



Gallium Arsenide CATV Amplifier Module

Features

- Specified for 79-, 112- and 132-Channel Loading
- Excellent Distortion Performance
- Higher Output Capability
- GaAs FET Transistor Technology
- Unconditionally Stable Under All Load Conditions

Applications

- CATV Systems Operating in the 40 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, 40 to 870 MHz, CATV GaAs Forward Power Doubler Amplifier Module
- Replaced MHW9187. There are no form, fit or function changes with this part replacement.
- RoHS Compliant

MHW9187N

**870 MHz
20 dB GAIN
132-CHANNEL
GaAs CATV AMPLIFIER MODULE**

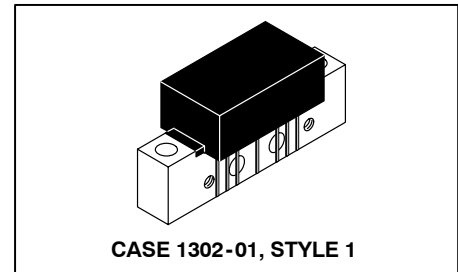


Table 1. Maximum Ratings

| Rating | Symbol | Value | Unit |
|----------------------------------|-----------|-------------|------|
| RF Voltage Input (Single Tone) | V_{in} | +70 | 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. 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 | 0.7 | 2 | kV |

Table 3. Electrical Characteristics ($V_{CC} = 24$ Vdc, $T_C = +45^\circ\text{C}$, 75 Ω system unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|--|--------|-----------------------------|-------------|-------------|------|
| Frequency Range | BW | 40 | — | 870 | MHz |
| Power Gain 870 MHz | G_p | 19.4 | 20 | 20.6 | dB |
| Slope 40-870 MHz | S | 0 | 0.5 | 1.0 | dB |
| Gain Flatness (40-870 MHz, Peak-to-Valley) | G_F | — | — | 0.5 | dB |
| Return Loss — Input ($Z_o = 75$ Ohms) | IRL | 20 18 16 | — — — | — — — | dB |
| Return Loss — Output ($Z_o = 75$ Ohms) | ORL | 20 18 | — — | — — | dB |
| | | 40-160 Mhz $f > 160$ Mhz | | | |

