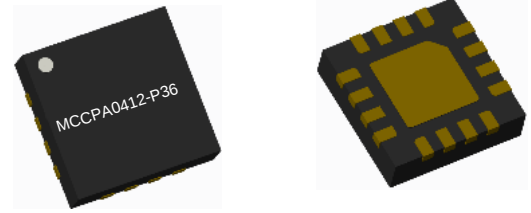


Product Overview

The MCCPA0412-P36 is a two stage HBT high power amplifier for indoor/outdoor wireless application such as RFID or Lora system application. It works for 900MHz and deliver 36dBm output peak power with 31dB power gain, and excellent linearity. The MCCPA0412-P36 input port is internally matched 50 Ω and integrated temperature compensation circuits within a tiny lead frame package.

ROHS compliant

Evaluation boards are available upon request.



16Pin 3×3mm QFN Package

Figure1.

Functional Block Diagram

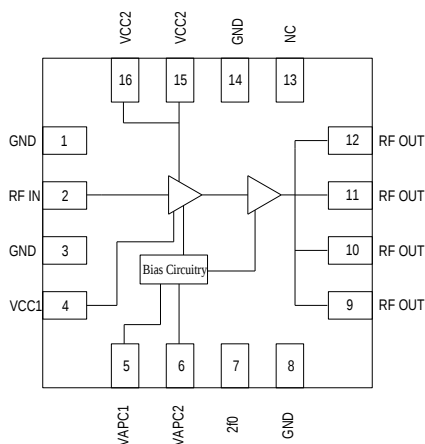


Figure2.

Key Features

- Frequency Range: 400-1200MHz
- 31dB Gain
- 50% PAE at 36dBm output power
- 36dBm output peak power
- Integrated temperature compensation circuits
- Compact and low-cost 3mm×3mm QFN package (MSL3,260 per JEDEC J-STD-020)

Applications

- Wireless Systems
- Power Amplifier Module
- Customer Permits Equipment (CPE)
- Automatic Meter Readers
- RFID Readers

Ordering info

Part No.	Description
MCCPA0412-P36	13' Reel with 4000pcs

Pin Description

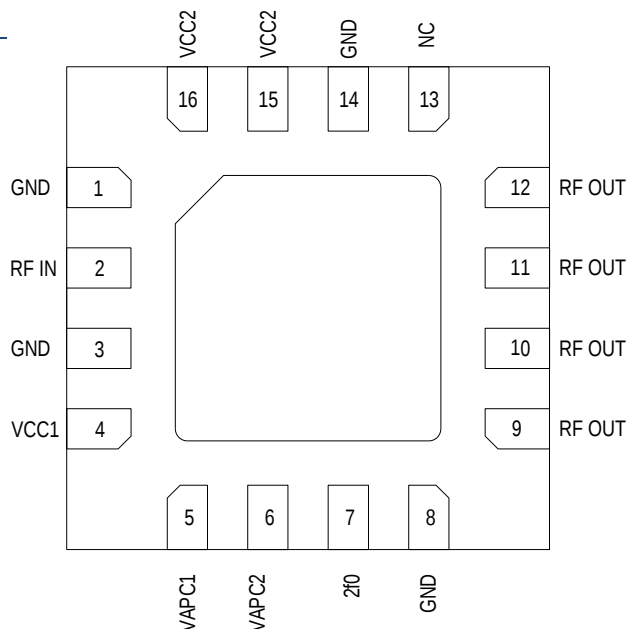


Figure 3. Pinout (Top View)

Pin	Name	Description	Pin	Name	Description
1	GND	Ground	9	RFOUT	RF output port
2	RFIN	RF input port	10	RFOUT	RF output port
3	GND	Ground	11	RFOUT	RF output port
4	VCC1	Stage 1 collector voltage	12	RFOUT	RF output port
5	VAPC1	Voltage of bias circuit	13	NC	Not connected
6	VAPC2	Voltage of bias circuit	14	GND	Ground
7	2f0	2 nd harmonic trap	15	VCC2	Stage 2 collector voltage
8	GND	Ground	16	VCC2	Stage 2 collector voltage

Absolute Maximum Ratings¹

Parameter	Rating	Unit
Operating Temp, T _c	-40 to +105	
Operating Junction Temp, T _j	175	
Storage Temp, T _{STG}	-55 to +125	
Thermal Resistance, R _{θjc}		/W
Operating Voltage, V _{CC1} , V _{CC2}	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	400		1200	MHz
Operating Temp,TC	-40	25	85	
Operating Voltage,VCC1,VCC2	3	5	5.5	V
VAPC1,VAPC2 Voltage	2.4	3.2		V
IAPC1,IAPC2 Current		8	15	mA

