

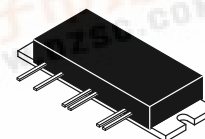
## The RF Line VHF Power Amplifier

The MHW105 is designed specifically for portable radio applications. The MHW105 is capable of 5.0 watts power output, operates from a 7.5 volt supply and requires only 1.0 mW of RF input power.

- Specified 7.5 Volt Characteristics:
  - RF Input Power — 1.0 mW (0 dBm)
  - RF Output Power — 5.0 W
  - Minimum Gain — 37 dB
  - Harmonics — -40 dBc Max @ 2 f<sub>0</sub>
- 50 Ohm Input/Output Impedances
- Guaranteed Stability and Ruggedness
- Epoxy Glass PCB Construction Gives Consistent Performance and Reliability

**MHW105**

**5.0 W  
68 to 88 MHz  
VHF POWER  
AMPLIFIER**



**CASE 301K-02, STYLE 3**

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

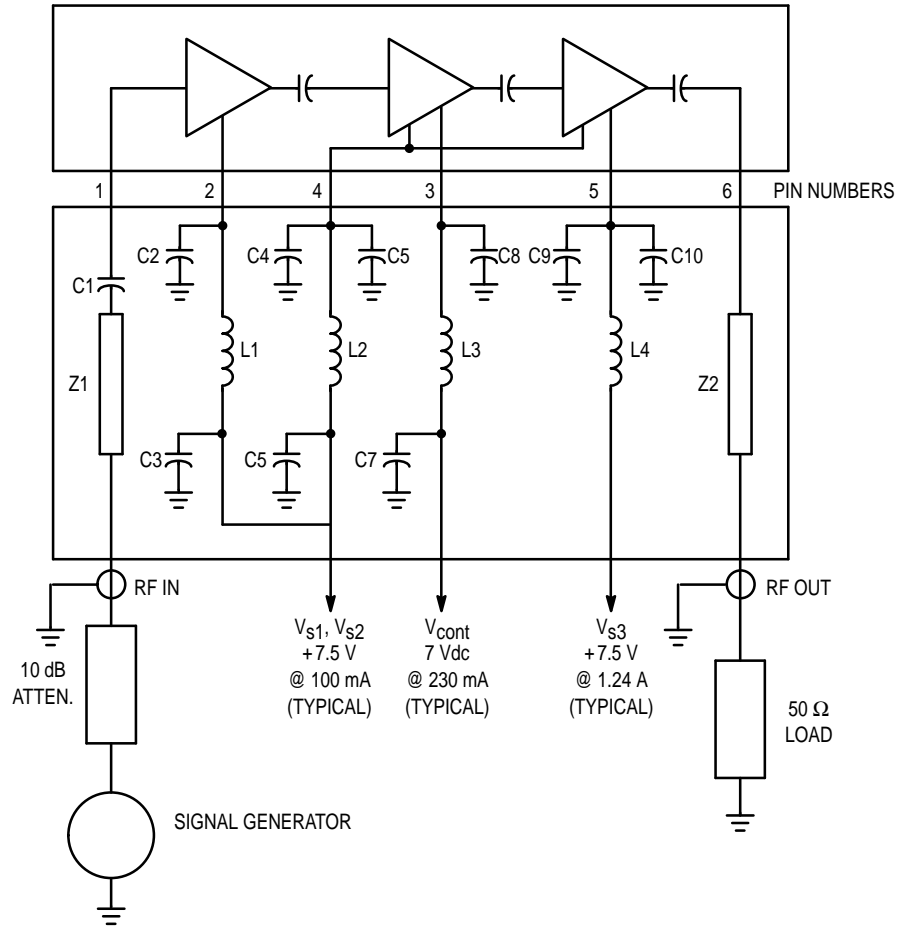
Rating	Symbol	Value	Unit
DC Supply Voltage	V <sub>S3</sub>	9.0	Vdc
DC Control & Bias Voltage	V <sub>S1,2</sub>	9.0	Vdc
DC Control Voltage	V <sub>cont</sub>	9.0	Vdc
RF Input Power	P <sub>in</sub>	5.0	mW
RF Output Power (V <sub>cont</sub> = 9.0 Vdc)	P <sub>out</sub>	7.0	W
Operating Case Temperature Range	T <sub>C</sub>	-30 to +100	°C
Storage Temperature Range	T <sub>stg</sub>	-30 to +100	°C

