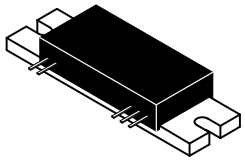
The RF Line
UHF Linear Power Amplifiers

Designed specifically for the United States digital 3.0 W, mobile radio. The MHW927A/B are capable of wide power range control, operate from a 12.5 V supply and require 1.0 mW of RF input power.

- MHW927A Operates from a 9.5 Volt Bias Supply (V_B)
  MHW927B Operates from a 8.0 Volt Bias Supply (V_B)
- Specified 12.5 Volt Characteristics for MHW927A/B:
  RF Input Power — 1.0 mW (0 dBm) Max
  RF Output Power — 6.0 W
  Power Gain — 40 dB Typ
  Harmonics — –30 dBc Max @ 2 f_0
- Linearity (IMD) — –29 dBc Max for 3rd Order; –34 dBc Max for 5th Order
- New Biasing and Control Techniques Providing Dynamic Range and Control Circuit Bandwidth Ideal for USDC
- 50 Ω Input/Output Impedances
- Guaranteed Stability and Ruggedness

MHW927A*
MHW927B
***Motorola Preferred Device**

6.0 W
824 to 849 MHz
RF LINEAR
POWER AMPLIFIERS



CASE 301AA–01, STYLE 1

MAXIMUM RATINGS (Recommended Values for Safe Operation — Not Guaranteed Performance)

Rating		Symbol	Value	Unit
DC Supply Voltage		V_{S2}, V_{S3}	16.5	Vdc
DC Bias Voltage		V_B	10	Vdc
RF Input Power	MHW927A, B	P_{in}	3.0	mW
RF Output Power		P_{out}	13	W
Operating Case Temperature Range		T_C	–30 to +100	°C
Storage Temperature Range		T_{stg}	–30 to +100	°C

ELECTRICAL CHARACTERISTICS (V_{S2} = V_{S3} = 12.5 Vdc; V_B = 9.5 Vdc (MHW927A); V_B = 8.0 Vdc (MHW927B); P_{in} ≤ 1.0 mW (MHW927A/B); T_C = +25°C, 50 ohm system, unless otherwise noted)

