

**DECT Power Amplifier  
1880 - 1930 MHz**

**MAAPSS0071  
V2**

**Features**

- Ideal for DECT Applications
- Saturated Output Power: +26 dBm Typical
- Power Gain: 26 dB Typical
- Low Current: 400 mA at P<sub>SAT</sub>
- Ramp Power Control
- Micro-Amp Shutdown
- Operates from 1.5 V to 4.0 V
- Lead-Free 3 mm 12-Lead PQFN Package
- 100% Matte Tin Plating over Copper
- Halogen-Free “Green” Mold Compound
- RoHS\* Compliant 260°C Reflow Compatible

**Description**

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

**Ordering Information**

Part Number	Package
MAAPSS0071	Bulk Packaging
MAAPSS0071TR-3000	3000 piece reel
MAAPSS0071SMB	Sample Test Board (Includes 5 Samples)

Note: Reference Application Note M513 for reel size information.

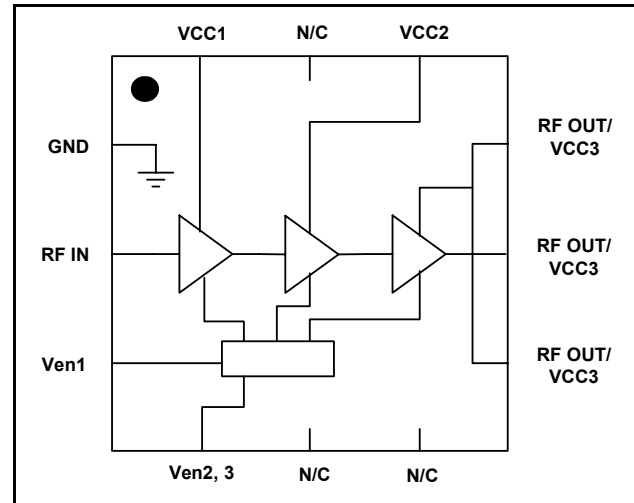
**Absolute Maximum Ratings** <sup>1,2</sup>

Parameter	Absolute Maximum
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

1. Exceeding any one or combination of these limits may cause permanent damage to this device.
2. M/A-COM does not recommend sustained operation near these survivability limits.

\* Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.

**Functional Schematic**



**Pin Configuration**

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

3. The exposed pad centered on the package bottom must be connected to RF and DC ground.

**DECT Power Amplifier  
1880 - 1930 MHz**

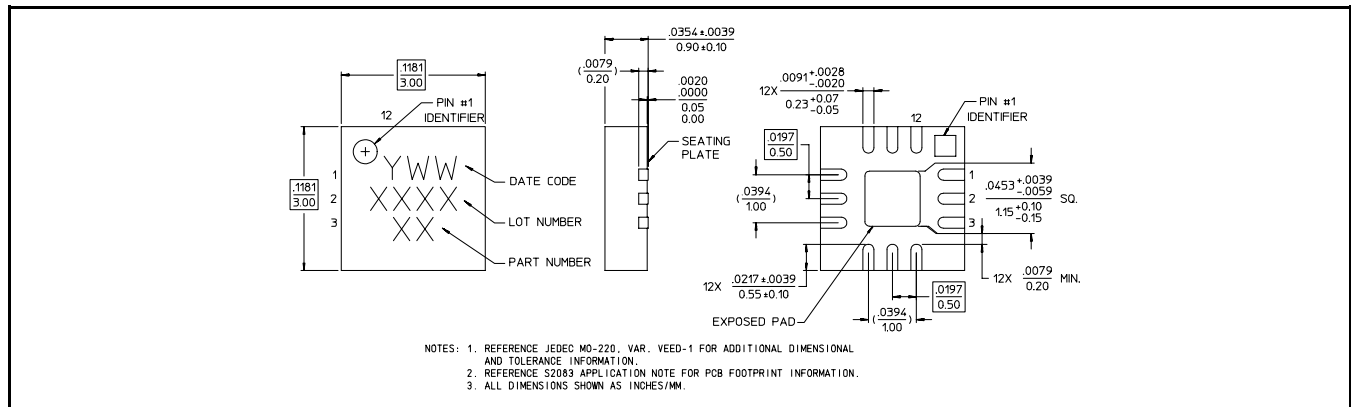
**MAAPSS0071  
V2**

**Electrical Specifications:**

**Frequency = 1905 MHz, P<sub>IN</sub> = -2 to 2 dBm, V<sub>CC</sub> = 2.4 V, V<sub>EN</sub> = 2.5 V, T<sub>A</sub> = 25 °C, Z<sub>0</sub> = 50Ω**

