

The RF Line

Gallium Arsenide CATV Amplifier Module

MHW9186A

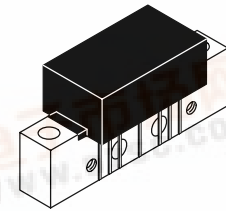
Features

- Specified for 79-, 112- and 132-Channel Loading
- Excellent Distortion Performance
- Built-in Input Diode Protection
- GaAs FET Transistor Technology
- Unconditionally Stable Under All Load Conditions
- Improved Ruggedness

870 MHz
18.5 dB GAIN
132-CHANNEL
GaAs CATV AMPLIFIER

Applications

- CATV Systems Operating in the 40 to 870 MHz Frequency Range
- Input Stage Amplifier in Optical Nodes, Line Extenders and Trunk Distribution Amplifiers for CATV Systems
- Output Stage Amplifier on Applications Requiring Low Power Dissipation and High Output Performance
- Driver Amplifier in Linear General Purpose Applications



CASE 1302-01, STYLE 1

Description

- 24 Vdc Supply, 40 to 870 MHz, CATV GaAs Forward Amplifier

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|----------------------------------|-----------|-------------|------|
| RF Voltage Input (Single Tone) | V_{in} | +65 | dBmV |
| DC Supply Voltage | V_{CC} | +26 | Vdc |
| Operating Case Temperature Range | T_C | -20 to +100 | °C |
| Storage Temperature Range | T_{stg} | -40 to +100 | °C |

ESD MAXIMUM RATINGS

| Rating | Input Value | Output Value | Unit |
|-------------------------------------|-------------|--------------|------|
| Surge Voltage per IEC 1000-4-5 | 300 | 300 | V |
| Human Body Model per Mil. Std. 1686 | 2 | 2 | kV |

ELECTRICAL CHARACTERISTICS ($V_{CC} = 24$ Vdc, $T_C = +30^\circ\text{C}$, 75 Ω system unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|--|--------|-----|------|------|------|
| Frequency Range | BW | 40 | — | 870 | MHz |
| Power Gain | G_p | 18 | 18.5 | 19.5 | dB |
| Slope | S | 0.1 | 0.6 | 1.2 | dB |
| Gain Flatness (40-870 MHz, Peak-to-Valley) | G_F | — | 0.3 | 0.8 | dB |
| Return Loss — Input ($Z_0 = 75$ Ohms) | IRL | 20 | — | — | dB |
| | | 19 | — | — | |
| | | 18 | — | — | |
| Return Loss — Output ($Z_0 = 75$ Ohms) | ORL | 20 | — | — | dB |
| | | 19 | — | — | |
| | | 18 | — | — | |

Freescale Semiconductor, Inc.

ELECTRICAL CHARACTERISTICS - continued ($V_{CC} = 24 \text{ Vdc}$, $T_C = +30^\circ\text{C}$, 75Ω system unless otherwise noted)

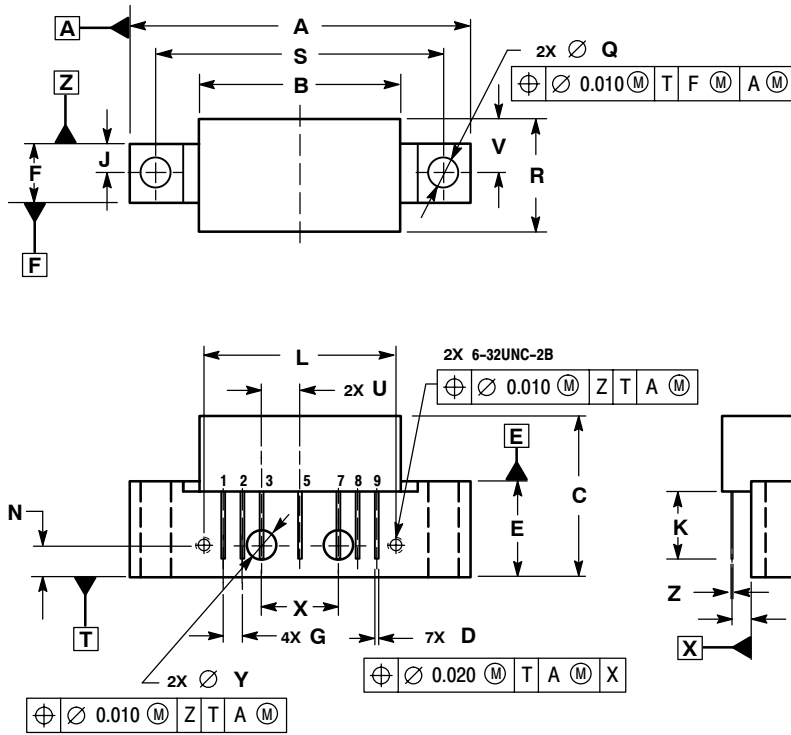
| Characteristic | | Symbol | Min | Typ | Max | Unit |
|--|------------------|-------------|-----|-----|-----|------|
| Composite Second Order | | | | | | dBc |
| ($V_{out} = +44 \text{ dBmV/ch.}$, Worst Case) | 132-Channel FLAT | CSO_{132} | — | -67 | -60 | |
| ($V_{out} = +46 \text{ dBmV/ch.}$, Worst Case) | 112-Channel FLAT | CSO_{112} | — | -65 | -61 | |
| ($V_{out} = +48 \text{ dBmV/ch.}$, Worst Case) | 79-Channel FLAT | CSO_{79} | — | -72 | -64 | |
| Cross Modulation Distortion @ Ch 2 | | | | | | dBc |
| ($V_{out} = +44 \text{ dBmV/ch.}$, FM = 55 MHz) | 132-Channel FLAT | XMD_{132} | — | -58 | -52 | |
| ($V_{out} = +46 \text{ dBmV/ch.}$, FM = 55 MHz) | 112-Channel FLAT | XMD_{112} | — | -58 | -52 | |
| ($V_{out} = +48 \text{ dBmV/ch.}$, FM = 55 MHz) | 79-Channel FLAT | XMD_{79} | — | -58 | -52 | |
| Composite Triple Beat | | | | | | dBc |
| ($V_{out} = +44 \text{ dBmV/ch.}$, Worst Case) | 132-Channel FLAT | CTB_{132} | — | -62 | -58 | |
| ($V_{out} = +46 \text{ dBmV/ch.}$, Worst Case) | 112-Channel FLAT | CTB_{112} | — | -61 | -58 | |
| ($V_{out} = +48 \text{ dBmV/ch.}$, Worst Case) | 79-Channel FLAT | CTB_{79} | — | -64 | -60 | |
| Noise Figure | 50 MHz | NF | — | 4.6 | 6.0 | dB |
| | 870 MHz | | — | 3.7 | 6.0 | |
| DC Current ($V_{DC} = 24 \text{ V}$, $T_C = -20^\circ$ to $+100^\circ\text{C}$) | | I_{DC} | 230 | 250 | 265 | mA |

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NOTES

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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 B

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