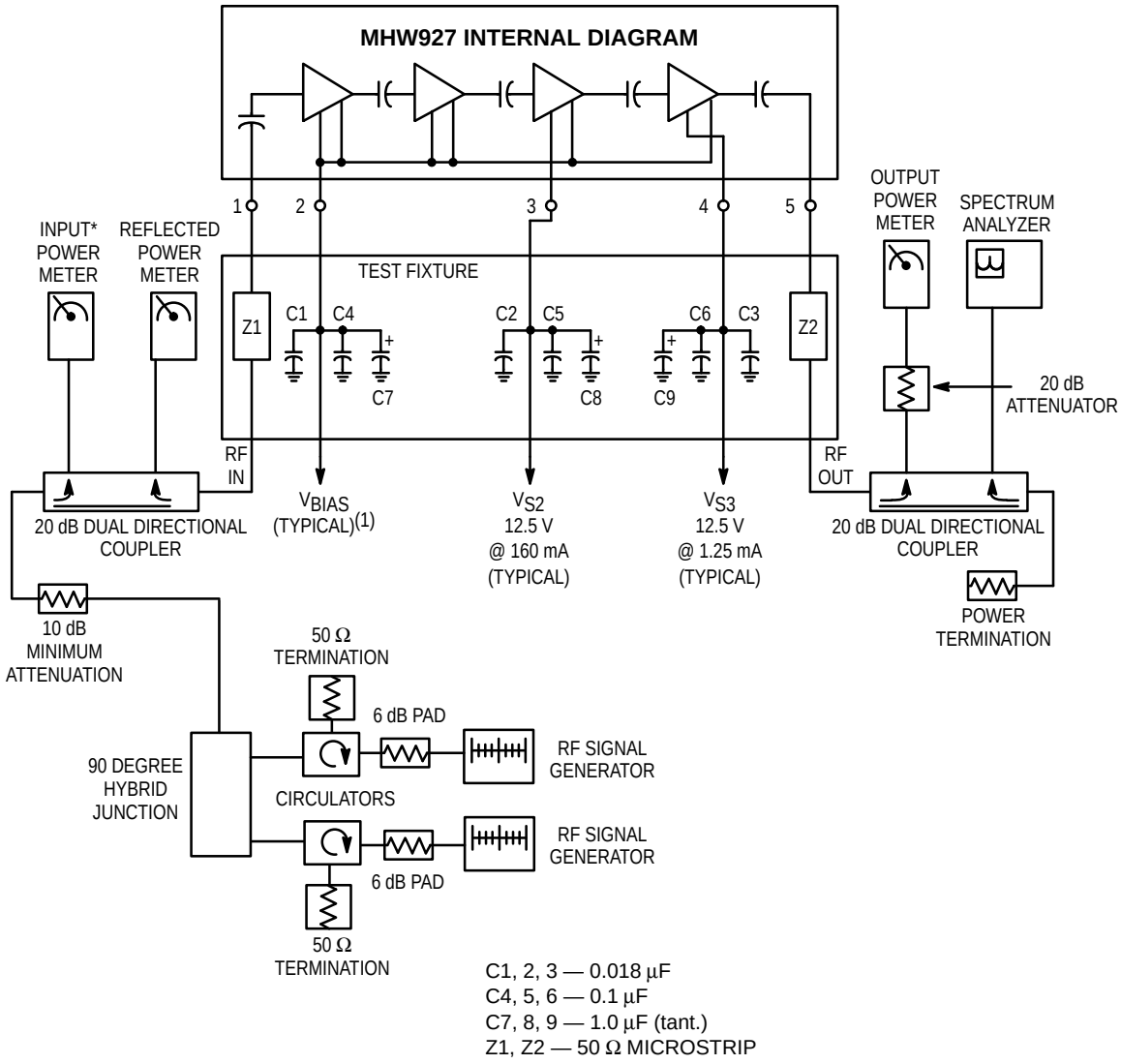
Characteristic		Symbol	Min	Typ	Max	Unit
Frequency Range		BW	824	—	849	MHz
Input Power (P_{out} = 6.0 W) (1)		P_{in}	—	—	1.0	mW
Efficiency (P_{out} = 6.0 W) (1)		η_1	28	30	—	%
Efficiency, Two Tone (P_{out} (Avg.) = 6.0 W; f_1 & f_2 10 kHz apart) (1)		η_2	28	30	—	%
Input VSWR (P_{out} = 6.0 W) (1)		$VSWR_{in}$	—	—	2.5:1	—
Harmonics (P_{out} = 6.0 W) (1)	2 f_0 3 f_0	—	— —	— —	–30 –45	dBc
Noise Power (In 30 kHz Bandwidth, 45 MHz Above f_0; T_C = +25°C to T_C = +100°C; P_{out} = 6.0 W) (1)		—	—	—	–82	dBm
Linearity (P_{out} (Avg.) = 6.0 W; f_1 & f_2 are 10 kHz apart) (1)	3rd Order IMD 5th Order IMD	—	— —	–31 –36	–29 –34	dBc
Load Mismatch Stress (V_{S2} = V_{S3} = 16 Vdc; P_{out} = 12.5 W; Pulsed at 50% Duty Cycle; Load VSWR = 20:1, All Phase Angles At Frequency of Test) (1)		ψ	No Degradation In Output Power Between Before and After Test			
Stability (V_{S2} = V_{S3} = 10 to 16 Vdc; P_{out} = 0.012 to 12 W; Load VSWR = 4:1, All Phase Angles At Frequency of Test) (1)		—	All Spurious Outputs More Than 70 dB Below Desired Signal			

NOTE:
1. Adjust P_{in} for Specified P_{out}.

Preferred devices are Motorola recommended choices for future use and best overall value.

