

Features

- Ideal for WLAN and CDT Applications
- +26 dBm Saturated Output Power
- +24 dBm Output P1dB
- 29 dB Gain Typical
- Analog Power Control
- Integrated Detector
- 3 mm FQFP-N 16 Lead Package

Description

The MAAPSM0005 is a two stage power amplifier, designed for 2.4 GHz WLAN applications. It meets the 802.11b spectral mask requirements at an output power of +21 dBm. This power amplifier is mounted in a standard outline 3 mm FQFP-N 16 Lead plastic package. The MAAPSM0005 also features analog power control and an integrated detector.

The MAAPSM0005 is fabricated using M/A-COM's iHBT process for high power efficiency and low leakage shutdown.

Ordering Information

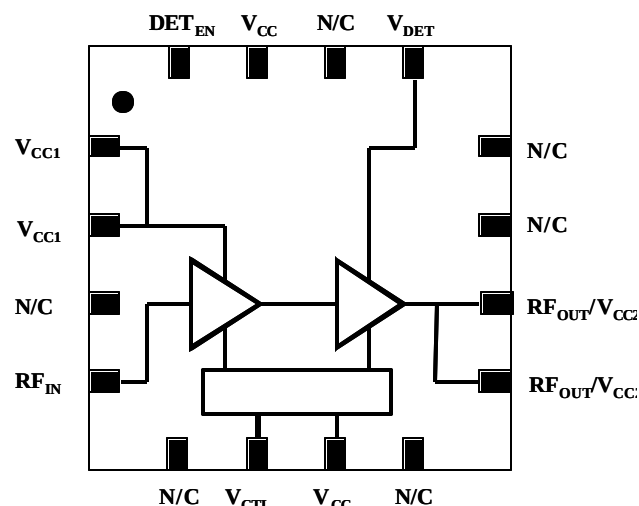
Part Number	Package
MAAPSM0005TR	7 inch, 1000 piece reel
MAAPSM0005TR-3000	13 inch, 3000 piece reel
MAAPSM0005SMB	Sample Test Board

Absolute Maximum Ratings¹

Parameter	Absolute Maximum
Max Input Power	+ 10 dBm
Operating Voltages	+5.0 volts
Operating Temperature	-20 °C to +85 °C
Channel Temperature	+150 °C
Storage Temperature	-40 °C to +150 °C

1. Exceeding any one or combination of these limits may cause permanent damage.

Functional Schematic



Pin Configuration

PIN No.	PIN Name	Description
1	V _{CC1}	First Stage Supply Voltage
2	V _{CC1}	First Stage Supply Voltage
3	N/C	No Connect
4	RF _{IN}	RF Input
5	N/C	No Connect
6	V _{CTL}	Control Voltage
7	V _{CC}	Bias Circuit Supply Voltage
8	N/C	No Connect
9	RF _{OUT} /V _{CC2}	RF Output, 2nd Stage Supply
10	RF _{OUT} /V _{CC2}	RF Output, 2nd Stage Supply
11	N/C	No Connect
12	N/C	No Connect
13	V _{DET}	Detector Output
14	N/C	No Connect
15	V _{CC}	Detector Circuit Supply Voltage
16	DET _{EN}	Detector Enable
Pad	GND	RF & DC Ground

Electrical Specifications: $T_A = 25\text{ }^{\circ}\text{C}$, $Z_0 = 50\text{ }\Omega$, $V_{CC} = 3.3\text{ V}$, $V_{CTL} = 2.85\text{ V}$

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Frequency		GHz	2.4		2.5
Output Power, Saturated		dBm		+26	
Output Power, P1dB		dBm		+24	
Output Power, Linear	Modulation = DSSS	dBm		21	
Small Signal Gain		dB		29	
Current, Operating	$P_{OUT} = +21\text{ dBm}$ CW or DSSS	mA		175	
Current, Off	$V_{CTL} = 0\text{ V}$	μA		1	
Control Current		mA		4	
Input VSWR				1.4:1	2.0:1
Isolation, Reverse		dB		30	
Isolation, Forward	$V_{CTL} = 0\text{ V}$	dB		30	
Detector Output, Single	$P_{OUT} = +10\text{ dBm}$	V		0	
	$P_{OUT} = +18\text{ dBm}$	V		0.7	
	$P_{OUT} = +24\text{ dBm}$	V		1.5	
	$P_{OUT} = +26\text{ dBm}$	V		1.8	
Harmonics		dBc		-40	
Duty Cycle		%			100
Stability	$+3.0\text{ V} < V_{CC} < +3.6\text{ V}$, $P_{OUT} < +23\text{ dBm}$, VSWR $< 6:1$, $-20\text{ }^{\circ}\text{C} < T_C < 85\text{ }^{\circ}\text{C}$, RBW = 3 MHz max. hold		All spurs $< -60\text{ dBc}$		
Ruggedness	$0\text{ V} < V_{CC} < +5.0\text{ V}$, $P_{OUT} < +23\text{ dBm}$, VSWR $< 8:1$		No Permanent Damage		

Operating The MAAPSM0005

The MAAPSM0005 is static sensitive. Please handle with care. To operate the device, follow these steps.

