

DECT Power Amplifier

1880 - 1930 MHz

Preliminary

V2P

Lead Free

MAAPSS0071

** Lead Free **

Features

- Ideal for DECT Applications
- Saturated Output Power: +26 dBm Typical
- Power Gain: 26 dB Typical
- Low Current: 400 mA at P_{SAT}
- Ramp Power Control
- Micro-Amp Shutdown
- 3 mm FQFP-N 12 Lead Package
- Operates from 1.5 V to 4.0 V

Description

The MAAPSS0071 is a three stage power amplifier designed for Cordless Telephone applications. This power amplifier is mounted in a standard outline 3 mm FQFP-N 12 Lead plastic package. The MAAPSS0071 features an integrated power enable control pin.

Ordering Information ¹

Part Number	Package
MAAPSS0071	3 mm FQFP-N 12 Lead Package
MAAPSS0071TR	7 inch, 1000 piece reel
MAAPSS0071TR-3000	13 inch, 3000 piece reel
MAAPSS0071SMB	Sample Test Board (Includes 5 Samples)

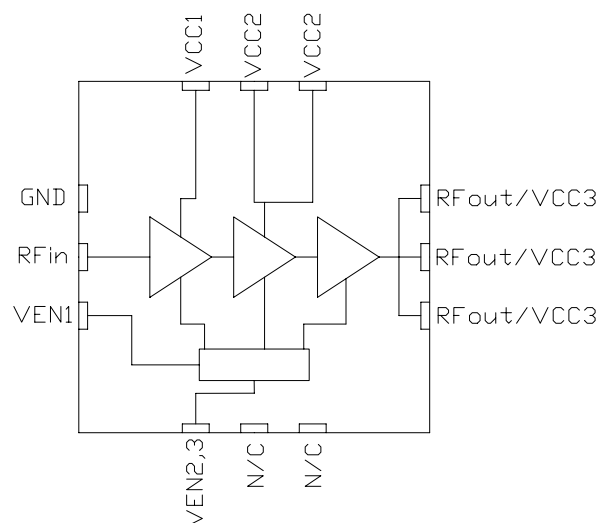
1. Reference Application Note M513 for reel size information.

Absolute Maximum Ratings ²

Parameter	Absolute Maximum
Max Input Power	+ 5 dBm
Operating Supply Voltage	+4.0 Volts
Operating Control Voltage	+3.0 Volts
Operating Temperature	-20 °C to +85 °C
Channel Temperature	+150 °C
Storage Temperature	-40 °C to +150 °C

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

Functional Schematic



Pin Configuration

PIN No.	PIN Name	Description
1	GND	Ground
2	RF _{IN}	RF Input
3	V _{EN1}	Power Enable
4	V _{EN2,3}	Power Enable
5	N/C	No Connection
6	N/C	No Connection
7	RF _{OUT} / V _{CC3}	RF Output, 3rd Stage Supply
8	RF _{OUT} / V _{CC3}	RF Output, 3rd Stage Supply
9	RF _{OUT} / V _{CC3}	RF Output, 3rd Stage Supply
10	V _{CC2}	2nd Stage Supply
11	V _{CC2}	2nd Stage Supply
12	V _{CC1}	1st Stage Supply
Pad	GND	RF & DC Ground

M/A-COM Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

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

■ North America: Tel. (800) 366-2266

■ Asia/Pacific: Tel. +81-44-844-8296, Fax +81-44-844-8298

■ Europe: Tel. +44 (1908) 574 200, Fax +44 (1908) 574 300

Electrical Specifications: $P_{IN} = -2$ to 2 dBm, 2.4 V, $V_{EN} = 2.5$ V, $T_A = 25$ °C

Parameter	Test Conditions	Units	Min.	Typ.	Max
Frequency		MHz	1880		1930
Small Signal Gain	$P_{IN} = -20$ dBm	dB		35	
Input Return Loss		dB		15	
Output Power		dBm		26	
Power Flatness	$2.0 < V_{CC} < 3.0$ V	dB		3	
PAE		%		45	
Current		mA		400	600
Current, Off	$V_{EN} = 0$ V	μ A		3	50
Pdiss	$P_{OUT} = 26.5$ dBm	W		0.5	
Control Pins	V_{EN} , Low V_{EN} , High Current	V V mA	0 2.0		0.5 2.5
Harmonics	2f 3f	dBc dBc		-35 -40	
Forward Isolation	$V_{EN} = 0$ V	dB		39	
Duty Cycle		%			100
Turn on/off time	Ton: RF burst to NTB-1 Toff: NTB-1 to off	μ sec		3	
Stability	$+1.5V < V_{CC} < +3.5$ V, $P_{IN} = -1$ to 2 dBm, VSWR $< 6:1$ $-20^\circ\text{C} < T_C < +70^\circ\text{C}$, RBW = 3 MHz max hold		All spurs < -60 dBc		

Operating the MAAPSS0071

The MAAPSS0071 is static sensitive. Please handle with care. To operate the device, follow these steps.

