MCCPA4248-P35

4200-4800MHz,High Power 35dBm power Amplifier

Product Overview

The MCCPA4248-P35 is a three-stage HBT general purpose power amplifier working at 4200-4800MHz(C-Band n77)with on-chip PA enable controller and temperature compensation circuits. This PA can deliver up to 35dBm CW output saturated power.The product input and output are both internally matched to 50Ω.

ROHS compliant

Evaluation boards are available upon request.

16Pad 5×5mm Laminate Package

Figure1.

Functional Block Diagram

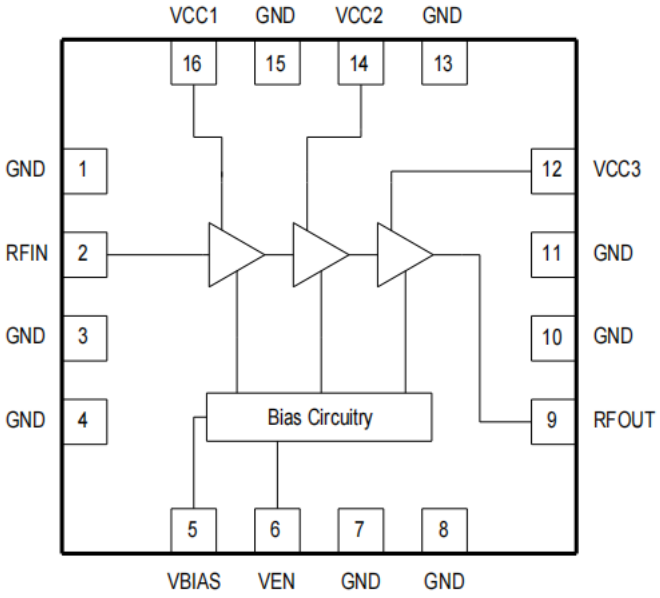


Figure2.

Key Features

- Frequency Range: 4200-4800MHz
- 29dB Gain @Psat
- 35dBm CW output power
- 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/5G Systems
- Active Antenna Array and Massive MIMO
- Customer Premises Equipment(CPE)
- C-band small-cell base stastions

Ordering info

Part No.	Description
MCCPA4248-P35	7' Reel with 1500pcs

Pin Description

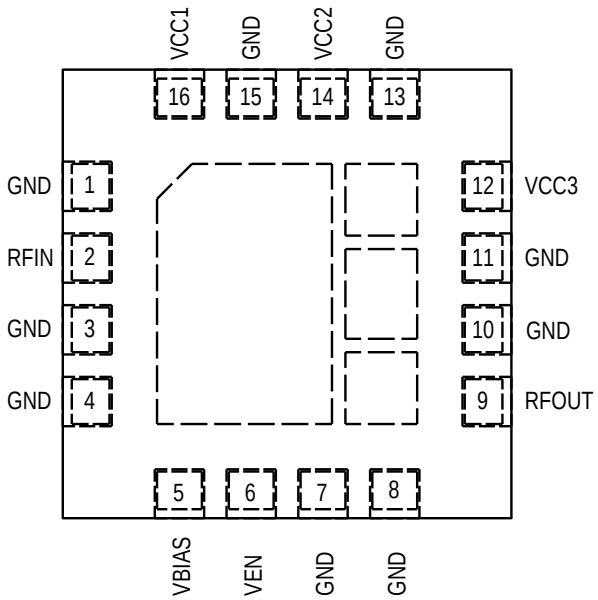


Figure 3.Pinout (Top View)

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 Ratings[1]

Parameter	Rating	Unit
Operating Temp,T_C	-40 to +85	℃
Operating Junction Temp,T_J	175	℃
Storage Temp,T_{STG}	-55 to+125	℃
Thermal Resistance,$R_{\theta jc}$		℃/W
Operating Voltage,V_{CC1},V_{CC2},V_{CC3},V_{BIAS}	5.5	V
Inuput Power,P_{IN}	10	dBm

Notes[1]: Exceeding any one or a combination of the Absolute Maxium Rating conditions may cause permanent damage to the device. Extended application of the Absolute Maximum Rating conditions to the device mayreduce device reliability.

