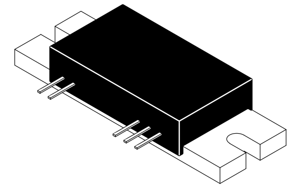
UHF Silicon FET Power Amplifier

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 ≤ 100 mW (20 dBm)
  RF Output Power = 14 W
  Minimum Gain = 21.5 dB
  Minimum Efficiency = 35%
- 50 Ω 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}, V_{S2}, V_{S3}	5.0 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°C, 50 Ω system, unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
Frequency Range	BW	880	915	MHz
Efficiency (P_{out} = 14 W) (1)	η	35	—	%
Power Gain (P_{out} = 14 W) (1)	G_p	21.5	—	dB
Harmonic Output (P_{out} = 14 W Reference) (1)	$2f_o$ $3f_o$	— —	– 30 – 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 (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°C, 50 Ω system, unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
Load Mismatch Stress (V_{supply} = 15.6 Vdc, P_{out} = 15 W; Load VSWR = 10:1, All Phase Angles) (1)	—	No degradation in output power		
Stability (V_{supply} = 10.8 to 16 Vdc; P_{out} = 0.03 to 14 W; Load VSWR = 6:1, All Phase Angles) (1)	—	All spurious outputs more than 60 dB below desired signal		
Quiescent Current (With No RF Applied) ($V_{S2} = V_{S3}$ = 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_o) (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}.