Electrical Specifications¹

Parameter	Conditions	Min	Typ	Max	Unit
Frequency		400	920	1200	MHz
Output P1dB			34		dBm
Output P3dB			36		dBm
Gain@33dBm			31		dB
Power added efficiency	@Psat		50		%
Quiescent currnt			300	350	mA
ACPR@26dBm	20MHz LTE-TM 1.1 9.5dB PAR		-47		dBc
Input return loss			-10		dB

Notes¹:VCC1=VCC2 =5V,VACP1=VACP2=3.2V,F=920MHz,TC=25 , Input/Output Load=50Ω

Evaluation Board Schemic

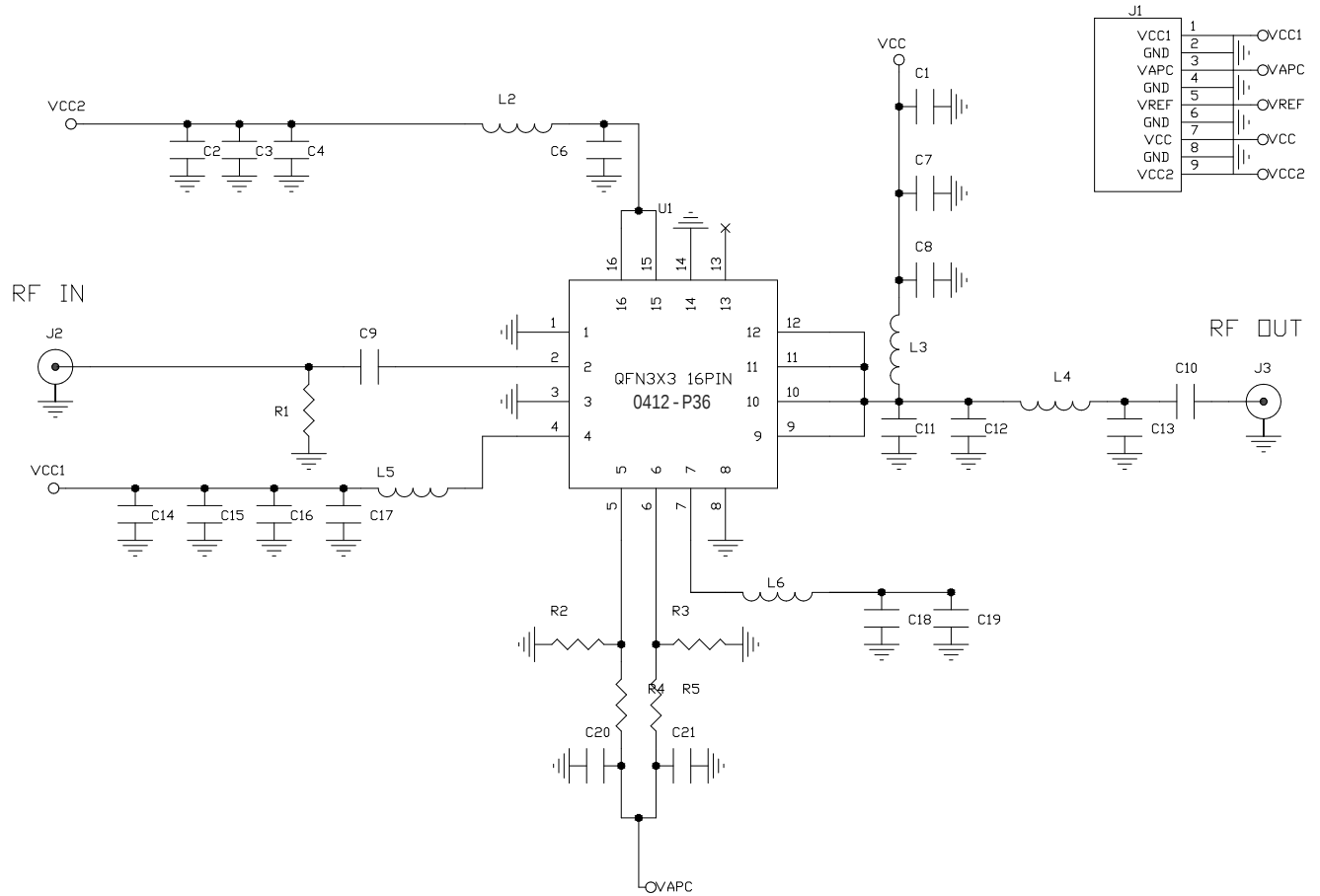


Figure 4 . Evaluation Board Schemic

Ref,Des	Value	Size
C17,C7	100pF 25V ±10% X7R	C0402
C15,C8,C6,C18,C21	1200pF 25V ±10% X7R	C0402
