MCCPA3438-P36

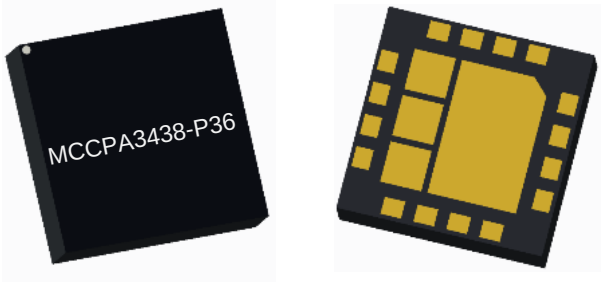
3400-3800MHz, High Efficiency 28dBm Power Amplifier

Product Overview

The MCCPA3438-P36 is a three-stage HBT general purpose power amplifier working at 3400~3800 MHz(Band 42,n78) 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 38dBm peak power using 20MHz LTE signal(9.5dB PAR@0.01%CCDF).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

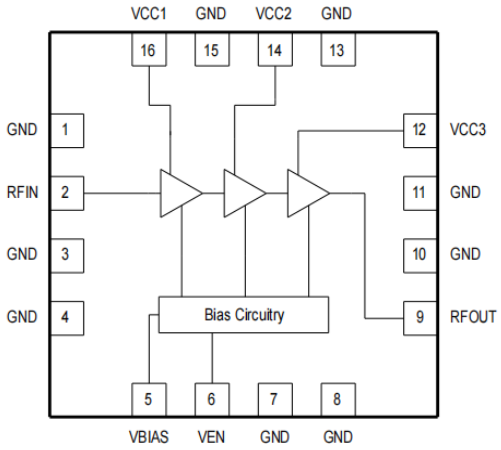


Figure2.

Key Features

- Frequency Range: 3400-3800MHz
- 30dB Gain
- 23% PAE at 28dBm output power
- Below -33dBc ACPR at 28dBm output power
- Higher than 38dBm 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

- FDD and TDD 2G/3G/4G LTE/5G NR systems
- 3GPP band 42,5G n78 small-cell base stations
- Customer Premises Equipment (CPE)
- Active antenna array and massive MIMO
- Driver amplifier for micro-base and macro-base stations

Ordering info

Part No.	Description
MCCPA3438-P36	7' Reel with 1500pcs

Pin Description

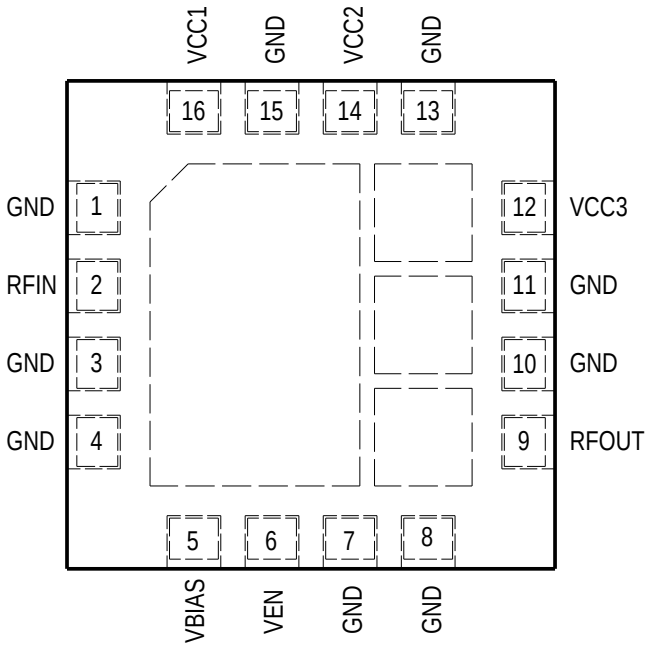


Figure 3.Pinout (Top View)

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 Ratings[1]

Parameter	Rating	Unit
Operating Temp,TC	-40 to +105	℃
Operating Junction Temp,TJ	150	℃
Storage Temp,TSTG	-55 to+125	℃
Thermal Resistance,Rθjc	21.1	℃/W
Operating Voltage,VCC1,VCC2,VCC3,VBIAS	5.5	V
Inuput Power,PIN	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	3400		3800	MHz
Operating Temp,TC	-40	25	85	℃
Operating Voltage,VCC1,VCC2,VCC3	4.5	5	5.5	V
PA Enable Voltage,VEN	1.6	1.8	3	V
PA Enable Current,IEN		400		uA

Electrical Specifications[1]

