

2-Watt Power Amplifier

13.75 - 14.50 GHz

Advanced

V 1

MAAPSM0013

MAAPSM0013

Features

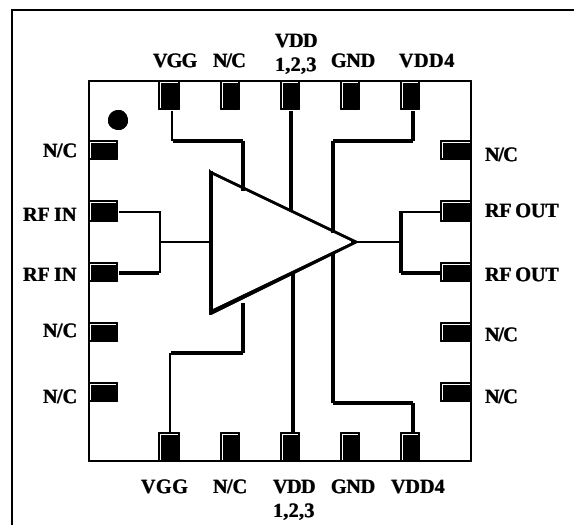
- Heat Sink on Base
- High Saturated Output Power: +33 dBm Typical
- 50 Ohm Input / Output Broadband Matched
- 5 mm FQFP-N 20-Lead Package

Description

The MAAPSM0013 is a four stage MMIC power amplifier mounted in a standard outline, 20-pin, 5-mm FQFP-N plastic package, designed ideally for Ku-Band VSAT applications. The MAAPSS0013 has fully matched 50 ohms input and output, eliminating the need for external RF tuning components. This product can be used as either a driver or an output stage amplifier.

M/A-COM fabricates the MAAPSS0013 using a self-aligned MSAG MESFET process to realize high power efficiency and small size. The process features full passivation for high performance and reliability.

Functional Schematic



Ordering Information

Part Number	Package
MAAPSM0013	5 mm FQFP-N 20 Lead
MAAPSM0013TR	MAAPSM0013 on 7-inch, 1000-piece reel
MAAPSM0013SMB	MAAPSM0013 Sample Test Board

Electrical Specifications: $T_C = 25^\circ\text{C}$, $V_{DD} = 8.0\text{ V}$, $I_{DQ} = 0.850\text{ A}$
(unless otherwise specified)

Parameter	Units	Min.	Typ.	Max.
Frequency	GHz	13.75		14.5
Input, Output VSWR			2.0:1	
Linear Gain	dB	25	27	
Saturated Power, $P_{in} = +9\text{ dBm}$	dBm	31.5	33	
P_{1dB}	dBm		32.5	
Drain Current	A		0.900	1.100
Power Flatness, $P_{in} = +9\text{ dBm}$	dB		± 1.0	
Gate Current	mA		5	

Specifications subject to change without notice.

- North America: Tel. (800) 366-2266, Fax (800) 618-8883
- Asia/Pacific: Tel. +81-44-844-8296, Fax +81-44-844-8298
- Europe: Tel. +44 (1344) 869 595, Fax +44 (1344) 300 020

Visit www.macom.com for additional data sheets and product information.

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Pin Configuration

PIN No.	PIN Name	Description
1	N/C	No Connect
2	RF IN	RF Input
3	RF IN	RF Input
4	N/C	No Connect
5	N/C	No Connect
6	VGG	Gate Supply
7	N/C	No Connect
8	VDD 1,2,3	Drain Supply
9	GND	Ground
10	VDD4	Drain Supply
11	N/C	No Connect
12	N/C	No Connect
13	RF OUT	RF Output
14	RF OUT	RF Output
15	N/C	No Connect
16	VDD4	Drain Supply
17	GND	Ground
18	VDD 1,2,3	Drain Supply
19	N/C	No Connect
20	VGG	Gate Supply
Base	GND	Package Ground

Absolute Maximum Ratings¹

Parameter	Absolute Maximum
DC Drain Supply Voltage	+10 volts
DC Gate Supply Voltage	-3 volts
Case Temperature	-40 °C to +85 °C
Channel Temperature	+150 °C
Storage Temperature	-40 °C to +150 °C
Input Power	15 dBm

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

Operating The MAAPSM00013

The MAAPSM0013 is static sensitive. Please handle with care. To operate the device, follow these steps.

1. Apply -2.5 Volts to V_{GG} .
2. Ramp V_{DD} +8V.
3. Adjust V_{GG} to set typical drain current .
4. Apply RF.
5. Power down sequence in reverse. Turn Gate Voltage off last.

