

The RF Line Gallium Arsenide CATV Amplifier Module

MHW9188A

Features

- Specified for 79-, 112- and 132-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

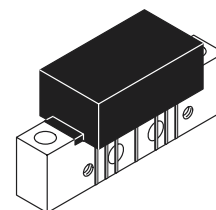
**870 MHz
20.3 dB GAIN
132-CHANNEL
GaAs CATV AMPLIFIER MODULE**

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



CASE 1302-01, STYLE 1

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
RF Voltage Input (Single Tone)	V_{in}	+75	dBmV
DC Supply Voltage	V_{CC}	+26	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 Ω system unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Frequency Range	BW	47	—	870	MHz
Power Gain 870 MHz	G_p	19.7	20.3	20.9	dB
Slope 47-870 MHz	S	0	0.5	1.0	dB
Gain Flatness (47-870 MHz, Peak-to-Valley)	G_F	—	—	0.5	dB
Return Loss — Input ($Z_o = 75$ Ohms) 47-500 MHz 501-750 MHz 751-870 MHz	IRL	20 18 16	— — —	— — —	dB
Return Loss — Output ($Z_o = 75$ Ohms) 47-160 MHz $f > 160$ MHz	ORL	20 18	— —	— —	dB

REV 0

© Motorola, Inc. 2003



**For More Information On This Product,
Go to: www.freescale.com**

digital dna

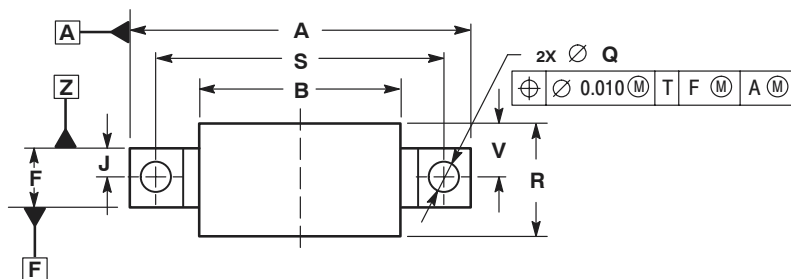
ELECTRICAL CHARACTERISTICS – continued ($V_{CC} = 24 \text{ Vdc}$, $T_C = +45^\circ\text{C}$, 75 Ω system unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Composite Second Order					dBc
($V_{out} = +48 \text{ dBmV/ch.}$, Worst Case) 132-Channel FLAT	CSO_{132}	—	-64	-62	
($V_{out} = +48 \text{ dBmV/ch.}$, Worst Case) 112-Channel FLAT	CSO_{112}	—	-66	-64	
($V_{out} = +48 \text{ dBmV/ch.}$, Worst Case) 79-Channel FLAT	CSO_{79}	—	-70	-68	
($V_{out} = +56 \text{ dBmV @ 870 MHz Equiv}$) 112-Channel, 12 dB Tilt	CSO_{112}	—	-65	-63	
($V_{out} = +56 \text{ dBmV @ 870 MHz Equiv}$) 112-Channel, 13.5 dB Tilt	CSO_{112}	—	-64	-62	
($V_{out} = +56 \text{ dBmV @ 870 MHz Equiv}$) 112-Channel, 17 dB Tilt	CSO_{112}	—	-63	-61	
($V_{out} = +58 \text{ dBmV @ 870 MHz Equiv}$) 79-Channel, 12 dB Tilt	CSO_{79}	—	-69	-67	
($V_{out} = +58 \text{ dBmV @ 870 MHz Equiv}$) 79-Channel, 13.5 dB Tilt	CSO_{79}	—	-74	-72	
($V_{out} = +58 \text{ dBmV @ 870 MHz Equiv}$) 79-Channel, 17 dB Tilt	CSO_{79}	—	-73	-71	
Cross Modulation Distortion @ Ch 2					dBc
($V_{out} = +48 \text{ dBmV/ch.}$, FM = 55 MHz) 132-Channel FLAT	XMD_{132}	—	-57	-55	
($V_{out} = +48 \text{ dBmV/ch.}$, FM = 55 MHz) 112-Channel FLAT	XMD_{112}	—	-59	-57	
($V_{out} = +48 \text{ dBmV/ch.}$, FM = 55 MHz) 79-Channel FLAT	XMD_{79}	—	-62	-60	
($V_{out} = +56 \text{ dBmV @ 870 MHz Equiv}$) 112-Channel, 12 dB Tilt	XMD_{112}	—	-53	-51	
($V_{out} = +56 \text{ dBmV @ 870 MHz Equiv}$) 112-Channel, 13.5 dB Tilt	XMD_{112}	—	-55	-53	
($V_{out} = +56 \text{ dBmV @ 870 MHz Equiv}$) 112-Channel, 17 dB Tilt	XMD_{112}	—	-58	-56	
($V_{out} = +58 \text{ dBmV @ 870 MHz Equiv}$) 79-Channel, 12 dB Tilt	XMD_{79}	—	-60	-47	
($V_{out} = +58 \text{ dBmV @ 870 MHz Equiv}$) 79-Channel, 13.5 dB Tilt	XMD_{79}	—	-62	-60	
($V_{out} = +58 \text{ dBmV @ 870 MHz Equiv}$) 79-Channel, 17 dB Tilt	XMD_{79}	—	-67	-65	
Composite Triple Beat					dBc
($V_{out} = +48 \text{ dBmV/ch.}$, Worst Case) 132-Channel FLAT	CTB_{132}	—	-58	-56	
($V_{out} = +48 \text{ dBmV/ch.}$, Worst Case) 112-Channel FLAT	CTB_{112}	—	-62	-60	
($V_{out} = +48 \text{ dBmV/ch.}$, Worst Case) 79-Channel FLAT	CTB_{79}	—	-68	-66	
($V_{out} = +56 \text{ dBmV @ 870 MHz Equiv}$) 112-Channel, 12 dB Tilt	CTB_{112}	—	-60	-58	
($V_{out} = +56 \text{ dBmV @ 870 MHz Equiv}$) 112-Channel, 13.5 dB Tilt	CTB_{112}	—	-61	-59	
($V_{out} = +56 \text{ dBmV @ 870 MHz Equiv}$) 112-Channel, 17 dB Tilt	CTB_{112}	—	-64	-62	
($V_{out} = +58 \text{ dBmV @ 870 MHz Equiv}$) 79-Channel, 12 dB Tilt	CTB_{79}	—	-66	-64	
($V_{out} = +58 \text{ dBmV @ 870 MHz Equiv}$) 79-Channel, 13.5 dB Tilt	CTB_{79}	—	-71	-69	
($V_{out} = +58 \text{ dBmV @ 870 MHz Equiv}$) 79-Channel, 17 dB Tilt	CTB_{79}	—	-74	-72	
Noise Figure					dB
50 MHz	NF	—	4.0	5.0	
550 MHz		—	4.0	5.0	
750 MHz		—	4.0	5.0	
870 MHz		—	4.0	5.0	
DC Current ($V_{DC} = 24 \text{ V}$, $T_C = 45^\circ\text{C}$)	I_{DC}	410	425	440	mA