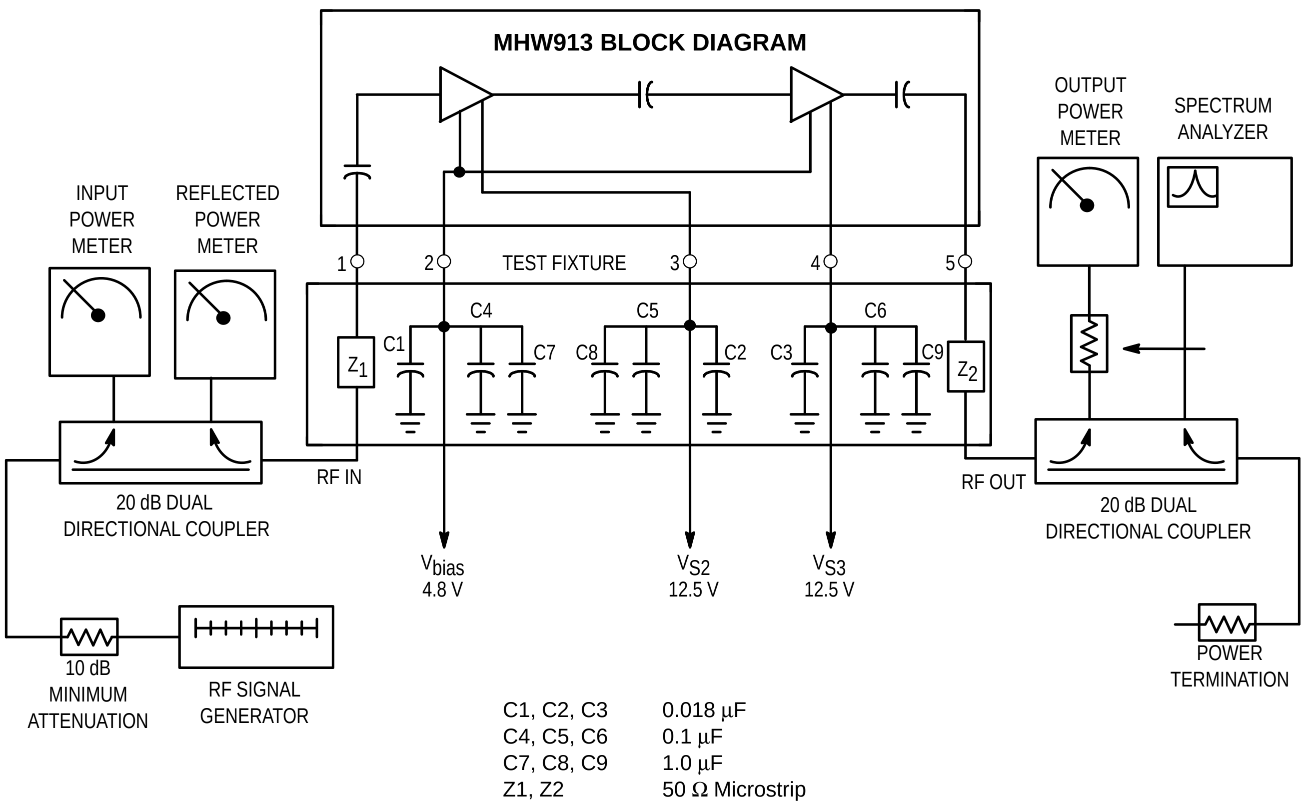


Figure 1. MHW913 Test Circuit Diagram

Typical Characteristics

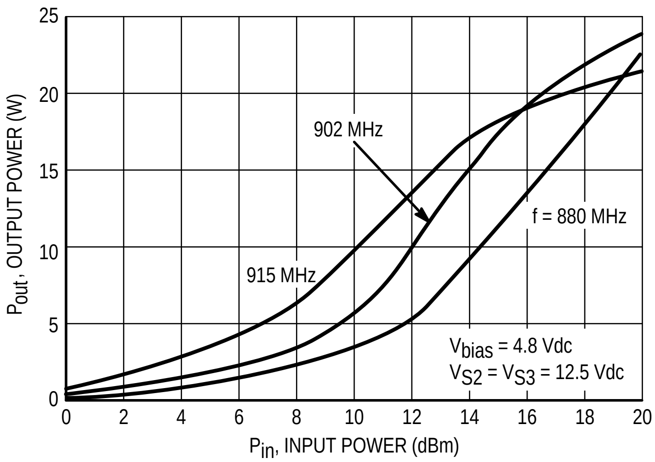


Figure 2. Output Power versus Input Power

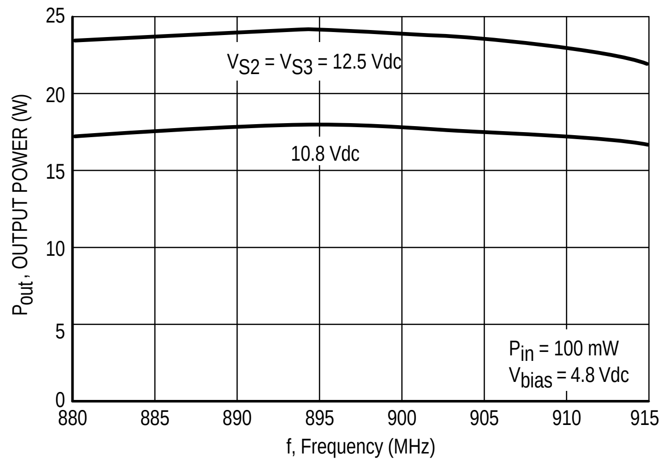


Figure 3. Output Power versus Frequency

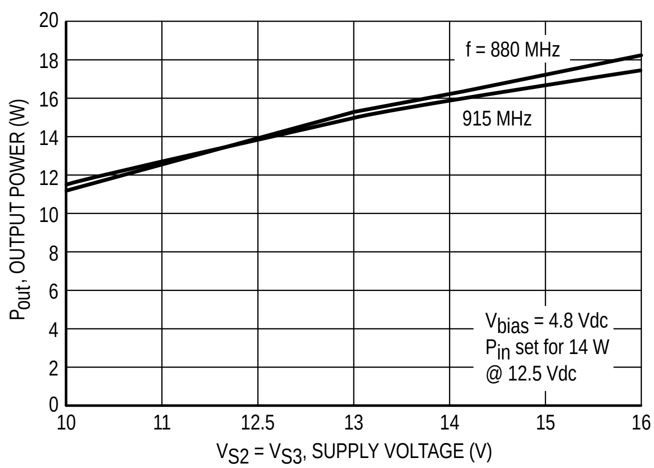


Figure 4. Output Power versus Supply Voltage

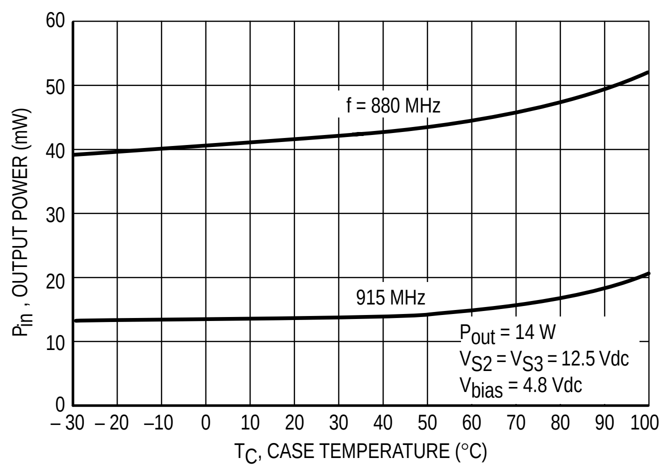


Figure 5. Input Power versus Case Temperature for P_{out} = 14 W

