Freescale Semiconductor
Technical Data

Document Number: MHW1244N
Rev. 4, 5/2006

RoHS

CATV Amplifier Module

MHW1244N

5 - 200 MHz, 24.0 dB
26 - CHANNEL
CATV HIGH - SPLIT
REVERSE AMPLIFIER

Features

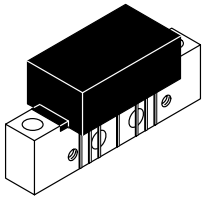
- Specified for 12 - , 22 - and 26 - Channel Loading
- Excellent Distortion Performance
- Superior Gain, Return Loss and DC Current Stability over Temperature
- Capable of Handling Multiple Channels in the Return Path with Good Distortion Performance
- Silicon Bipolar Transistor Technology
- Unconditionally Stable Under All Load Conditions

Applications

- CATV Systems Operating in the 5 to 200 MHz Frequency Range
- Designed for Broadband Applications Requiring Low Distortion Characteristics
- Specified for Use as a Return Path Amplifier for Low - , Mid - and High - Split 2 - Way Cable TV Systems

Description

- 24 Vdc Supply, 5 to 200 MHz, CATV Reverse Amplifier
- Replaced MHW1244. There are no form, fit or function changes with this part replacement.
- RoHS Compliant



CASE 1302 - 01, STYLE 1

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
RF Voltage Input (Single Tone)	V_{in}	+65	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. Electrical Characteristics (V_{CC} = 24 Vdc, T_C = +30°C, 75 Ω system)

Characteristic	Symbol	MHW1244	Units
Power Gain @ 10 MHz	G_p	24.0 ± 0.5	dB
Frequency Range (Response/Return Loss) (1)	BW	5.0 - 200	MHz
Cable Slope Equivalent (5.0 - 200 MHz)	S	- 0.2 Min/+ 0.8 Max	dB
Gain Flatness (5.0 - 200 MHz)	G_F	±0.2 Max	dB
Input/Output Return Loss (5.0 - 200 MHz) (1)	IRL/ORL	18.0 Min	dB
Cross Modulation Distortion @ +50 dBmV per ch. 12 - Channel FLAT (5.0 - 120 MHz) 22 - Channel FLAT (5.0 - 175 MHz) (2) (3) 26 - Channel FLAT (5.0 - 200 MHz)	 XMD_{12} XMD_{22} XMD_{26}	 - 66 Typ - 61 Max - 61 Typ	 dBc dBc dBc

1. Response and return loss characteristics are tested and guaranteed for the full 5.0 - 200 MHz frequency range.
2. Freescale 100% distortion and noise figure testing is performed over the 5.0 - 175 MHz frequency range. Cross modulation and composite triple beat testing are with 22 - channel loading; Video carriers used are:

T7 - T13	7.0 - 43.0 MHz	7 - Channels
2 - 6	55.25 - 83.25 MHz	5 - Channels
A - 7	121.25 - 175.25 MHz	10 - Channels

3. Video carriers used for 12 - Channel typical performances are T7 - 6; For 26 - Channel typical performance, Channels 8, 9, 10 and 11 are added to the 22 - Channel carriers listed above.

freescale semiconductor

Table 2. Electrical Characteristics (V_{CC} = 24 Vdc, T_C = +30°C, 75 Ω system) **(continued)**

