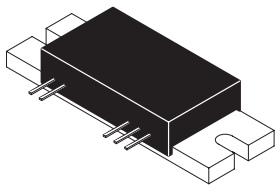
The RF Line
UHF Silicon FET Power Amplifier

Designed specifically for the European Digital Extended Group Special Mobile (GSM) Base Station applications in the 925–960 MHz frequency range. MHW916 operates from a 26 Volt supply and requires 15.5 dBm of RF input power.

- Specified 26 Volt Characteristics
  - RF Input Power: 15.5 dBm Max
  - RF Output Power: 16 Watts at 1.0 dB Compression Point
  - Minimum Gain: 26.5 dB
  - Harmonics: –35 dBc Max at 2Fo
- 50 Ω Input/Output System
- Meet GSM Linearity Specification for Base Station up to 12.5 Watts

MHW916

16 WATT
925–960 MHz
RF POWER
AMPLIFIER



CASE 301AB–02, STYLE 1

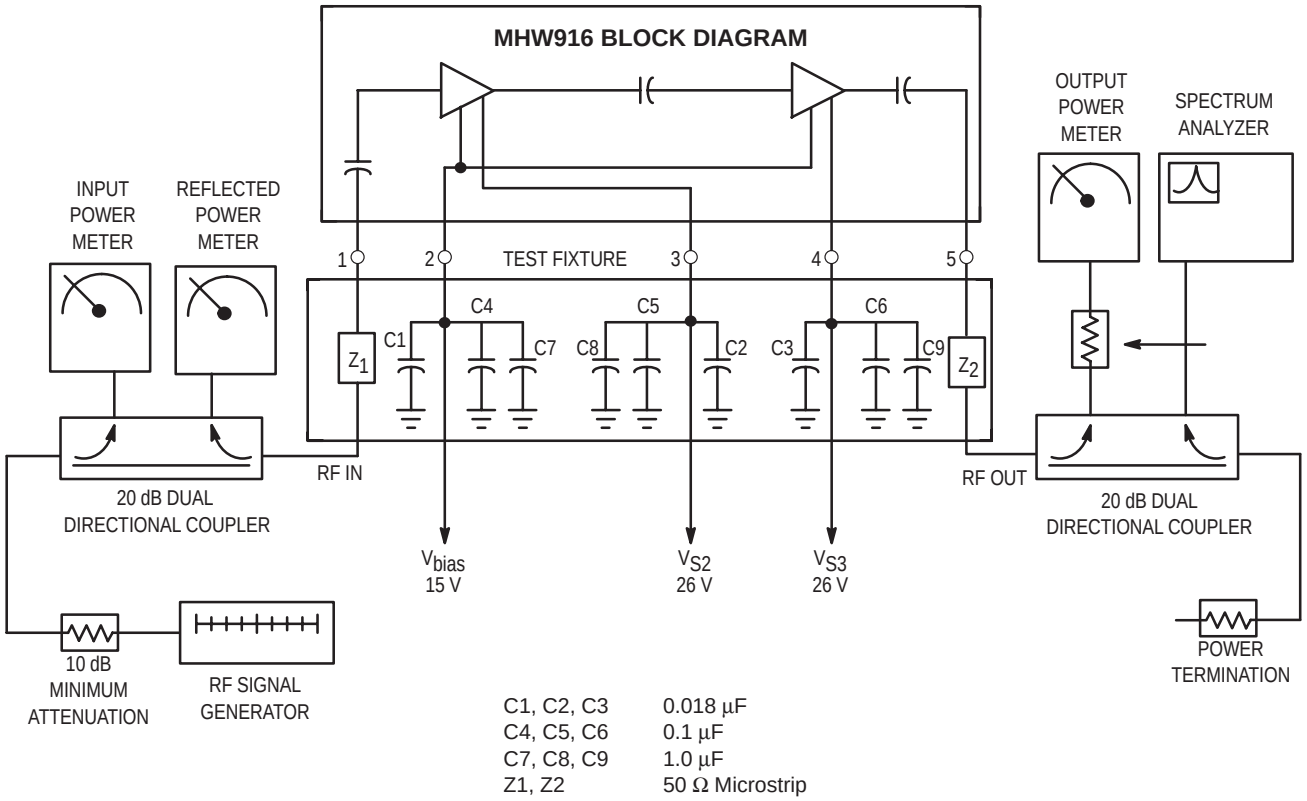
MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
DC Supply Voltage	V_S	28	Vdc
DC Bias Voltage	V_B	16	Vdc
RF Input Power	P_{in}	19	dBm
RF Output Power	P_{out}	25	W
Operating Case Temperature Range	T_C	– 5.0 to +85	°C
Storage Temperature Range	T_{stg}	– 30 to +100	°C
Standby Current (Pin Removed, $I_{stdby} = I_{S1} + I_{S2}$)	I_{stdby}	400	mA

