Advance Information

The RF Line

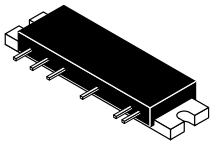
UHF Power Amplifier

. . . designed specifically for the Pan European digital 5.0 watt, GSM handheld radio. The MHW909 is capable of wide power range control, operates from a 7.2 volt supply and requires 100 mW of RF input power.

- Specified 7.2 Volt Characteristics:
  RF Input Power — 100 mW (20 dBm)
  RF Output Power — 9.0 W
  Minimum Gain — 19.5 dB
  Harmonics — –35 dBc Max @ 2.0 f_o
- New Biasing and Control Techniques Providing Dynamic Range and Control Circuit Bandwidth Ideal for GSM
- 50 Ohm Input/Output Impedances
- Guaranteed Stability and Ruggedness
- Test fixture circuit board photomaster available upon request by contacting RF Tactical Marketing in Phoenix, AZ.

MHW909

9.0 W
890 to 915 MHz
RF POWER
AMPLIFIER



CASE 301T–02, STYLE 1

MAXIMUM RATINGS (Flange Temperature = 25°C)

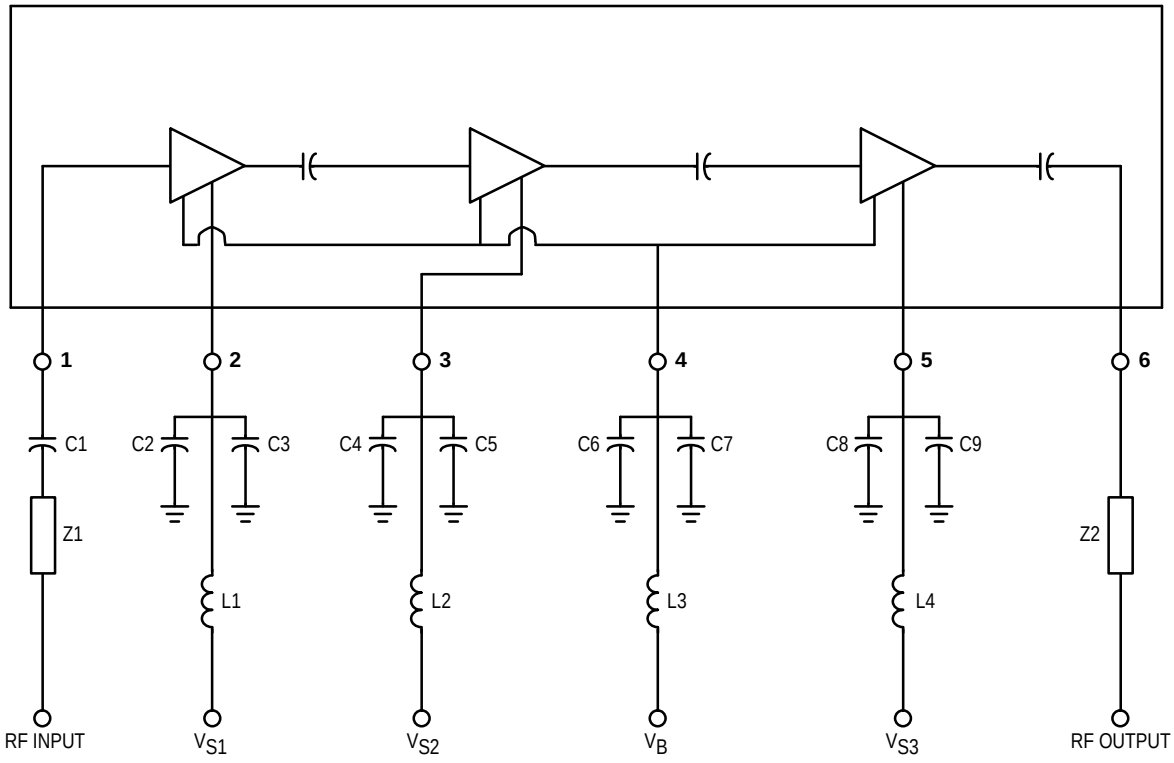
Rating	Symbol	Value	Unit
DC Supply Voltage	V_S	9.0	Vdc
DC Bias Voltage	V_B	4.75	Vdc
RF Input Power	P_{in}	400	mW
RF Output Power (V_S = 9.0 Vdc)	P_{out}	10	W
Operating Case Temperature Range	T_C	–30 to +100	°C
Storage Temperature Range	T_{stg}	–30 to +100	°C

