



# 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

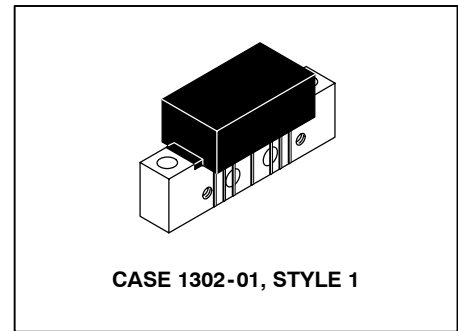
- CATV Systems Operating in the 5 to 200 MHz Frequency Range
- Designed for Broadband Applications Requiring Low Distortion Characteristics
- Specified for Use as a Return Path Amplifier for Low-, Mid- and High-Split 2-Way Cable TV Systems

## Description

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

**MHW1244N**

**5- 200 MHz, 24.0 dB  
 26- CHANNEL  
 CATV HIGH-SPLIT  
 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  $\Omega$  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.<br>12-Channel FLAT (5.0 - 120 MHz)<br>22-Channel FLAT (5.0 - 175 MHz) (2) (3)<br>26-Channel FLAT (5.0 - 200 MHz) | XMD <sub>12</sub><br>XMD <sub>22</sub><br>XMD <sub>26</sub> | - 66 Typ<br>- 61 Max<br>- 61 Typ | dBc<br>dBc<br>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.

ARCHIVE INFORMATION

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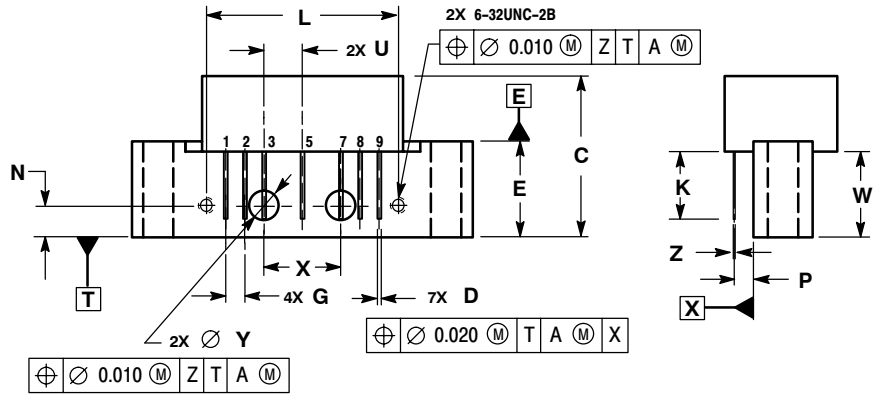
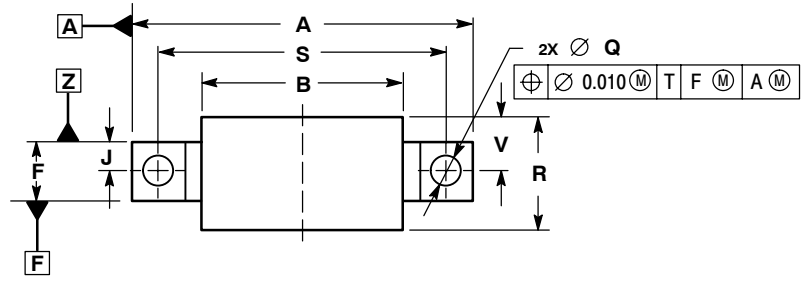
**Table 2. Electrical Characteristics** ( $V_{CC} = 24 \text{ Vdc}$ ,  $T_C = +30^\circ\text{C}$ ,  $75 \Omega$  system) (continued)

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

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**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 E**

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