

Features

- 32dB Gain (Typ.)
- 30dBm P_{-1dB} @ Supply Voltage=3.3V
- 2.5% EVM WLAN @P_{out}=25dBm, V_{cc}=3.3V
- 300mA Quiescent Current@ V_{cc}=3.3V
- 3~3.7V Supply Voltage
- Integrated Output Power Detector
- ESD protection all ports above 1000V HBM, forward and reverse voltage

Applications

- IEEE 802.11b/g/n WLAN
- 3G/4G
- 5G Band41

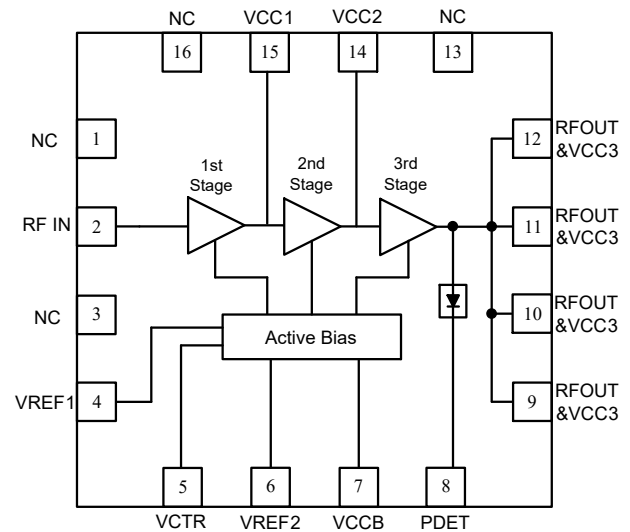
Product Description

The YP243433 is a three-stage, high-linearity, high-gain power amplifier. The device is manufactured on an advanced InGaP/GaAs HBT process. This amplifier provides a typical gain of 32dB and P_{1dB} power of 30dBm, typical bias condition is 3.3V at 300mA. The input is internally matched to 50Ω and requires a minimum of external matching components to cover the entire 1.8GHz to 2.8GHz (it needs different matching circuit for different frequency range). The YP243433 is assembled in a 16-Pin, 4×4mm², QFN package. It is internally integrated with ESD protection circuitry on all ports.

Pin Description

Pin No.	Symbol	Description
1, 3, 13, 16	NC	No connection or connect to ground
2	RF IN	RF input
4, 6	VREF1/VREF2	Bias current control voltage
5	VCTR	Power on/off control voltage. Apply >2.5VDC to power down the three power amplifier stages. Apply 0VDC to power up. If function is not desired, pin5 may be connected to GND
7	VCCB	Supply voltage for bias circuit
8	PDET	Output power detector
9, 10, 11, 12	RFOUT&VCC3	RF output and Stage3 supply voltage
14, 15	VCC2, VCC1	Stage2, Stage1 supply voltage
PKG Base	GND	Ground connection

RoHS & Pb-Free Product



Functional Block Diagram

Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Input RF Power with 50Ω Output Load	RF IN	+3	dBm
Supply Voltage	VCC1,VCC2, VCC3,VCCB	-0.5 to +8.0	V
Reference Voltage	VREF1, VREF2	-0.5 to +2.9	V
Operating Ambient Temperature	T _{OP}	-40 to +85	°C
Storage Temperature	T _{ST}	-40 to +150	°C


Caution! ESD Sensitive Device.

ESD Rating: Class1C
Value: Passes ≥1000V min.
Test: Human Body Model (HBM)
Standard: JEDEC Standard JESD22-A114

ESD Rating: Class IV
Value: Passes ≥1000V min.
Test: Charged Device Model (CDM)
Standard: JEDEC Standard JESD22-C101

