

Features

- 5000~6000 MHz Frequency Range
- $P_{SAT}=+31\text{dBm}$
- $P_{out}=+18.5\text{dBm}$ at -43dB DEVM 802.11ax MCS11
- $P_{out}=+22\text{dBm}$ at -35dB DEVM 802.11ac MCS9
- Optimized for +5V Supply Voltage
- 31dB Gain
- Small (16-Pin, 4x4 mm) QFN Package

Applications: WIFI system and others

- IEEE 802.11ac and 802.11ax WLAN enabled: Access point, Media gateways, Set-top boxes and LCD TVs
- Other broadband triple-play multimedia applications

Product Description

YP553030 chipset is a 5GHz Microwave Monolithic integrated Circuit (MMIC) power amplifier (PA) with superior output power, linearity and efficiency, which is ideal for IEEE 802.11ax application. The compact form (4x4mm) and 50 Ohm integrated matching of input and output minimize layout area of application system. The PA is activated with a standard 5.0V low current logic signal. The device is internally matched and mounted in a 16-pin, 4x4mm QFN package, which allow for a highly manufacturable, low-cost solution.

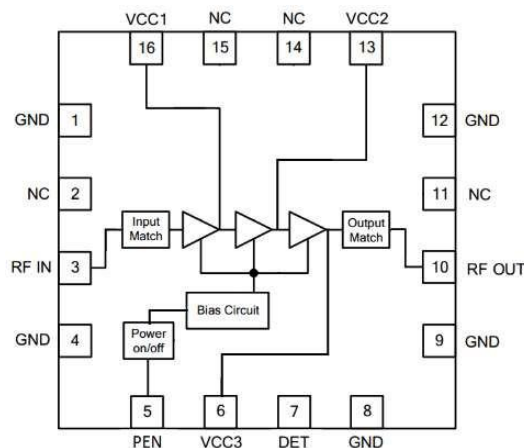


Figure1. Functional Block

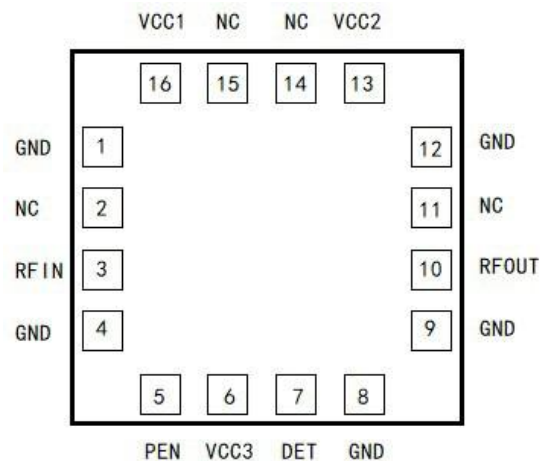


Figure2. Pin Out (Top View through package) Diagram

Pin Description

■ Table 1: Pin Description

Pin No.	Symbol	Description
1,4, 8, 9, 12	GND	Ground connection
3	RF IN	RF input
5	PEN	PA on/off control voltage
6	VCC3	Supply voltage for the 3 rd stage
7	DET	Provides an output voltage proportional to the RF level
10	RF OUT	RF output
13	VCC2	Supply voltage for the 2 nd stage
2, 11, 14, 15	NC	No connection
16	VCC1	Supply voltage for the 1 st stage
PKG base	GND	Ground connection

■ Table 2: Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Input RF Power (50-ohm load, No Damage)	RF IN	+5	dBm
DC Supply Voltage	VCC1,VCC2 VCC3	0 to +6.0	V
DC Input on Control pins	PEN	0 to +3.3	V
Operating Ambient Temperature	T _{OP}	-40 to +85	°C
Storage Temperature	T _{ST}	-40 to +150	°C



Caution! ESD sensitive device.

Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability.