Parameter	Test Conditions	Units	Min.	Typ.	Max
Input Return Loss	—	dB	—	15	—
Output Power	—	dBm	24	26	27
Power Flatness	2.0 < V <sub>CC</sub> < 3.0 V	dB	—	3	—
PAE	—	%	—	45	—
Current	—	mA	—	400	500
Current, Off	V <sub>EN</sub> = 0 V	μA	—	3	10
Pdiss	P <sub>OUT</sub> = 26.0 dBm	W	—	0.5	—
Control Pins	V <sub>EN, Low</sub>	V	0	—	0.5
	V <sub>EN, High</sub>	V	2.0	—	2.5
	Current	mA	—	2.0	4.0
Harmonics	2f	dBc	—	-35	—
	3f	dBc	—	-40	—
Forward Isolation	V <sub>EN</sub> = 0 V	dB	—	39	—
Duty Cycle	—	%	—	—	100
Turn on/off time	Ton: RF burst to NTP-1	μS	—	3	—
	Toff: NTP-1 to off	μS	—	2	—
Stability	+1.5V < V <sub>CC</sub> < +3.5 V, P <sub>IN</sub> = -2 to 2 dBm, VSWR < 6:1 -20°C < T <sub>C</sub> < +70°C, RBW = 3 MHz max hold		All spurs < -60 dBc		

**Lead-Free 3 mm 12-Lead PQFN†**

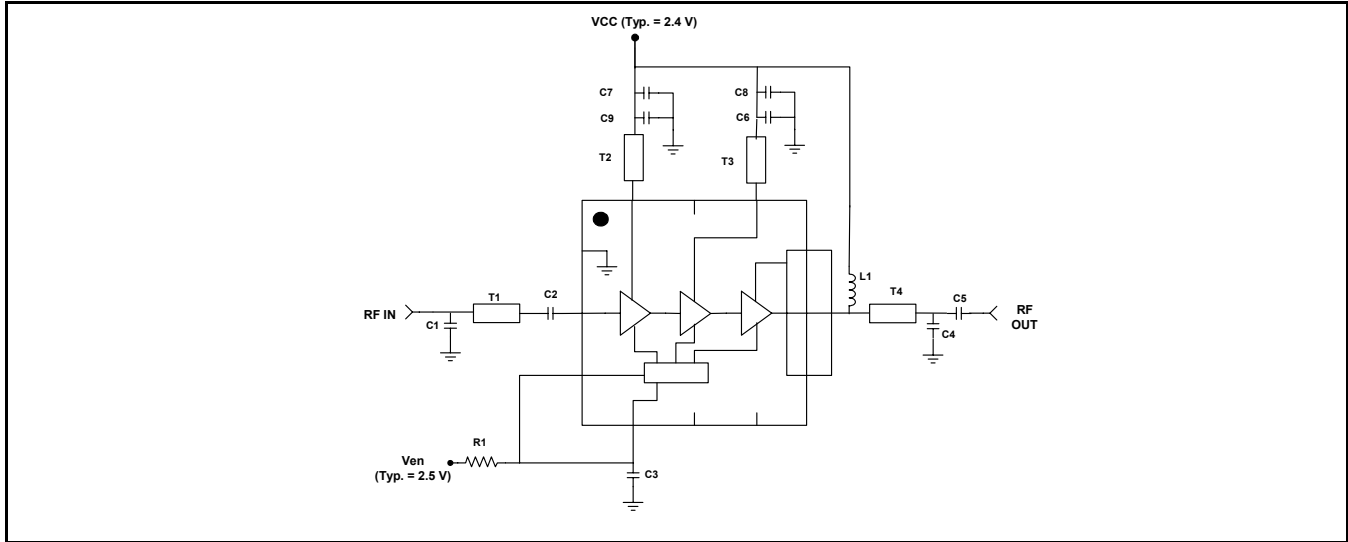


† Reference Application Note M538 for lead-free solder reflow recommendations.

**Operating the MAAPSS0071**

The MAAPSS0071 can be damaged by electrostatic discharge (ESD). Use proper ESD control techniques when handling this device. To operate the MAAPSS0071, turn on the V<sub>CC</sub> before V<sub>EN</sub> for power on and turn off V<sub>CC</sub> after V<sub>EN</sub> for shutdown.

