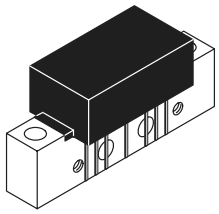
The RF Line

Gallium Arsenide CATV Amplifier Module

MHW9267

870 MHz
27.6 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
- Built–in Input Diode Protection
- GaAs FET Transistor Technology
- Unconditionally Stable Under All Load Conditions

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

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

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

ELECTRICAL CHARACTERISTICS (V_{CC} = 24 Vdc, T_C = +45°C, 75 Ω system unless otherwise noted)

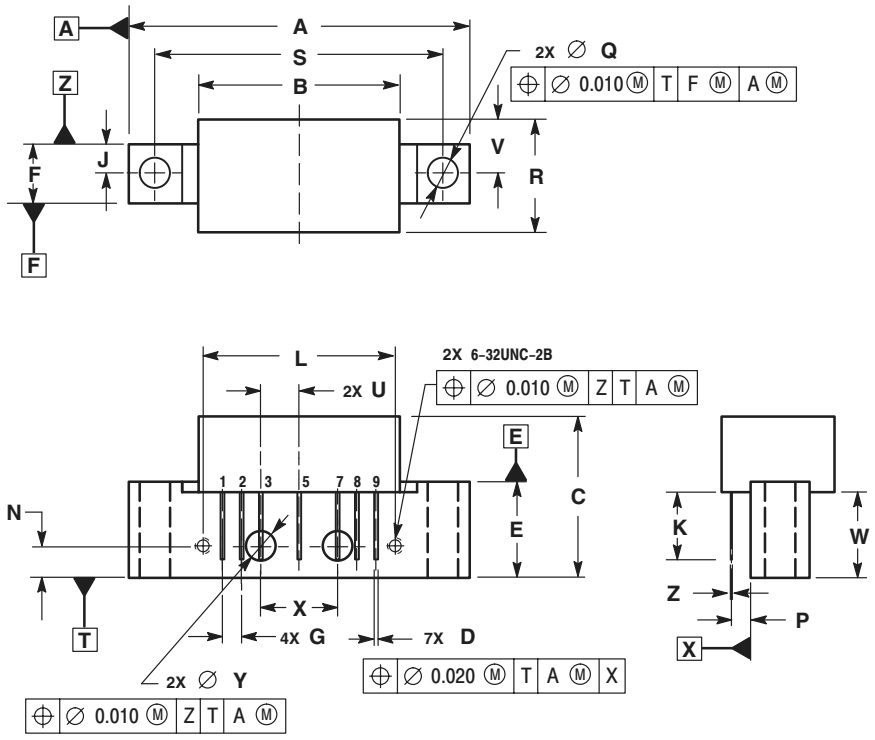
Characteristic		Symbol	Min	Typ	Max	Unit
Frequency Range		BW	40	—	870	MHz
Power Gain	870 MHz	G_p	27	27.6	28.2	dB
Slope	47–870 MHz	S	0	0.7	1.4	dB
Gain Flatness (40–870 MHz, Peak–to–Valley)		G_F	—	—	0.5	dB
Return Loss — Input		IRL				dB
(Z_o = 75 Ohms)	47–500 MHz		20	—	—	
	501–750 MHz		18	—	—	
	751–870 MHz		16	—	—	

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

Characteristic		Symbol	Min	Typ	Max	Unit
Return Loss — Output		ORL				dB
(Z_o = 75 Ohms)	47–160 MHz		20	—	—	
	f > 160 MHz		18	—	—	
Composite Second Order						dBc
(V_{out} = +48 dBmV/ch., Worst Case)	132–Channel FLAT	CSO_{132}	—	–62	–60	
(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} = +56 dBmV @ 870 MHz Equiv)	112–Channel, 13.5db Tilt	CSO_{112}	—	–65	–63	
(V_{out} = +56 dBmV @ 870 MHz Equiv)	112–Channel, 17db Tilt	CSO_{112}	—	–66	–64	
(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}	—	–71	–69	
(V_{out} = +58 dBmV @ 870 MHz Equiv)	79–Channel, 17db Tilt	CSO_{79}	—	–72	–70	
Cross Modulation Distortion @ Ch 2						dBc
(V_{out} = +48 dBmV/ch., FM = 55 MHz)	132–Channel FLAT	XMD_{132}	—	–56	–54	
(V_{out} = +48 dBmV/ch., FM = 55 MHz)	112–Channel FLAT	XMD_{112}	—	–58	–56	
(V_{out} = +48 dBmV/ch., FM = 55 MHz)	79–Channel FLAT	XMD_{79}	—	–60	–58	
(V_{out} = +56 dBmV @ 870 MHz Equiv)	112–Channel, 12db Tilt	XMD_{112}	—	–52	–50	
(V_{out} = +56 dBmV @ 870 MHz Equiv)	112–Channel, 13.5db Tilt	XMD_{112}	—	–53	–51	
(V_{out} = +56 dBmV @ 870 MHz Equiv)	112–Channel, 17db Tilt	XMD_{112}	—	–55	–53	
(V_{out} = +58 dBmV @ 870 MHz Equiv)	79–Channel, 12db Tilt	XMD_{79}	—	–55	–52	
(V_{out} = +58 dBmV @ 870 MHz Equiv)	79–Channel, 13.5db Tilt	XMD_{79}	—	–58	–56	
(V_{out} = +58 dBmV @ 870 MHz Equiv)	79–Channel, 17db Tilt	XMD_{79}	—	–61	–59	
Composite Triple Beat						dBc
(V_{out} = +48 dBmV/ch., Worst Case)	132–Channel FLAT	CTB_{132}	—	–58	–56	
(V_{out} = +48 dBmV/ch., Worst Case)	112–Channel FLAT	CTB_{112}	—	–61	–59	
(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}	—	–58	–56	
(V_{out} = +56 dBmV @ 870 MHz Equiv)	112–Channel, 13.5db Tilt	CTB_{112}	—	–59	–57	
(V_{out} = +56 dBmV @ 870 MHz Equiv)	112–Channel, 17db Tilt	CTB_{112}	—	–61	–59	
(V_{out} = +58 dBmV @ 870 MHz Equiv)	79–Channel, 12db Tilt	CTB_{79}	—	–62	–60	
(V_{out} = +58 dBmV @ 870 MHz Equiv)	79–Channel, 13.5db Tilt	CTB_{79}	—	–64	–62	
(V_{out} = +58 dBmV @ 870 MHz Equiv)	79–Channel, 17db Tilt	CTB_{79}	—	–67	–65	
Noise Figure	50 MHz	NF	—	5.5	7.0	dB
	550 MHz		—	5.5	7.0	
	750 MHz		—	5.8	7.0	
	870 MHz		—	6.0	7.0	
DC Current (V_{DC} = 24 V, T_C = 45°C)		I_{DC}	410	440	460	mA

NOTES

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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