tyco Electronics

RoHS Compliant

M/A-COM

WDCT Power Amplifier
2400 – 2500 MHz

MAAPSS0066
V2

Features

- Ideal for WDCT Applications
- Saturated Output Power: +25 dBm Typical
- Power Gain: 25 dB Typical
- Low Current: 400 mA at P_{SAT}
- 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 and 260°C Reflow Compatible

Description

The MAAPSS0066 is a three stage power amplifier designed for Cordless Telephone applications. This power amplifier is packaged in a standard outline, lead-free 3 mm 12-lead PQFN plastic package. The MAAPSS0066 features an integrated bias controller that allows for micro amp shut down current.

Ordering Information

Part Number	Package
MAAPSS0066	Bulk Packaging
MAAPSS0066TR-3000	3000 piece reel
MAAPSS0066SMB	Sample Test Board (Includes 5 Samples)

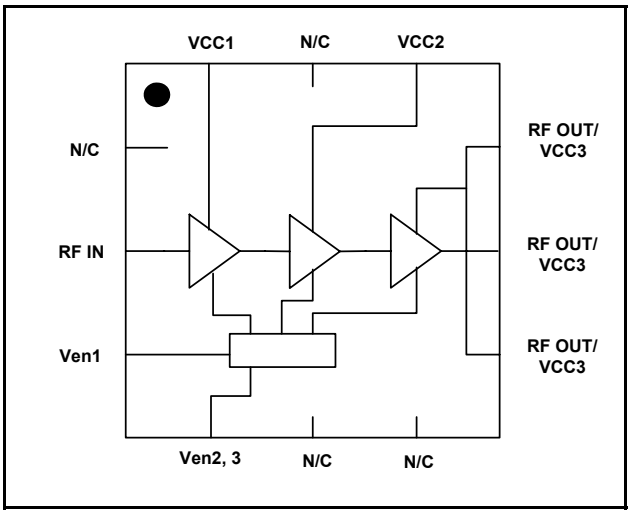
Note: Reference Application Note M513 for reel size information.

Absolute Maximum Ratings [1,2]

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.

Functional Schematic



Pin Configuration

PIN No.	PIN Name	Description
1	N/C	No Connection
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	N/C	No Connection
12	V_{CC1}	1st Stage Supply
Pad[3]	GND	RF & DC Ground

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

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

- **North America** Tel: 800.366.2266 / Fax: 978.366.2266
- **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

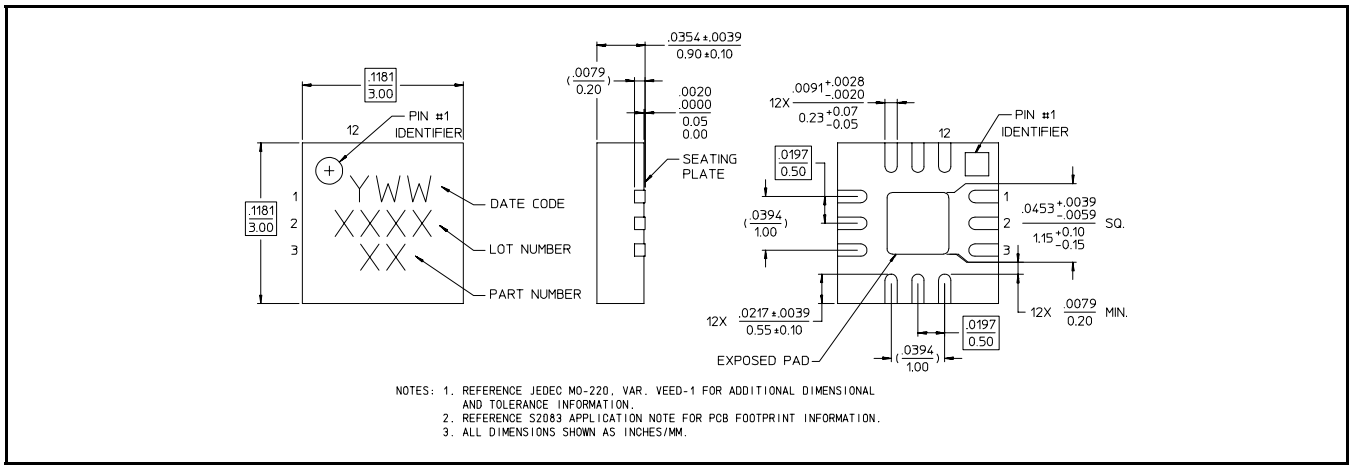
Visit www.macom.com for additional data sheets and product information.