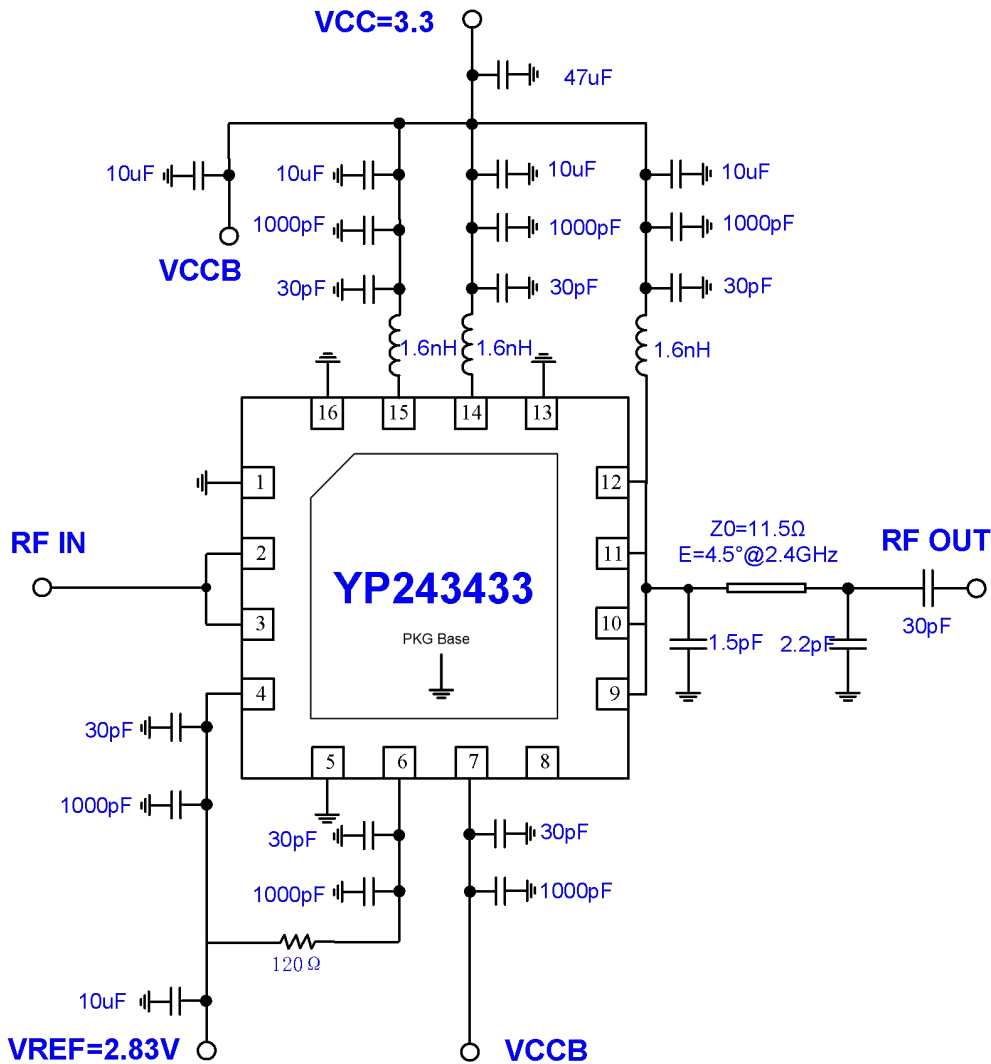
MSL Rating: Level 3 at +260 °C convection reflow
Standard: JEDEC Standard J-STD-020

Electrical Characteristics

Parameter	Specification			Unit	Conditions
	Min.	Typ.	Max.		
WLAN IEEE802.11g					VCC1=VCC2=VCC3=VCCB=3.3 V, T _{OP} =+25°C, Freq=2.4GHz to 2.5GHz
Frequency Range	2.4		2.5	GHz	
P _{-1dB}		30		dBm	@ICQ=300mA, 2.442GHz
		30		dBm	@ICQ=210mA, 2.442GHz
EVM @ Pout=25dBm		2.0		%	@ICQ=300mA, 2.442GHz, 802.11g, 54Mbps, 64QAM
		3.0		%	@ ICQ=210mA,2.442GHz, 802.11g, 54Mbps, 64QAM
Operating Current, ICC @ Pout=27dBm		950		mA	@ICQ=300mA, 2.442GHz, 802.11g, 54Mbps, 64QAM
		720		mA	@ICQ=210mA,2.442GHz, 802.11g, 54Mbps, 64QAM
Small Signal Gain		32		dB	@ICQ=320mA, 2.442GHz
		31		dB	@ICQ=210mA,2.442GHz
Quiescent Current (no RF), ICQ		300		mA	VREF1=VREF2=2.80V
		210		mA	VREF1=VREF2=2.66V
Reference Current (Total), IREF		3		mA	VREF1=VREF2=2.80V
		2		mA	VREF1=VREF2=2.66V