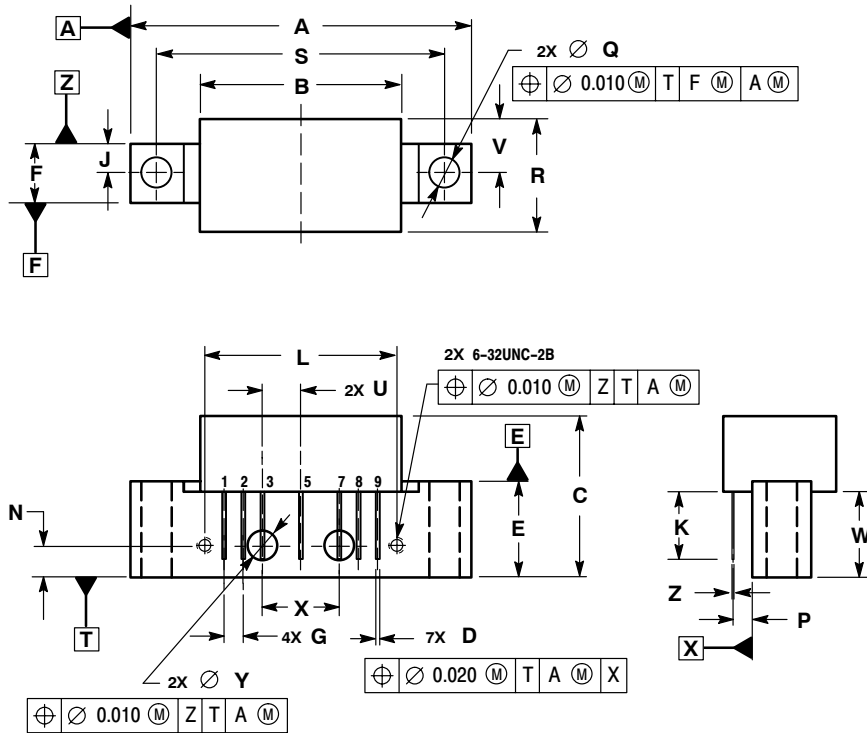
LIFETIME BUY

LAST SHIP 30 JUN 08
LAST ORDER 31 DEC 07

Table 3. Electrical Characteristics ($V_{CC} = 24 \text{ Vdc}$, $T_C = +45^\circ\text{C}$, 75Ω system unless otherwise noted) (continued)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|-------------|-----|-----|-----|------|
| Composite Second Order | | | | | dE |
| ($V_{out} = +48 \text{ dBmV/ch.}$, Worst Case) 132-Channel FLAT | CSO_{132} | — | -64 | -62 | |
| ($V_{out} = +48 \text{ dBmV/ch.}$, Worst Case) 112-Channel FLAT | CSO_{112} | — | -66 | -64 | |
| ($V_{out} = +48 \text{ dBmV/ch.}$, Worst Case) 79-Channel FLAT | CSO_{79} | — | -70 | -68 | |
| ($V_{out} = +56 \text{ dBmV @ 870 Mhz Equiv}$) 112-Channel, 12db Tilt | CSO_{112} | — | -65 | -63 | |
| ($V_{out} = +56 \text{ dBmV @ 870 Mhz Equiv}$) 112-Channel, 13.5db Tilt | CSO_{112} | — | -64 | -62 | |
| ($V_{out} = +56 \text{ dBmV @ 870 Mhz Equiv}$) 112-Channel, 17db Tilt | CSO_{112} | — | -63 | -61 | |
| ($V_{out} = +58 \text{ dBmV @ 870 Mhz Equiv}$) 79-Channel, 12db Tilt | CSO_{79} | — | -69 | -67 | |
| ($V_{out} = +58 \text{ dBmV @ 870 Mhz Equiv}$) 79-Channel, 13.5db Tilt | CSO_{79} | — | -74 | -72 | |
| ($V_{out} = +58 \text{ dBmV @ 870 Mhz Equiv}$) 79-Channel, 17db Tilt | CSO_{79} | — | -73 | -71 | |
| Cross Modulation Distortion @ Ch 2 | | | | | dBc |
| ($V_{out} = +48 \text{ dBmV/ch.}$, FM = 55 MHz) 132-Channel FLAT | XMD_{132} | — | -57 | -55 | |
| ($V_{out} = +48 \text{ dBmV/ch.}$, FM = 55 MHz) 112-Channel FLAT | XMD_{112} | — | -59 | -57 | |
| ($V_{out} = +48 \text{ dBmV/ch.}$, FM = 55 MHz) 79-Channel FLAT | XMD_{79} | — | -62 | -60 | |
| ($V_{out} = +56 \text{ dBmV @ 870 Mhz Equiv}$) 112-Channel, 12db Tilt | XMD_{112} | — | -53 | -51 | |
| ($V_{out} = +56 \text{ dBmV @ 870 Mhz Equiv}$) 112-Channel, 13.5db Tilt | XMD_{112} | — | -55 | -53 | |
| ($V_{out} = +56 \text{ dBmV @ 870 Mhz Equiv}$) 112-Channel, 17db Tilt | XMD_{112} | — | -58 | -56 | |
| ($V_{out} = +58 \text{ dBmV @ 870 Mhz Equiv}$) 79-Channel, 12db Tilt | XMD_{79} | — | -60 | -47 | |
| ($V_{out} = +58 \text{ dBmV @ 870 Mhz Equiv}$) 79-Channel, 13.5db Tilt | XMD_{79} | — | -62 | -60 | |
| ($V_{out} = +58 \text{ dBmV @ 870 Mhz Equiv}$) 79-Channel, 17db Tilt | XMD_{79} | — | -67 | -65 | |
| Composite Triple Beat | | | | | dBc |
| ($V_{out} = +48 \text{ dBmV/ch.}$, Worst Case) 132-Channel FLAT | CTB_{132} | — | -60 | -56 | |
| ($V_{out} = +48 \text{ dBmV/ch.}$, Worst Case) 112-Channel FLAT | CTB_{112} | — | -64 | -60 | |
| ($V_{out} = +48 \text{ dBmV/ch.}$, Worst Case) 79-Channel FLAT | CTB_{79} | — | -68 | -66 | |
| ($V_{out} = +56 \text{ dBmV @ 870 Mhz Equiv}$) 112-Channel, 12db Tilt | CTB_{112} | — | -60 | -58 | |
| ($V_{out} = +56 \text{ dBmV @ 870 Mhz Equiv}$) 112-Channel, 13.5db Tilt | CTB_{112} | — | -61 | -59 | |
| ($V_{out} = +56 \text{ dBmV @ 870 Mhz Equiv}$) 112-Channel, 17db Tilt | CTB_{112} | — | -64 | -62 | |
| ($V_{out} = +58 \text{ dBmV @ 870 Mhz Equiv}$) 79-Channel, 12db Tilt | CTB_{79} | — | -66 | -64 | |
| ($V_{out} = +58 \text{ dBmV @ 870 Mhz Equiv}$) 79-Channel, 13.5db Tilt | CTB_{79} | — | -71 | -69 | |
| ($V_{out} = +58 \text{ dBmV @ 870 Mhz Equiv}$) 79-Channel, 17db Tilt | CTB_{79} | — | -74 | -72 | |
| Noise Figure | | | | | dB |
| 50 MHz | NF | — | 4.0 | 4.5 | |
| 550 MHz | | — | 3.5 | 4.5 | |
| 750 MHz | | — | 3.5 | 4.5 | |
| 870 MHz | | — | 4.0 | 4.5 | |
| DC Current ($V_{DC} = 24 \text{ V}$, $T_C = 45^\circ\text{C}$) | I_{DC} | 410 | 425 | 440 | mA |

PACKAGE DIMENSIONS



- NOTES:
 1. DIMENSIONS ARE IN INCHES.
 2. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M, 1994.

| 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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