

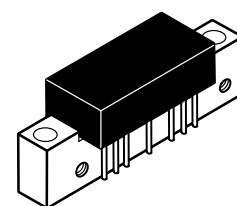
## The RF Line Low Distortion Wideband Amplifiers

... designed specifically for broadband applications requiring low distortion characteristics. Specified for use as return amplifiers for mid-split and high-split 2-way cable TV systems. Features all gold metallization system.

- Guaranteed Broadband Power Gain @  $f = 5.0\text{--}200$  MHz
- Guaranteed Broadband Noise Figure @  $f = 5.0\text{--}175$  MHz
- Superior Gain, Return Loss and DC Current Stability with Temperature
- All Gold Metallization
- All Ion-Implanted Arsenic Emitter Transistor Chips with 6.0 GHz  $f_T$ 's
- Circuit Design Optimized for Good RF Stability Under High VSWR Load Conditions
- Transformers Designed to Insure Good Low Frequency Gain Stability versus Temperature

**MHW1134**  
**MHW1184**  
**MHW1224**  
**MHW1244**

13.0 dB  
18.0 dB  
22.0 dB  
24.0 dB  
5.0–200 MHz  
CATV HIGH-SPLIT  
REVERSE AMPLIFIERS



CASE 714-06, STYLE 1

### ABSOLUTE 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

### ELECTRICAL CHARACTERISTICS ( $V_{CC} = 24$ Vdc, $T_C = +30^\circ\text{C}$ , 75 $\Omega$ system)

Characteristic	Symbol	MHW1134	MHW1184	MHW1224	MHW1244	Units
Power Gain @ 10 MHz	$G_p$	13.0 $\pm$ 0.5	18.5 $\pm$ 0.5	22.0 $\pm$ 0.5	24.0 $\pm$ 0.5	dB
Frequency Range (Response/Return Loss) Note 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)	F	$\pm$ 0.2 Max				dB
Input/Output Return Loss (5.0–200 MHz) Note 1	IRL/ORL	18.0 Min				dB
Cross Modulation Distortion @ +50 dBmV per ch.						
12-Channel FLAT (5.0–120 MHz)	$XM_{12}$	-70 Typ	-68 Typ	-67 Typ	-66 Typ	dB
22-Channel FLAT (5.0–175 MHz) (2) (3)	$XM_{22}$	-65 Max	-64 Max	-62 Max	-61 Max	dB
26-Channel FLAT (5.0–200 MHz)	$XM_{26}$	-65 Typ	-64 Typ	-62 Typ	-61 Typ	dB

#### NOTES:

1. Response and return loss characteristics are tested and guaranteed for the full 5.0–200 MHz frequency range.
2. Motorola 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.

**ELECTRICAL CHARACTERISTICS — continued** ( $V_{CC} = 24 \text{ Vdc}$ ,  $T_C = +30^\circ\text{C}$ ,  $75 \Omega$  system)

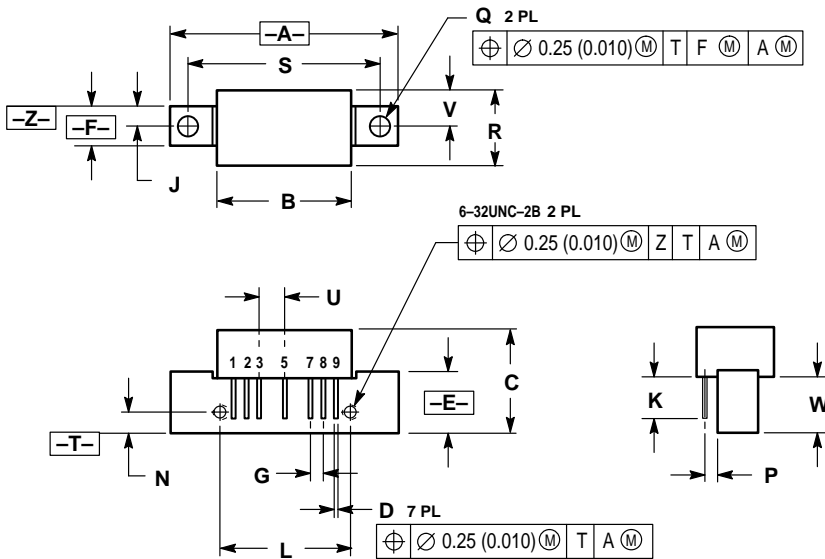
Characteristic	Symbol	MHW1134	MHW1184	MHW1224	MHW1244	Units
Composite Triple Beat Distortion @ +50 dBmV per ch. 22-Channel FLAT (5.0–175 MHz) Notes 2 and 3 26-Channel FLAT (5.0–200 MHz)	CTB <sub>22</sub> CTB <sub>26</sub>	–73 Max –71 Typ	–72 Max –70 Typ	–69 Max –68.5 Typ	–68 Max –67.5 Typ	dB dB
Individual 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 <sub>3</sub> TB <sub>3</sub>	–90 Typ –87 Typ	–88 Typ –85 Typ	–88 Typ –85 Typ	–87 Typ –84 Typ	dB dB
Second Order Distortion @ +50 dBmV per ch. High-Split (5.0–175 MHz) CH2, CHA @ 176.5 MHz	IMD	–72 Max	–72 Max	–72 Max	–72 Max	dB
Noise Figure High-Split (5.0–175 MHz) Note 2	NF	7.0 Max	5.5 Max	5.5 Max	5.0 Max	dB
DC Current	I <sub>DC</sub>	210 Typ/240 Max				mAdc

**NOTES:**

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



- NOTES:  
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
 2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	—	1.775	—	45.08
B	—	1.085	—	27.56
C	—	0.840	—	21.34
D	0.018	0.022	0.46	0.56
E	0.465	0.510	11.81	12.95
F	0.300	0.325	7.62	8.25
G	0.100 BSC		2.54 BSC	
J	0.156 BSC		3.96 BSC	
K	0.315	0.355	8.00	8.50
L	1.00 BSC		25.40 BSC	
N	0.165 BSC		4.10 BSC	
P	0.100 BSC		2.54 BSC	
Q	0.148	0.168	3.76	4.27
R	—	0.595	—	15.11
S	1.500 BSC		38.10 BSC	
U	0.200 BSC		5.08 BSC	
V	0.280 BSC		7.11 BSC	
W	0.435	0.450	11.05	11.43

- STYLE 1:  
 PIN 1. RF INPUT  
 2. GROUND  
 3. GROUND  
 4. DELETED  
 5. VDC  
 6. DELETED  
 7. GROUND  
 8. GROUND  
 9. RF OUTPUT

**CASE 714-06  
 ISSUE K**

Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola 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 can and do vary in different applications. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Motorola does not convey any license under its patent rights nor the rights of others. Motorola 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 Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola 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 Motorola was negligent regarding the design or manufacture of the part. Motorola and are registered trademarks of Motorola, Inc. Motorola, Inc. is an Equal Opportunity/Affirmative Action Employer.

**Literature Distribution Centers:**

USA: Motorola Literature Distribution; P.O. Box 20912; Phoenix, Arizona 85036.

EUROPE: Motorola Ltd.; European Literature Centre; 88 Tanners Drive, Blakelands, Milton Keynes, MK14 5BP, England.

JAPAN: Nippon Motorola Ltd.; 4-32-1, Nishi-Gotanda, Shinagawa-ku, Tokyo 141, Japan.

ASIA PACIFIC: Motorola Semiconductors H.K. Ltd.; Silicon Harbour Center, No. 2 Dai King Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong.



**MOTOROLA**



MHW1134/D

