

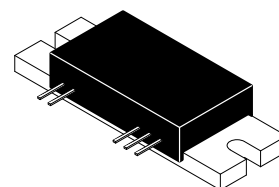
# UHF Silicon FET Power Amplifier

Designed specifically for the Pan European digital 8.0 watt, GSM mobile radio. The MHW913 is capable of wide power range control, operates from a 12.5 volt supply and requires less than 100 mW of RF input power.

- Specified 12.5 V Characteristics
  - RF Input Power  $\leq$  100 mW (20 dBm)
  - RF Output Power = 14 W
  - Minimum Gain = 21.5 dB
  - Minimum Efficiency = 35%
- 50  $\Omega$  Input/Output Impedance
- Guaranteed Stability and Ruggedness
- Epoxy Glass Substrate Eliminates Possibility of Substrate Fracture
- Circuit board photomaster available upon request by contacting RF Tactical Marketing in Phoenix, AZ.

**MHW913**

**14 WATT  
880–915 MHz  
RF POWER AMPLIFIER**



**CASE 301AB-02, STYLE 1**

## MAXIMUM RATINGS (Flange Temperature = 25°C)

| Rating                     | Symbol                              | Value        | Unit |
|----------------------------|-------------------------------------|--------------|------|
| DC Supply Voltage          | $V_{bias}$ ,<br>$V_{S2}$ , $V_{S3}$ | 5.0<br>15.6  | Volt |
| RF Input Power             | $P_{in}$                            | 200          | mW   |
| RF Output Power            | $P_{out}$                           | 15           | Watt |
| Storage Temperature        | $T_C$                               | – 30 to +100 | °C   |
| Operating Case Temperature | $T_{stg}$                           | – 30 to +100 | °C   |

## ELECTRICAL CHARACTERISTICS ( $V_{S2} = V_{S3} = 12.5$ Vdc, $V_{bias} = 4.8$ Vdc, $T_C = 25^\circ\text{C}$ , 50 $\Omega$ system, unless otherwise noted)

| Characteristic  | Symbol           | Min    | Max          | Unit |
|---|------------------|--------|--------------|------|
| Frequency Range   | BW               | 880    | 915          | MHz  |
| Efficiency ( $P_{out} = 14$ W) (1)  | $\eta$           | 35     | —            | %    |
| Power Gain ( $P_{out} = 14$ W) (1)  | $G_p$            | 21.5   | —            | dB   |
| Harmonic Output ( $P_{out} = 14$ W Reference) (1)   | $2f_o$<br>$3f_o$ | —<br>— | – 30<br>– 35 | dBc  |
| Input VSWR ( $P_{out} = 14$ W) (1)  | $VSWR_{in}$      | —      | 3:1          |      |
| Linearity — % AM in Output $P_{out} = 0.02$ to 14 W; 135 kHz, 1.0% AM on Input (1)          | —                |        | 6.0          | %    |
| Output Power at Decreased Voltage<br>( $P_{in} = 100$ mW, $V_{S2} = V_{S3} = 10.8$ Vdc) (1) | $P_{out}$        | 10     | —            | Watt |

