Freescale Semiconductor
Technical Data

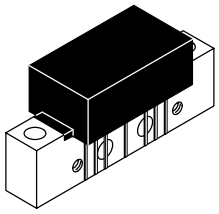
Document Number: MHW8247A
Rev. 2, 5/2006

Replaced by MHW8247AN. There are no form, fit or function changes with this part replacement. N suffix indicates RoHS compliant part.

Gallium Arsenide CATV Amplifier Module

MHW8247A

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



CASE 1302-01, STYLE 1

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

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	300	300	V
Human Body Model per Mil. Std. 1686	2	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	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		IRL				dB
(Z_o = 75 Ohms)	47-500 MHz		20	—	—	
	501-750 MHz		18	—	—	
	751-870 MHz		16	—	—	
Return Loss — Output		ORL				dB
(Z_o = 75 Ohms)	47-160 MHz		20	—	—	
	161-700 MHz		18	—	—	
	701-870 MHz		16	—	—	

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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						dBc
(V_{out} = +48 dBmV/ch., Worst Case)	112-Channel FLAT	CSO_{112}	—	-64	-62	
(V_{out} = +48 dBmV/ch., Worst Case)	79-Channel FLAT	CSO_{79}	—	-68	-66	
(V_{out} = +56 dBmV @ 870 Mhz Equiv)	112-Channel, 12db Tilt	CSO_{112}	—	-64	-62	
(V_{out} = +58 dBmV @ 870 Mhz Equiv)	79-Channel, 12db Tilt	CSO_{79}	—	-69	-67	
Cross Modulation Distortion @ Ch 2						dBc
(V_{out} = +48 dBmV/ch., FM = 55 MHz)	112-Channel FLAT	XMD_{112}	—	-57	-55	
(V_{out} = +48 dBmV/ch., FM = 55 MHz)	79-Channel FLAT	XMD_{79}	—	-59	-57	
(V_{out} = +56 dBmV @ 870 Mhz Equiv)	112-Channel, 12db Tilt	XMD_{112}	—	-52	-50	
(V_{out} = +58 dBmV @ 870 Mhz Equiv)	79-Channel, 12db Tilt	XMD_{79}	—	-55	-53	
Composite Triple Beat						dBc
(V_{out} = +48 dBmV/ch., Worst Case)	112-Channel FLAT	CTB_{112}	—	-59	-57	
(V_{out} = +48 dBmV/ch., Worst Case)	79-Channel FLAT	CTB_{79}	—	–66	-64	
(V_{out} = +56 dBmV @ 870 Mhz Equiv)	112-Channel, 12db Tilt	CTB_{112}	—	-57	-55	
(V_{out} = +58 dBmV @ 870 Mhz Equiv)	79-Channel, 12db Tilt	CTB_{79}	—	-63	-61	
Noise Figure	50 MHz	NF	—	5.5	—	dB
	550 MHz		—	5.5	—	
	750 MHz		—	5.8	—	
	870 MHz		—	6.0	—	
DC Current (V_{DC} = 24 V, T_C = 45°C)		I_{DC}	420	440	460	mA

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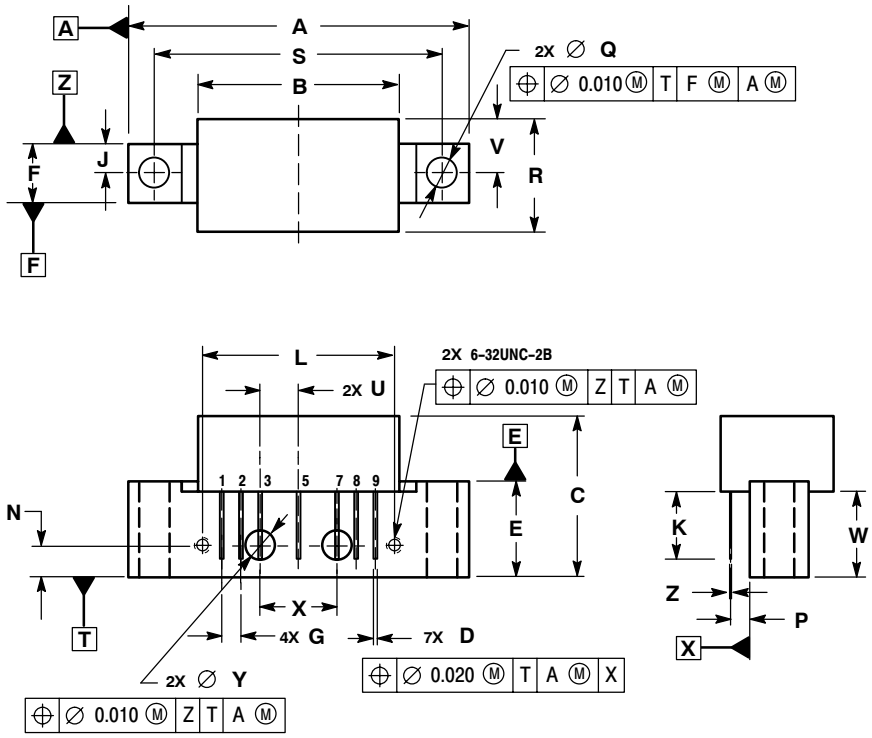
PACKAGE DIMENSIONS



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 B

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How to Reach Us:

Home Page:
www.freescale.com

E-mail:
support@freescale.com

USA/Europe or Locations Not Listed:
Freescale Semiconductor
Technical Information Center, CH370
1300 N. Alma School Road
Chandler, Arizona 85224
+1-800-521-6274 or +1-480-768-2130
support@freescale.com

Europe, Middle East, and Africa:
Freescale Halbleiter Deutschland GmbH
Technical Information Center
Schatzbogen 7
81829 Muenchen, Germany
+44 1296 380 456 (English)
+46 8 52200080 (English)
+49 89 92103 559 (German)
+33 1 69 35 48 48 (French)
support@freescale.com

Japan:
Freescale Semiconductor Japan Ltd.
Headquarters
ARCO Tower 15F
1-8-1, Shimo-Meguro, Meguro-ku,
Tokyo 153-0064
Japan
0120 191014 or +81 3 5437 9125
support.japan@freescale.com

Asia/Pacific:
Freescale Semiconductor Hong Kong Ltd.
Technical Information Center
2 Dai King Street
Tai Po Industrial Estate
Tai Po, N.T., Hong Kong
+800 2666 8080
support.asia@freescale.com

For Literature Requests Only:
Freescale Semiconductor Literature Distribution Center
P.O. Box 5405
Denver, Colorado 80217
1-800-441-2447 or 303-675-2140
Fax: 303-675-2150
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