

# The RF Line

## Gallium Arsenide

### CATV Amplifier Module

# MHW8247A

#### Features

- Specified for 79- and 112-Channel Loading
- Excellent Distortion Performance
- Higher Output Capability
- Built-in Input Diode Protection
- GaAs FET Transistor Technology
- Unconditionally Stable Under All Load Conditions
- Output Port Ring Wave Protection

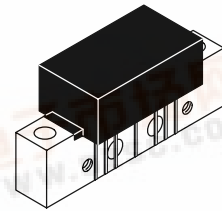
#### Applications

- CATV Systems Operating in the 47 to 870 MHz Frequency Range
- Output Stage Amplifier in Optical Nodes, Line Extenders and Trunk Distribution Amplifiers for CATV Systems
- Driver Amplifier in Linear General Purpose Applications

#### Description

- 24 Vdc Supply, 47 to 870 MHz, CATV GaAs Forward Power Doubler Amplifier Module

**870 MHz**  
**24.9 dB GAIN**  
**112-CHANNEL**  
**GaAs CATV AMPLIFIER MODULE**



CASE 1302-01, STYLE 1

#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
RF Voltage Input (Single Tone)	$V_{in}$	+70	dBmV
DC Supply Voltage	$V_{CC}$	+28	Vdc
Operating Case Temperature Range	$T_C$	-20 to +100	°C
Storage Temperature Range	$T_{stg}$	-40 to +100	°C

#### ESD MAXIMUM RATINGS

Rating	Input Value	Output Value	Unit
Surge Voltage per IEC 1000-4-5	300	300	V
Human Body Model per Mil. Std. 1686	2	2	kV

#### ELECTRICAL CHARACTERISTICS ( $V_{CC} = 24$ Vdc, $T_C = +45^\circ\text{C}$ , 75 $\Omega$ system unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Frequency Range	BW	47	—	870	MHz
Power Gain 870 MHz	$G_p$	24.4	24.9	25.4	dB
Slope 47-870 MHz	S	0	0.6	1.2	dB
Gain Flatness (40-870 MHz, Peak-to-Valley)	$G_F$	—	—	0.7	dB
Return Loss — Input ( $Z_o = 75$ Ohms)	IRL	20	—	—	dB
		18	—	—	
		16	—	—	
Return Loss — Output ( $Z_o = 75$ Ohms)	ORL	20	—	—	dB
		18	—	—	
		16	—	—	

# Freescale Semiconductor, Inc.

## ELECTRICAL CHARACTERISTICS - continued (V<sub>CC</sub> = 24 Vdc, T<sub>C</sub> = +45°C, 75 Ω system unless otherwise noted)

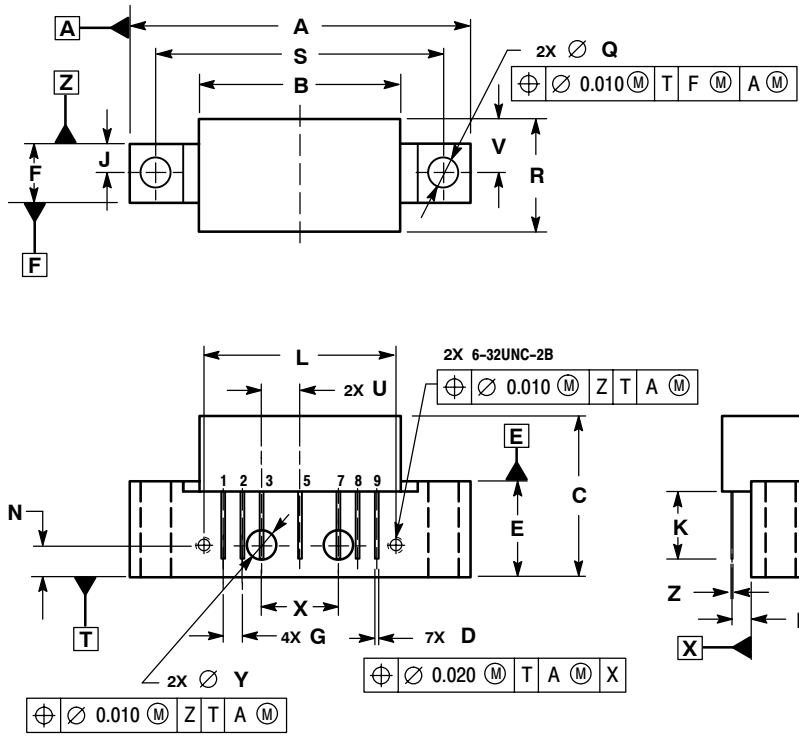
Characteristic	Symbol	Min	Typ	Max	Unit
Composite Second Order					dBc
(V <sub>out</sub> = +48 dBmV/ch., Worst Case) 112-Channel FLAT	CSO <sub>112</sub>	—	-64	-62	
(V <sub>out</sub> = +48 dBmV/ch., Worst Case) 79-Channel FLAT	CSO <sub>79</sub>	—	-68	-66	
(V <sub>out</sub> = +56 dBmV @ 870 Mhz Equiv) 112-Channel, 12db Tilt	CSO <sub>112</sub>	—	-64	-62	
(V <sub>out</sub> = +58 dBmV @ 870 Mhz Equiv) 79-Channel, 12db Tilt	CSO <sub>79</sub>	—	-69	-67	
Cross Modulation Distortion @ Ch 2					dBc
(V <sub>out</sub> = +48 dBmV/ch., FM = 55 MHz) 112-Channel FLAT	XMD <sub>112</sub>	—	-57	-55	
(V <sub>out</sub> = +48 dBmV/ch., FM = 55 MHz) 79-Channel FLAT	XMD <sub>79</sub>	—	-59	-57	
(V <sub>out</sub> = +56 dBmV @ 870 Mhz Equiv) 112-Channel, 12db Tilt	XMD <sub>112</sub>	—	-52	-50	
(V <sub>out</sub> = +58 dBmV @ 870 Mhz Equiv) 79-Channel, 12db Tilt	XMD <sub>79</sub>	—	-55	-53	
Composite Triple Beat					dBc
(V <sub>out</sub> = +48 dBmV/ch., Worst Case) 112-Channel FLAT	CTB <sub>112</sub>	—	-59	-57	
(V <sub>out</sub> = +48 dBmV/ch., Worst Case) 79-Channel FLAT	CTB <sub>79</sub>	—	-66	-64	
(V <sub>out</sub> = +56 dBmV @ 870 Mhz Equiv) 112-Channel, 12db Tilt	CTB <sub>112</sub>	—	-57	-55	
(V <sub>out</sub> = +58 dBmV @ 870 Mhz Equiv) 79-Channel, 12db Tilt	CTB <sub>79</sub>	—	-63	-61	
Noise Figure					dB
50 MHz	NF	—	5.5	—	
550 MHz		—	5.5	—	
750 MHz		—	5.8	—	
870 MHz		—	6.0	—	
DC Current (V <sub>DC</sub> = 24 V, T <sub>C</sub> = 45°C)	I <sub>DC</sub>	420	440	460	mA

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**NOTES**

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## 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 B

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