Handling Procedures

Please observe the following precautions to avoid damage to the MAAPSM0013:

Static Sensitivity

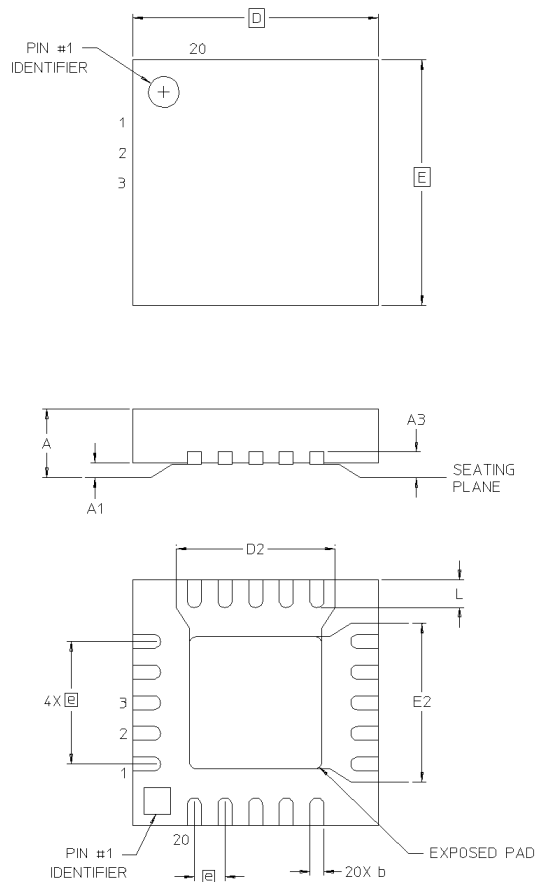
Gallium arsenide integrated circuits are ESD sensitive and can be damaged by static electricity. Use proper ESD precautions when handling these devices.

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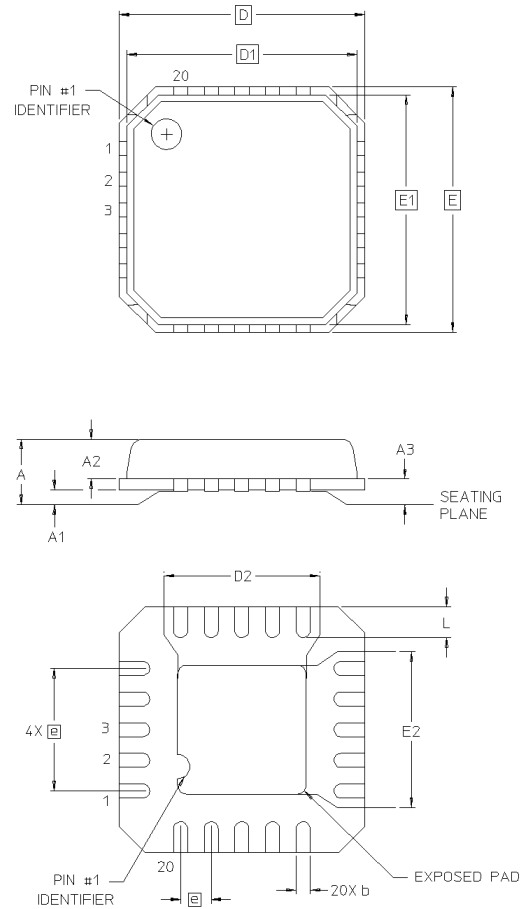
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5 mm FQFP-N 20 Lead Saw Singulated



5 mm FQFP-N 20 Lead Anvil Singulated



DIMENSION SYMBOL	MEASUREMENT (mm)			DIMENSION SYMBOL	MEASUREMENT (mm)		
	MIN	NOM	MAX		MIN	NOM	MAX
A	0.80	0.90	1.00	A	0.80	0.90	1.00
A1	0	0.02	0.05	A1	0	0.02	0.05
A3	0.25 REF			A2	0	0.65	1.00
b	0.23	0.30	0.38	A3	0.25 REF		
D		5.00 BSC		b	0.23	0.30	0.38
D2	1.25	2.70	3.25	D		5.00 BSC	
e		0.65 BSC		D1		4.75 BSC	
E		5.00 BSC		D2	1.25	2.70	3.25
E2	1.25	2.70	3.25	e		0.65 BSC	
L	0.35	0.55	0.75	E		5.00 BSC	
				E1		4.75 BSC	
				E2	1.25	2.70	3.25
				L	0.35	0.55	0.75

NOTES: 1. REFERENCE JEDEC MO-220, VAR. VHHC (ISSUE C) FOR ADDITIONAL DIMENSIONAL AND TOLERANCE INFORMATION.
2. REFERENCE S2083 APPLICATION NOTE FOR PCB FOOTPRINT INFORMATION.

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