**Evaluation Board Schematic**



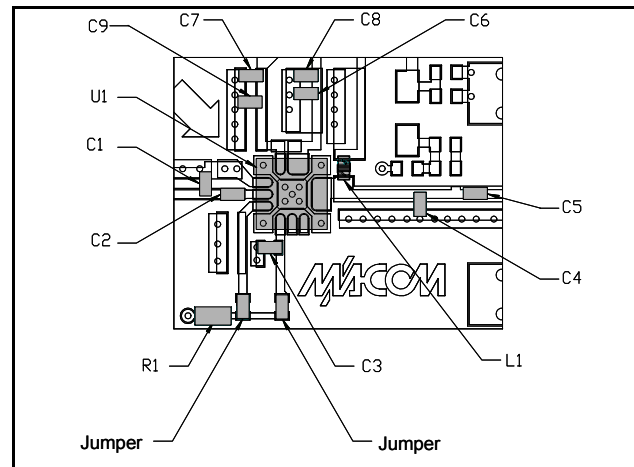
**MAAPSS0071 External Parts List**

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
C9	4 pF	0402	Murata	GRM155C1H4R0CZ01B
R1	475 Ohm	0402	Panasonic	ERJ-3EKF4750V
L1	10 nH	0402	Coilcraft	0402CS-10NXJB

**Transmission Line Dimensions, 0.20 mm thick FR4**

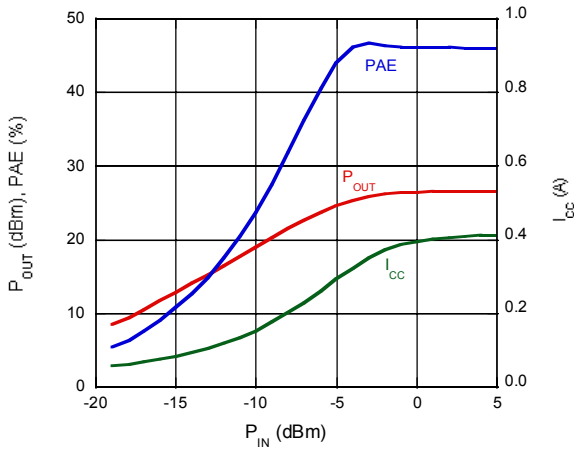
Designator	Length (mm) <sup>4</sup>	Width (mm)
T1 <sup>5</sup>	2.16	0.37
T2	2.54	0.37
T3	3.05	0.37
T4	3.94	0.37

- 4. From package edge to center of component.
- 5. T1 is measured from package edge (not C2) to the center of C1.

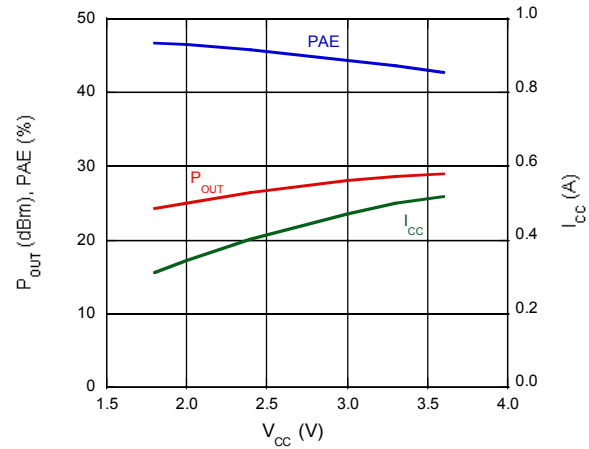


**Typical Characteristics (Using the supplied sample board BOM)**

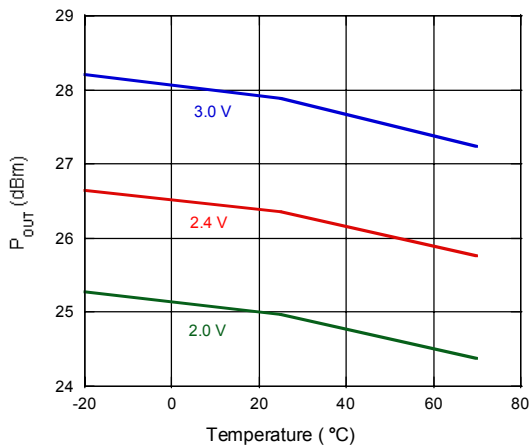
**$P_{OUT}$ , PAE,  $I_{CC}$  vs.  $P_{IN}$  @ 2.4 V, 1900 MHz**