C2,C14,C1	4.7uF 16V ±10% X7R	C1206
R4,R5,L2,L6	0R ±5% 1/16W	R0402
C9,C10	47pF 25V ±10% X7R	C0402
L5	2.5nH Sunlord MWSD	L0402
L3	10nH Sunlord MWSD	L0603
L4	2.6nH Sunlord MWSD	L0402
C11	1pF 25V ±2% X7R	C0402
C12	15pF 25V ±0.1pF X7R	C0402
C13	4pF 25V ±1pF X7R	C0402
C19	5.1pF 25V ±0.1pF X7R	C0402

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

Evaluation Board Information

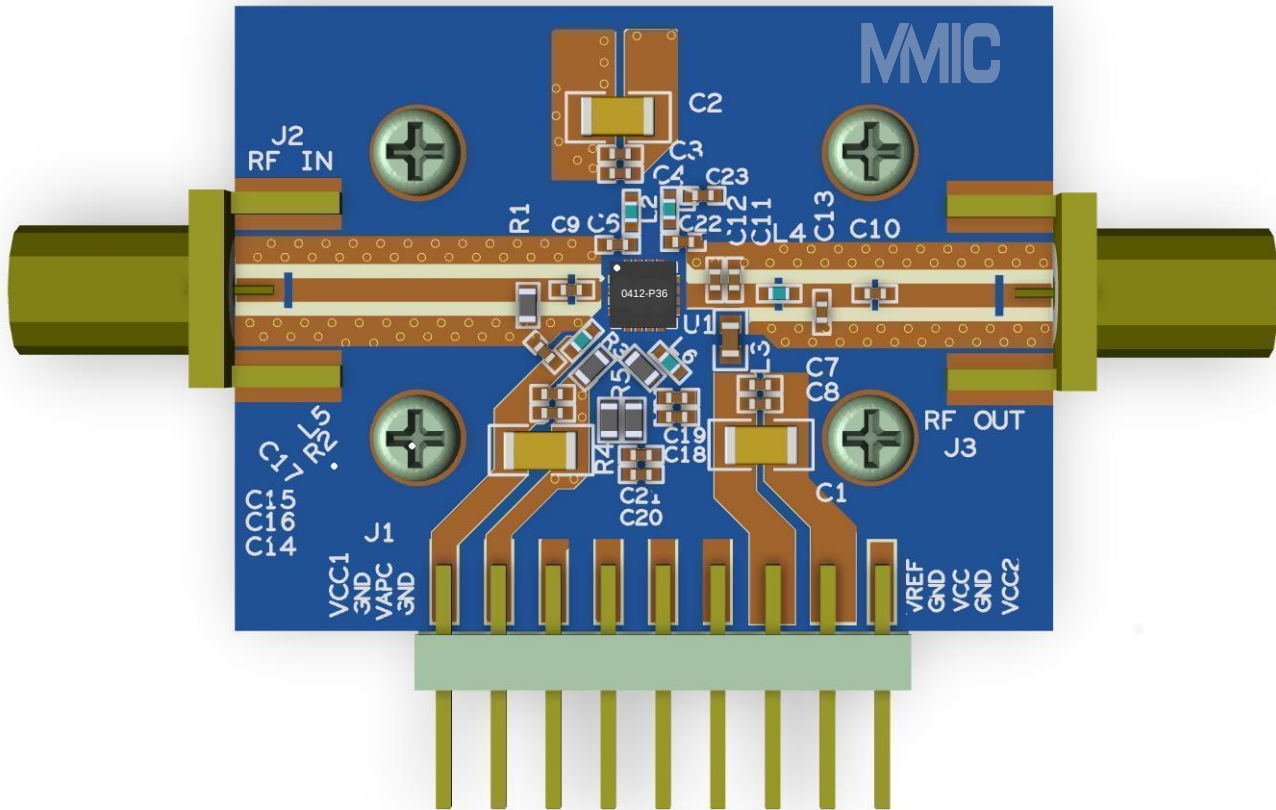


Figure 5

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 to 5V, then turn on VAPC1=VAPC2 to 3.2V in order
3. Apply RF signal