ELECTRICAL CHARACTERISTICS (T_C = 25°C, $V_{S1} = V_{S2}$ = 26 Vdc, V_{bias} = 15 Vdc, 50 ohm system)

Characteristic	Symbol	Min	Typ	Max	Unit
Frequency Range	BW	925	—	960	MHz
Quiescent Current (P_{in} = 0 mW)	Idq1 + Idq2	—	400	—	mA
Power Gain (P_{out} = 16 W) (1)	Gp	26.5	30	32.5	dB
Output Power at 1.0 dB Compression	P1dB	16	—	—	W
Efficiency (1.0 dB Compression Power)	η_1	37	44	—	%
Efficiency (P_{out} = 16 W) (1)	η_2	33	39	—	%
Input VSWR (P_{out} = 16 W) (1)	$VSWR_{in}$	—	—	2:1	—
Harmonic 2 f_o (P_{out} = 16 W) (1)	H_2	—	–40	–35	dBc
Harmonic 3 f_o (P_{out} = 16 W) (1)	H_3	—	–60	–45	dBc
Ripple (P_{out} = 16 W) (1)	Rp	—	1.0	—	dB
Load Mismatch Stress (P_{out} = 16 W) Load VSWR = 5:1, All Phase Angles	Ψ	No Degradation in Output Power			
Stability (P_{out} = 10 mW to 16 W) Load VSWR = 3:1, All Phase Angles (Except Harmonics)	—	All Spurious Outputs More Than 60 dB Below Desired Signal			
Stability (P_{out} = –5.0 dBm to 42 dBm, f = 925 to 960 MHz) Load VSWR = 2:1, All Phase Angles	—	All Spurious Outputs Lower Than –46 dBm or –85 dBc (Whichever the Higher)			

(1) Adjust P_{in} for Specified P_{out}.