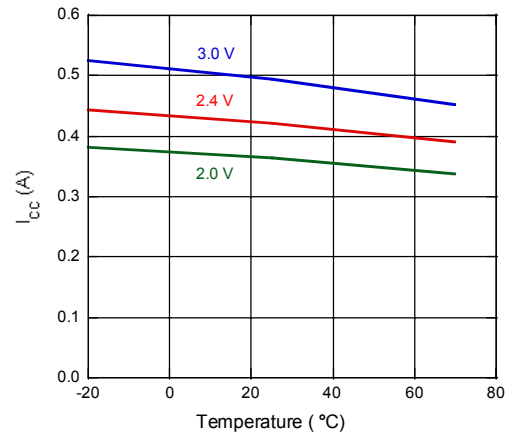
**$P_{OUT}$ , PAE,  $I_{CC}$  vs.  $V_{CC}$  @ 1900 MHz,  $P_{IN} = 0$  dBm**



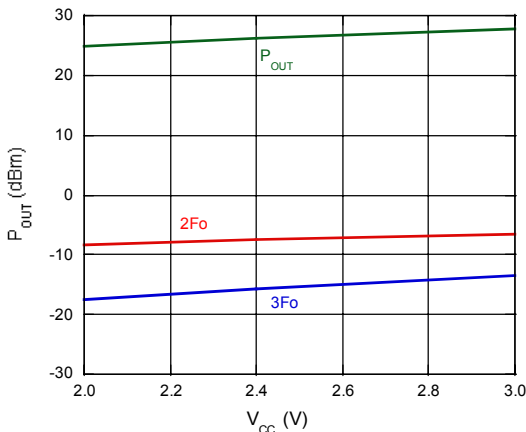
**$P_{OUT}$  vs. Temperature @ 1900 MHz,  $P_{IN} = 0$  dBm**



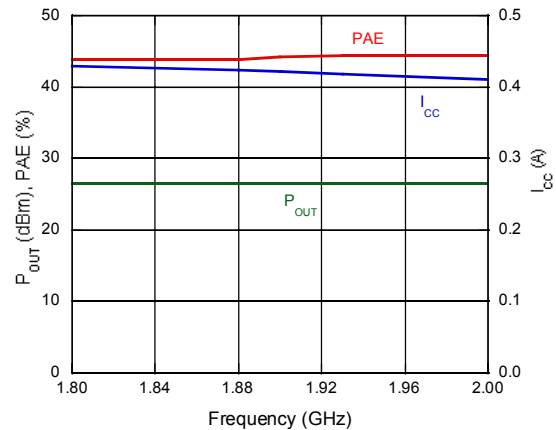
**$I_{CC}$  vs. Temperature @ 1900 MHz,  $P_{IN} = 0$  dBm**



**$P_{OUT}$  vs.  $V_{CC}$  @ 1900 MHz,  $P_{IN} = 0$  dBm**

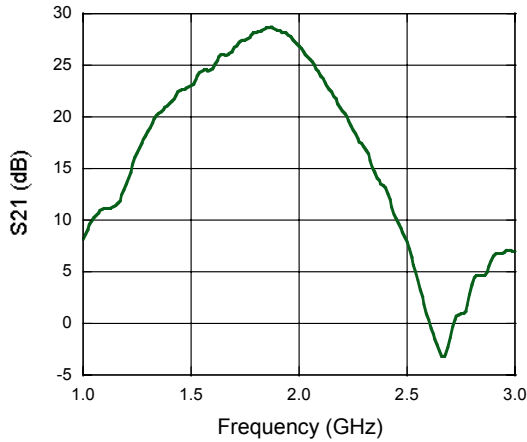


**$P_{OUT}$ , PAE,  $I_{CC}$  vs. Frequency @  $V_{CC} = 2.4$  V,  $P_{IN} = 0$  dBm**



**Typical Characteristics (Using the supplied sample board BOM)**

**S21 vs. Frequency @  $V_{CC} = 2.4\text{ V}$ ,  $V_{EN} = 2.5\text{ V}$**



**S22, S11 vs. Frequency @  $V_{CC} = 2.4\text{ V}$ ,  $V_{EN} = 2.5\text{ V}$**

