

Lead Free

MAAPSS0082

Lead Free

Features

- Ideal for PHS Applications
- Linear Output Power: +23 dBm Typical
- Power Gain: 31 dB Typical
- Low Current: 280 mA at 23 dBm Pout
- Micro-Amp Shutdown
- Lead Free 3 mm FQFP-N 12-lead Package
- Operates from 2.8 V to 3.5 V

Description

The MAAPSS0082 is a three stage power amplifier designed for PHS applications. This power amplifier is packaged in a lead free standard outline Lead Free 3 mm FQFP-N 12-lead plastic package. The MAAPSS0082 features an integrated power enable control pin.

Ordering Information ¹

Part Number	Package
MAAPSS0082	Lead Free 3 mm FQFP-N 12-lead Package
MAAPSS0082TR	7 inch, 1000 piece reel
MAAPSS0082TR-3000	13 inch, 3000 piece reel
MAAPSS0082SMB	Sample Test Board (Includes 5 Samples)

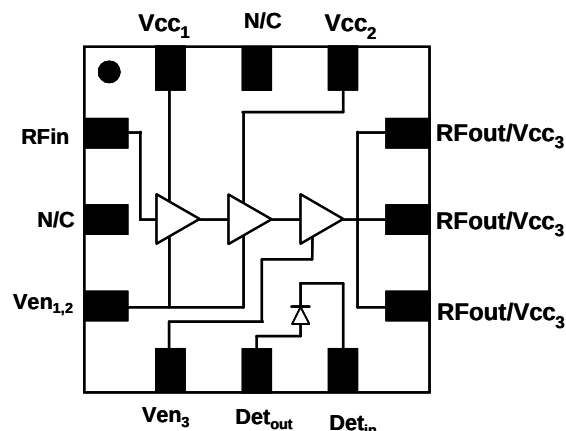
1. Reference Application Note M513 for reel size information.

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	RF _{IN}	RF Input
2	N/C	No Connect ion
3	Ven _{1,2}	Power Enable
4	Ven ₃	Power Enable
5	DET _{out}	Detector Output
6	DET _{in}	Detector Input
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	N/C	No Connect ion
12	V _{CC1}	1st Stage Supply
Pad	GND	RF & DC Ground

Electrical Specifications: $V_{CC} = 3.3\text{ V}$, $V_{EN} = 3.0\text{ V}$, $T_A = 25\text{ }^{\circ}\text{C}$

Parameter	Test Conditions	Units	Min.	Typ.	Max
Frequency		GHz	1.89		1.92
Small Signal Gain	$P_{IN} = -20\text{ dBm}$	dB		31	
Input Return Loss		dB		15	
Linear Output Power	ACPR @ 600 kHz offset < -60 dBc ACPR @ 900 kHz offset < -70 dBc	dBm		23	
P1dB		dBm		26.5	
PAE	$P_{OUT} = 23\text{ dBm}$	%		25	
Operating Current	$P_{OUT} = 23\text{ dBm}$	mA		280	
Idle Current	No RF applied	mA		90	
Current, Off	$V_{EN} = 0\text{ V}$	μA		3	
Pdiss	$P_{OUT} = 23\text{ dBm}$	W		0.5	
Control Pins	$V_{EN, Low}$ $V_{EN, High}$ Current	V V mA	0 2.5	4	0.5 3.0
Forward Isolation	$V_{EN} = 0\text{ V}$	dB		39	
Duty Cycle		%			100
Stability	$P_{OUT} < 27\text{ dBm}$, $VSWR < 4:1$ $-20^{\circ}\text{C} < T_C < +70^{\circ}\text{C}$		All spurs < -60 dBc		