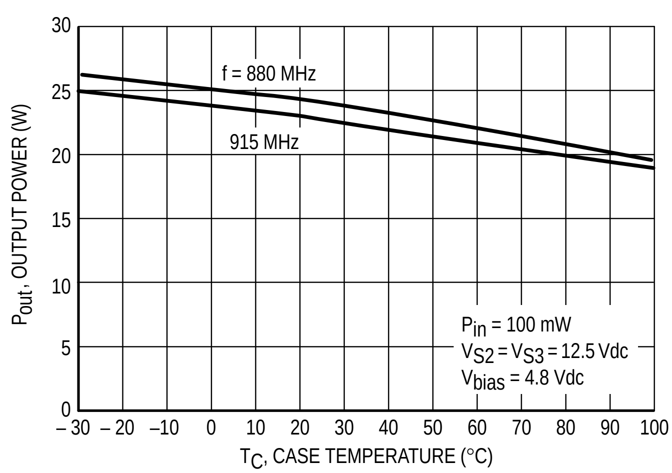
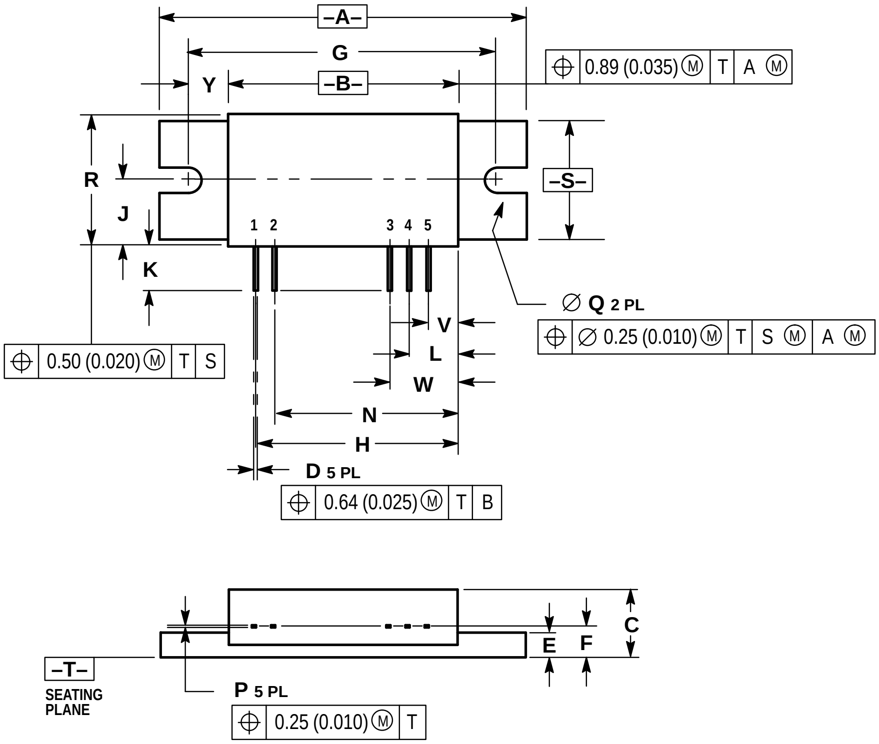


Figure 6. Output Power versus Case Temperature for Maximum Input Power

PACKAGE DIMENSIONS



NOTES:
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.

	INCHES		MILLIMETERS	
DIM	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	

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

CASE 301AB–02
ISSUE G

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