1. Apply V_{CC} (2.4 V).
2. Apply Pin (-1 to 2 dBm).
3. Apply V_{EN} (2.5 V).

M/A-COM Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

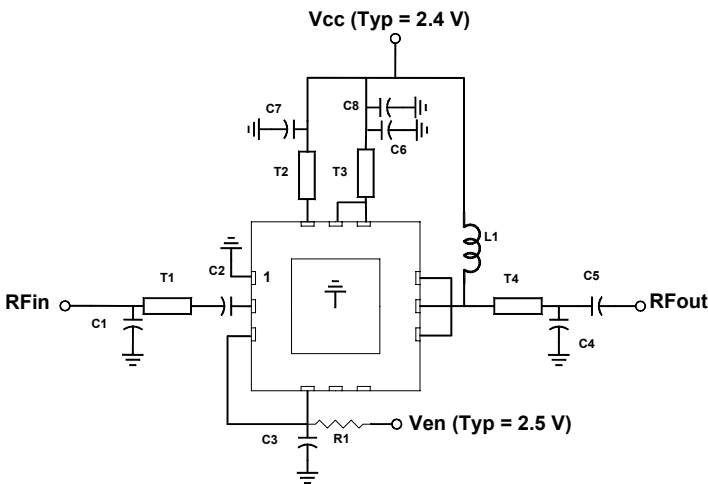
Visit www.macom.com for additional data sheets and product information.

■ North America: Tel. (800) 366-2266

■ Asia/Pacific: Tel. +81-44-844-8296, Fax +81-44-844-8298

■ Europe: Tel. +44 (1908) 574 200, Fax +44 (1908) 574 300

Evaluation Board Schematic



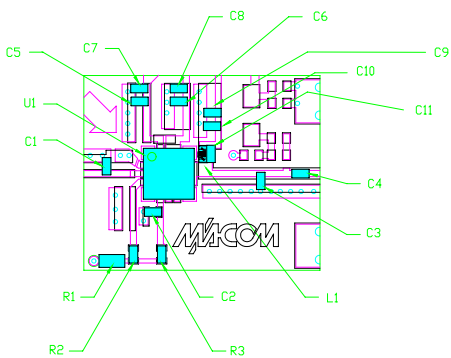
MAAPSS0071 Parts List

Designator	Value	Footprint	Manufacturer*	Part ID
C1	1 pF	0402	Murata	GRM1555C1H1R0CZ01B
C2, C4	3 pF	0402	Murata	GRM1555C1H3R0CZ01B
C3	22 nF	0402	Murata	GRM155R71C223KA01B
C5, C6	47 pF	0402	Murata	GRM1555C1H470JZ01B
C7, C8	100 nF	0402	Murata	GRM155F51C104ZA01B
R1	475 Ohm	0402	Panasonic	ERJ-3EKF4750V
L1	10 nH	0402	Coilcraft	0402CS-10NXJB

* Equivalent components can be substituted.

