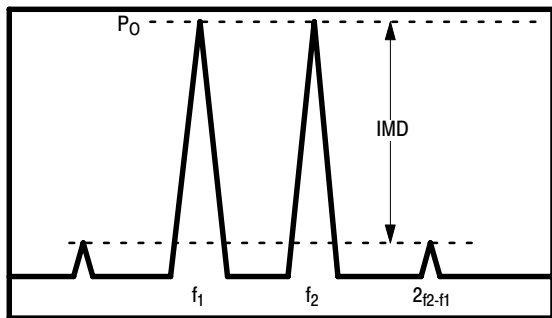
**Table 3. S-Parameters (Biased at 24 Volts, T = 25°C Z<sub>o</sub> = 50Ω)**

Frequency (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**

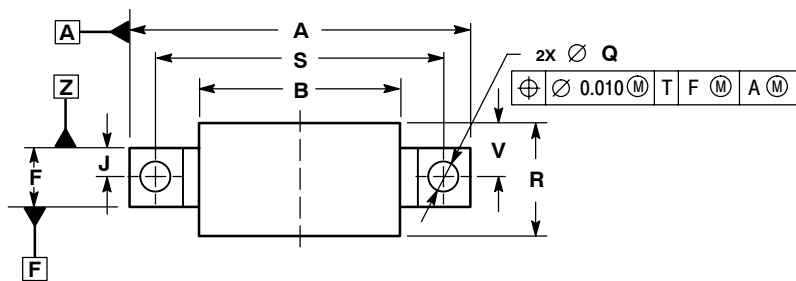


$$ITO = P_0 + \frac{IMD}{2} @ IMD > 60dB$$

$$PEP = 4X P_0 @ IMD = -32dB$$

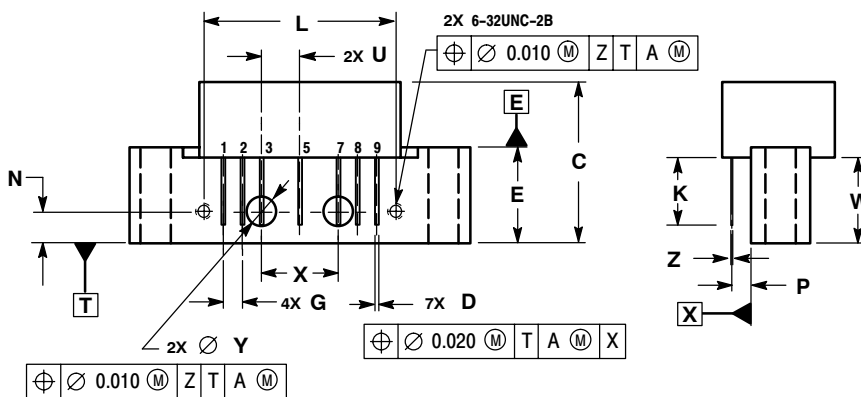
**Figure 2. Intermodulation Test**

### 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:  
 PIN 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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