1. Apply V_{CC} (3.3 V).
2. Apply V_{CTL} (2.85 V).
3. Ramp Pin
4. Turn off in reverse order with V_{CC} last.

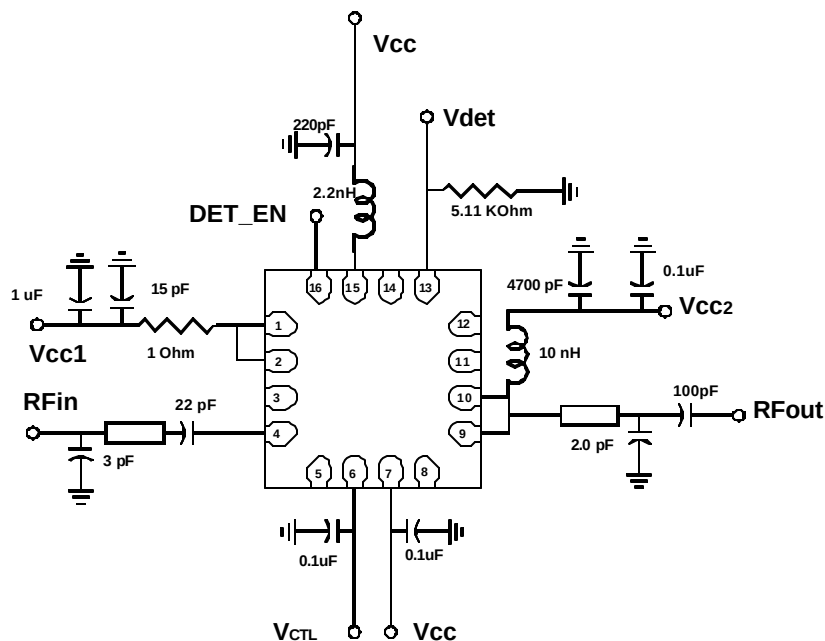
Handling Procedures

Please observe the following precautions to avoid damage to the MAAPSM0005:

Static Sensitivity

Gallium arsenide integrated circuits are ESD sensitive and can be damaged by static electricity. Use proper ESD precautions when handling these devices.