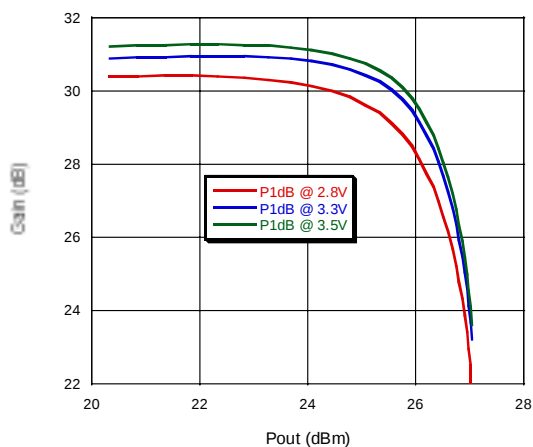
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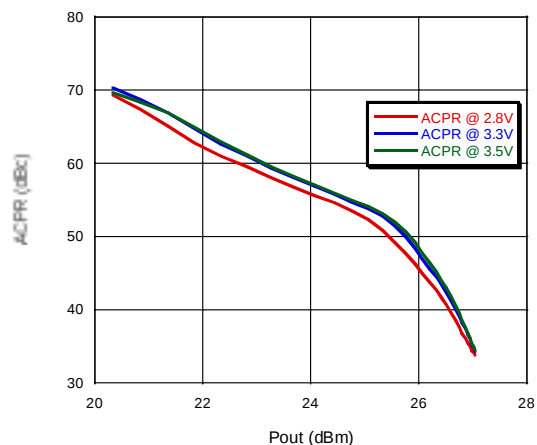
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Typical Characteristics (All data uses the supplied sample board BOM)

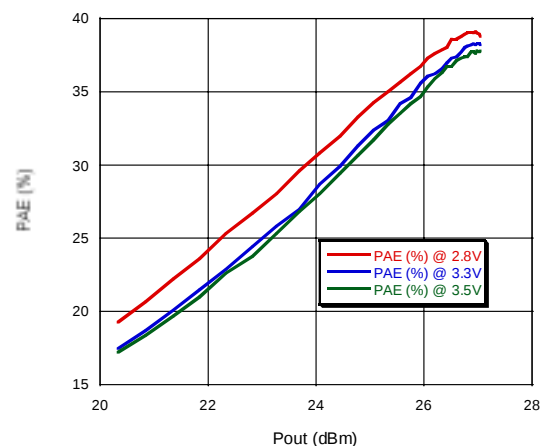
P1dB over Voltage @ 1.9 GHz



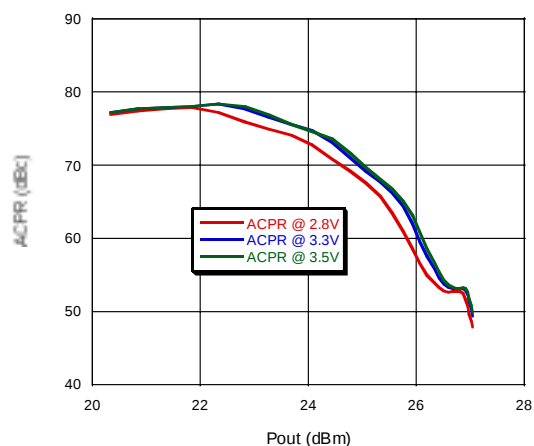
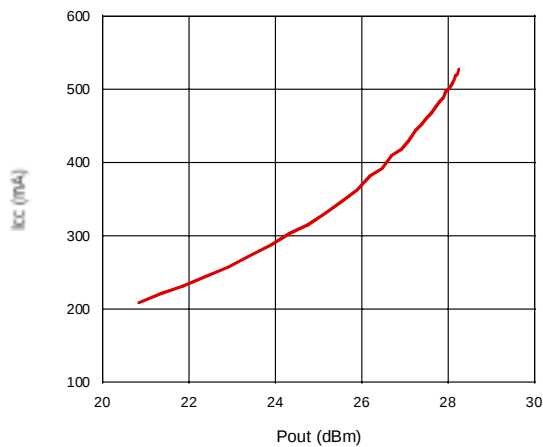
Adjacent Channel Power Ratio over Voltage @ 1.9 GHz



