# MHW591

## The RF Line

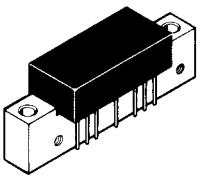
### LOW DISTORTION WIDEBAND AMPLIFIER

. . . low-noise, high-gain, ultra-linear, thin-film hybrid. Designed for multi-purpose broadband 50 to 100 ohm system applications requiring superior gain and current stability with temperature.

- Supply Voltage = 13.6 V Nominal
- Broadband Power Gain –
  $G_p$ = 36.5 dB (Typ) @ f = 1-250 MHz
- Broadband Noise Figure –
  NF = 3.7 dB (Typ) @ f = 30 MHz
- Ideal for Low Level Wideband Linear Amplifiers and AM Modulators in HF/SSB, VHF Communications Equipment and RF Instrumentation Applications

**1.0–250 MHz**

**HIGH GAIN AMPLIFIER**

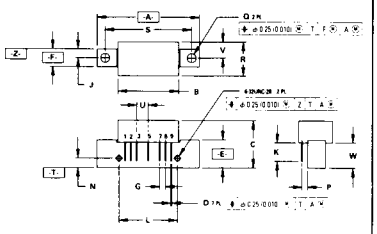


**MAXIMUM RATINGS**

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Supply Voltage | $V_{DC}$ | 16 | Vdc |
| Input Power | $P_{in}$ | 3.0 | dBm |
| Operating Case Temperature Range | $T_C$ | -20 to +90 | °C |
| Storage Temperature Range | $T_{stg}$ | -40 to +100 | °C |

**ELECTRICAL CHARACTERISTICS** ($V_{DC}$ = 13.6 Vdc, $Z_o$ = 50 Ω, $T_C$ = 25°C. All characteristics guaranteed over bandwidth listed under "Frequency Range", unless specified otherwise.)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| Frequency Range | BW | 1.0 | – | 250 | MHz |
| Power Gain | $G_p$ | 34.5 | 36.5 | 38 | dB |
| Gain Flatness | F | – | – | ±1.5 | dB |
| Voltage Standing Wave Ratio, In/Out | VSWR | | | | |
| (f = 1.0-30 MHz) | | – | 1.5:1 | – | |
| (f = 30-250 MHz) | | – | 2:1 | – | |
| 1 dB Compression | P1 | | | | mW |
| (f = 30 MHz) | | 650 | 800 | – | |
| (f = 100 MHz) | | – | 700 | – | |
| (f = 250 MHz) | | – | 250 | – | |
| Peak Envelope Power | PEP | | | | mW |
| (IMD3 = -30 dB, f = 30 MHz) | | 700 | 850 | – | |
| (IMD3 = -30 dB, f = 100 MHz) | | – | 600 | – | |
| (IMD3 = -30 dB, f = 250 MHz) | | – | 300 | – | |
| Noise Figure | NF | | | | dB |
| (f = 30 MHz) | | – | 3.7 | 5.0 | |
| (f = 100 MHz) | | – | 3.7 | – | |
| (f = 250 MHz) | | – | 4.5 | – | |
| DC Voltage | $V_{DC}$ | – | 13.6 | 16 | V |
| DC Current | $I_{DC}$ | – | 300 | 340 | mA |



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

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

| DIM | MILLIMETERS MIN | MILLIMETERS MAX | INCHES MIN | INCHES MAX |
|---|---|---|---|---|
| A | – | 45.08 | – | 1.775 |
| B | 26.42 | 26.92 | 1.040 | 1.060 |
| C | 20.57 | 21.34 | 0.810 | 0.840 |
| D | 0.46 | 0.56 | 0.018 | 0.022 |
| E | 11.81 | 12.95 | 0.465 | 0.510 |
| F | 7.62 | 8.25 | 0.300 | 0.325 |
| G | 2.54 BSC | | 0.100 BSC | |
| J | 3.96 BSC | | 0.156 BSC | |
| K | 8.00 | 8.50 | 0.315 | 0.355 |
| L | 25.40 BSC | | 1.00 BSC | |
| N | 4.19 BSC | | 0.165 BSC | |
| P | 2.54 BSC | | 0.100 BSC | |
| Q | 3.76 | 4.27 | 0.148 | 0.168 |
| R | – | 15.11 | – | 0.595 |
| S | 38.10 BSC | | 1.500 BSC | |
| U | 5.08 BSC | | 0.200 BSC | |
| V | 7.11 BSC | | 0.280 BSC | |
| W | 11.05 | 11.43 | 0.435 | 0.450 |