Transmission Line Lengths, 0.20 mm thick FR4

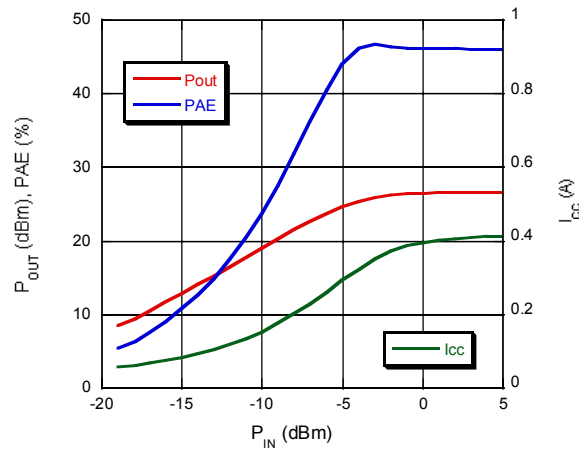
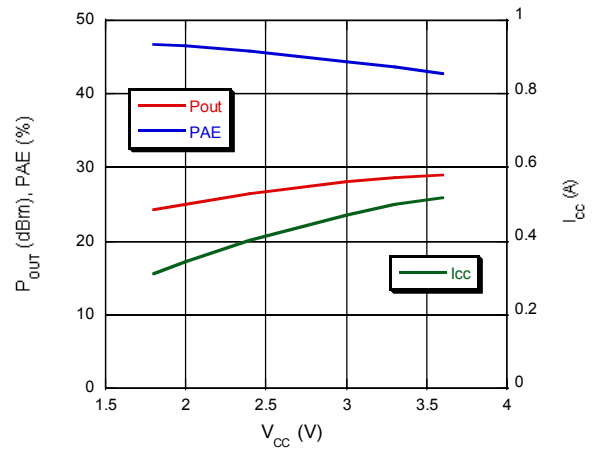
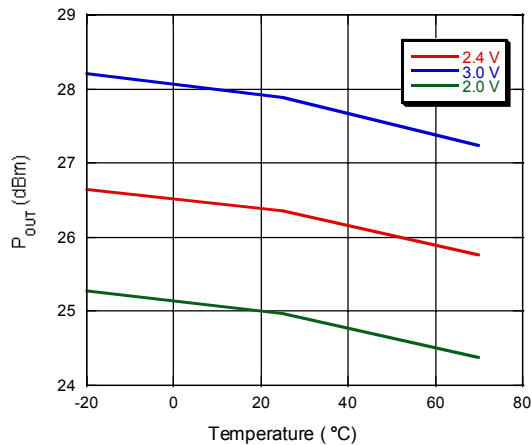
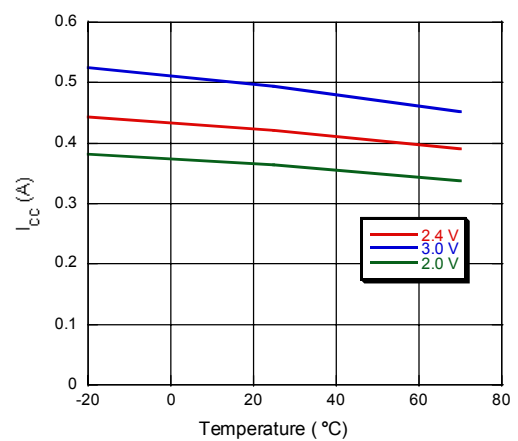
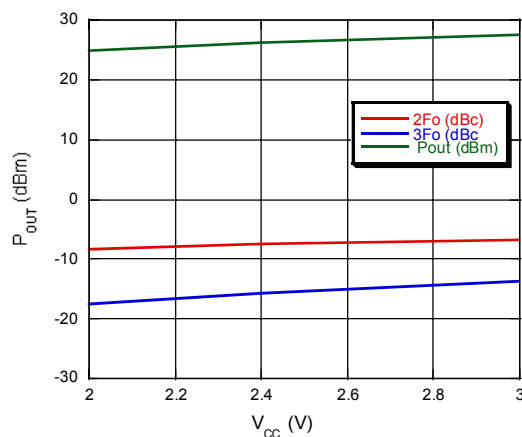
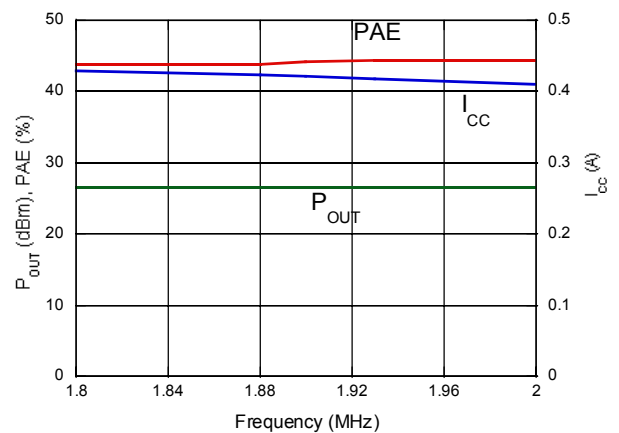
Designator	Length (mm) *	Width (mm)
T1	2.16	0.36
T2	3.56	0.20
T3	3.05	0.20
T4	3.94	0.36
* From package edge to center of component		