Electrical Specifications:

Frequency = 2450 MHz, P_{IN} = -1 to 3 dBm, V_{CC} = 2.4 V, V_{EN} = 2.5 V, T_A = 25 °C, Z_0 = 50Ω

Parameter	Test Conditions	Units	Min.	Typ.	Max
Small Signal Gain	Pin = -20 dBm	dB	—	27	—
Input Return Loss	—	dB	—	15	—
Output Power	—	dBm	23	25	—
Power Flatness	2.0 V < V_{CC} < 3.0 V	dB	—	3	—
PAE	—	%	—	33	—
Current	—	mA	—	400	500
Current, Off	V_{EN} = 0 V	µA		3	10
Pdiss	P_{OUT} = 25.0 dBm	W	—	0.6	—
Control Pins	$V_{EN,}$ Low $V_{EN,}$ High Current	V V mA	0 2.0 —	— — 3	0.5 2.5 4.0
Harmonics	2f 3f	dBc dBc	— —	-54 -42	— —
Forward Isolation	V_{EN} = 0 V	dB	—	39	—
Duty Cycle	—	%	—	—	100
Stability	+1.5 V < V_{CC} < +3.5 V, P_{IN} = -1 to 3 dBm, VSWR < 6:1 -20°C < T_C < +70ºC, 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 MAAPSS0066

The MAAPSS0066 can be damaged by electrostatic discharge (ESD). Use proper ESD control techniques when handling this device. To operate the MAAPSS0066, turn on V_{CC} before V_{EN} for power on and turn off V_{CC} after V_{EN} for shutdown.

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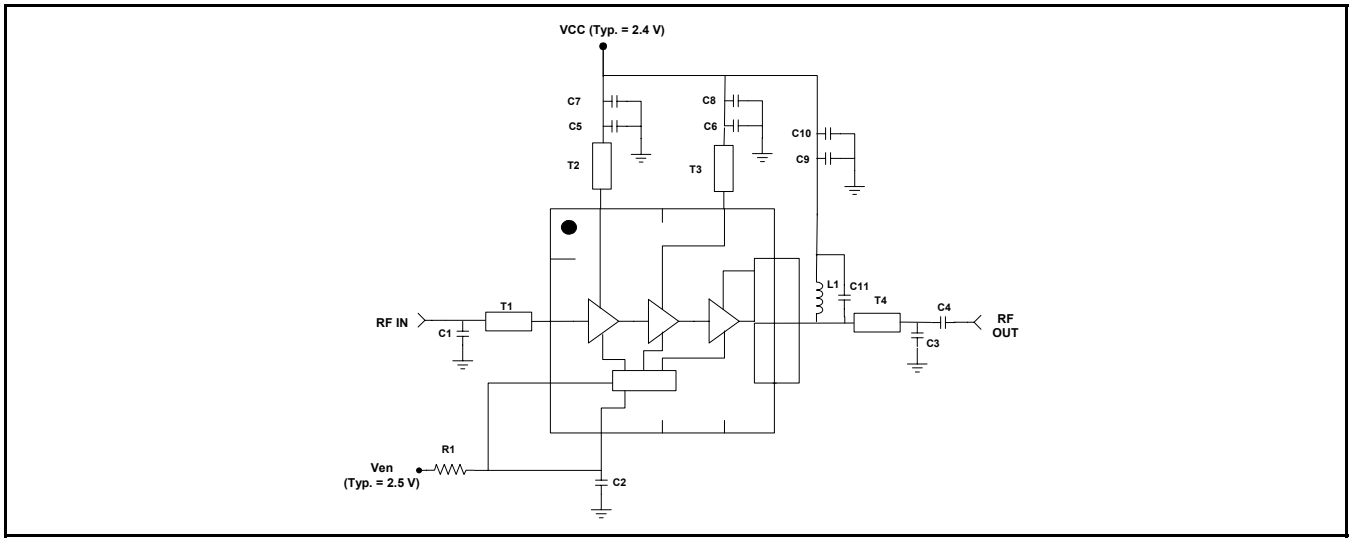
Evaluation Board Schematic

