

Product Overview

The MCCPA4650-P36 is a three-stage HBT general purpose power amplifier working at 4600-5000MHz (Band n79) with on-chip PA enable controller and temperature compensation circuits. This high-efficiency and DPD-friendly PA can deliver up to 28dBm average output power and 37dBm peak power using 20MHz LTE signal (8.5dB PAR@0.01% CCDF). The product input and output are both internally matched to 50Ω.



16Pad 5×5mm Laminate Package

Figure1.

ROHS compliant

Evaluation boards are available upon request.

Functional Block Diagram

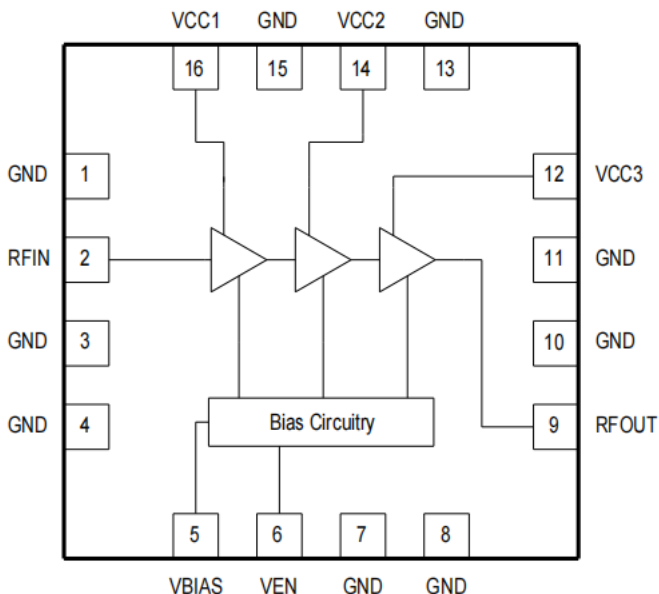


Figure2.

Key Features

- Frequency Range: 4600-5000MHz
- 31dB Gain
- 22% PAE at 28dBm output power
- Below -30dBc ACPR at 28dBm output power
- Higher than 36.5dBm peak power
- Wide instantaneous BW DPD friendly design
- Input/output internally matched to 50Ω
- On-chip PA enable controller and temperature compensation circuits
- Compact and low-cost 5mm×5mm LGA package (MSL3,260 per JEDEC J-STD-020)

Applications

- Driver Amplifier for Micro-base and Macro-base Stations
- FDD and TDD 2G/3G/4G LTE Systems
- Active Antenna Array and Massive MIMO
- Customer Premises Equipment (CPE)
- 3GPP band n79 small-cell base stations

Ordering info

Part No.	Description
MCCPA4650-P36	7' Reel with 1500pcs

Pin Description

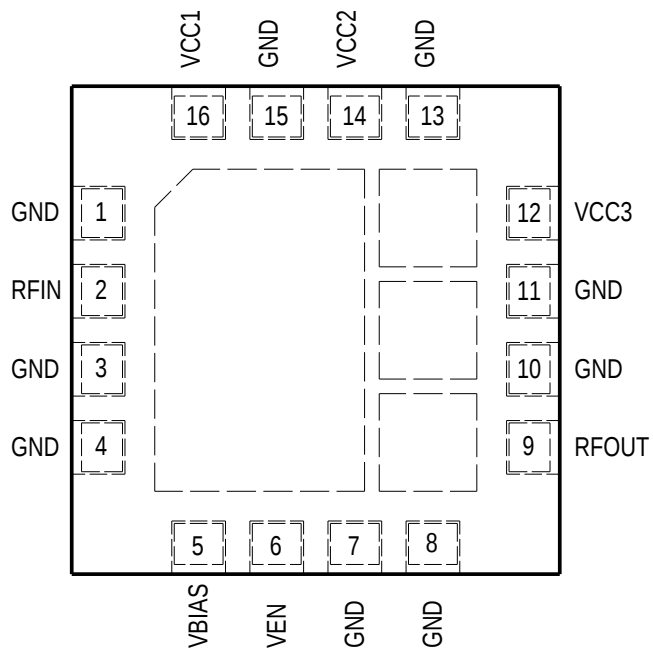


Figure 3. Pinout (Top View)

Pin	Name	Description	Pin	Name	Description
1	GND	Ground	9	RFOUT	RF output port
2	RFIN	RF input port	10	GND	Ground
3	GND	Ground	11	GND	Ground
4	GND	Ground	12	VCC3	Stage 3 collector voltage
5	VBIAS	Bias voltage	13	GND	Ground
6	VEN	PA enable voltage	14	VCC2	Stage 2 collector voltage
7	GND	Ground	15	GND	Ground
8	GND	Ground	16	VCC1	Stage 1 collector voltage