M/A-COM Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

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

■ North America: Tel. (800) 366-2266
■ Asia/Pacific: Tel. +81-44-844-8296, Fax +81-44-844-8298
■ Europe: Tel. +44 (1908) 574 200, Fax +44 (1908) 574 300

Typical Characteristics (All data uses the supplied sample board BOM) **P_{OUT} , PAE, I_{CC} vs. P_{IN} @ 2.4 V, 1900 MHz** **P_{OUT} , PAE, I_{CC} vs. V_{CC} @ 1900 MHz, $P_{IN} = 0$ dBm** **P_{OUT} vs. Temperature @ 1900 MHz, $P_{IN} = 0$ dBm** **I_{CC} vs. Temperature @ 1900 MHz, $P_{IN} = 0$ dBm** **P_{OUT} vs. V_{CC} @ 1900 MHz, $P_{IN} = 0$ dBm** **P_{OUT} , PAE, I_{CC} vs. Frequency @ $V_{CC} = 2.4$ V, $P_{IN} = 0$ dBm**

M/A-COM Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

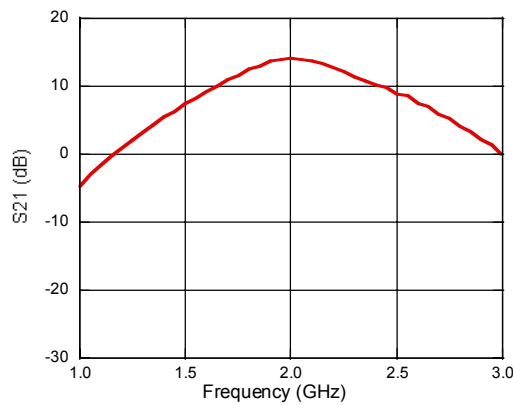
Visit www.macom.com for additional data sheets and product information.

■ North America: Tel. (800) 366-2266

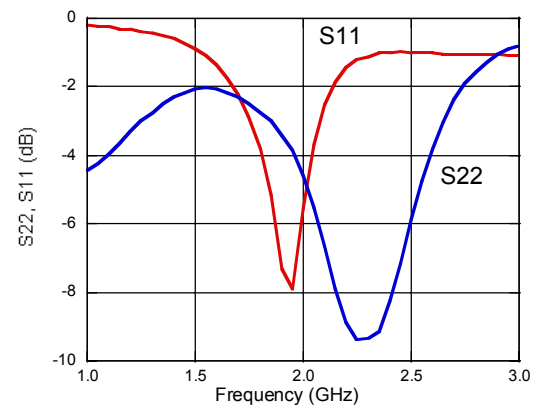
■ Asia/Pacific: Tel. +81-44-844-8296, Fax +81-44-844-8298

■ Europe: Tel. +44 (1908) 574 200, Fax +44 (1908) 574 300

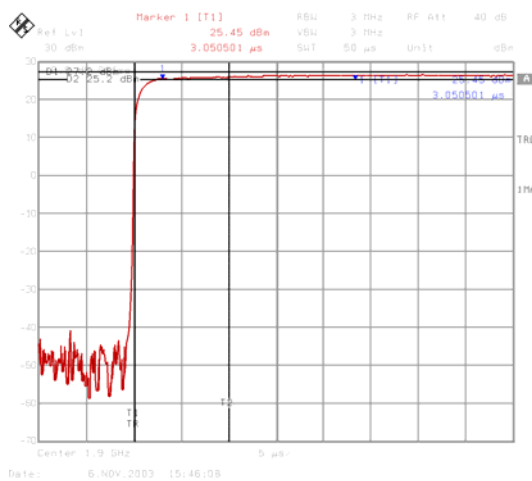
S21 VS. Frequency @ $V_{CC} = 2.4$ V, $V_{EN} = 2.5$ V



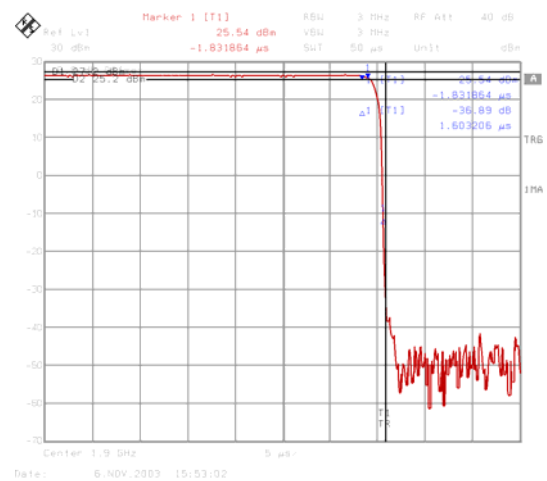
S22, S11 VS. Frequency @ $V_{CC} = 2.4$ V, $V_{EN} = 2.5$ V



