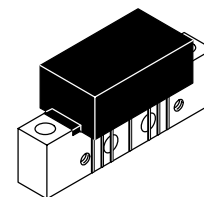


Replaced by MHW1244N. There are no form, fit or function changes with this part replacement. N suffix indicates RoHS compliant part.

MHW1244

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



CASE 1302-01, STYLE 1

CATV Amplifier Module

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

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, $T_C = +30^\circ\text{C}$, 75 Ω system)

Characteristic	Symbol	MHW1244	Units
Power Gain @ 10 MHz	G_p	24.0 \pm 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	\pm 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.

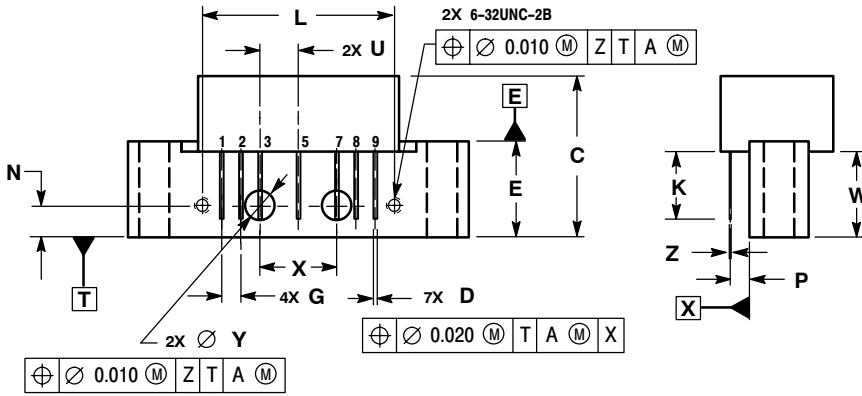
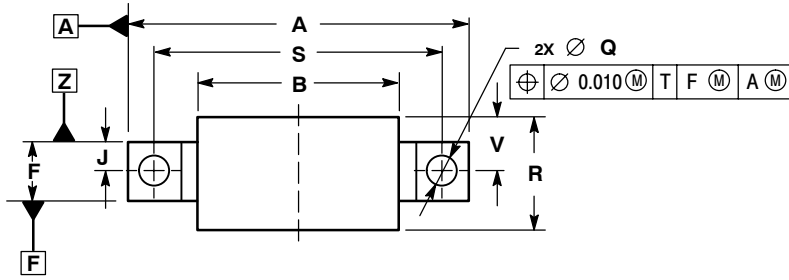
Table 2. Electrical Characteristics ($V_{CC} = 24 \text{ Vdc}$, $T_C = +30^\circ\text{C}$, 75Ω system) (continued)

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

- Response and return loss characteristics are tested and guaranteed for the full 5.0 - 200 MHz frequency range.
- 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
- 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		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 B

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

Information in this document is provided solely to enable system and software implementers to use Freescale Semiconductor products. There are no express or implied copyright licenses granted hereunder to design or fabricate any integrated circuits or integrated circuits based on the information in this document.

Freescale Semiconductor reserves the right to make changes without further notice to any products herein. Freescale Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Freescale Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters that may be provided in Freescale Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals", must be validated for each customer application by customer's technical experts. Freescale Semiconductor does not convey any license under its patent rights nor the rights of others. Freescale Semiconductor products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Freescale Semiconductor product could create a situation where personal injury or death may occur. Should Buyer purchase or use Freescale Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold Freescale Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Freescale Semiconductor was negligent regarding the design or manufacture of the part.

Freescale™ and the Freescale logo are trademarks of Freescale Semiconductor, Inc. All other product or service names are the property of their respective owners.
© Freescale Semiconductor, Inc. 2006. All rights reserved.

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>.