### ELECTRICAL CHARACTERISTICS (V<sub>S1</sub> = V<sub>S2</sub> = V<sub>S3</sub> = 7.5 Vdc; V<sub>cont</sub> ≤ 7.0 Vdc; T<sub>C</sub> = +25°C, 50 Ω system, unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
Frequency Range	BW	68	88	MHz
Power Gain (P <sub>out</sub> = 5.0 W) (1)	G <sub>p</sub>	37	—	dB
Control Voltage (P <sub>in</sub> = 1.0 mW; P <sub>out</sub> = 5.0 W) (1)	V <sub>cont</sub>	—	7.0	Vdc
Efficiency (P <sub>out</sub> = 5.0 W) (1)	η	40	—	%
Harmonics (P <sub>out</sub> = 5.0 W) (1)				
		2 f <sub>0</sub> , 3 f <sub>0</sub>	-40	dBc
Input VSWR (P <sub>out</sub> = 5.0 W) (1)	VSWR <sub>in</sub>	—	2.0:1	—
Load Mismatch (V <sub>S1</sub> = V <sub>S2</sub> = V <sub>S3</sub> = 9.0 Vdc; Load VSWR = 20:1; P <sub>out</sub> = 5.0 W) (1)	ψ	No Degradation in Power Output Before and After Test		
Stability (P <sub>in</sub> = 1.0 to 3.0 mW; V <sub>S1</sub> = V <sub>S2</sub> = V <sub>S3</sub> = 6.0 to 9.0 Vdc; P <sub>out</sub> = 1.0 W to 5.0 W; Load VSWR = 8:1, All Phase Angles) (1)	—	All Spurious Outputs More Than 60 dB Below Desired Signal		
Quiescent Current (V <sub>S1</sub> = V <sub>S2</sub> = V <sub>S3</sub> = 7.5 Vdc; V <sub>cont</sub> = 7.0 Vdc; P <sub>in</sub> = 0)	I <sub>Q</sub>	—	200	mA

NOTE:  
1. Adjust V<sub>cont</sub> for specified P<sub>out</sub>





C1, C2, C3, C4, C6, C7, C8, C9 — 18,000 pF CHIP  
 C5, C10 — 3.3 μF TANTALUM CHIP  
 L1, L2, L3, L4 — 0.2 μH  
 Z1, Z2 — 50 Ω MICROSTRIP LINE