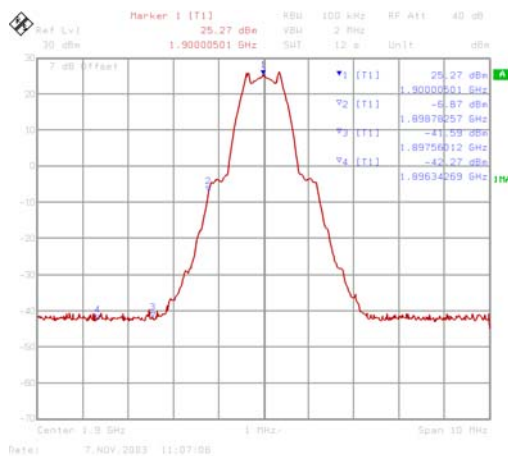
P_{OUT} vs. Time, 3 μ sec Rise Time



P_{OUT} vs. Time, 2 μ sec Fall Time



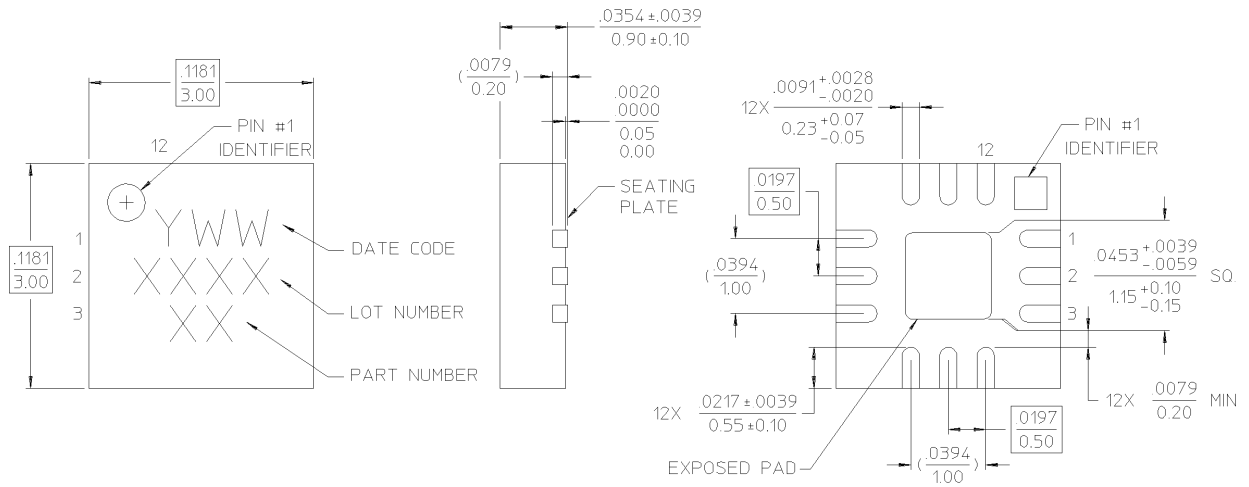
Spectral Emissions, CW @ 2.4 V, 1900 MHz



M/A-COM Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

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

North America: Tel. (800) 366-2266
Asia/Pacific: Tel. +81-44-844-8296, Fax +81-44-844-8298
Europe: Tel. +44 (1908) 574 200, Fax +44 (1908) 574 300

3 mm FQFP-N 12 Lead ³

- NOTES: 1. REFERENCE JEDEC MO-220, VAR. VEED-1 FOR ADDITIONAL DIMENSIONAL AND TOLERANCE INFORMATION.
 2. REFERENCE S2083 APPLICATION NOTE FOR PCB FOOTPRINT INFORMATION.
 3. ALL DIMENSIONS SHOWN AS INCHES/MM.

3. Reference M/A-COM's application note S2083 for FQFP-N surface mount instructions.

M/A-COM Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

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

- North America: Tel. (800) 366-2266
- Asia/Pacific: Tel. +81-44-844-8296, Fax +81-44-844-8298
- Europe: Tel. +44 (1908) 574 200, Fax +44 (1908) 574 300