The RF Line

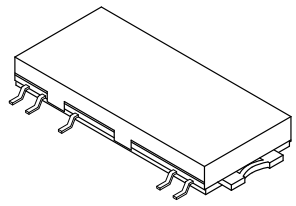
UHF Silicon FET Power Amplifiers

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_o 350 – 360 MHz
  – 40 dBc Max @ 2.0 f_o 360 – 400 MHz
- Epoxy Glass PCB Construction Gives Consistent Performance and Reliability
- 50 Ω 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

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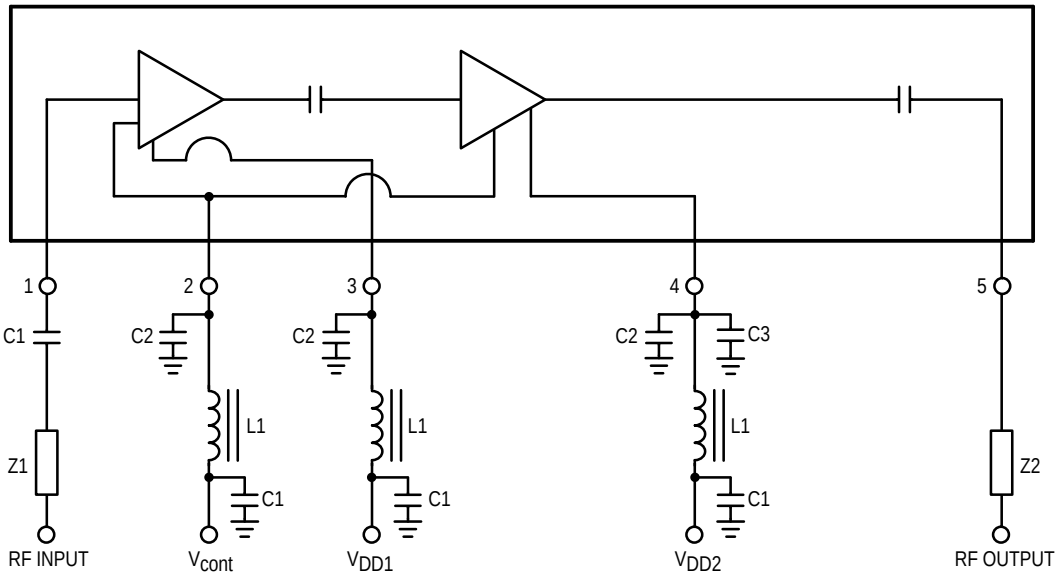
ELECTRICAL CHARACTERISTICS (V_{DD1}, V_{DD2} = 7.5 Vdc (Pins 3, 4); T_C = +25°C, 50 Ω system unless otherwise noted)

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)	η	40	—	%
Harmonics (P_{out} = 7 W; P_{in} = 20 mW) (1) 2.0 f_o 350 – 360 MHz 2.0 f_o 360 – 400 MHz	—	—	– 35 – 40	dBc
Input VSWR (P_{out} = 7 W; P_{in} = 20 mW, 50 Ω 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)	ψ	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:

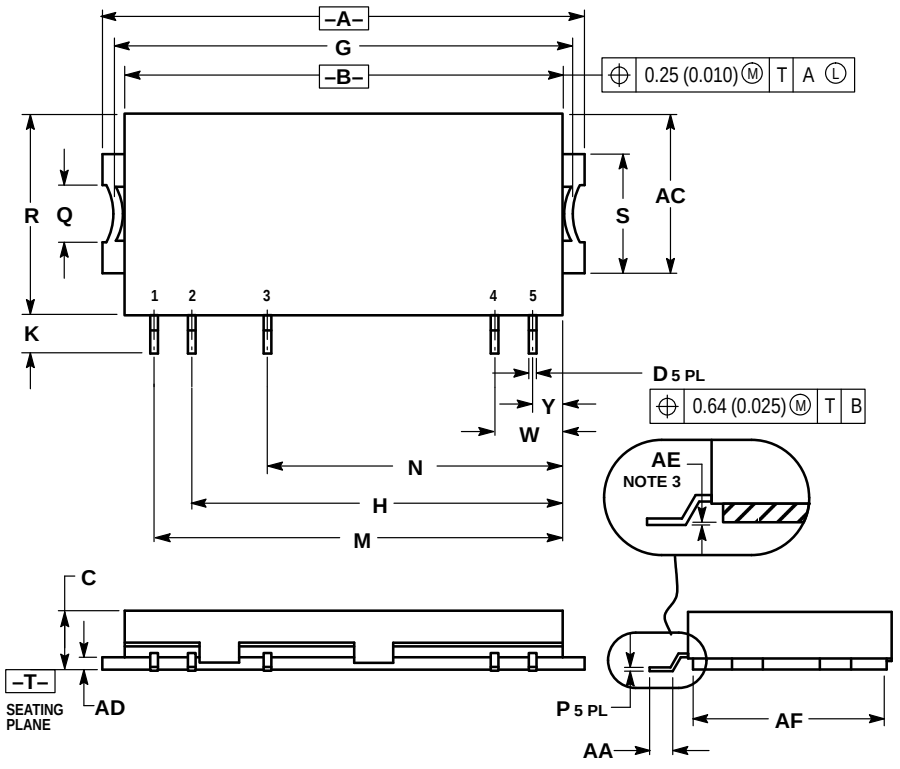
Pin 1 — RF Input Power (13 dBm)
Pin 2 — V_{cont} (0 – 9 Vdc)
Pin 3 — V_{DD1} (7.5 Vdc)
Pin 4 — V_{DD2} (7.5 Vdc)
Pin 5 — RF OUT (7 Watts nom.)

Element Values:

C1 = 0.018 µF
C2 = 0.1 µF
C3 = 3.3 µF
L1 = 0.22 µH CHOKE
Z1, Z2 = 50 Ω 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.

	MILLIMETERS		INCHES	
DIM	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:
PIN 1. P IN
2. VCONT
3. VDD1
4. VDD2
5. POUT

CASE 420AC–01
ISSUE A

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