Parameter	Conditions	Min	Typ	Max	Unit
Frequency		3400		3800	MHz
Tested Frequency			3600		MHz
Output average power			+28		dBm
Output P3dB	Pulse 10%,1ms		+37		dBm
Gain @28dBm	Pulse 10%,1ms	27	31		dB
Power added efficiency	Pulse 10%,1ms		23		%
ACPR@28dBm	20MHz LTE E-TM1.1,9.5dB PAR		-33		dBc
Quiescent current	RF OFF	90	150		mA
Iutput return loss			-10		dB
Reverse isolation			-51		dB
Instantaneous bandwidth			200		MHZ

Notes[1]:VCC1=VCC2=VCC3=VBIAS=5V,VEN=1.8V,F=3700MHz,TC=25℃,Input/Output Load=50Ω

Evaluation Board Schemic

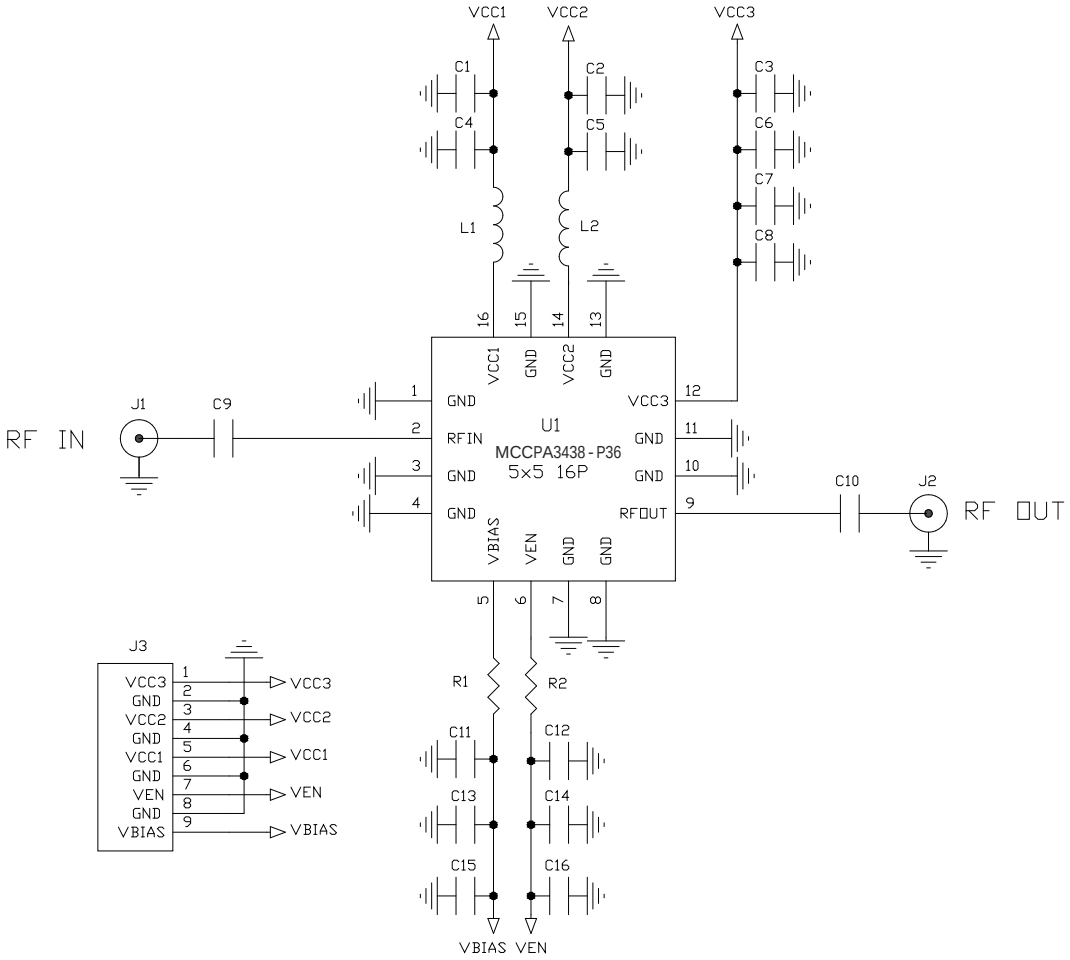


Figure 4. Evaluation Board Schemic

Evaluation Board Bill of Materials

Ref,Des	Value	**Size**
C9 C10	Ceramic capacitor, 18pF, 16V, +/-10%, X7R	0402/0603
C1 C2 C6 C15	Ceramic capacitor, 4.7uF, 16V, +/-10%, X7R	1206
L1 L2 R1 R2	Resistor, 0 Ω, 0.063W	0402
C12	Ceramic capacitor, 2.2nF, 16V, +/-10%, X7R	0402