Application Schematic



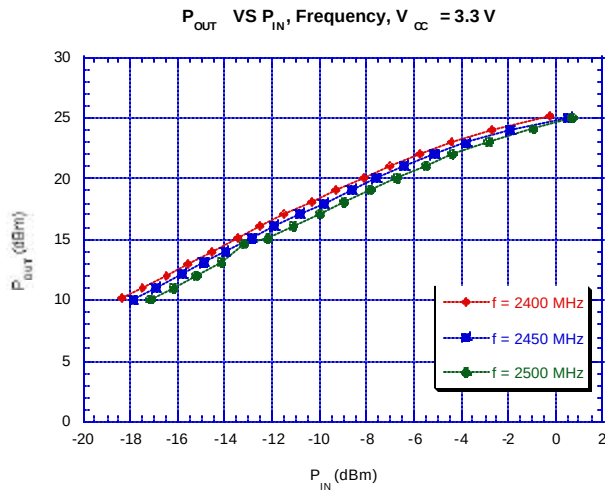
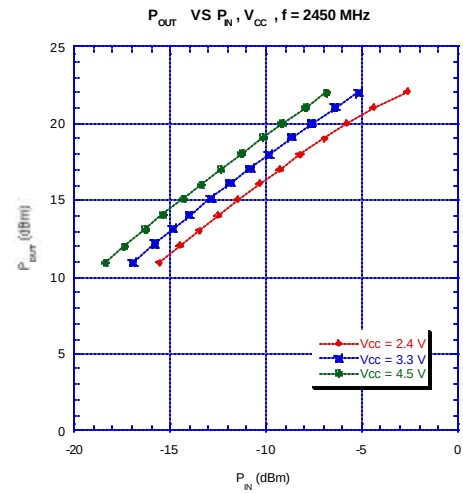
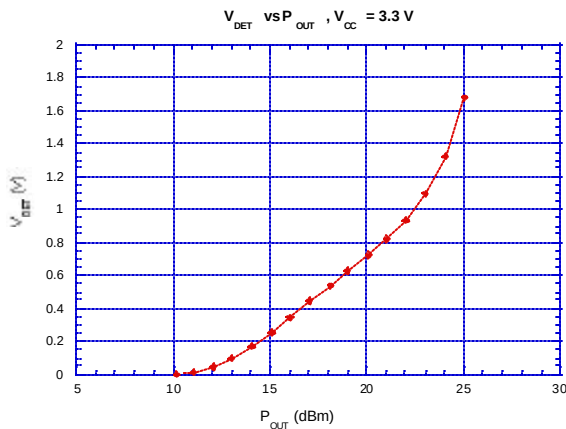
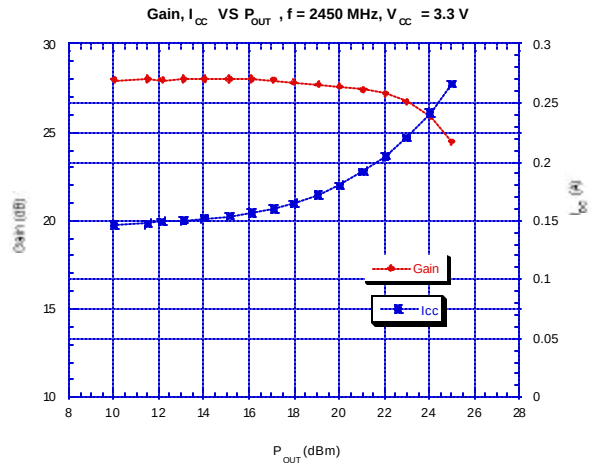
1. Vcc1, +3.3V
2. Vcc1, +3.3V
3. N/C
4. RFin
5. N/C
6. VCTL, +2.85V/0V
7. Vcc, +3.3V
8. N/C
9. RFout
10. RFout
11. N/C
12. N/C
13. Vdet
14. N/C
15. Vcc, +3.3V
16. DET_EN, +2.85V

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Typical Performance Curves

 P_{OUT} vs. Frequency P_{OUT} vs. P_{OUT}  V_{DET} vs. P_{OUT} Gain I_{CC} vs. P_{OUT} 

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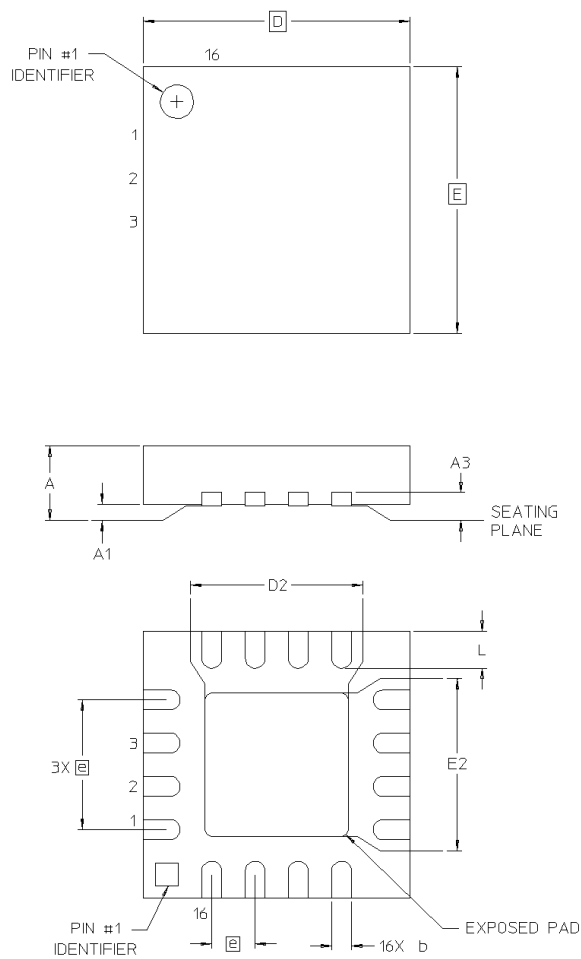
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3 mm FQFP-N 16 Lead Saw Singulated



DIMENSION SYMBOL	MEASUREMENT (mm)		
	MIN	NOM	MAX
A	0.80	0.90	1.00
A1	0	0.02	0.05
A3	0.25 REF		
b	0.18	0.23	0.30
D		3.00 BSC	
D2	1.30	1.45	1.55
e		0.50 BSC	
E		3.00 BSC	
E2	1.30	1.45	1.55
L	0.30	0.40	0.50

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