Recommended Operating Conditions

Parameter	Min	Typ	Max	Unit
Operating Frequency,F	4200		4800	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	3	V
PA Enable Current,I_{EN}		400		uA

Electrical Specifications-EVB Typical Performance[1]

Parameter	Conditions	Min	Typ	Max	Unit
Frequency		4200		4800	MHz
Output P3dB	CW		35		dBm
Gain@P3dBm	CW		29		dB
Power added efficiency					%
Quiescent current			185		mA
ACPR@28dBm	20MHz LTE E-TM1.1,9.5dB PAR		/		dBc
Input return loss			-10		dB
Reverse isolation			-55		dB

Notes[1]:V_{CC1}=V_{CC2}=V_{CC3}=V_{BAIS}=5V,V_{EN}=1.8V,F=3980MHz,TC=25℃, Input/Output Load=50Ω

Evaluation Board Schemic

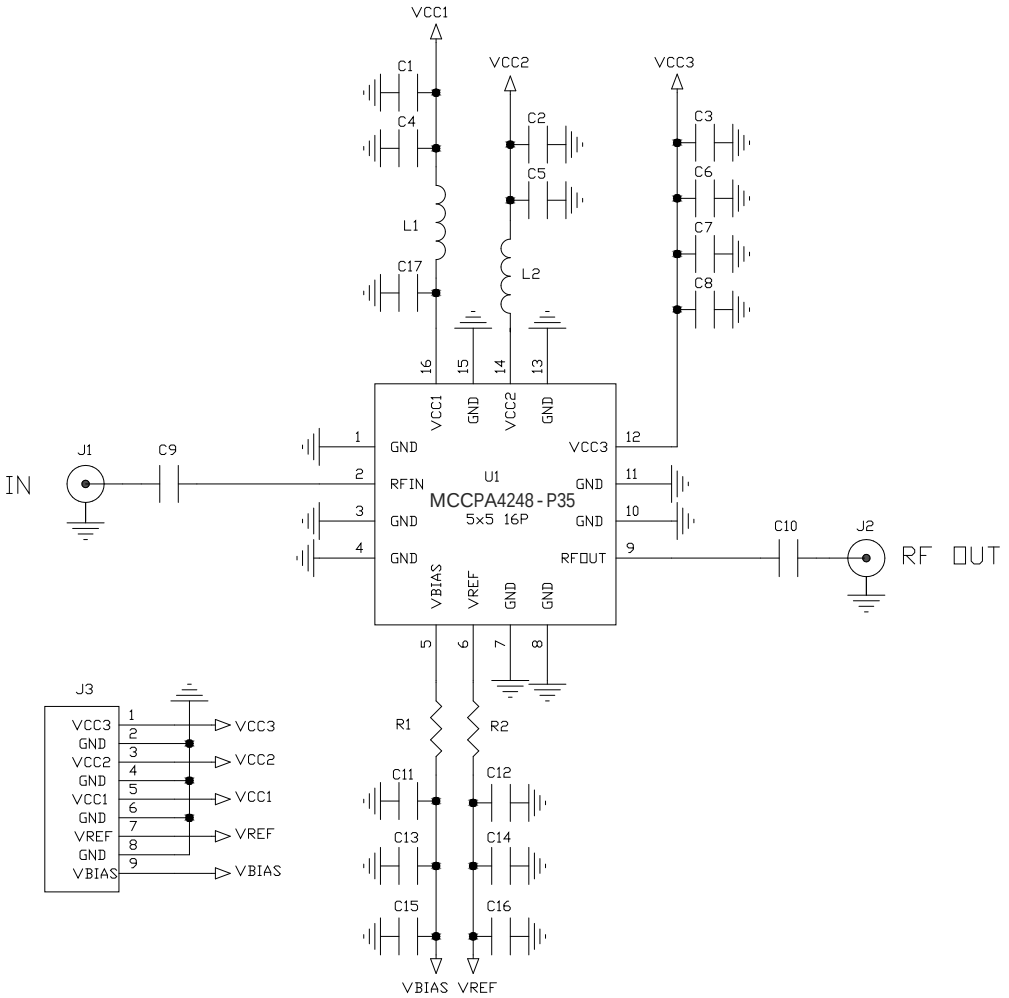


Figure 4. Evaluation Board Schemic

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.