Absolute Maximum Ratings¹

Parameter	Rating	Unit
Operating Temp, T _c	-40 to +85	
Operating Junction Temp, T _j	150	
Storage Temp, T _{STG}	-55 to +125	
Thermal Resistance, R _{θjc}	21	/W
Operating Voltage, V _{CC1} , V _{CC2} , V _{CC3} , V _{BIAS}	5.5	V
Input Power, P _{IN}	10	dBm

Notes¹: Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of the Absolute Maximum Rating conditions to the device may reduce device reliability.

Recommended Operating Conditions

Parameter	Min	Typ	Max	Unit
Operating Frequency, F	4600		5000	MHz
Operating Temp, T _c	-40	25	85	
Operating Voltage V _{CC1} , V _{CC2} , V _{CC3} , V _{BIAS}		5	5.5	V
PA Enable Voltage, V _{EN}	1.6	1.8	V _{CC}	V
PA Enable Current, I _{EN}		400		uA

Electrical Specifications¹

Parameter	Conditions	Min	Typ	Max	Unit
Frequency		4600		5000	MHz
Output P _{3dB}			36.5		dBm
Gain@28dBm			31		dB
Power added efficiency			22		%
Quiescent current			120		mA
ACPR@28dBm	100MHz NR signal, 8.5dB PAR		-30		dBc
Input return loss			-8		dB
Instantaneous bandwidth			> 100		MHz
Output average power			28		dBm

Notes¹: V_{CC1}=V_{CC2}=V_{CC3}=V_{BIAS}=5V, V_{EN}=1.8 V, F=4900 MHz, T_C=25 , Input/Output Load=50Ω