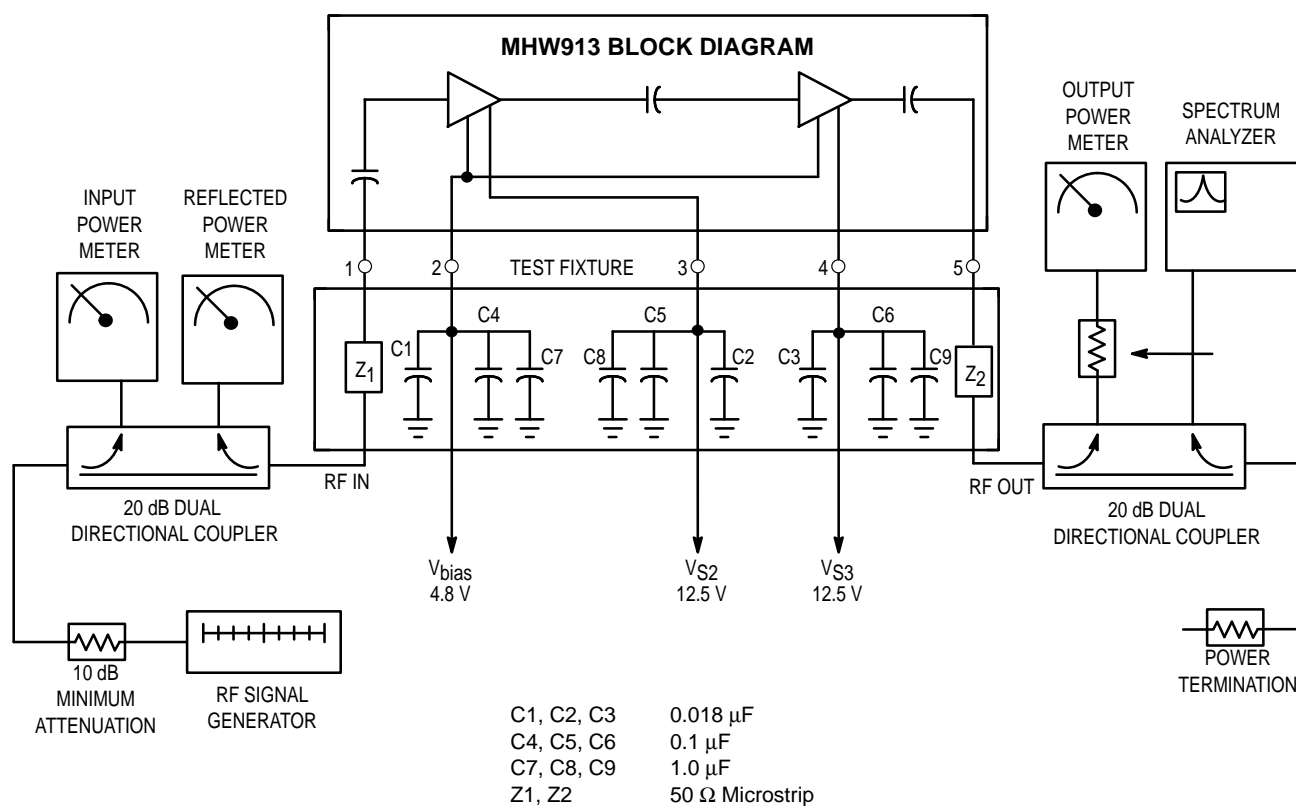
(1) Adjust  $P_{in}$  for specified  $P_{out}$ .

(continued)

**ELECTRICAL CHARACTERISTICS (continued)** ( $V_{S2} = V_{S3} = 12.5$  V,  $V_{bias} = 4.8$  V,  $T_C = 25^\circ\text{C}$ ,  $50\ \Omega$  system, unless otherwise noted)

|   |            |  |     |     |
|---|------------|--|-----|-----|
| Load Mismatch Stress ( $V_{supply} = 15.6$ Vdc, $P_{out} = 15$ W;<br>Load VSWR = 10:1, All Phase Angles) (1)  | —          | No degradation in<br>output power                            |     |     |
| Stability ( $V_{supply} = 10.8$ to $16$ Vdc; $P_{out} = 0.03$ to $14$ W;<br>Load VSWR = 6:1, All Phase Angles) (1)  | —          | All spurious outputs more than<br>60 dB below desired signal |     |     |
| Quiescent Current (With No RF Applied)<br>( $V_{S2} = V_{S3} = 12.5$ Vdc, $V_{bias} = 4.8$ Vdc)   | $I_{sq}$   | —  | 500 | mA  |
| Leakage Current ( $P_{in} = 0$ mW, $V_{S2} = V_{S3} = 12.5$ Vdc, $V_b = 0$ Vdc)   | $I_L$      | —  | 0.6 | mA  |
| Bias $P_{in}$ Current ( $P_{out} = 14$ W) (1)   | $I_{bias}$ | —  | 0.8 | mA  |
| Noise Power (In 30 kHz Bandwidth, 20 MHz above $f_0$ )<br>( $P_{out} = 0.03$ to $14$ W, $V_{S2} = V_{S3} = 10.8$ to $15.6$ Vdc; $V_{bias} = 4.8$ Vdc) (1) | —          | —  | -70 | dBm |

(1) Adjust  $P_{in}$  for specified  $P_{out}$ .



