

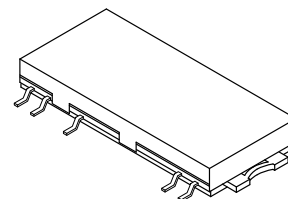
The RF Line  
**UHF Silicon FET  
Power Amplifiers**

Designed for 7.5 volt UHF power amplifier applications in industrial and commercial equipment primarily for hand portable radios.

- Specified 7.5 Volt Characteristics:
  - RF Input Power: 20 mW (13 dBm)
  - RF Output Power: 7 W
  - Minimum Gain ( $V_{cont} = 7 V$ ): 25.5 dB
  - Harmonics: -35 dBc Max @  $2.0 f_0$  350 - 360 MHz
  - 40 dBc Max @  $2.0 f_0$  360 - 400 MHz
- Epoxy Glass PCB Construction Gives Consistent Performance and Reliability
- 50  $\Omega$  Input/Output Impedances
- Guaranteed Stability and Ruggedness

**MHW2727-3**

**7 W,  
350 - 400 MHZ  
UHF POWER AMPLIFIERS**



**CASE 420AC-01 , STYLE 1**

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

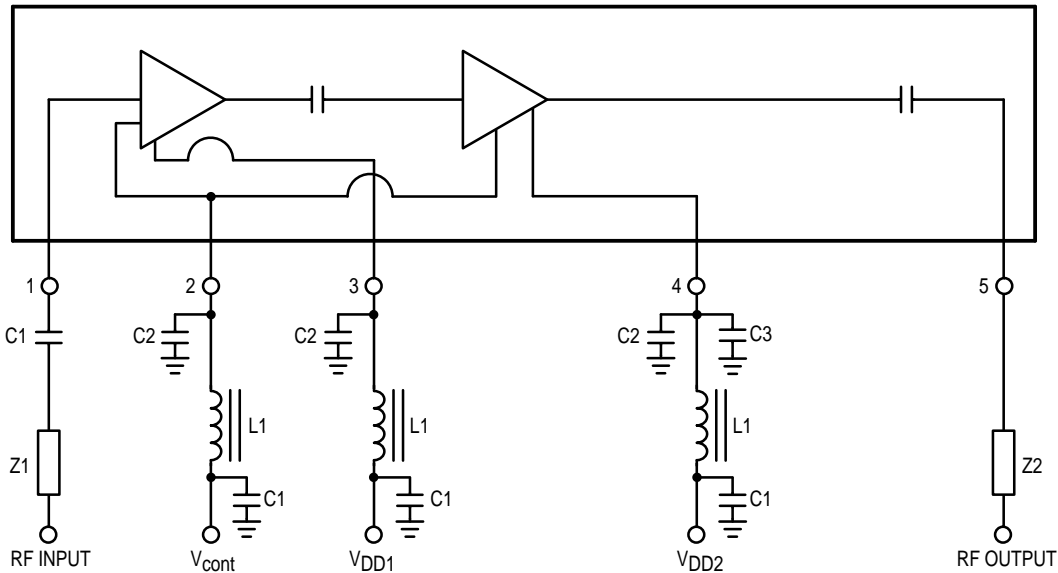
Rating	Symbol	Value	Unit
DC Supply Voltage (Pins 3, 4)	$V_{DD1, 2}$	9	Vdc
DC Control Voltage (Pin 2)	$V_{cont}$	9	Vdc
RF Input Power	$P_{in}$	40	mW
RF Output Power ( $V_{DD1, 2} = 9 V$ )	$P_{out}$	9	W
Operating Case Temperature Range	$T_C$	-30 to +100	°C
Storage Temperature Range	$T_{stg}$	-30 to +100	°C

**ELECTRICAL CHARACTERISTICS** ( $V_{DD1}, V_{DD2} = 7.5$  Vdc (Pins 3, 4);  $T_C = +25^\circ\text{C}$ ,  $50\ \Omega$  system unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
Frequency Range	BW	350	400	MHz
Control Voltage ( $P_{out} = 7$ W; $P_{in} = 20$ mW) (1)	$V_{cont}$	0	7	Vdc
Quiescent Current ( $V_{DD1}, V_{DD2} = 7.5$ Vdc; $P_{in} = 0$ mW, $V_{cont} = 0$ Vdc)	—	—	1	mA
Power Gain ( $P_{out} = 7$ W) (1)	$G_p$	25.5	—	dB
Efficiency ( $P_{out} = 7$ W; $P_{in} = 20$ mW) (1)	$\eta$	40	—	%
Harmonics ( $P_{out} = 7$ W; $P_{in} = 20$ mW) (1)		$2.0 f_0$ 350 – 360 MHz $2.0 f_0$ 360 – 400 MHz	– 35 – 40	dBc
Input VSWR ( $P_{out} = 7$ W; $P_{in} = 20$ mW, $50\ \Omega$ Ref.) (1)	$VSWR_{in}$	—	2.3:1	—
Control Current ( $V_{DD1}, V_{DD2} = 7.5$ Vdc; $P_{in} = 20$ mW, $P_{out} = 7$ W) (1)	$I_{cont}$	—	2	mA
Load Mismatch Stress ( $V_{DD1}, V_{DD2} = 9$ Vdc; $P_{in} = 40$ mW; $P_{out} = 9$ W; Load VSWR = 10:1, at All Phase Angles) (1)	$\psi$	No Degradation in Output		
Stability ( $P_{in} = 20$ – $40$ mW; $V_{DD1}, V_{DD2} = 6$ – $9$ Vdc; $P_{out} =$ between $0.1$ W and $9$ W; Load VSWR = 8:1, at All Phase Angles) (1)	—	All Spurious Outputs More Than 60 dB Below Desired Signal		

(1) Adjust  $V_{cont}$  for Specified  $P_{out}$ .