**CASE 714-04**

FIGURE 1 – POWER GAIN versus FREQUENCY

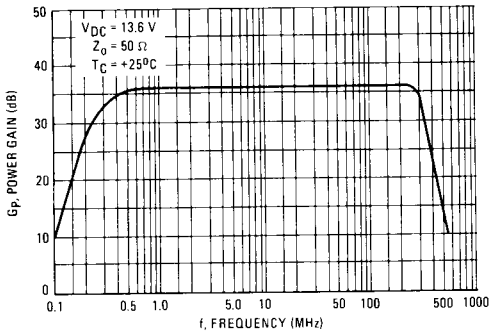



FIGURE 2 – POWER GAIN versus FREQUENCY

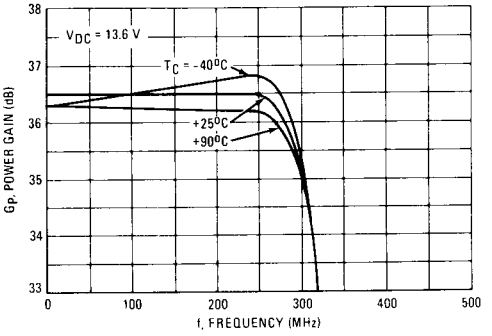



FIGURE 3 – POWER GAIN versus SUPPLY VOLTAGE

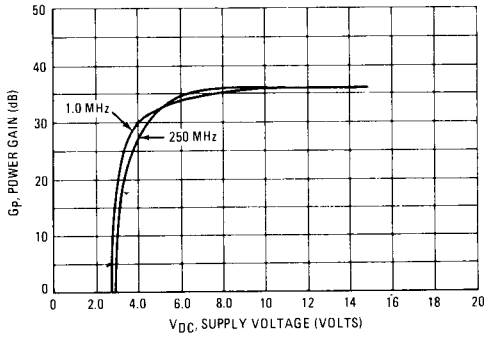



FIGURE 4 – NOISE FIGURE versus SUPPLY VOLTAGE

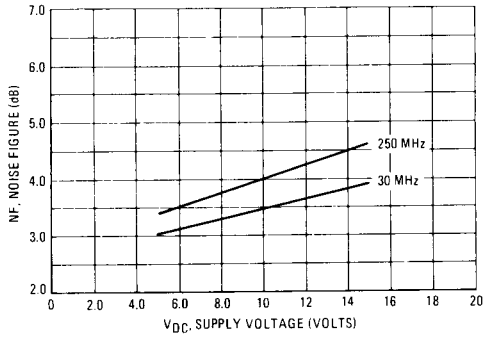



FIGURE 5 – OUTPUT POWER versus INPUT POWER

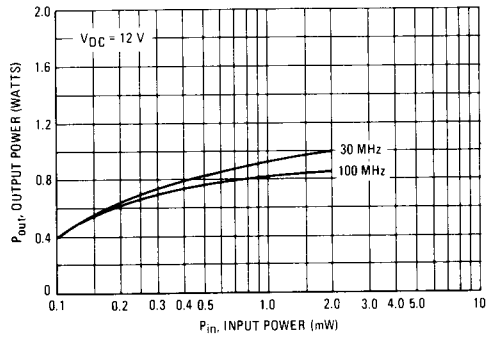
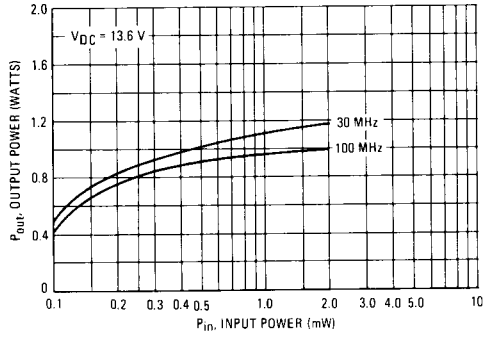



FIGURE 6 – OUTPUT POWER versus INPUT POWER




5

FIGURE 7 – INTERMODULATION DISTORTION versus OUTPUT POWER

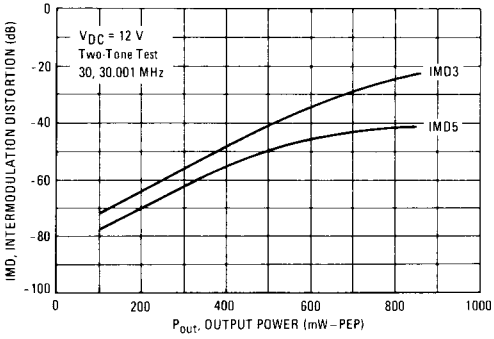



FIGURE 8 – INTERMODULATION DISTORTION versus OUTPUT POWER

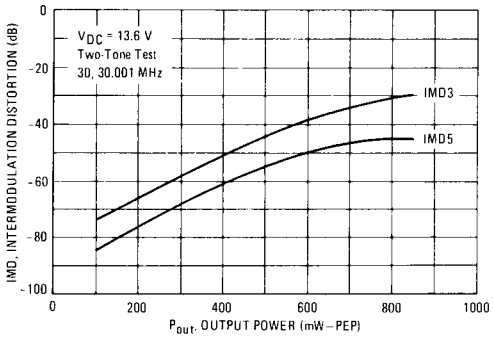
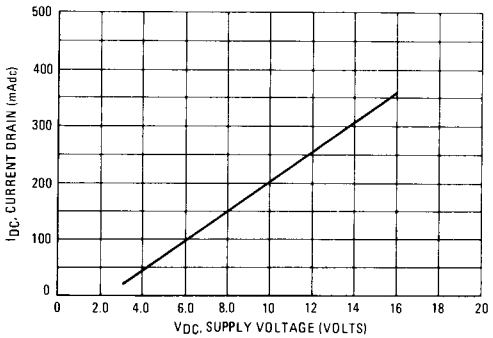



FIGURE 9 – DC CURRENT DRAIN versus SUPPLY VOLTAGE




5