Freescale Semiconductor
Technical Data

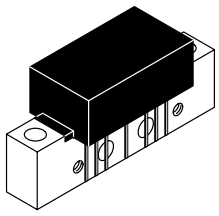
Document Number: MHW9187N
Rev. 5, 4/2006

RoHS

Gallium Arsenide CATV Amplifier Module

MHW9187N

870 MHz
20 dB GAIN
132-CHANNEL
GaAs CATV AMPLIFIER MODULE



CASE 1302-01, STYLE 1

Features

- Specified for 79-, 112- and 132-Channel Loading
- Excellent Distortion Performance
- Higher Output Capability
- GaAs FET Transistor Technology
- Unconditionally Stable Under All Load Conditions

Applications

- CATV Systems Operating in the 40 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, 40 to 870 MHz, CATV GaAs Forward Power Doubler Amplifier Module
- Replaced MHW9187. There are no form, fit or function changes with this part replacement.
- RoHS Compliant

Table 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

Table 2. ESD Maximum Ratings

Rating	Input Value	Output Value	Unit
Surge Voltage per IEC 1000-4-5	200	200	V
Human Body Model per Mil. Std. 1686	0.7	2	kV

Table 3. Electrical Characteristics (V_{CC} = 24 Vdc, T_C = +45°C, 75 Ω system unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
Frequency Range		BW	40	—	870	MHz
Power Gain	870 MHz	G_p	19.4	20	20.6	dB
Slope	40-870 MHz	S	0	0.5	1.0	dB
Gain Flatness (40-870 MHz, Peak-to-Valley)		G_F	—	—	0.5	dB
Return Loss — Input		IRL				dB
(Z_o = 75 Ohms)	40-500 Mhz		20	—	—	
	501-750 Mhz		18	—	—	
	751-870 Mhz		16	—	—	
Return Loss — Output		ORL				dB
(Z_o = 75 Ohms)	40-160 Mhz		20	—	—	
	f > 160 Mhz		18	—	—	

LIFETIME BUY

LAST ORDER 31 DEC 07 LAST SHIP 30 JUN 08

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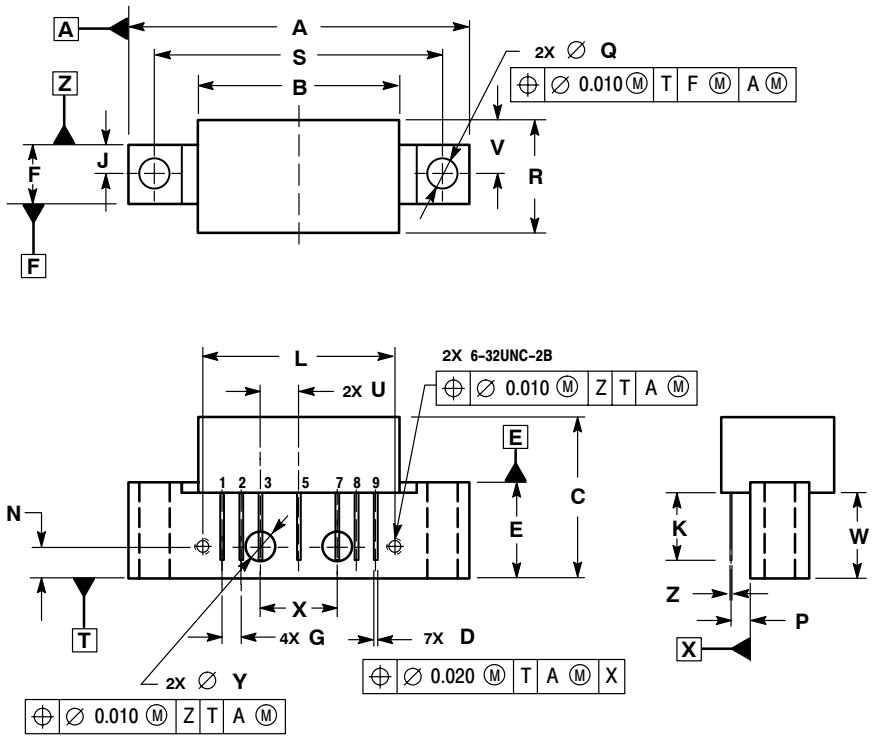
Table 3. Electrical Characteristics (V_{CC} = 24 Vdc, T_C = +45°C, 75 Ω system unless otherwise noted) **(continued)**