C1, C2, C3	0.018 μF
C4, C5, C6	0.1 μF
C7, C8, C9	1.0 μF
Z1, Z2	50 Ω Microstrip

Figure 1. MHW916 Test Circuit Diagram

TYPICAL CHARACTERISTICS

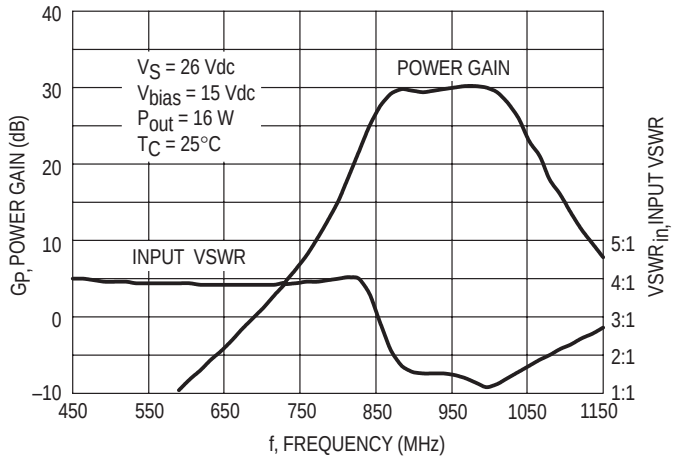


Figure 2. Power Gain and Input VSWR versus Frequency

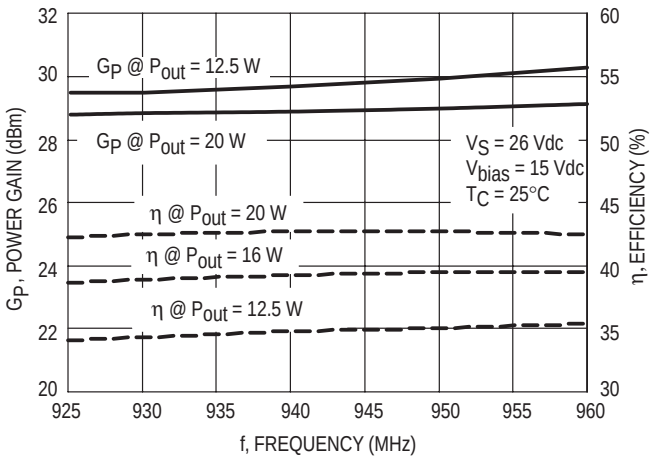


Figure 3. Power Gain and Efficiency versus Frequency

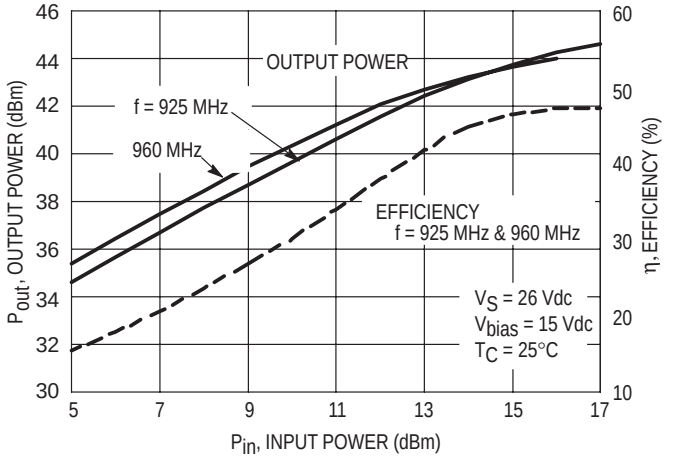


Figure 4. Output Power and Efficiency versus Input Power

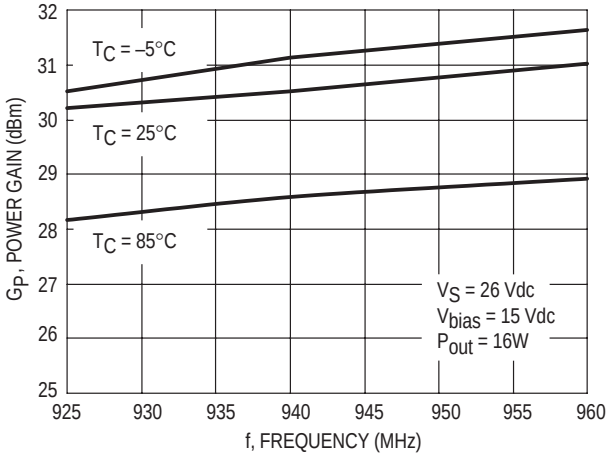


Figure 5. Power Gain versus Frequency

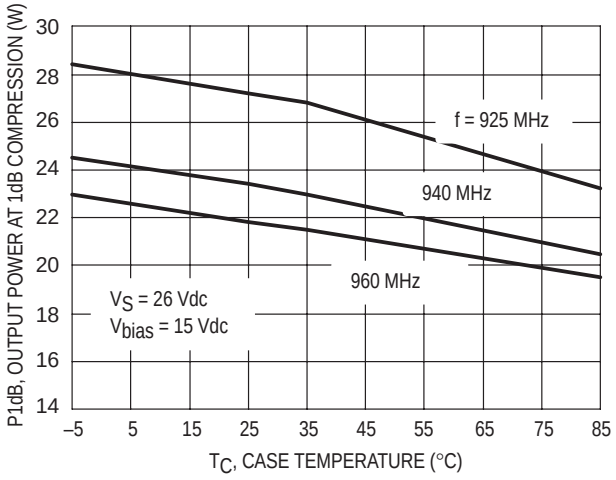


Figure 6. Output Power at 1 dB Compression versus Temperature

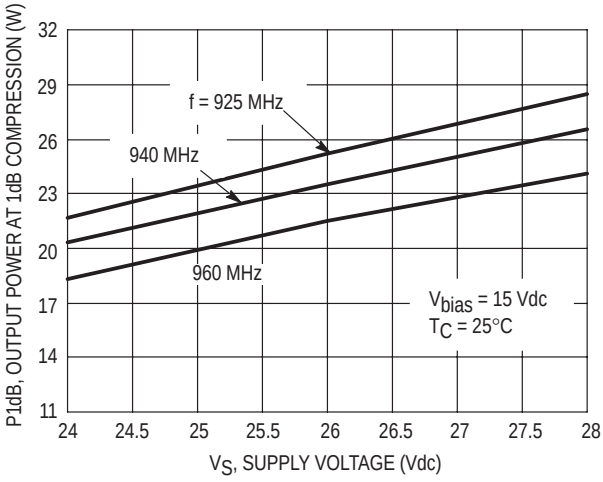
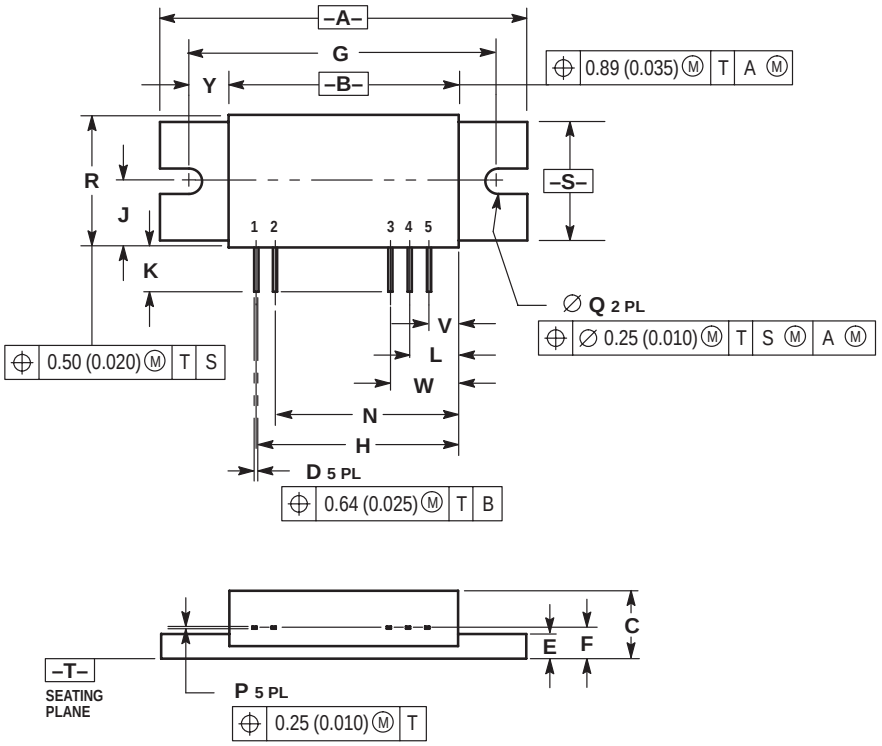


Figure 7. Output Power at 1dB Compression versus Supply Voltage

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 H

How to reach us:
USA / EUROPE / Locations Not Listed: Motorola Literature Distribution;
P.O. Box 5405, Denver, Colorado 80217. 1–303–675–2140 or 1–800–441–2447

JAPAN: Motorola Japan Ltd.; SPS, Technical Information Center,
3–20–1, Minami–Azabu, Minato–ku, Tokyo 106–8573 Japan.
81–3–3440–3569

Customer Focus Center: 1–800–521–6274

Mfax™: RMFAX0@email.sps.mot.com – TOUCHTONE 1–602–244–6609
Motorola Fax Back System – US & Canada ONLY 1–800–774–1848
– http://sps.motorola.com/mfax/

HOME PAGE: http://motorola.com/sps/

ASIA / PACIFIC: Motorola Semiconductors H.K. Ltd.; Silicon Harbour Centre,
2, Dai King Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong.
852–26668334

NOT RECOMMENDED FOR NEW DESIGN