ELECTRICAL CHARACTERISTICS (V_{S1} = V_{S2} = V_{S3} = 7.2 Vdc; V_B = 4.5 Vdc, T_C = +25°C, 50 ohm system, unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
Frequency Range	BW	890	915	MHz
Power Gain (P_{out} = 9.0 W) (1)	G_p	19.5	—	dB
Leakage Current (P_{in} = 0 mW, V_B = 0 Vdc, V_{S1} = V_{S2} = V_{S3} = 9.0 Vdc)	I_L	—	5.0	mA
Efficiency (P_{out} = 9.0 W) (1)	η	30	—	%
Input VSWR (P_{out} = 9.0 W) (1)	$VSWR_{in}$	—	2.0:1	—
Harmonics (P_{out} = 9.0 W) (1) 2.0 f_o 3.0 f_o to 5.0 f_o		—	–35 –40	dBc
Noise Power (In 30 kHz Bandwidth, 935 to 960 MHz frequency range; (P_{out} = 0.03 to 9.0 W; V_{S1} = V_{S2} = V_{S3} = 6.25 to 9.0 Vdc) (1)		—	–75	dBm
Linearity — %AM in Output (P_{out} = 0.2 to 9.0 W; 135 kHz 1% AM in Input) (1)	—	—	6.0	%
Output Power, Low Voltage (P_{in} = 100 mW; V_{S1} = V_{S2} = V_{S3} = 6.25 Vdc)	P_{out_2}	6.8	—	W
Load Mismatch Stress (V_{S1} = V_{S2} = V_{S3} = 9.0 Vdc; V_B = 4.75 Vdc; P_{out} = 10 W; Load VSWR = 10:1, All Phase Angles at Frequency of Test) (1)	ψ	No Degradation In Output Power Before/After Test		
Stability (V_{S1} = V_{S2} = V_{S3} = 6.0 to 9.0 Vdc; P_{out} = 0.03 to 9.0 W; Load VSWR = 6:1, Source VSWR = 3:1, All Phase Angles at Frequency of Test) (1)	—	All Spurious Outputs More Than 60 dB Below Desired Signal		

NOTE:
1. Adjust P_{in} for Specified P_{out}; Duty Cycle = 12.5%, Period = 4.6 msec

This document contains information on a new product. Specifications and information herein are subject to change without notice.



Pin Designations:

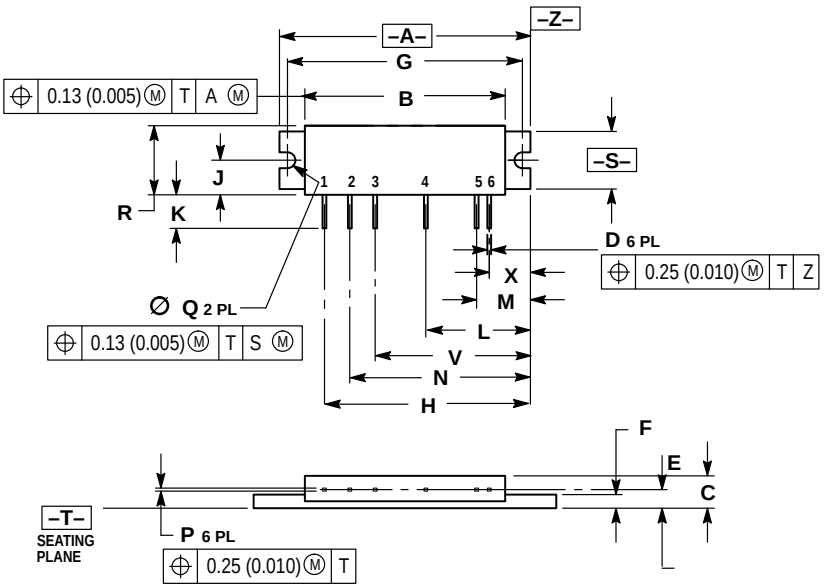
Pin 1 — RF Input Power @ 20 dBm Max Adjust for Output Power
Pin 2 — First Stage Collector Voltage @ 7.2 Vdc
Pin 3 — Second Stage Collector Voltage @ 7.2 Vdc
Pin 4 — Trickle Bias Voltage @ 4.5 Vdc
Pin 5 — Third Stage Collector Supply @ 7.2 Vdc
Pin 7 — RF Output Power @ 9.0 W Nominal

Element Values:

C1 = C2 = C4 = C6 = C8 = 0.018 μF
C3 = C5 = C7 = C9 = 2.2 μF
L1–L3 = 0.29 μH
L4 = 0.2 μH
Z1, Z2 = 50 Ohm Microstrip

Figure 1. Test Circuit Diagram

PACKAGE DIMENSIONS



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION F TO CENTER OF LEADS.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	1.970	1.990	50.04	50.55
B	1.570	1.590	39.88	4.039
C	0.245	0.265	6.23	6.73
D	0.018	0.022	0.46	0.56
E	0.100	0.115	2.54	2.92
F	0.147 BSC		3.73 BSC	
G	1.860 BSC		47.24 BSC	
H	1.626 BSC		41.28 BSC	
J	0.267	0.278	6.78	7.06
K	0.177	0.217	4.50	5.51
L	0.825 BSC		20.96 BSC	
M	0.425 BSC		10.80 BSC	
N	1.425 BSC		36.20 BSC	
P	0.008	0.012	0.20	0.30
Q	0.120	0.130	3.05	3.30
R	0.535	0.555	13.59	14.10
S	0.445	0.465	11.30	11.81
V	1.225 BSC		31.12 BSC	
X	0.325 BSC		8.26 BSC	

STYLE 1:
PIN 1. RF INPUT
2. DC TERMINAL, Vs1
3. DC TERMINAL, Vs2
4. DC TERMINAL, Vb
5. DC TERMINAL, Vs3
6. RF OUTPUT

CASE 301T–02
ISSUE B

Literature Distribution Centers:
USA: Motorola Literature Distribution; P.O. Box 20912; Phoenix, Arizona 85036.
EUROPE: Motorola Ltd.; European Literature Centre; 88 Tanners Drive, Blakelands, Milton Keynes, MK14 5BP, England.
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