REV 6

MOTOROLA



(1) V_{BIAS} = 9.5 V @ 140 mA (MHW927A) or 8.0 V @ 140 mA (MHW927B)

*Module input power is forward power as sampled by the directional coupler and read on the input power meter.

Figure 1. MHW927A/B Test Circuit Diagram

TYPICAL CHARACTERISTICS

(MHW927A)

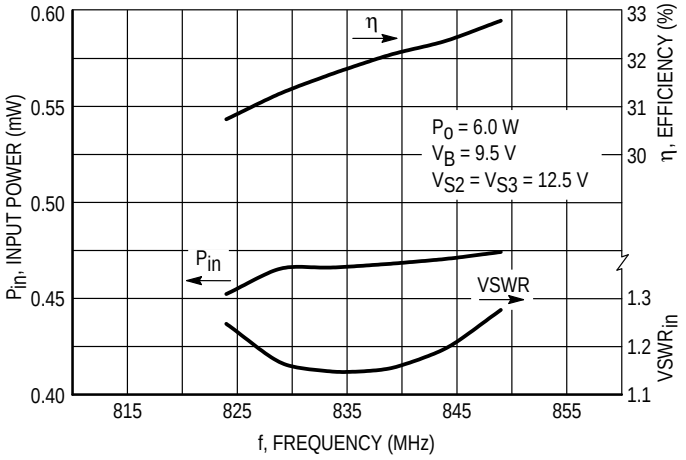


Figure 2. Input Power, Efficiency and VSWR versus Frequency

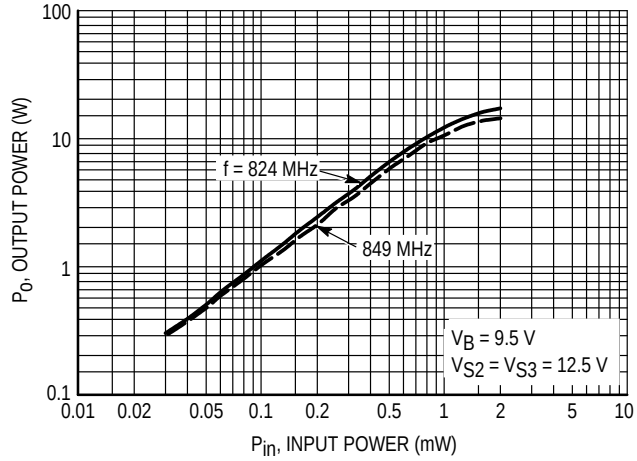