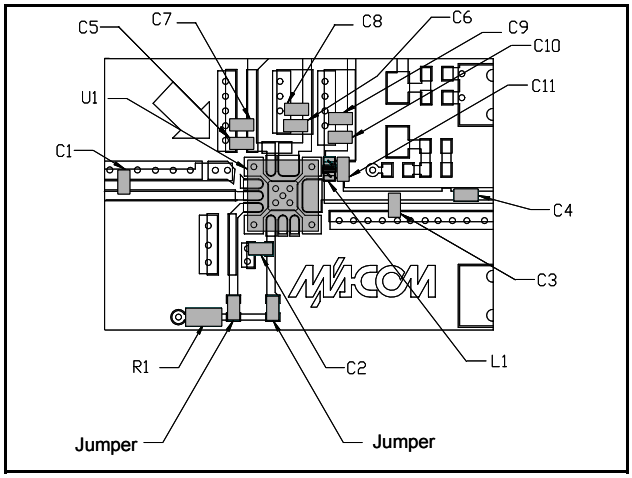


MAAPSS0066 External Parts List

Designator	Value	Footprint	Manufacturer	Part ID
C1, C3	2 pF	0402	Murata	GRM1555C1H2R0CZ01
C2	1 nF	0402	Murata	GRM1555R71H102KA01
C4, C5, C6	47 pF	0402	Murata	GRM1555C1H470JZ01
C7, C8, C9	1 uF	0402	Murata	GRM1555R60J105KE19
C10	4700 pF	0402	Murata	GRM155R71H472KA01D
C11	1 pF	0402	Murata	GRM36C0G010C50
L1	10 nH	0402	Coilcraft	0402CS-10NXJB
R1	250 Ohm	0402	Panasonic	ERJ-2RKF2490X

Transmission Line Dimensions, 0.20 mm thick FR4

Designator	Length (mm) *	Width (mm)
T1	5.20	0.37
T2	1.00	0.37
T3	1.27	0.37
T4	3.20	0.37
* From package edge to center of component		



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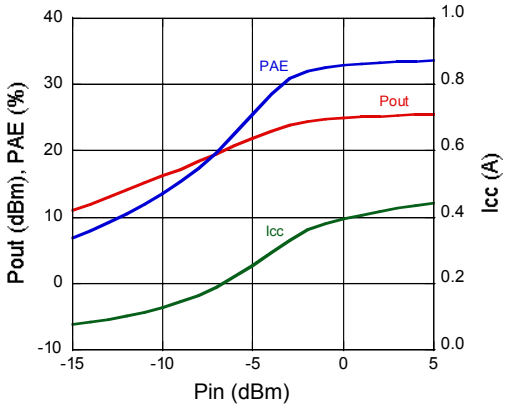
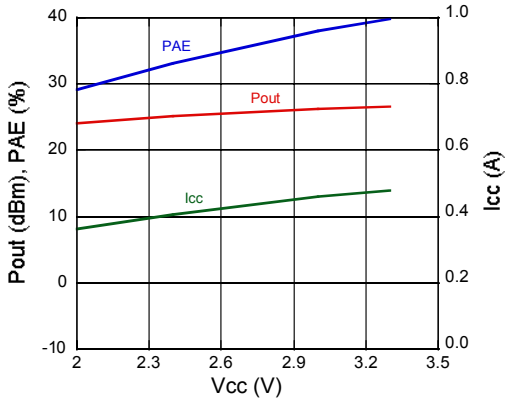
Typical Characteristics (All data uses the supplied sample board BOM)

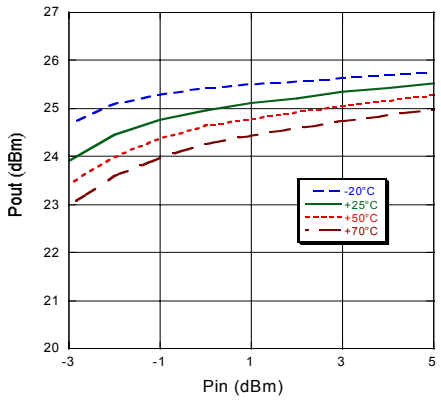
P_{OUT}, PAE, I_{CC} vs. P_{IN} @ 2.4 V, 2450 MHz