Evaluation Board Schematic for WLAN Application

$VCC1=VCC2=VCC3=VCCB=3.3V$, $ICQ=300mA$ (without RF signal), $T_{op}=+25^{\circ}C$



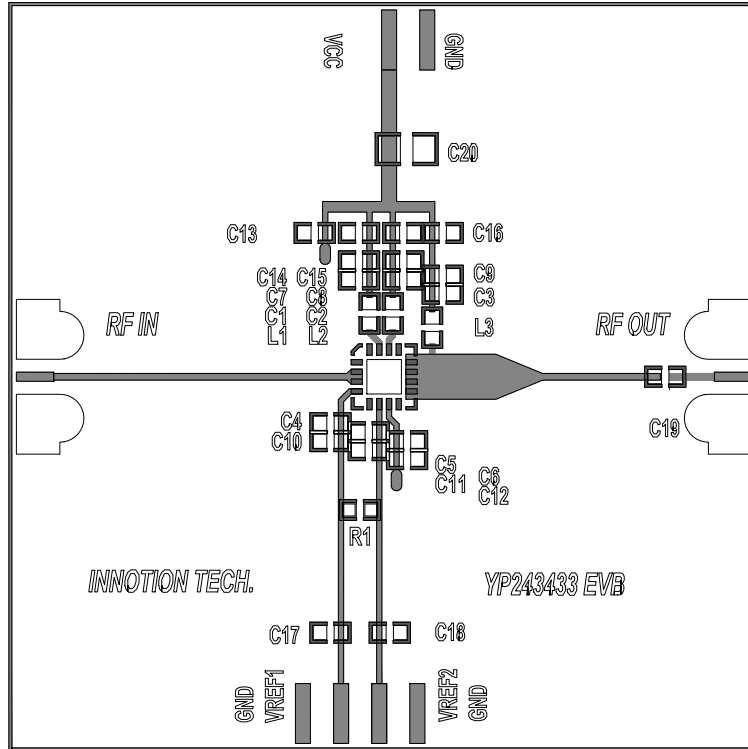
Notes:

1. Pin5 is power down pin. Apply $>1.5 V_{DC}$ to power off the PA. Apply $0 V_{DC}$ to power on. If the function is not desired, this pin may be connected to GND.
2. Pin8 is active power detection port, if the function is not desired, this pin need to left unterminated (open).