Figure 3. Output Power versus Input Power

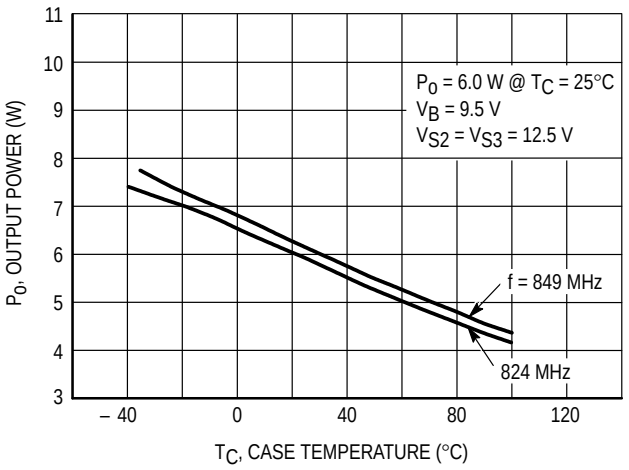


Figure 4. Output Power versus Case Temperature

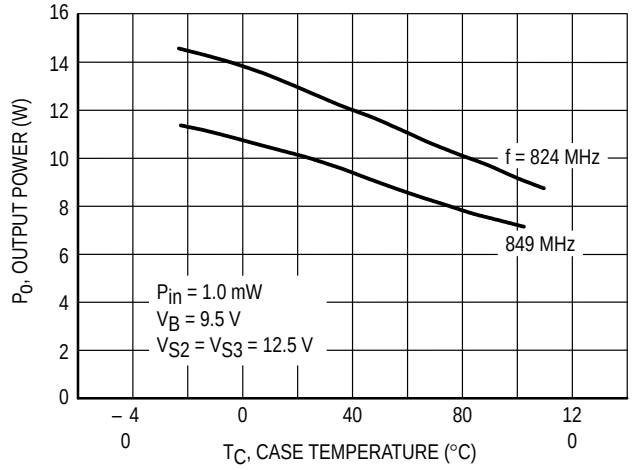


Figure 5. Output Power versus Case Temperature at Maximum Input Power

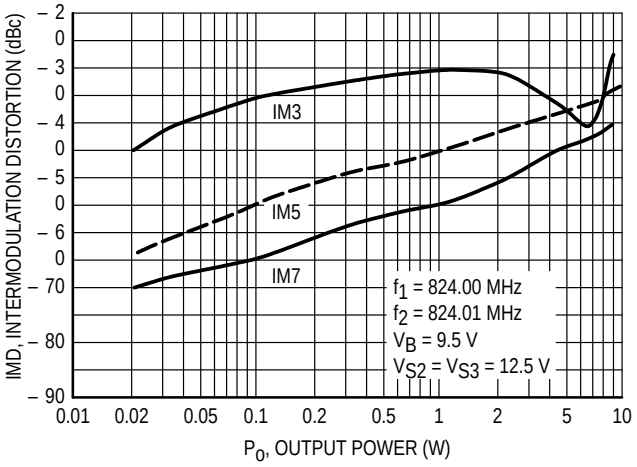


Figure 6. Intermodulation versus Output Power

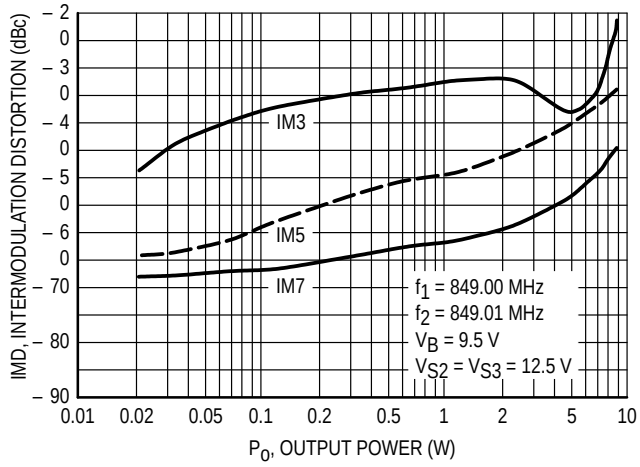


Figure 7. Intermodulation versus Output Power

TYPICAL CHARACTERISTICS

(MHW927B)