PAE over Voltage @ 1.9 GHz



Alternate Channel Power Ratio over Voltage @ 1.9 GHz

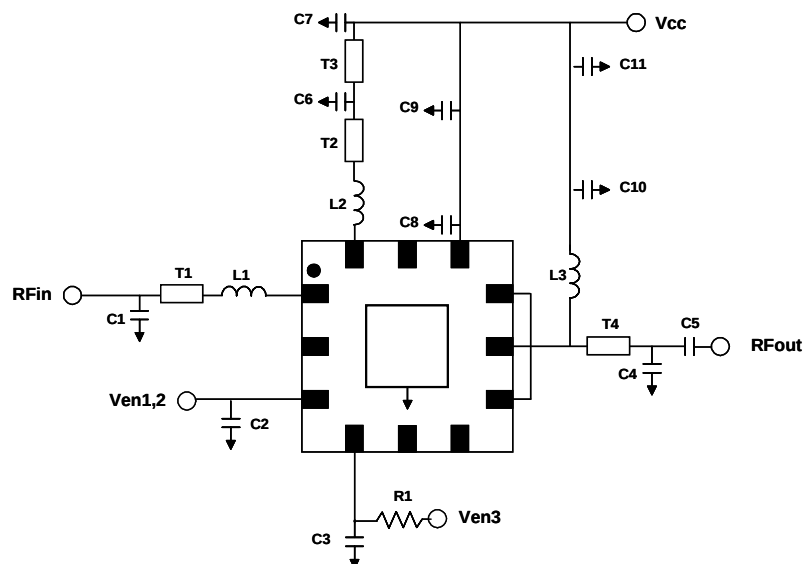
 I_{CC} vs. Pout @ 3.3 V

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Evaluation Board Schematic



MAAPSS0082 Parts List

Designator	Value	Footprint	Manufacturer*	Part ID
C1	2 pF	0402	Murata	GRM1555C1H1R0CZ01B
C2, C3, C7, C9, C11	0.1 uF	0402	Murata	ECJ-0EB1A04K
C4	2.7 pF	0402	Murata	GRM615C0G2R7C50
C5	47 pF	0402	Murata	GRM1555C1H470JZ01B
C6	10 pF	0402	Murata	GRM1555C1H100JZ01B
C8, C10	15 pF	0402	Murata	GRM1555C1H150JZ01B
R1	820 Ohm	0402	Panasonic	ERJ-2RKF8200X
L1	3.3 nH	0402	Coilcraft	0402CS-3N3XJB
L2	2 nH	0402	Coilcraft	0402CS-2N0XJB
L3	15 nH	0402	Coilcraft	0402CS-15NXJB

* Equivalent components can be substituted.

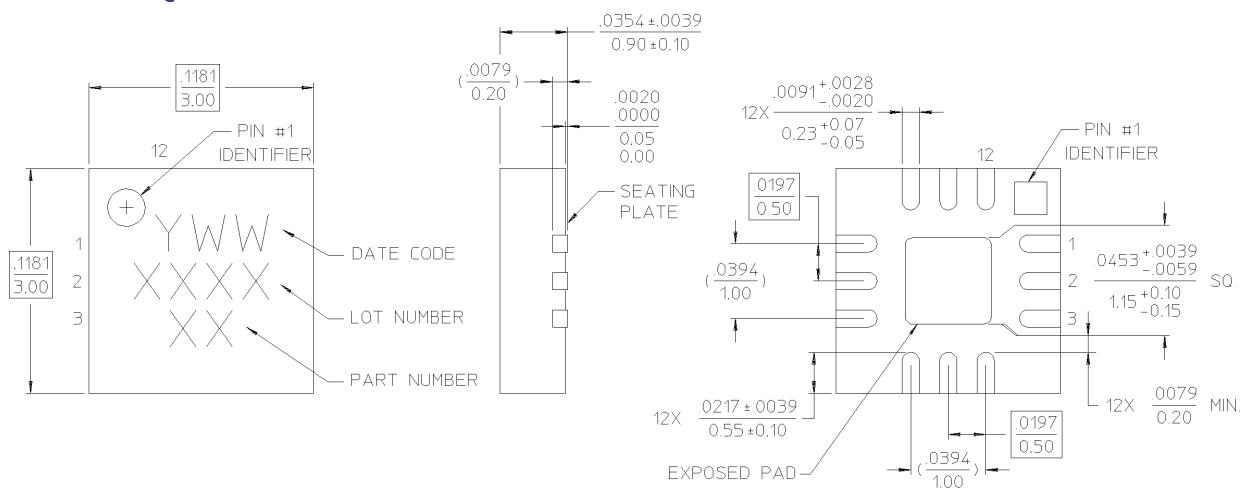
Transmission Line Lengths, 0.20 mm thick FR4

Designator	Length (mm) *	Width (mm)
T1	0.254	0.37338
T2	0.254	0.37338
T3	0.762	0.37338
T4	2.921	0.37338
* From package edge to center of component		

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3 mm FQFP-N 12 Lead³

- 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.

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