Evaluation Board Layout

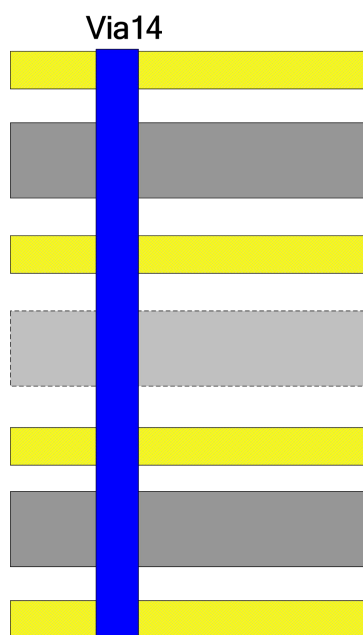
Board Size 50mm×50mm

Board Thickness 0.8mm, Board Material FR4, Multi-Layer

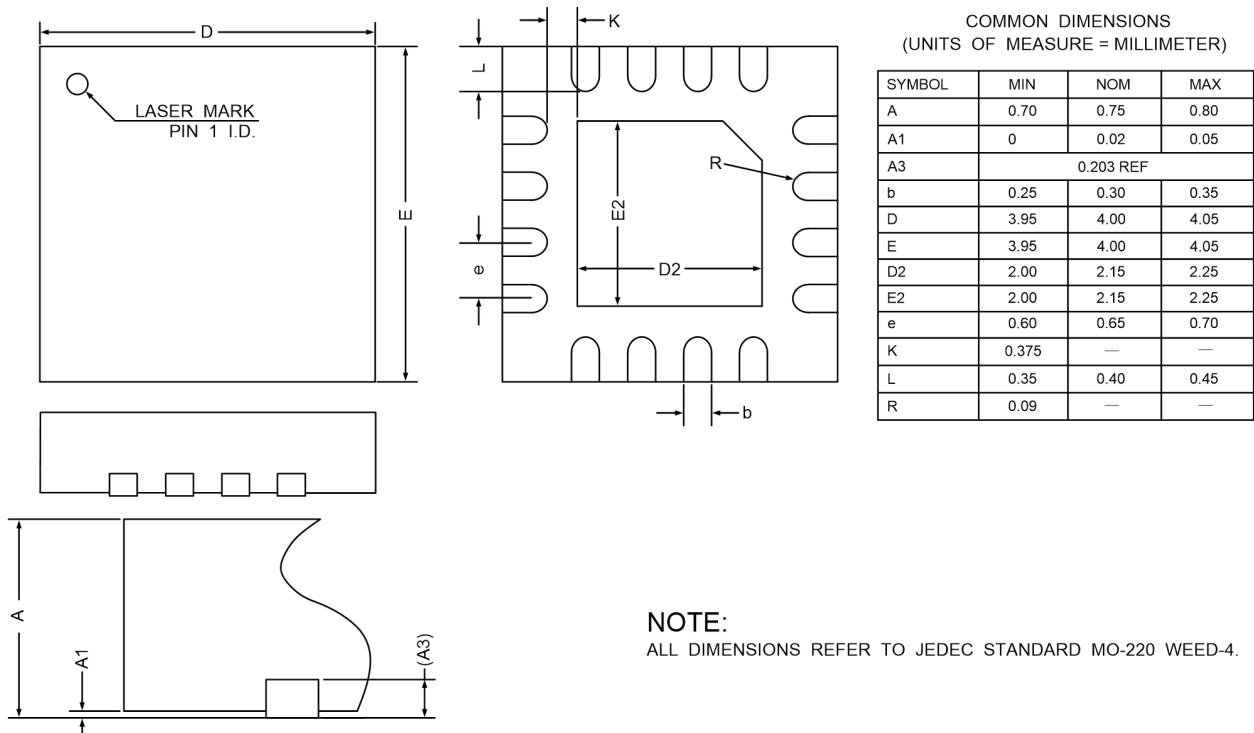


Top-Layer

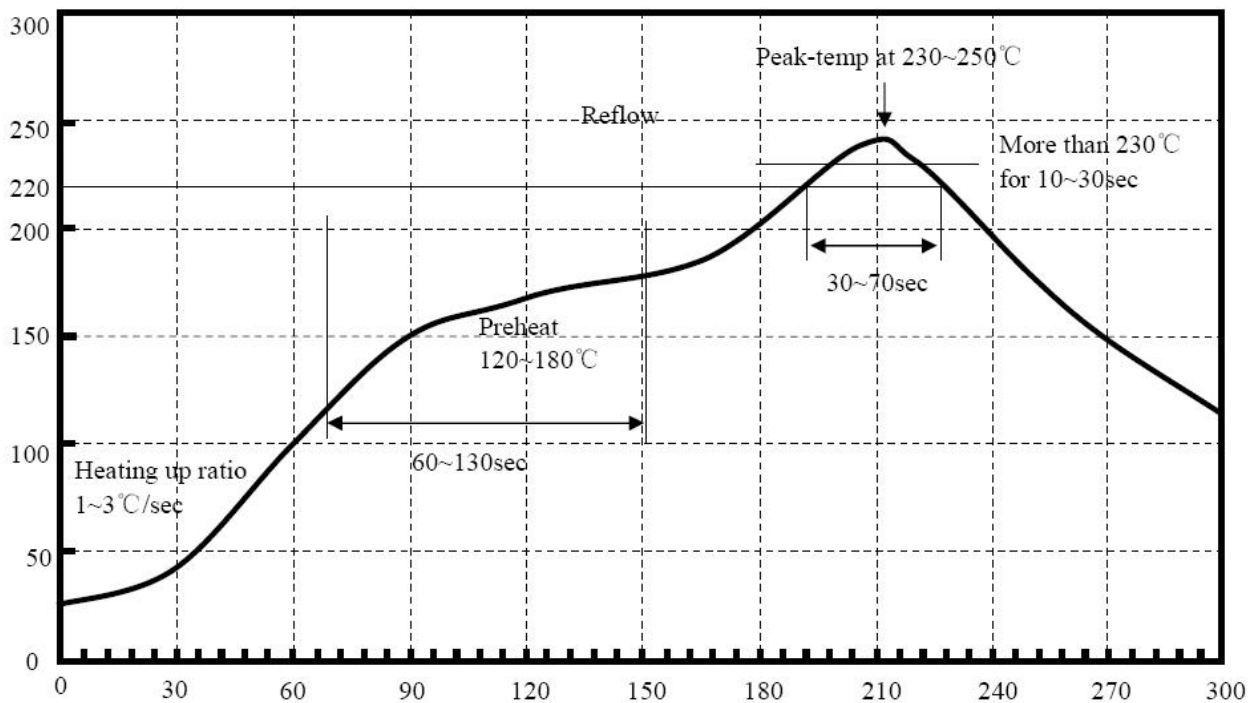
Layer Details of DEMO Board

Cross Section	Name	Thickness	Material	Er
	Top-Layer	1 oz	Cu	--