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

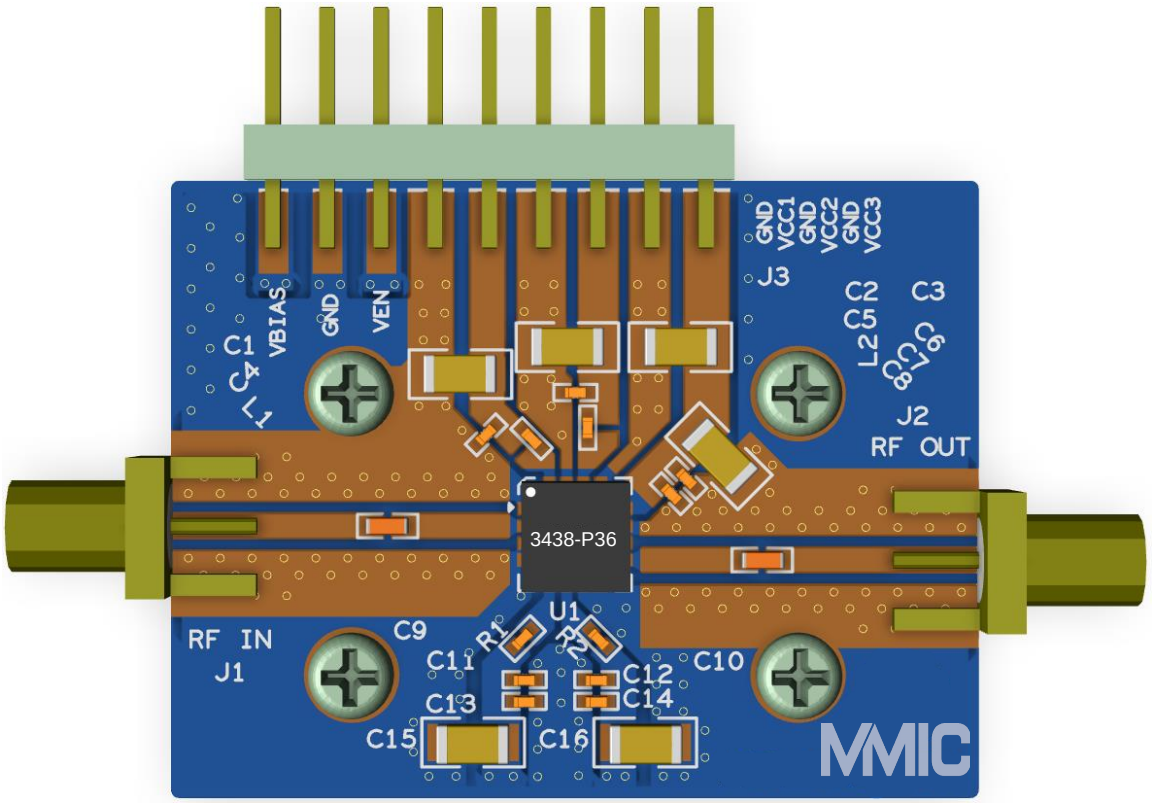


Figure 5 .Evaluation Board PCB information

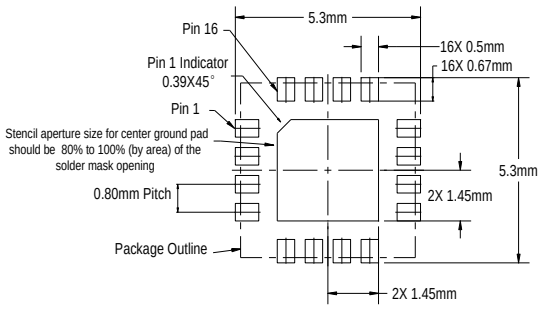
Evaluation board test procedure

Turn-on sequence

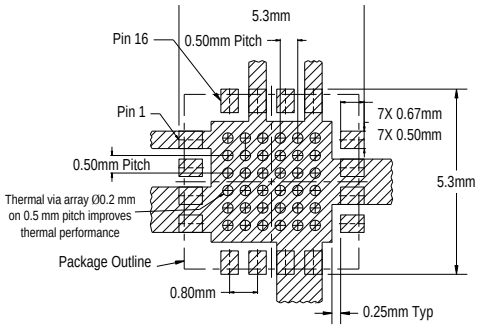
1.Connect test equipment to the input and output port of Evaluation board and then connect DC ground.
2.Turn on VCC1,VCC2,VCC3 to 5V,turn on VBIAS to 5V then turn on VEN to 1.8V in order.
3.Apply RF signal

