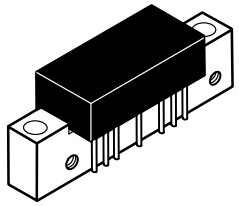
## The RF Line
# 450 MHz CATV Amplifier

. . . designed for broadband applications requiring low distortion characteristics. Specified for use as a CATV trunk–line amplifier. Features ion–implanted arsenic emitter transistors with 7.0 GHz $f_T$, and an all gold metallization system.

- Specified for 53– and 60–Channel Performance
- Broadband Power Gain — @ f = 40–450 MHz
  $G_p$ = 12.5 dB (Typ)
- Broadband Power Gain — @ f = 40–450 MHz
  $G_p$ = 12.5 dB (Typ)
- Broadband Noise Figure — @ f = 450 MHz
  NF = 7.0 dB (Typ)
- Superior Gain, Return Loss and DC Current Stability with Temperature

**MHW5122A**

**12.5 dB GAIN**
**450 MHz**
**60–CHANNEL**
**CATV TRUNK AMPLIFIER**



**CASE 714–06, STYLE 1**

### ABSOLUTE 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 |

### ELECTRICAL CHARACTERISTICS ($V_{CC}$ = 24 Vdc, $T_C$ = +30°C, 75 Ω system unless otherwise noted)

| Characteristic | | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Frequency Range | | BW | 40 | — | 450 | MHz |
| Power Gain — 50 MHz | | $G_p$ | 12 | 12.5 | 13 | dB |
| Slope | | S | +0.2 | +0.7 | +1.5 | dB |
| Gain Flatness (Peak To Valley) | | — | — | 0.2 | 0.4 | dB |
| Return Loss — Input/Output ($Z_o$ = 75 Ohms) | 40–450 MHz | IRL/ORL | 18 | — | — | dB |
| Second Order Intermodulation Distortion | | IMD | | | | dB |
| ($V_{out}$ = +46 dBmV per ch., Ch 2, M6, M15) | | | — | –78 | — | |
| ($V_{out}$ = +46 dBmV per ch., Ch 2, M13, M22) | | | — | — | –72 | |
| Cross Modulation Distortion | 53–Channel FLAT | $XMD_{53}$ | — | –63 | — | dB |
| ($V_{out}$ = +46 dBmV per ch.) | 60–Channel FLAT | $XMD_{60}$ | — | –63 | –61 | |
| Composite Triple Beat | 53–Channel FLAT | $CTB_{53}$ | — | –63 | — | dB |
| ($V_{out}$ = +46 dBmV per ch.) | 60–Channel FLAT | $CTB_{60}$ | — | –61 | –58 | |
| DIN (European Applications Only)* | | | | | | dBμV** |
| 300 MHz — (CH V + Q – P @ W) | | DIN1 | — | 125 | — | |
| 400 MHz — (CH M8 + M15 – M9 @ M14) | | DIN2 | — | 124 | — | |
| 450 MHz — (CH M20 + M23 – M22 @ M21) | | DIN3 | — | 123 | — | |
| Noise Figure (f = 450 MHz) | | NF | — | 7.0 | 8.0 | dB |
| DC Current | | $I_{DC}$ | — | 200 | 240 | mA |

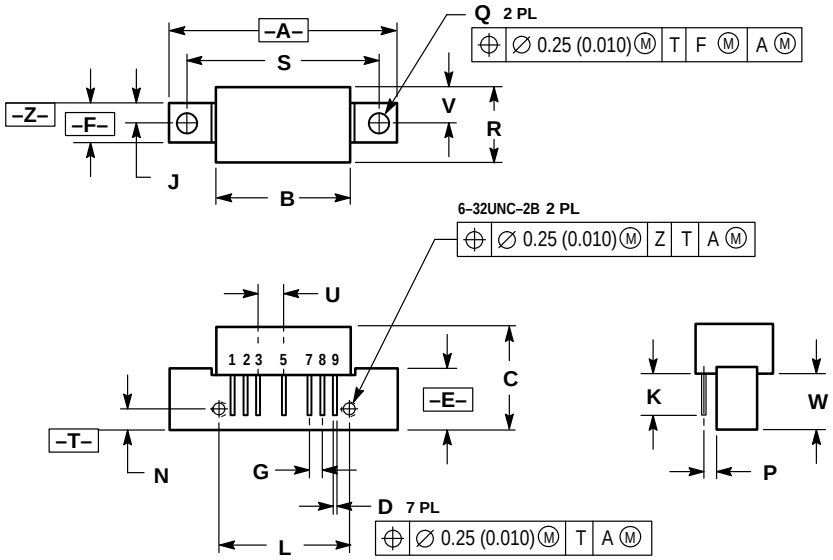
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***DIN (European Applications Only)**

| NCTA Channel Designation | Frequency (MHz) | DIN Output Level (dBmV)** (Typ) | DIN Beat Level dB Relative to Ref. Ch. |
|---|---|---|---|
| P | 253.25 | +59 | ≤ –60 |
| Q | 259.25 | +59 | |
| V | 289.25 | +65 | |
| W (Ref.) | 295.25 | +65 | |
| M8 | 361.25 | +58 | ≤ –60 |
| M9 | 367.25 | +58 | |
| M14 (Ref.) | 397.25 | +64 | |
| M15 | 403.25 | +64 | |
| M20 | 433.25 | +63 | ≤ –60 |
| M21 (Ref.) | 439.25 | +63 | |
| M22 | 445.25 | +57 | |
| M23 | 451.25 | +57 | |

** DIN (dBμV) = Reference Channel Level (dBmV) + 60 dB

## PACKAGE DIMENSIONS




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

| | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| DIM | 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**

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