	Core 1	240um	FR-4	4.2
	Mid-Layer1	1 oz	Cu	--
			FR-4	4.2
	Mid-Layer2	1 oz	Cu	--
			FR-4	4.2
	Bottom-Layer	1oz	Cu	--

Packaging Diagram



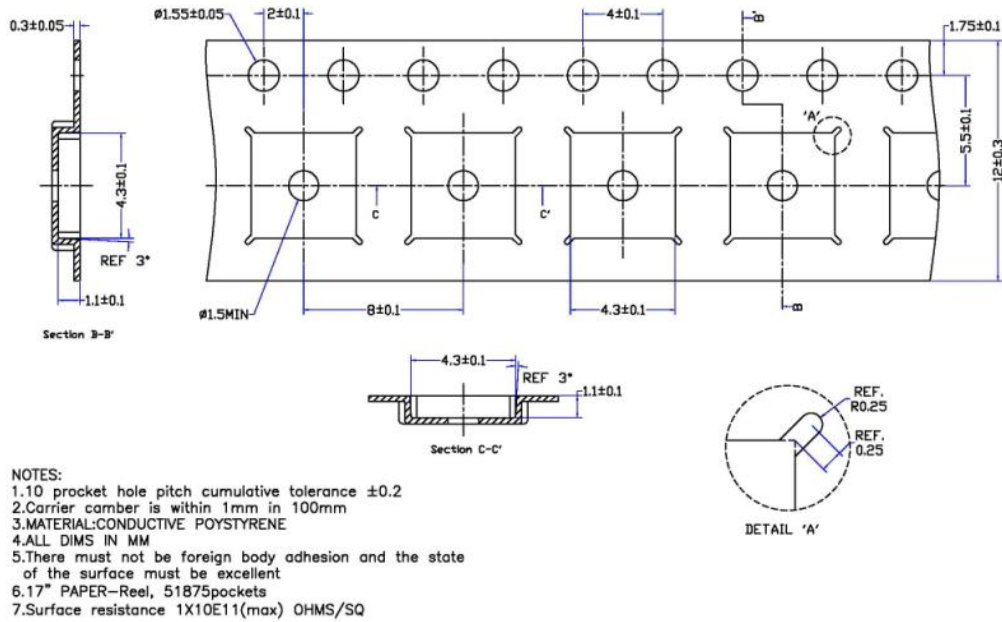
Recommended Solder Temperature



Recommended Temperature

Sn95.5Ag4.0Cu0.5

Tape dimensions and Orientation



Reel dimensions and Orientation