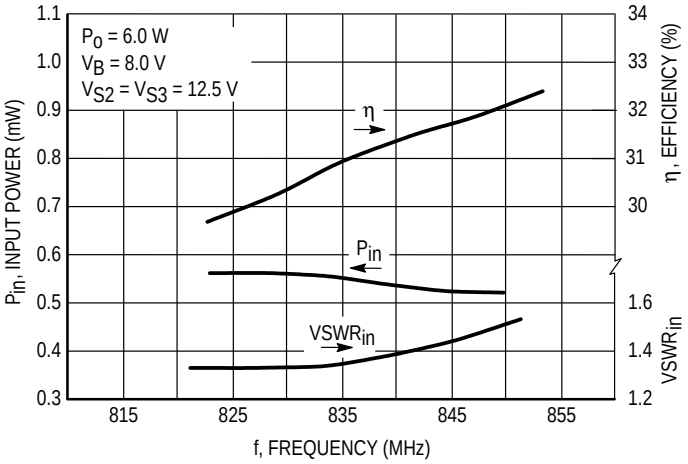


Figure 8. Input Power, Efficiency and VSWR versus Frequency

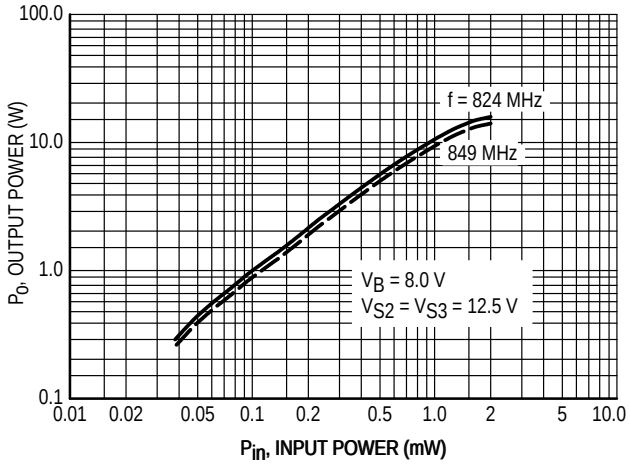


Figure 9. Output Power versus Input Power

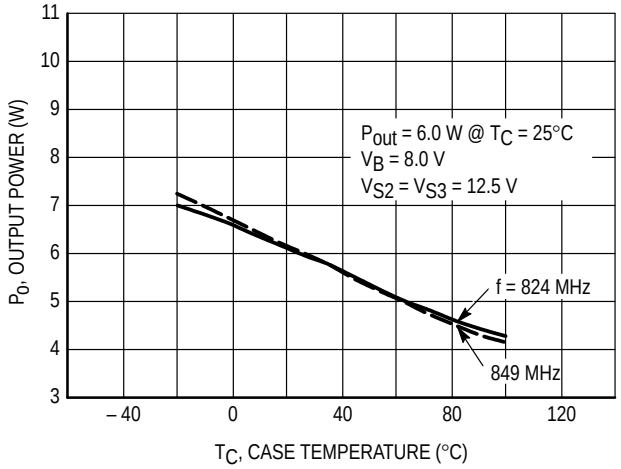


Figure 10. Output Power versus Case Temperature

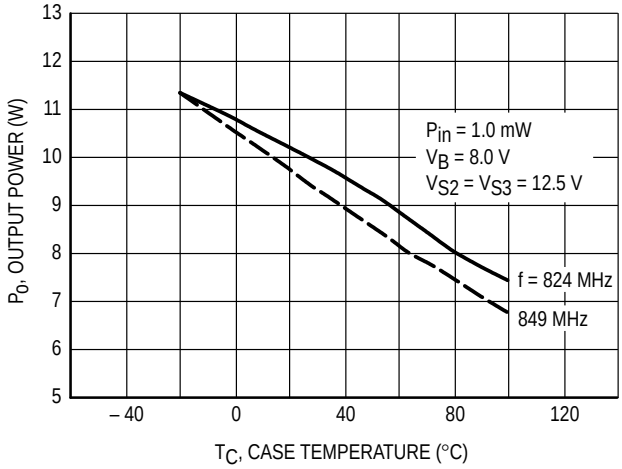


Figure 11. Output Power versus Case Temperature at Maximum Input Power

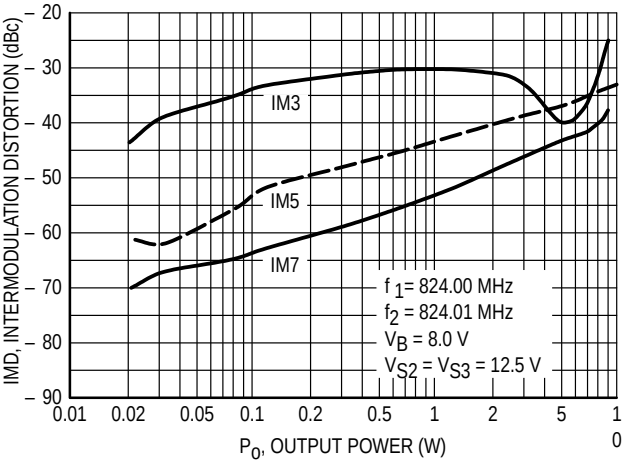


Figure 12. Intermodulation versus Output Power

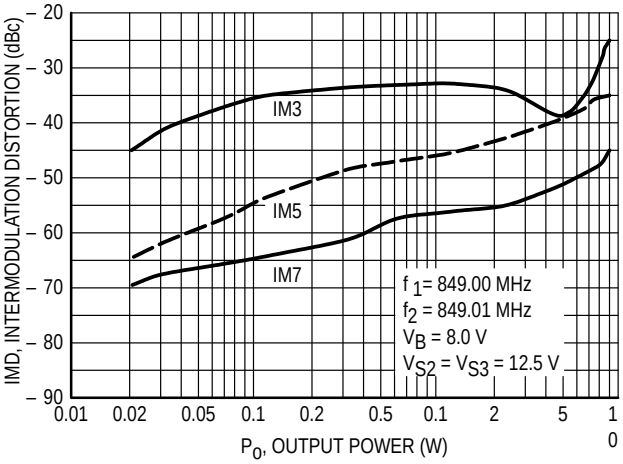
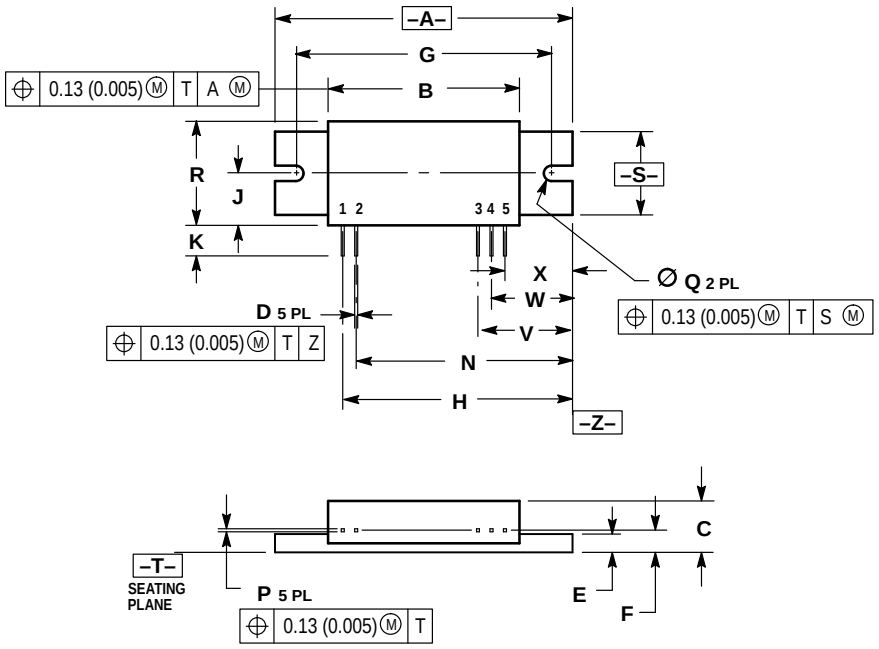


Figure 13. Intermodulation versus Output Power

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	2.190	2.210	55.63	56.13
B	1.395	1.415	35.44	35.94
C	0.355	0.380	9.02	9.65
D	0.018	0.022	0.46	0.55
E	0.120	0.135	3.05	3.42
F	0.164 BSC		4.16 BSC	
G	1.900 BSC		48.26 BSC	
H	1.700 BSC		43.18 BSC	
J	0.345	0.385	8.77	9.77
K	0.225	—	5.72	—
N	1.600 BSC		40.64 BSC	
P	0.008	0.012	0.21	0.30
Q	0.150	0.160	3.81	4.06
R	0.690	0.770	17.53	19.55
S	0.595	0.615	15.12	15.62
V	0.700 BSC		17.78 BSC	
W	0.600 BSC		15.24 BSC	
X	0.500 BSC		12.70 BSC	

STYLE 1:
PIN 1. RF INPUT
2. V_{BIAS} (8.0 V)
3. V_{CC2} (12.5 V)
4. V_{CC3} (12.5 V)
5. RF OUTPUT

CASE 301AA–01
ISSUE O

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