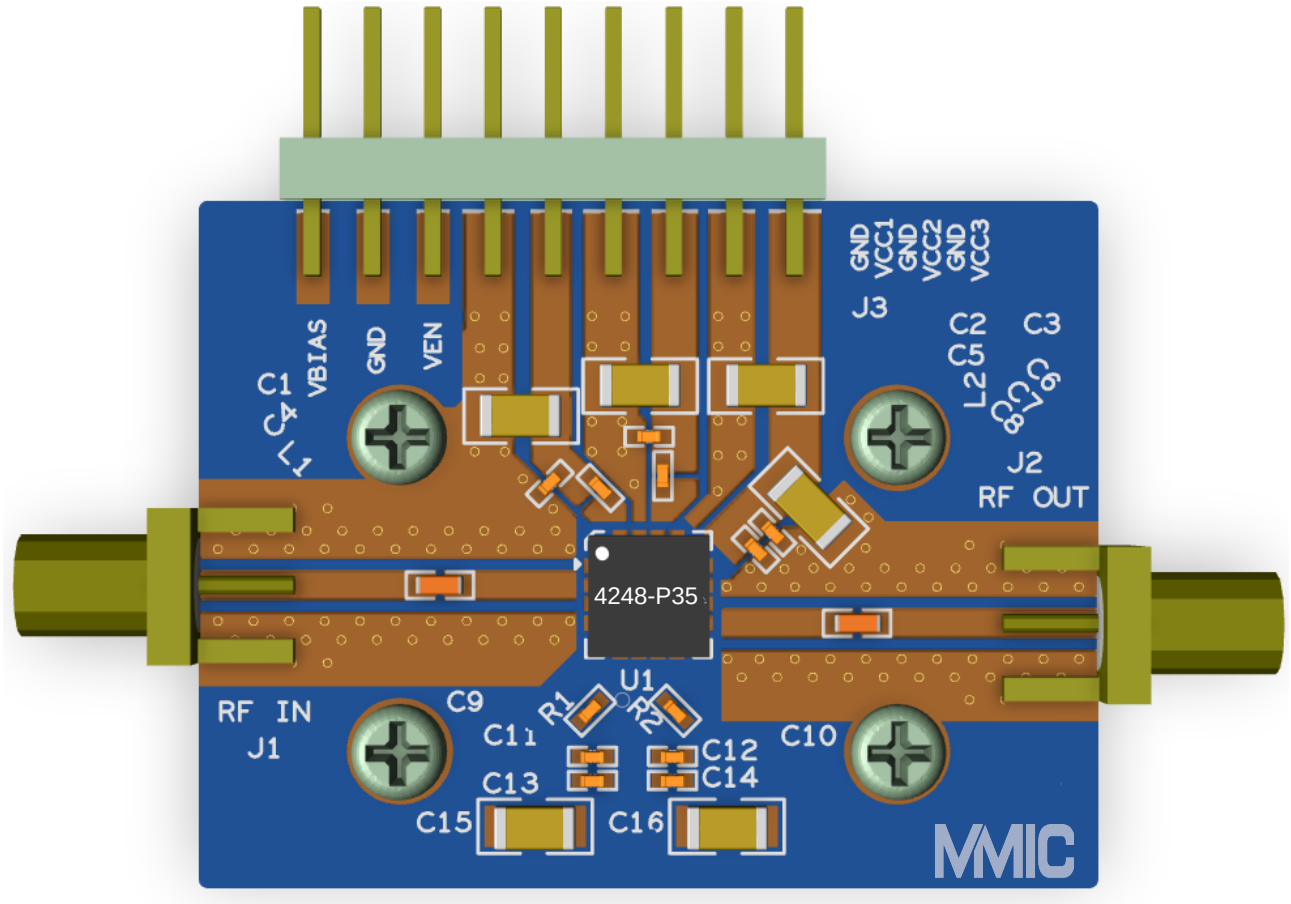


Figure 5 .Evaluation Board PCB information

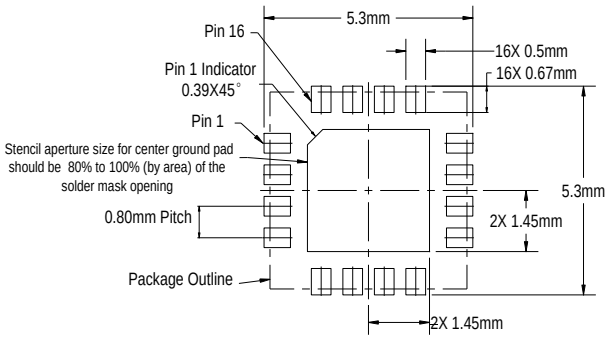
Evaluation board test procedure

Turn-on sequence

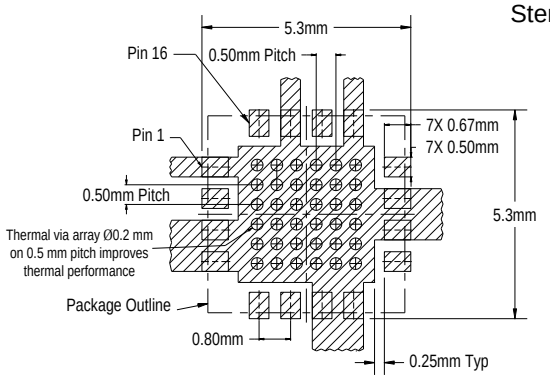
1.Connect test equipment to the input and output port of Evaluation board and then connect DC ground.
2.Turn on VCC1,VCC2,VCC3 to 5V,turn on VBAIS to 5V then turn on VEN to 1.8V in order.
3.Apply RF signal

Turn-on sequence

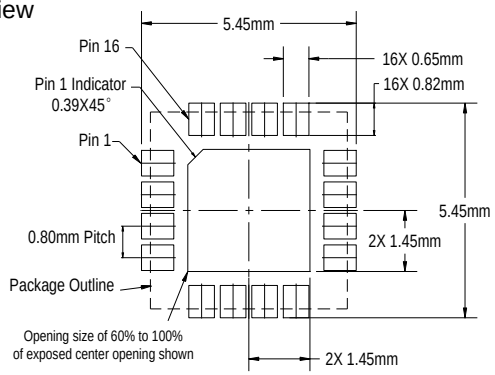
1.Turn off RF signal
2.Turn off VEN,VBIAS and VCC1,VCC2,VCC3 in order