NOTES

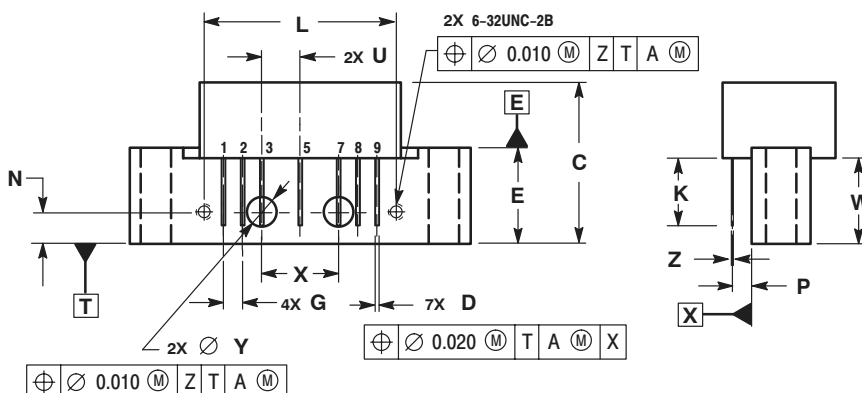
Freescal Semiconductor, Inc.

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

Information in this document is provided solely to enable system and software implementers to use Motorola products. There are no express or implied copyright licenses granted hereunder to design or fabricate any integrated circuits or integrated circuits based on the information in this document.

Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters that may be provided in Motorola data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals", must be validated for each customer application by customer's technical experts. Motorola does not convey any license under its patent rights nor the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part.

MOTOROLA and the Stylized M Logo are registered in the US Patent and Trademark Office. All other product or service names are the property of their respective owners. Motorola, Inc. is an Equal Opportunity/Affirmative Action Employer.

© Motorola Inc. 2003

HOW TO REACH US:

USA/EUROPE/LOCATIONS NOT LISTED:
Motorola Literature Distribution
P.O. Box 5405, Denver, Colorado 80217
1-800-521-6274 or 480-768-2130

JAPAN: Motorola Japan Ltd.; SPS, Technical Information Center,
3-20-1, Minami-Azabu, Minato-ku, Tokyo 106-8573, Japan
81-3-3440-3569

ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; Silicon Harbour Centre,
2 Dai King Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong
852-26688334

HOME PAGE: <http://motorola.com/semiconductors>



MOTOROLA

For More Information On This Product,
Go to: www.freescale.com

MHW9188A/D