Turn-on sequence

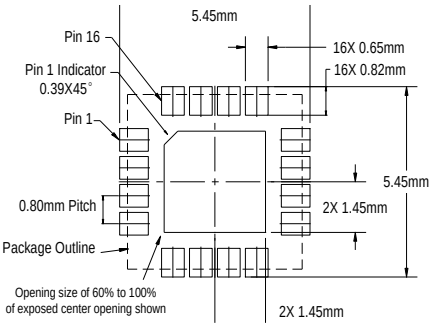
1.Turn off RF signal
2.Turn off VEN,VCC1,VCC2 and VCC3 in order



Stencil Aperture Top View



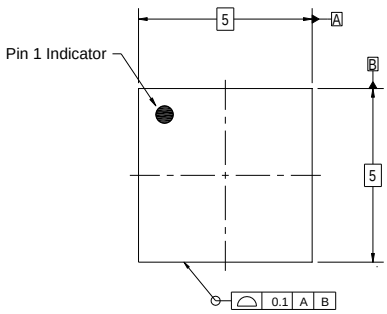
Metallization Top View



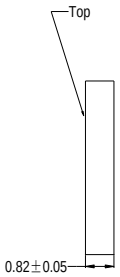
Solder Mask Opening Top View

Figure 6.PCB Layout Footprint

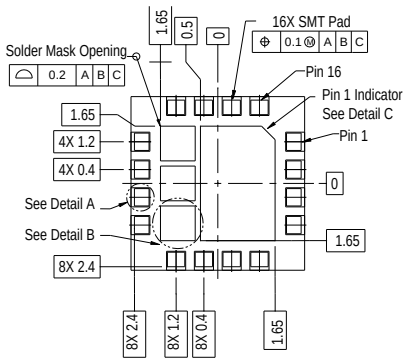
Package Dimensions



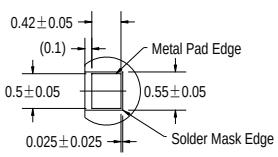
Top View



Side View

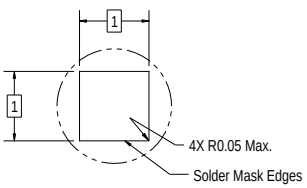


Bottom View



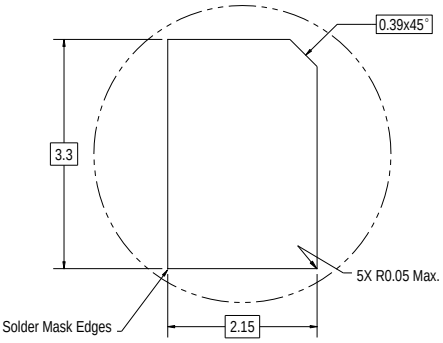
Detail A

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

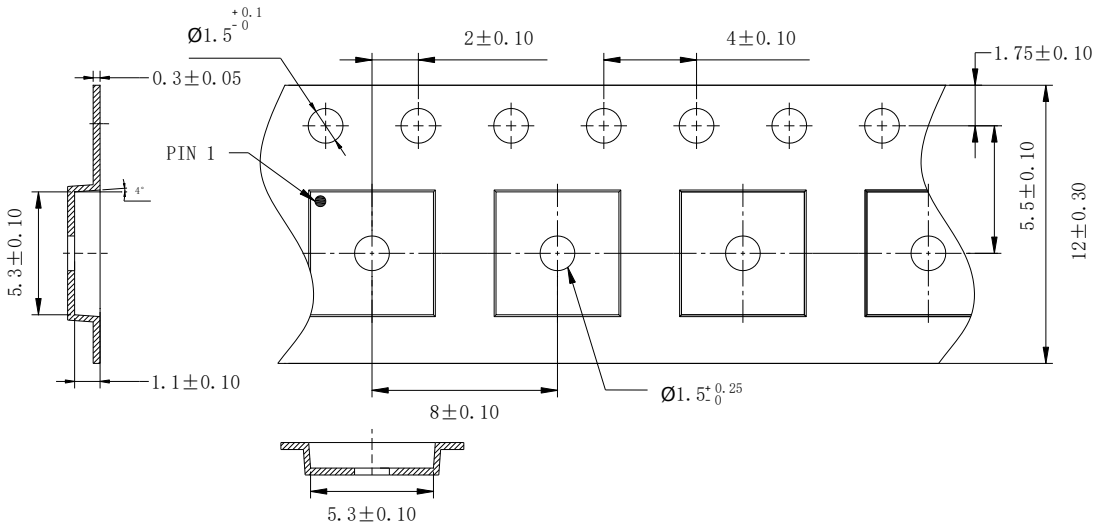


Detail C

Pad
Scale: 2X
1X this rotation

Figure 7.Package Dimensions

Tape and Reel Information



Technical requirements:
1.Cover 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

Figure 8