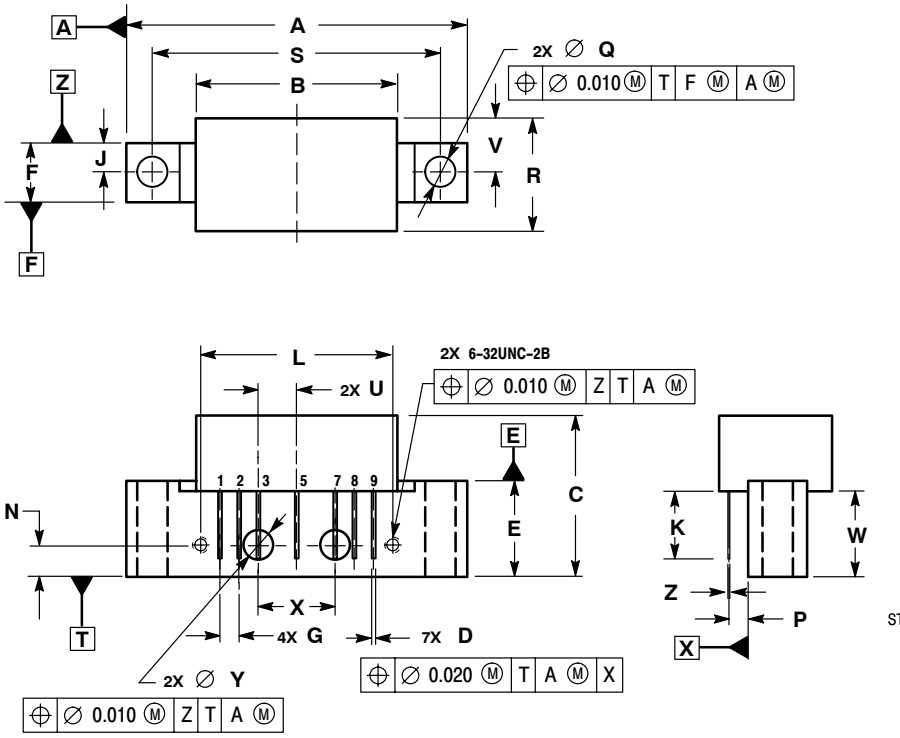
Characteristic	Symbol	MHW1244	Units
Composite Triple Beat Distortion @ +50 dBmV per ch. 22-Channel FLAT (5.0 - 175 MHz) (2) 26-Channel FLAT (5.0 - 200 MHz) (3)	 CTB_{22} CTB_{26}	 - 68 Max - 67.5 Typ	 dBc dBc
Individual Triple Beat Distortion @ +50 dBmV per ch. Mid-Split (5.0 - 120 MHz) T11, T12 and CH2 @ 123.25 MHz High-Split (5.0 - 175 MHz) T13, CH2 and CH5 @ 175.5 MHz	 TB_3 TB_3	 - 87 Typ - 84 Typ	 dBc dBc
Second Order Distortion @ +50 dBmV per ch. High-Split (5.0 - 175 MHz) CH2, CHA @ 176.5 MHz	IMD	- 72 Max	dBc
Noise Figure High-Split (5.0 - 175 MHz) (2)	NF	5.0 Max	dB
DC Current	I_{DC}	210 Typ/240 Max	mAdc

1. Response and return loss characteristics are tested and guaranteed for the full 5.0 - 200 MHz frequency range.
2. Freescale 100% distortion and noise figure testing is performed over the 5.0 - 175 MHz frequency range. Cross modulation and composite triple beat testing are with 22-channel loading; Video carriers used are:

T7 - T13	7.0 - 43.0 MHz	7-Channels
2 - 6	55.25 - 83.25 MHz	5-Channels
A - 7	121.25 - 175.25 MHz	10-Channels

3. Video carriers used for 12-Channel typical performances are T7 - 6; For 26-Channel typical performance, Channels 8, 9, 10 and 11 are added to the 22-Channel carriers listed above.

PACKAGE DIMENSIONS



DIM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS 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

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
LDCForFreescaleSemiconductor@hibbertgroup.com

RoHS-compliant and/or Pb-free versions of Freescale products have the functionality and electrical characteristics of their non-RoHS-compliant and/or non-Pb-free counterparts. For further information, see http://www.freescale.com or contact your Freescale sales representative.

For information on Freescale’s Environmental Products program, go to http://www.freescale.com/epp.

freescale™ semiconductor

Document Number: MHW1244N
Rev. 4, 5/2006