Evaluation Board Schematic

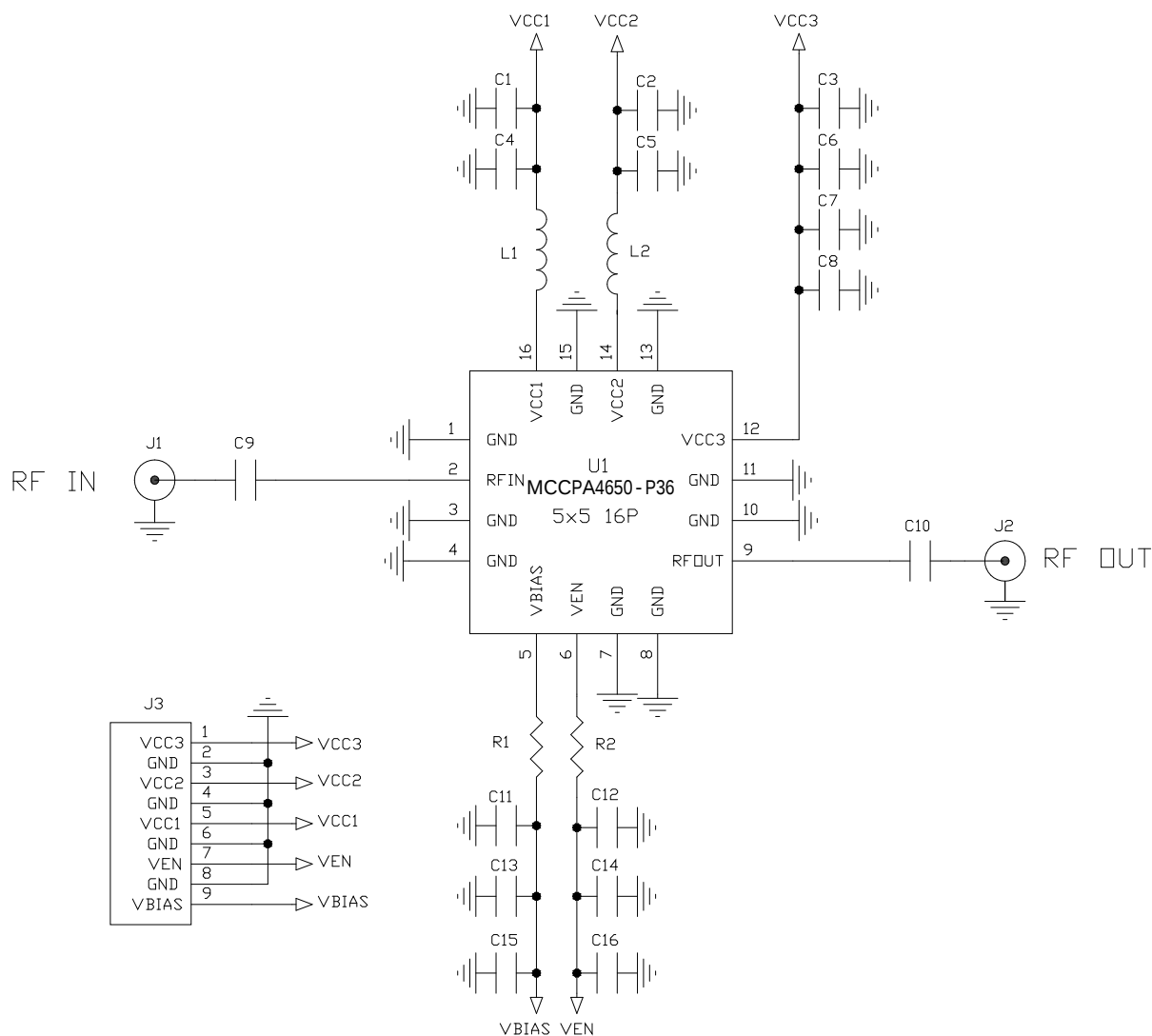


Figure 4. Evaluation Board Schematic

Evaluation Board Bill of Materials

Ref,Des	Value	Size
C9 C10	Ceramic capacitor, 10pF, 16V, +/-10%, X7R	0402/0603
C1 C2 C6 C15	Ceramic capacitor, 4.7uF, 16V, +/-10%, X7R	1206
L1 L2 R1 R2	Resistor, 0Ω, 0.063W	0402
C12	Ceramic capacitor, 2.2nF, 16V, +/-10%, X7R	0402

Rest of the components on the schematic are not used in this part.

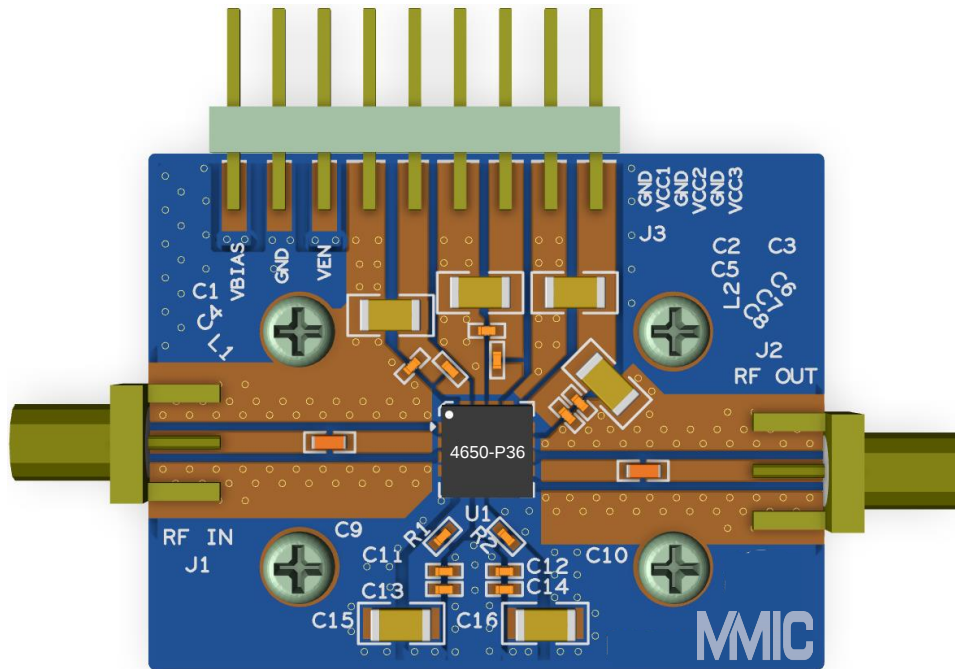


Figure 5 .Evaluation Board PCB information

Evaluation Board Test Procedure

Turn-on sequence

- 1.Connect test equipment to the input and output port of Evaluation board and then connect DC ground.
- 2.Turn on VCC1,VCC2,VCC3 to 5V,turn on VBAIS to 5V then turn on VEN to 1.8V in order.
- 3.Apply RF signal

