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Freescale Semiconductor  
 Technical Data

Document Number: MHW9186N  
 Rev. 4, 5/2006



# Gallium Arsenide CATV Amplifier Module

## Features

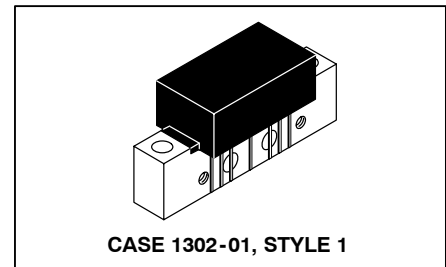
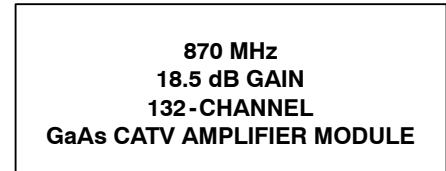
- Specified for 79-, 112- and 132-Channel Loading
- Excellent Distortion Performance
- Built-in Input Diode Protection
- GaAs FET Transistor Technology
- Unconditionally Stable Under All Load Conditions

## Applications

- CATV Systems Operating in the 40 to 870 MHz Frequency Range
- Input Stage Amplifier in Optical Nodes, Line Extenders and Trunk Distribution Amplifiers for CATV Systems
- Output Stage Amplifier on Applications Requiring Low Power Dissipation and High Output Performance
- Driver Amplifier in Linear General Purpose Applications

## Description

- 24 Vdc Supply, 40 to 870 MHz, CATV GaAs Forward Amplifier Module
- Replaced MHW9186. There are no form, fit or function changes with this part replacement.
- RoHS Compliant



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**Table 1. Maximum Ratings**

Rating	Symbol	Value	Unit
RF Voltage Input (Single Tone)	$V_{in}$	+65	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	300	300	V
Human Body Model per Mil. Std. 1686	2	2	kV

**Table 3. Electrical Characteristics** ( $V_{CC} = 24$  Vdc,  $T_C = +30^\circ\text{C}$ , 75  $\Omega$  system unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Frequency Range	BW	40	—	870	MHz
Power Gain	$G_p$	50 MHz	17.5	18	dB
		870 MHz	18	18.5	
Slope	S	0.2	0.6	1.2	dB
Gain Flatness (40-870 MHz, Peak-to-Valley)	$G_F$	—	0.3	0.8	dB
Return Loss — Input ( $Z_o = 75$ Ohms)	IRL	40-200 MHz	20	—	dB
		200-600 MHz	19	—	
		600-870 MHz	18	—	
Return Loss — Output ( $Z_o = 75$ Ohms)	ORL	40-200 MHz	20	—	dB
		200-600 MHz	19	—	
		600-870 MHz	18	—	

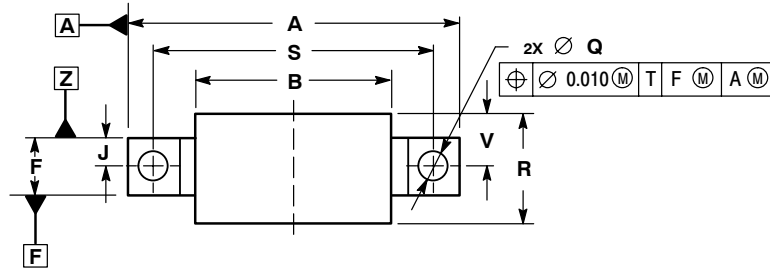
**Table 3. Electrical Characteristics** ( $V_{CC} = 24 \text{ Vdc}$ ,  $T_C = +30^\circ\text{C}$ , 75  $\Omega$  system unless otherwise noted) (continued)

Characteristic		Symbol	Min	Typ	Max	Unit
Composite Second Order ( $V_{out} = +44 \text{ dBmV/ch.}$ , Worst Case)	132-Channel FLAT	$CSO_{132}$	—	-67	-60	dBc
( $V_{out} = +46 \text{ dBmV/ch.}$ , Worst Case)	112-Channel FLAT	$CSO_{112}$	—	-65	-61	
( $V_{out} = +48 \text{ dBmV/ch.}$ , Worst Case)	79-Channel FLAT	$CSO_{79}$	—	-72	-64	
Cross Modulation Distortion @ Ch 2 ( $V_{out} = +44 \text{ dBmV/ch.}$ , FM = 55 MHz)	132-Channel FLAT	$XMD_{132}$	—	-58	-52	dBc
( $V_{out} = +46 \text{ dBmV/ch.}$ , FM = 55 MHz)	112-Channel FLAT	$XMD_{112}$	—	-58	-52	
( $V_{out} = +48 \text{ dBmV/ch.}$ , FM = 55 MHz)	79-Channel FLAT	$XMD_{79}$	—	-58	-52	
Composite Triple Beat ( $V_{out} = +44 \text{ dBmV/ch.}$ , Worst Case)	132-Channel FLAT	$CTB_{132}$	—	-62	-58	dBc
( $V_{out} = +46 \text{ dBmV/ch.}$ , Worst Case)	112-Channel FLAT	$CTB_{112}$	—	-61	-58	
( $V_{out} = +48 \text{ dBmV/ch.}$ , Worst Case)	79-Channel FLAT	$CTB_{79}$	—	-64	-60	
Noise Figure	50 MHz	NF	—	4	5.0	dB
	870 MHz		—	3.7	5.0	
DC Current ( $V_{DC} = 24 \text{ V}$ , $T_C = -20^\circ$ to $+100^\circ\text{C}$ )		$I_{DC}$	230	250	265	mA

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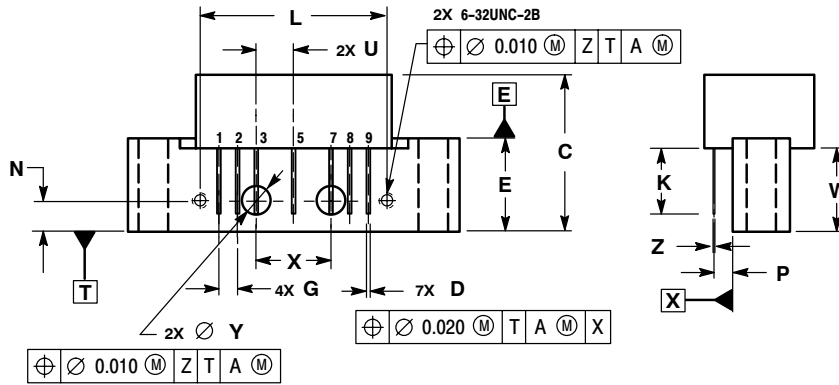
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PACKAGE DIMENSIONS



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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