Figure 1. VHF Power Module Test Circuit Diagram

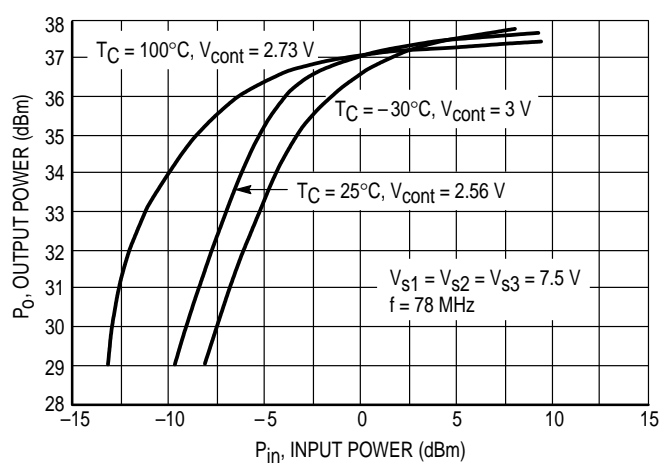


Figure 2. Output Power versus Input Power

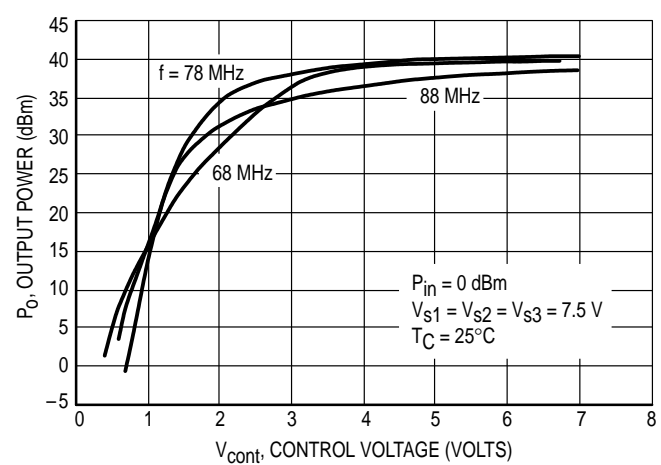


Figure 3. Output Power versus Control Voltage

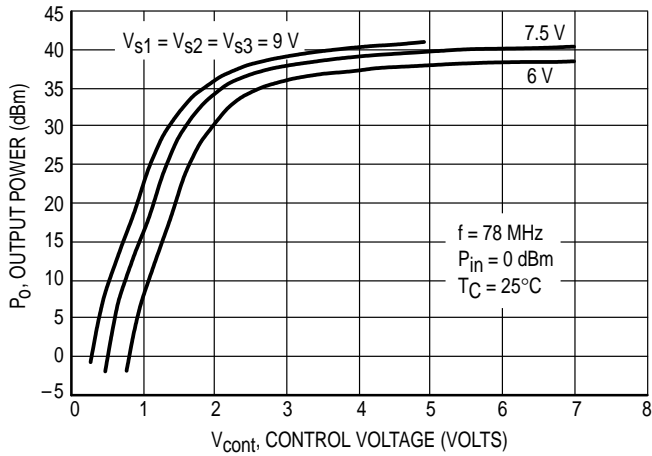


Figure 4. Output Power versus Control Voltage

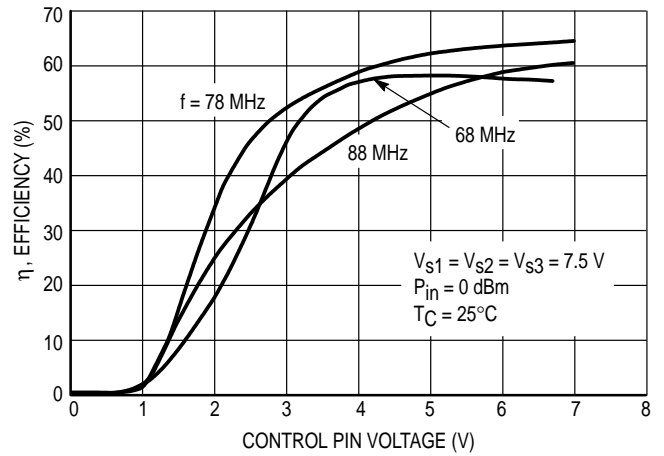


Figure 5. Efficiency versus Control Voltage