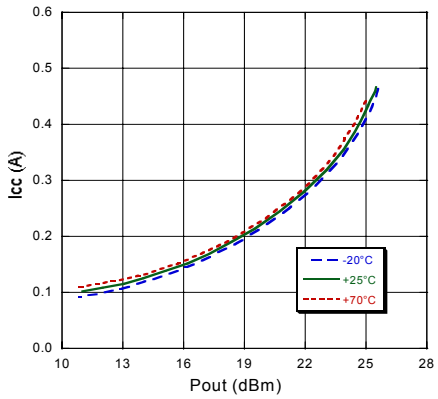
P_{OUT}, PAE, I_{CC} vs. V_{CC} @ 2450 MHz, P_{IN} = 1 dBm



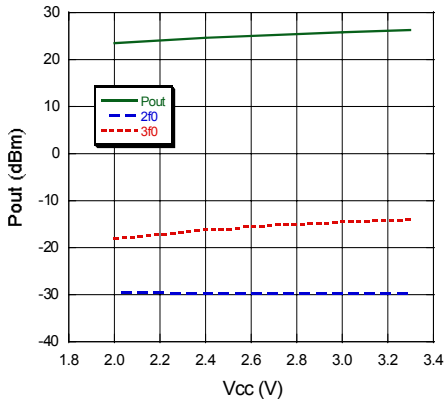
P_{OUT} vs. P_{IN} and Temp @ 2.4 V, 2450 MHz



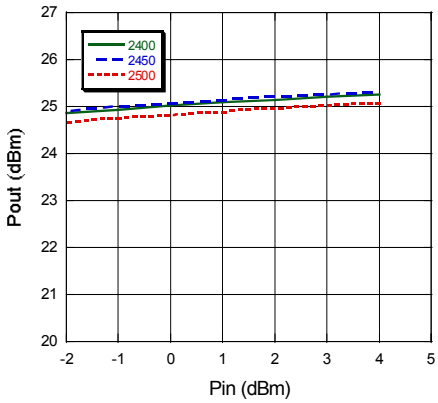
I_{CC} vs. P_{OUT} and Temp @ 2.4 V, 2450 MHz



P_{OUT} vs. V_{CC} @ 2450 MHz, Pin = 1 dBm



P_{OUT} vs. P_{IN}, V_{CC} = 2.4 V @ 2450 MHz



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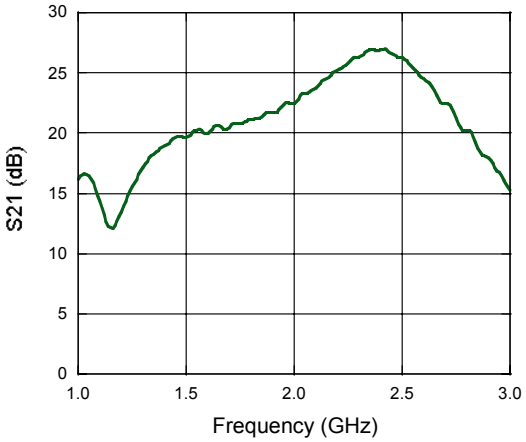
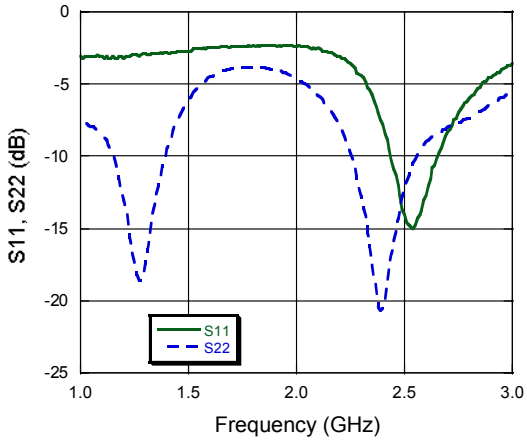
Typical Characteristics (All data uses the supplied sample board BOM)

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



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