Stencil Aperture Top View



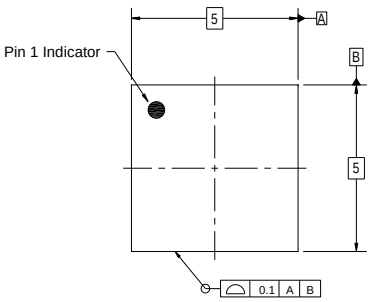
Metallization Top View



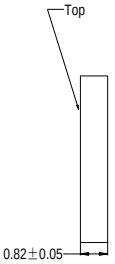
Solder Mask Opening Top View

Figure 6.PCB Layout Footprint

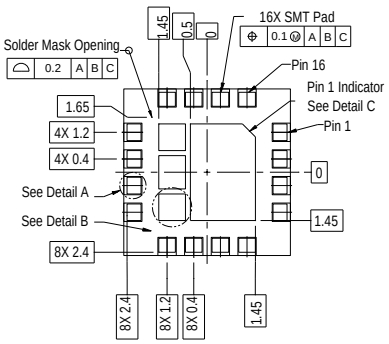
Package Dimensions



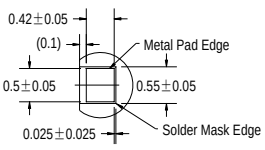
Top View



Side View

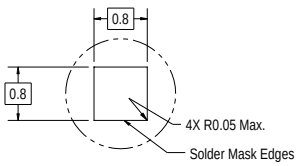


Bottom View



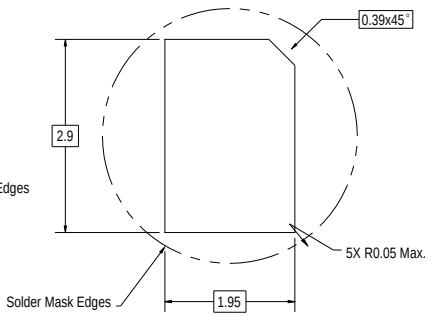
Detail A

Pad
Scale:2X
4X this rotation
4X rotated 180°
4X rotated 90° CW
4X rotated 90° CW



Detail B

Pad
Scale: 2X
3X this rotation



Detail C

Pad
Scale: 2X
1X this rotation

Figure 7 . Package Dimensions

Tape and Reel Information

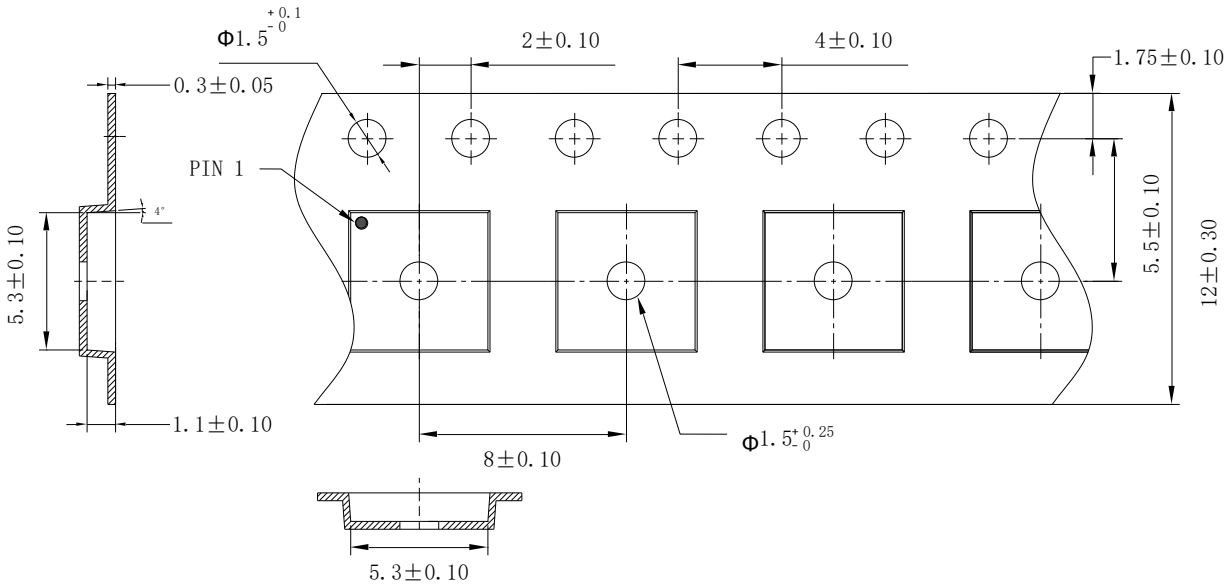


Figure 8.

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