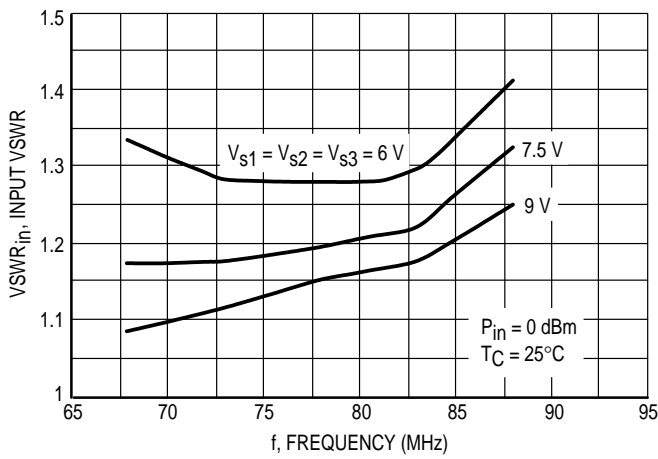


Figure 6. Input VSWR versus Frequency

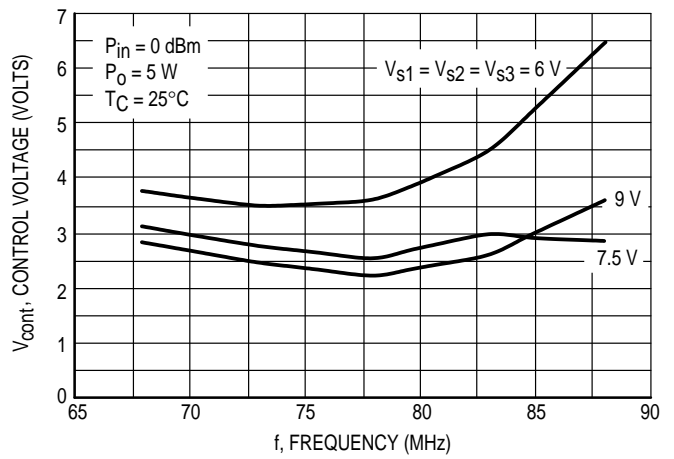


Figure 7. Control Voltage versus Frequency

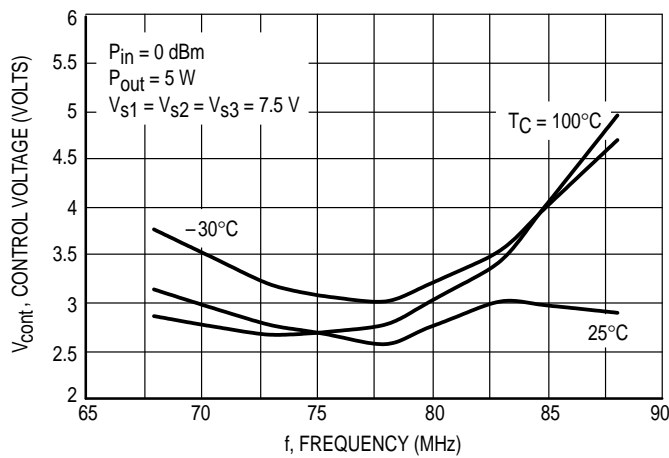
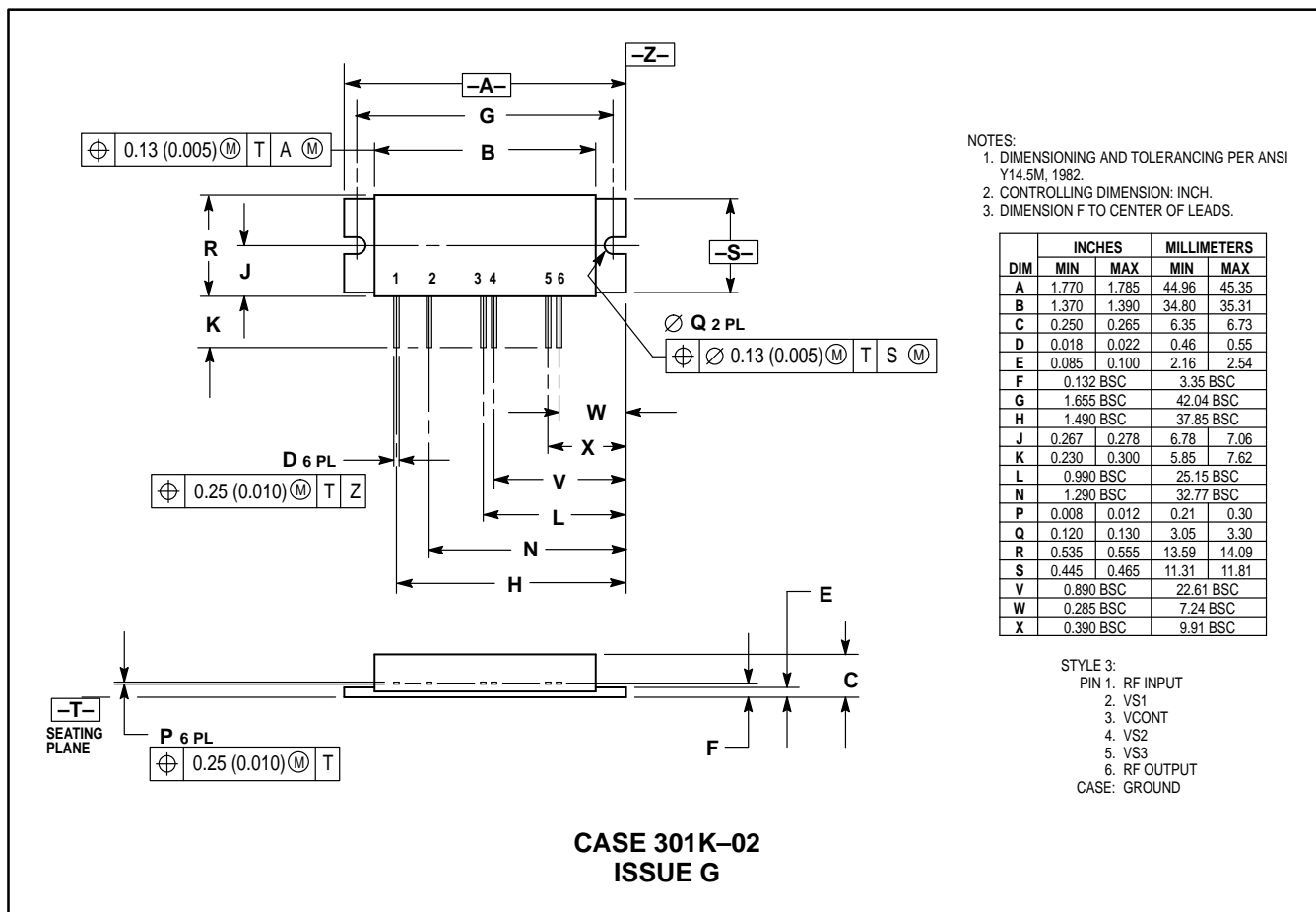


Figure 8. Control Voltage versus Frequency

## PACKAGE DIMENSIONS



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