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Freescale Semiconductor
 Technical Data

Document Number: MHW8227AN
 Rev. 3, 5/2006



Gallium Arsenide CATV Amplifier Module

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

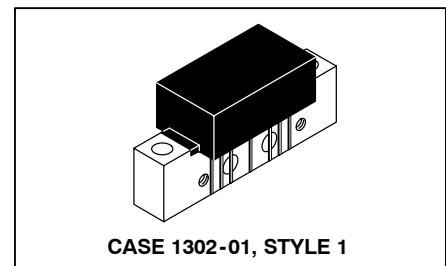
- CATV Systems Operating in the 47 to 870 MHz Frequency Range
- Output Stage Amplifier in Optical Nodes, Line Extenders and Trunk Distribution Amplifiers for CATV Systems
- Driver Amplifier in Linear General Purpose Applications

Description

- 24 Vdc Supply, 47 to 870 MHz, CATV GaAs Forward Power Doubler Amplifier Module
- Replaced MHW8227A. There are no form, fit or function changes with this part replacement.
- RoHS Compliant

MHW8227AN

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



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Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
RF Voltage Input (Single Tone)	V_{in}	+70	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

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	2	2	kV

Table 3. 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	21.5	22.1	22.7	dB
Slope 47-870 MHz	S	0	0.5	1.2	dB
Gain Flatness (47-870 MHz, Peak-to-Valley)	—	—	—	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	—	—	

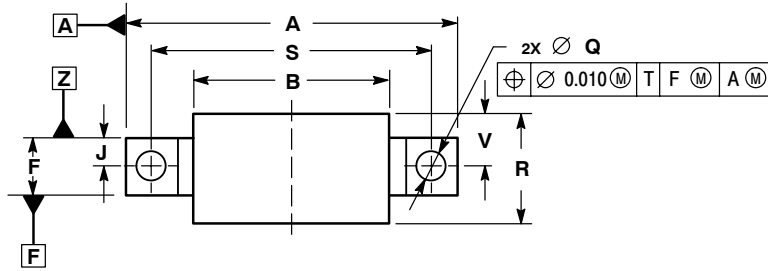
Table 3. Electrical Characteristics ($V_{CC} = 24$ Vdc, $T_C = +45^\circ\text{C}$, 75 Ω system unless otherwise noted) (continued)

Characteristic		Symbol	Min	Typ	Max	Unit
Composite Second Order ($V_{out} = +48$ dBmV/ch., Worst Case) ($V_{out} = +48$ dBmV/ch., Worst Case) ($V_{out} = +56$ dBmV @ 870 MHz Equiv) ($V_{out} = +58$ dBmV @ 870 MHz Equiv)	112-Channel FLAT	CSO ₁₁₂	—	-66	-64	dBc
	79-Channel FLAT	CSO ₇₉	—	-70	-68	
	112-Channel, 12 dB Tilt	CSO ₁₁₂	—	-65	-63	
	79-Channel, 12 dB Tilt	CSO ₇₉	—	-69	-67	
Cross Modulation Distortion @ Ch 2 ($V_{out} = +48$ dBmV/ch., FM = 55.25 MHz) ($V_{out} = +48$ dBmV/ch., FM = 55.25 MHz) ($V_{out} = +56$ dBmV @ 870 MHz Equiv) ($V_{out} = +58$ dBmV @ 870 MHz Equiv)	112-Channel FLAT	XMD ₁₁₂	—	-58	-56	dBc
	79-Channel FLAT	XMD ₇₉	—	-61	-59	
	112-Channel, 12 dB Tilt	XMD ₁₁₂	—	-53	-51	
	79-Channel, 12 dB Tilt	XMD ₇₉	—	-60	-47	
Composite Triple Beat ($V_{out} = +48$ dBmV/ch., Worst Case) ($V_{out} = +48$ dBmV/ch., Worst Case) ($V_{out} = +56$ dBmV @ 870 MHz Equiv) ($V_{out} = +58$ dBmV @ 870 MHz Equiv)	112-Channel FLAT	CTB ₁₁₂	—	-60	-58	dBc
	79-Channel FLAT	CTB ₇₉	—	-66	-64	
	112-Channel, 12 dB Tilt	CTB ₁₁₂	—	-57	-55	
	79-Channel, 12 dB Tilt	CTB ₇₉	—	-63	-61	
Noise Figure	50 MHz	NF	—	4.5	—	dB
	550 MHz		—	4.5	—	
	750 MHz		—	4.5	—	
	870 MHz		—	4.5	—	
DC Current ($V_{DC} = 24$ V, $T_C = 45^\circ\text{C}$)		I_{DC}	410	425	440	mA

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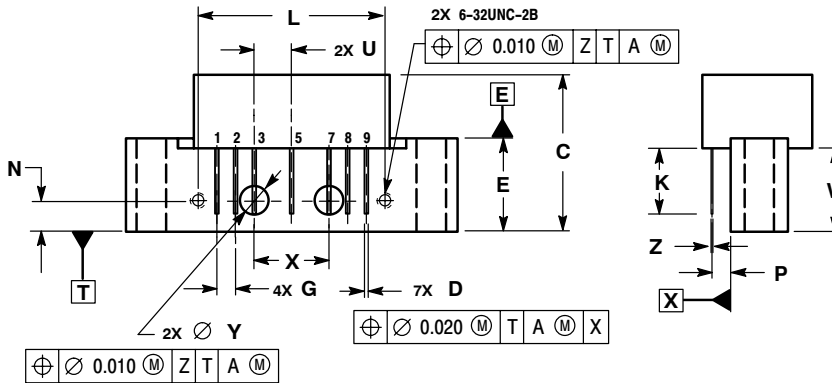
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PACKAGE DIMENSIONS



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 E

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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

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