**Figure 1. MHW913 Test Circuit Diagram**

## Typical Characteristics

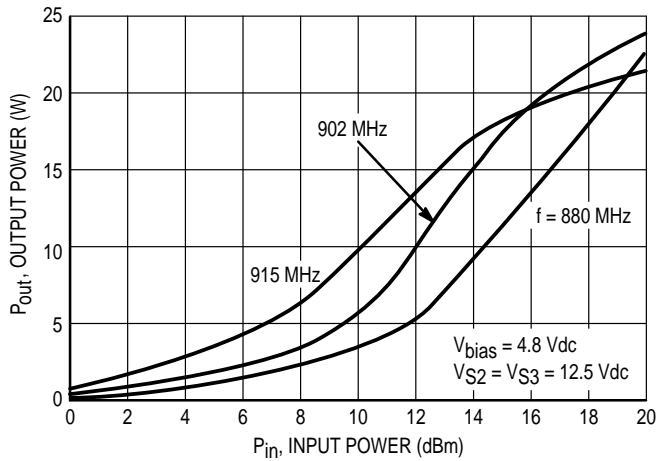


Figure 2. Output Power versus Input Power

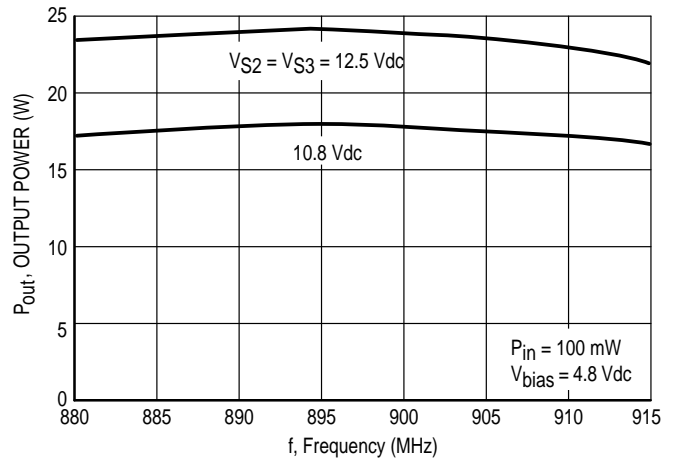


Figure 3. Output Power versus Frequency

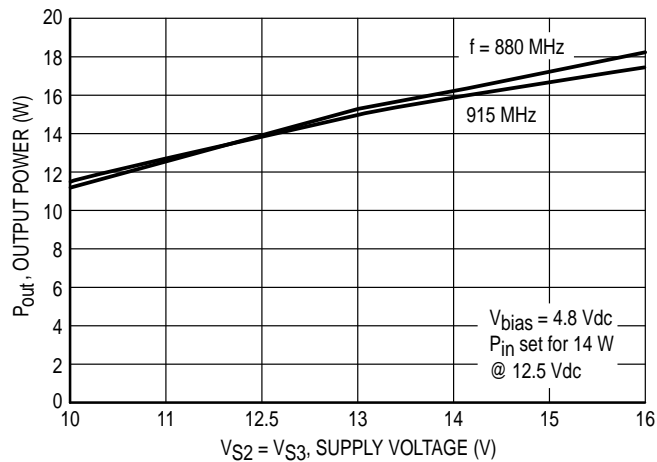


Figure 4. Output Power versus Supply Voltage

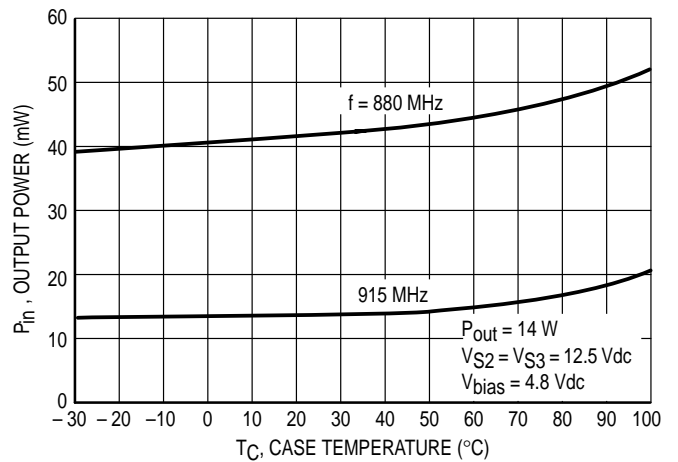


Figure 5. Input Power versus Case Temperature for  $P_{out} = 14\text{ W}$

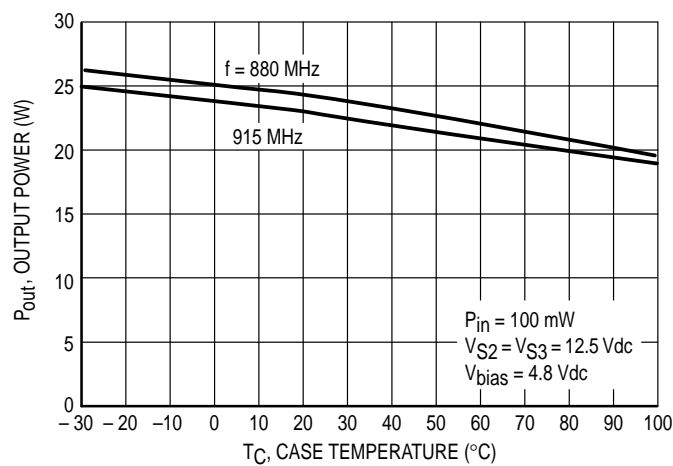
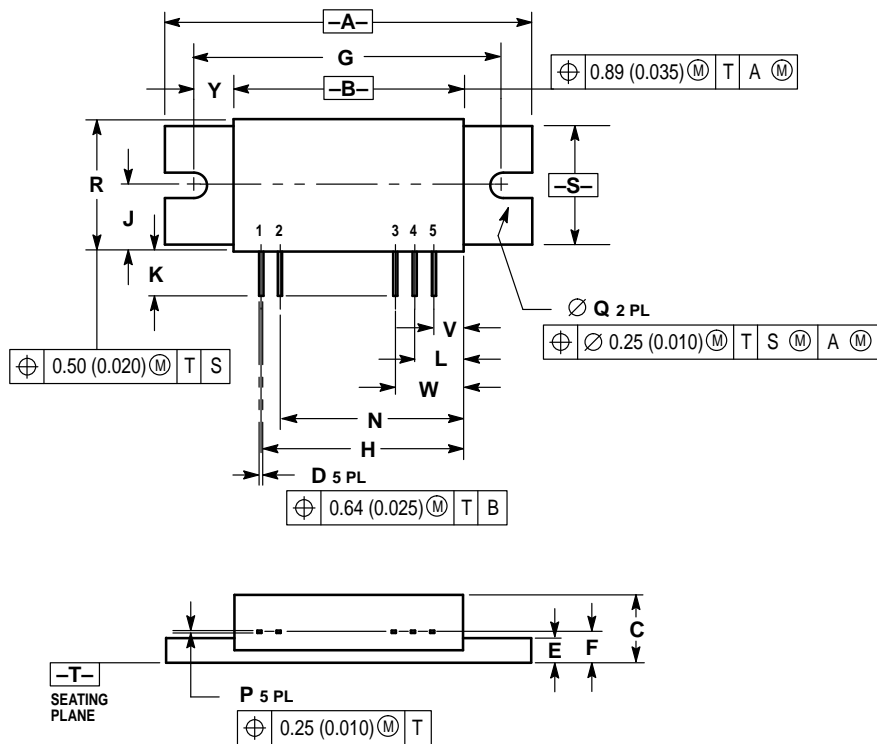


Figure 6. Output Power versus Case Temperature for Maximum Input Power

## PACKAGE DIMENSIONS




1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION F TO CENTER OF LEADS.
4. REF INDICATES NON-CONTROLLED DIMENSION FOR REFERENCE USE ONLY.

| DIM | INCHES    |       | MILLIMETERS |       |
|-----|-----------|-------|-------------|-------|
|     | MIN       | MAX   | MIN         | MAX   |
| A   | 1.890     | 1.910 | 48.01       | 48.51 |
| B   | 1.170     | 1.190 | 29.72       | 30.23 |