■ Table 3: Recommended Operating Range

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Supply Voltage	VCC1, VCC2, VCC3	4.8	5	5.25	V
PA enable voltage (High)	PEN	2.5	2.6	2.9	V
PA enable voltage (Low)	PEN	-0.2	0	0.3	V

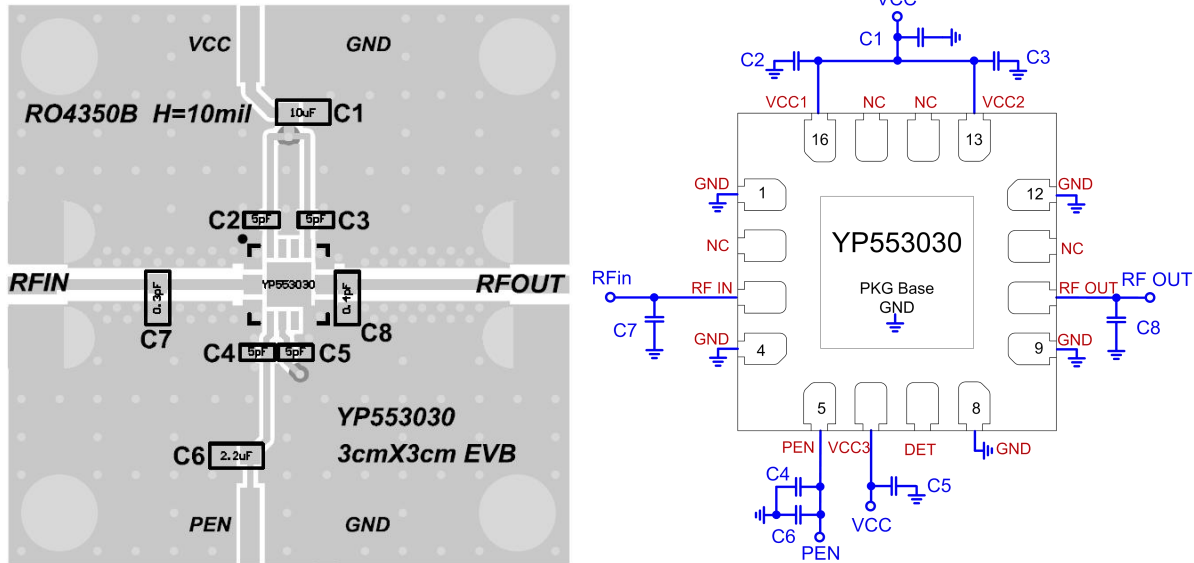


■ Table 4: Electrical Characteristics

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Compliance and Nominal Conditions					VCC1=VCC2=VCC3=5V, PEN=2.65V, ICQ=160mA, T _{OP} =+25°C
Frequency Range	5000	5500	6000	MHz	
Output Power		18.5		dBm	VHT160/MCS11, -43dB EVM
		22		dBm	VHT80/MCS9, -35dB EVM
		30.5		dBm	P ₋₁ @Freq=5.1GHz
		30.6		dBm	P ₋₁ @Freq=5.5GHz
		30.4		dBm	P ₋₁ @Freq=5.9GHz
Input Return Loss		8		dB	
Output Return Loss		6		dB	
VPD, Power Detector Output		0.5		V	@ No RF
		0.7		V	@+20dBm
		1.1		V	@+30dBm
Power Supply					
ICQ, Total Quiescent Current		160		mA	@ No RF
ICC, Total Operating Current		670		mA	@ P ₋₁ , Freq=5.5GHz

Application Circuit

(Test Condition: $VCC1=VCC2=VCC3= 5V$, $VR=2.65V$, $T_{OP}=+25^{\circ}C$)



■ Table 5: Circuit Component Designations and Values

Reference Des.	Value	Footprint	Manuf.
C1	10uF	0603	Murata
C2, C3, C4, C5	5pF	0402	Murata
C6	2.2uF	0603	Murata
C10	3pF	0402	Murata
C7	0.3pF	0402	YAGEO
C8	0.4pF	0402	YAGEO
U1	YP553030	QFN4X4	INNOTION

Packaging Diagram