Turn-on sequence

- 1.Turn off RF signal
- 2.Turn off VEN,VBIAS and VCC1,VCC2,VCC3 in order

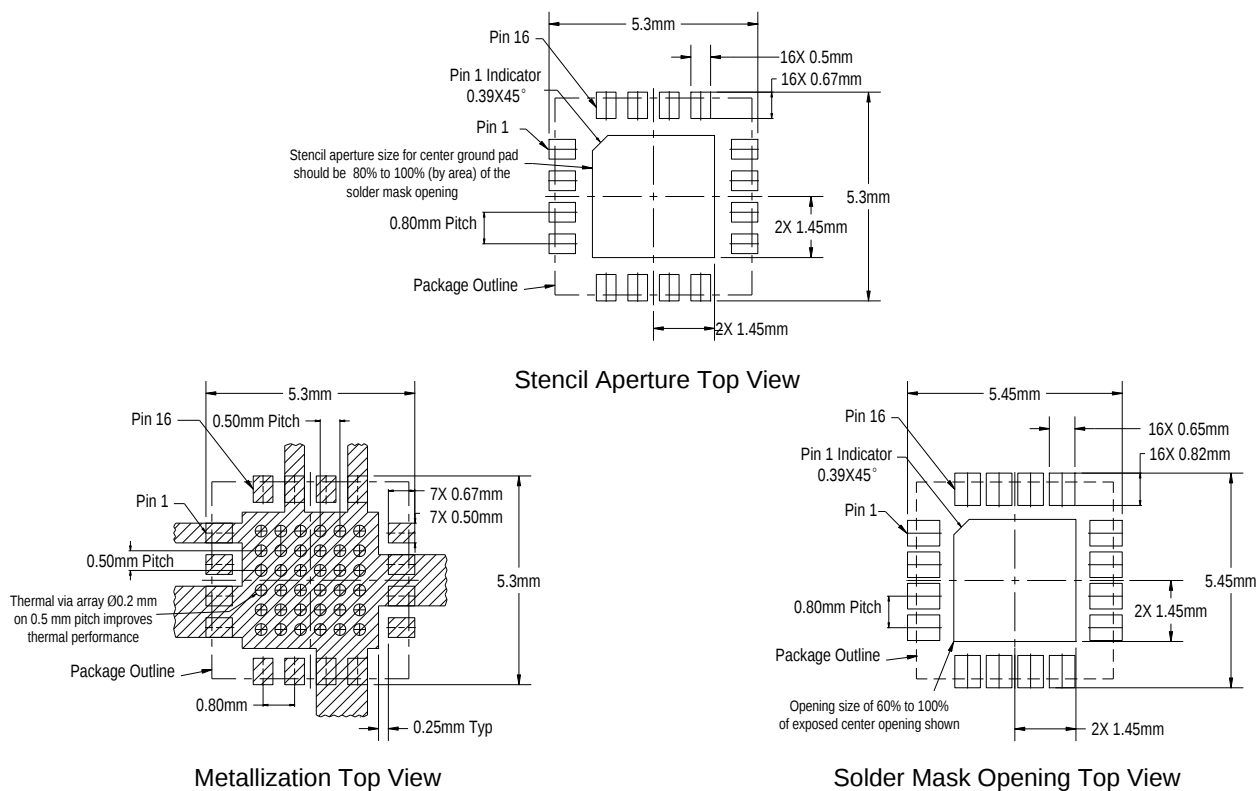


Figure 6.PCB Layout Footprint

Package Dimensions

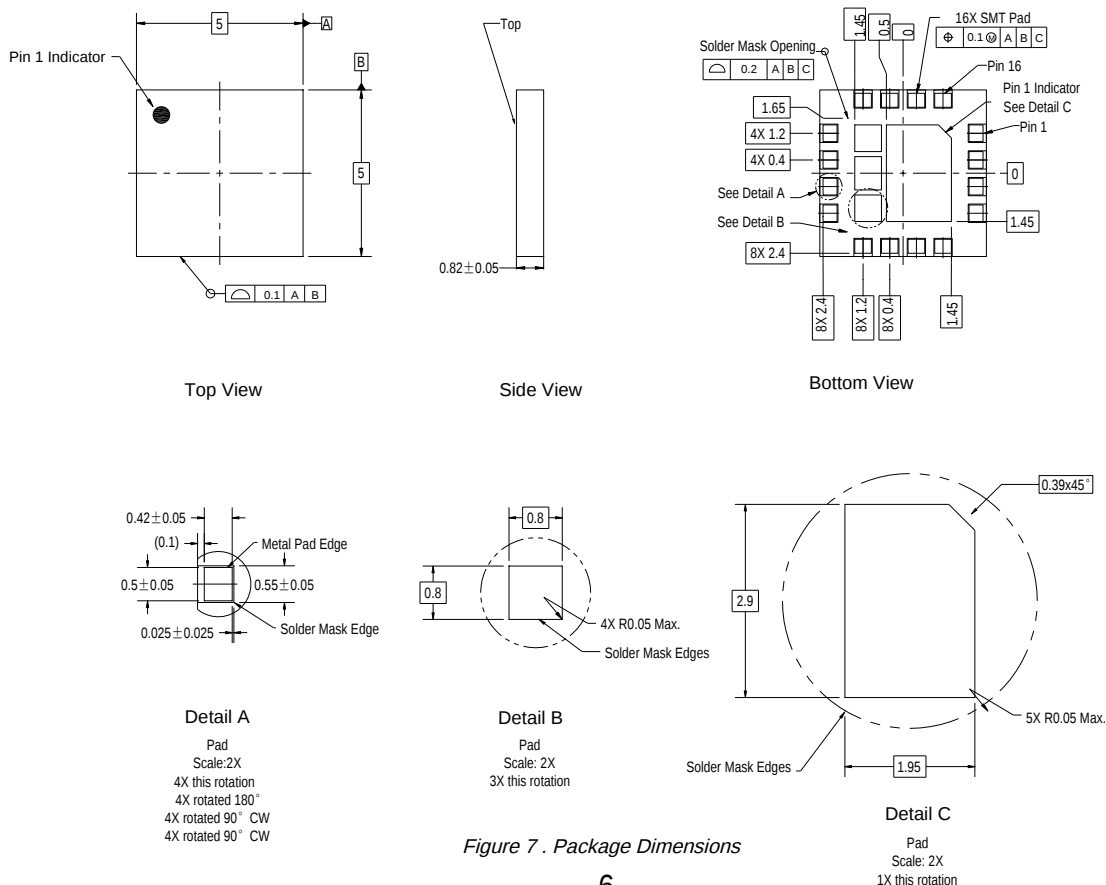


Figure 7 . Package Dimensions