**MHW2727 CIRCUIT BLOCK DIAGRAM**



**Pin Designations:**

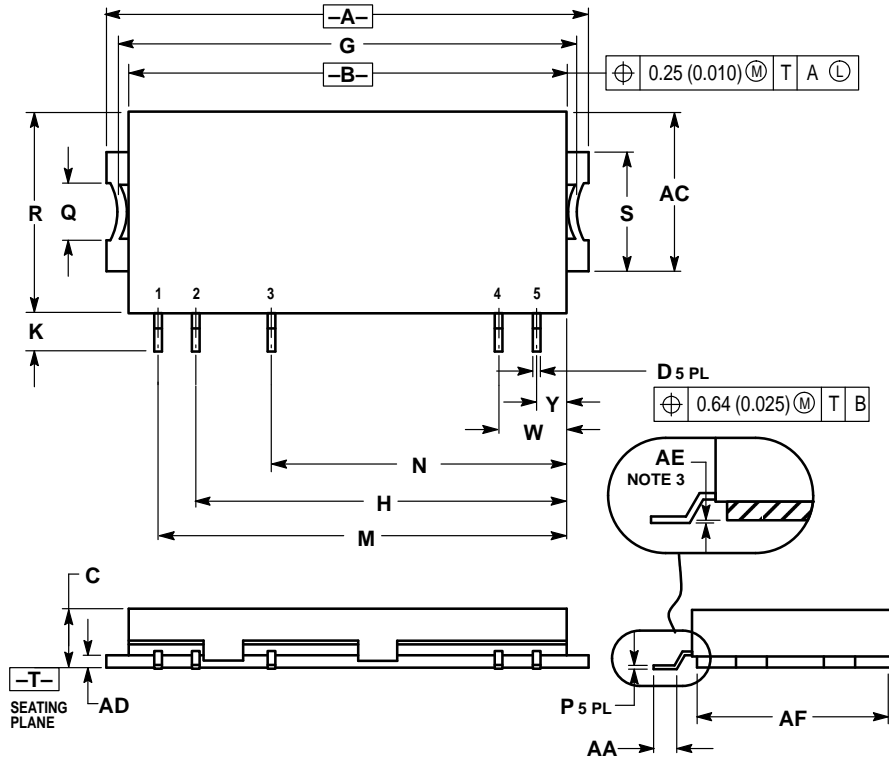
- Pin 1 — RF Input Power (13 dBm)
- Pin 2 —  $V_{cont}$  (0 – 9 Vdc)
- Pin 3 —  $V_{DD1}$  (7.5 Vdc)
- Pin 4 —  $V_{DD2}$  (7.5 Vdc)
- Pin 5 — RF OUT (7 Watts nom.)

**Element Values:**

- C1 = 0.018  $\mu\text{F}$
- C2 = 0.1  $\mu\text{F}$
- C3 = 3.3  $\mu\text{F}$
- L1 = 0.22  $\mu\text{H}$  CHOKE
- Z1, Z2 = 50  $\Omega$  Microstrip Line

**Figure 1. UHF Power Module Test Circuit Schematic and Device Block Diagram**

# PACKAGE DIMENSIONS



## NOTES:


1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION AE (PACKAGE COPLANARITY): THE BOTTOM OF THE DEVICE LEADS AND THE REFERENCE PLANE -T- MUST BE COPLANAR WITHIN DIMENSION AE.
4. REF INDICATES NON-CONTROLLED DIMENSION FOR REFERENCE USE ONLY.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	31.75	32.05	1.250	1.262
B	28.85	29.10	1.136	1.146
C	3.70	4.00	0.146	0.157
D	0.43	0.58	0.017	0.023
G	29.60 REF		1.165 REF	
H	24.51 BSC		0.965 BSC	
K	2.10	2.62	0.083	0.103
M	27.00 BSC		1.063 BSC	
N	19.51 BSC		0.768 BSC	
P	0.25 REF		0.010 REF	
Q	3.78 REF		0.149 REF	
R	13.15	13.45	0.518	0.530
S	8.00 REF		0.315 REF	
W	4.50 BSC		0.177 BSC	
Y	1.98 BSC		0.078 BSC	
AA	1.35	1.70	0.053	0.067
AC	10.50 REF		0.413 REF	
AD	0.81 REF		0.032 REF	
AE	+0.050	-0.076	+0.002	-0.003
AF	12.80 REF		0.504 REF	

## STYLE 1:

1. PIN
2. VCONT
3. VDD1
4. VDD2
5. POUT

**CASE 420AC-01  
ISSUE A**

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