| C   | 0.350     | 0.376 | 8.89        | 9.55  |
| D   | 0.018     | 0.022 | 0.46        | 0.56  |
| E   | 0.120     | 0.135 | 3.05        | 3.43  |
| F   | 0.165 BSC |       | 4.19 BSC    |       |
| G   | 1.600 BSC |       | 40.64 BSC   |       |
| H   | 1.055 BSC |       | 26.80 BSC   |       |
| J   | 0.336     | 0.360 | 8.53        | 9.14  |
| K   | 0.225     | —     | 5.72        | —     |
| L   | 0.255 BSC |       | 6.48 BSC    |       |
| N   | 0.955 BSC |       | 24.26 BSC   |       |
| P   | 0.008     | 0.012 | 0.20        | 0.31  |
| Q   | 0.151     | 0.161 | 3.84        | 4.09  |
| R   | 0.685     | 0.705 | 17.40       | 17.91 |
| S   | 0.598     | 0.612 | 15.19       | 15.55 |
| V   | 0.155 BSC |       | 3.94 BSC    |       |
| W   | 0.355 BSC |       | 9.02 BSC    |       |
| Y   | 0.210 REF |       | 5.33 REF    |       |

PIN 1. RF INPUT  
2. +DC (BIAS)  
3. +DC (SUPPLY)  
4. +DC (SUPPLY)  
5. RF OUTPUT  
CASE: GROUND

**CASE 301AB-02**  
**ISSUE F**

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MHW913/D