Characteristic		Symbol	Min	Typ	Max	Unit
Composite Second Order						dB
(V_{out} = +48 dBmV/ch., Worst Case)	132-Channel FLAT	CSO_{132}	—	-64	-62	
(V_{out} = +48 dBmV/ch., Worst Case)	112-Channel FLAT	CSO_{112}	—	-66	-64	
(V_{out} = +48 dBmV/ch., Worst Case)	79-Channel FLAT	CSO_{79}	—	-70	-68	
(V_{out} = +56 dBmV @ 870 Mhz Equiv)	112-Channel, 12db Tilt	CSO_{112}	—	-65	-63	
(V_{out} = +56 dBmV @ 870 Mhz Equiv)	112-Channel, 13.5db Tilt	CSO_{112}	—	-64	-62	
(V_{out} = +56 dBmV @ 870 Mhz Equiv)	112-Channel, 17db Tilt	CSO_{112}	—	-63	-61	
(V_{out} = +58 dBmV @ 870 Mhz Equiv)	79-Channel, 12db Tilt	CSO_{79}	—	-69	-67	
(V_{out} = +58 dBmV @ 870 Mhz Equiv)	79-Channel, 13.5db Tilt	CSO_{79}	—	-74	-72	
(V_{out} = +58 dBmV @ 870 Mhz Equiv)	79-Channel, 17db Tilt	CSO_{79}	—	-73	-71	
Cross Modulation Distortion @ Ch 2						dBc
(V_{out} = +48 dBmV/ch., FM = 55 MHz)	132-Channel FLAT	XMD_{132}	—	-57	-55	
(V_{out} = +48 dBmV/ch., FM = 55 MHz)	112-Channel FLAT	XMD_{112}	—	-59	-57	
(V_{out} = +48 dBmV/ch., FM = 55 MHz)	79-Channel FLAT	XMD_{79}	—	-62	-60	
(V_{out} = +56 dBmV @ 870 Mhz Equiv)	112-Channel, 12db Tilt	XMD_{112}	—	-53	-51	
(V_{out} = +56 dBmV @ 870 Mhz Equiv)	112-Channel, 13.5db Tilt	XMD_{112}	—	-55	-53	
(V_{out} = +56 dBmV @ 870 Mhz Equiv)	112-Channel, 17db Tilt	XMD_{112}	—	-58	-56	
(V_{out} = +58 dBmV @ 870 Mhz Equiv)	79-Channel, 12db Tilt	XMD_{79}	—	-60	-47	
(V_{out} = +58 dBmV @ 870 Mhz Equiv)	79-Channel, 13.5db Tilt	XMD_{79}	—	-62	-60	
(V_{out} = +58 dBmV @ 870 Mhz Equiv)	79-Channel, 17db Tilt	XMD_{79}	—	-67	-65	
Composite Triple Beat						dBc
(V_{out} = +48 dBmV/ch., Worst Case)	132-Channel FLAT	CTB_{132}	—	-60	-56	
(V_{out} = +48 dBmV/ch., Worst Case)	112-Channel FLAT	CTB_{112}	—	-64	-60	
(V_{out} = +48 dBmV/ch., Worst Case)	79-Channel FLAT	CTB_{79}	—	–68	-66	
(V_{out} = +56 dBmV @ 870 Mhz Equiv)	112-Channel, 12db Tilt	CTB_{112}	—	-60	-58	
(V_{out} = +56 dBmV @ 870 Mhz Equiv)	112-Channel, 13.5db Tilt	CTB_{112}	—	-61	-59	
(V_{out} = +56 dBmV @ 870 Mhz Equiv)	112-Channel, 17db Tilt	CTB_{112}	—	-64	-62	
(V_{out} = +58 dBmV @ 870 Mhz Equiv)	79-Channel, 12db Tilt	CTB_{79}	—	-66	-64	
(V_{out} = +58 dBmV @ 870 Mhz Equiv)	79-Channel, 13.5db Tilt	CTB_{79}	—	-71	-69	
(V_{out} = +58 dBmV @ 870 Mhz Equiv)	79-Channel, 17db Tilt	CTB_{79}	—	-74	-72	
Noise Figure	50 MHz	NF	—	4.0	4.5	dB
	550 MHz		—	3.5	4.5	
	750 MHz		—	3.5	4.5	
	870 MHz		—	4.0	4.5	
DC Current (V_{DC} = 24 V, T_C = 45°C)		I_{DC}	410	425	440	mA

PACKAGE DIMENSIONS



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

	INCHES		MILLIMETERS	
DIM	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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