Tape and Reel Information

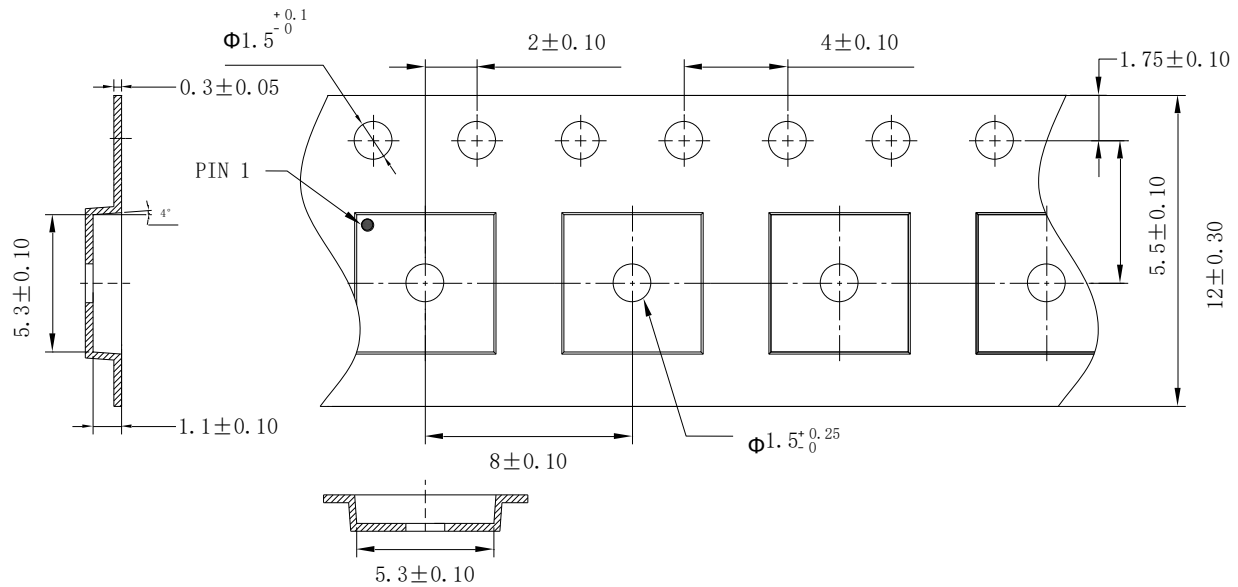


Figure 8.

Technical requirements:

1. CARRIER TAPE COLOR: BLACK
2. THE MATERIAL: PS
3. MOLD# LGA/QFN (5×5)
4. COVER TAPE WIDTH: 9.5±0.1mm/9.3±0.1mm
5. COVER TAPE COLOR: TRANSPARENT