Turn-off sequence

1. Turn off RF signal
2. Turn off VAPC1, VAPC2, VCC1, VCC2 in order

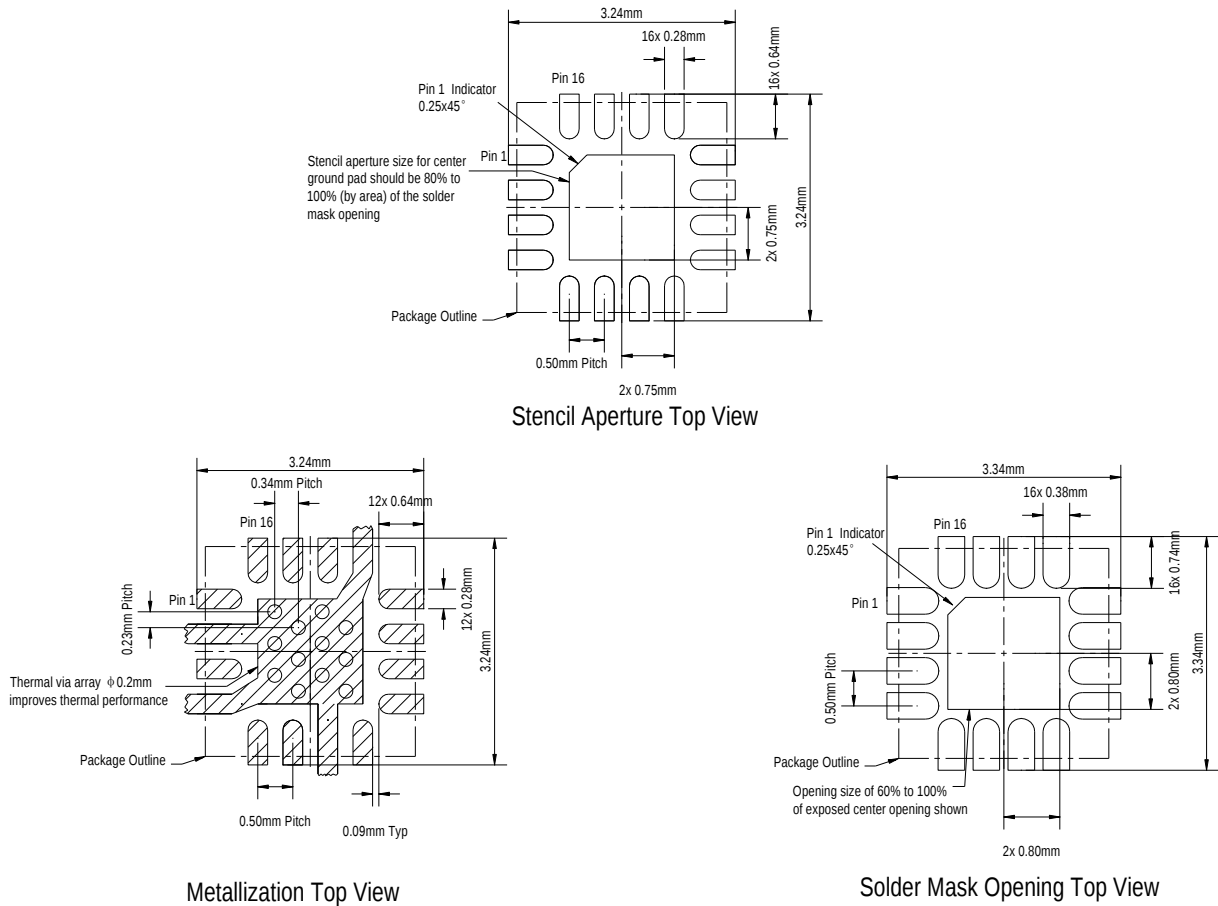


Figure 6. PCB Layout Footprint

Package Dimensions

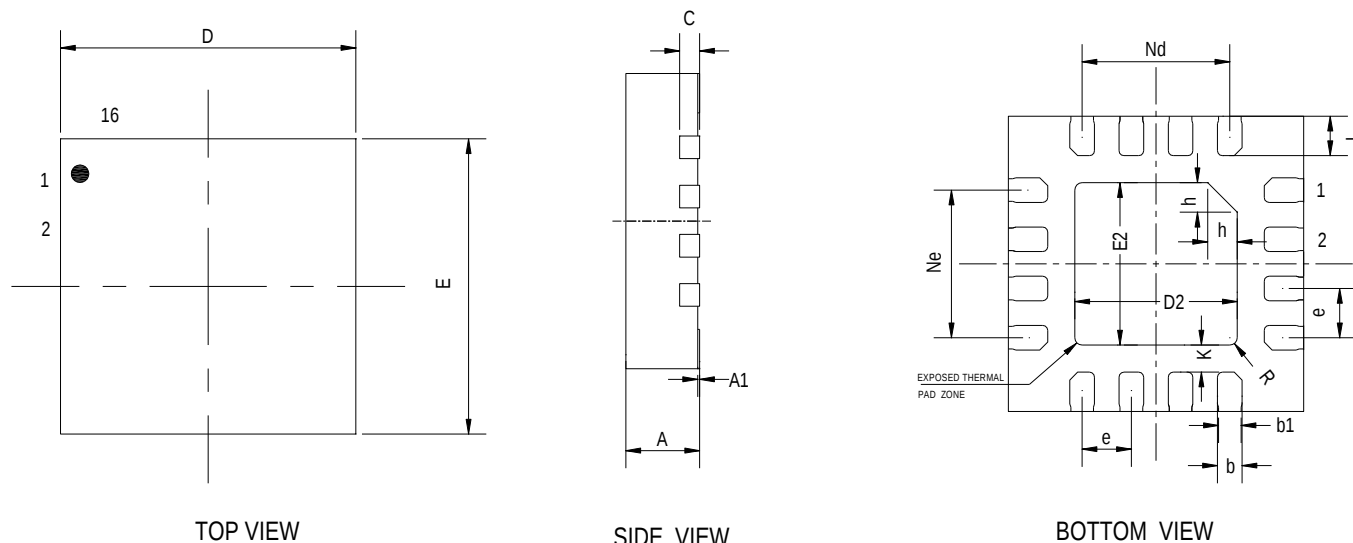
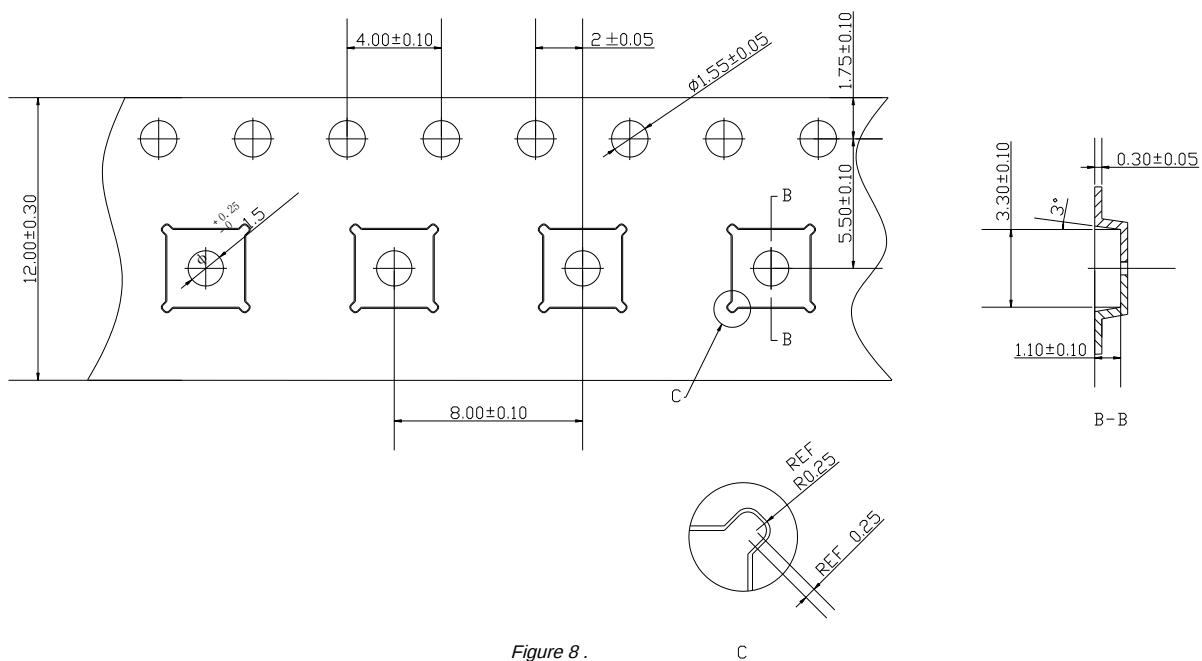


Figure 7.

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.7	0.75	0.80
A1	0	0.02	0.05
b	0.2	0.25	0.3
b1	0.23REF		
c	0.203REF		
D	2.90	3.00	3.10
D2	1.6	1.65	1.70
e	0.50BSC		
Ne	1.50BSC		
Nd	1.50BSC		
E	2.90	3.00	3.10
E2	1.60	1.65	1.70
L	0.35	0.4	0.45
h	0.25	0.3	0.35
K	0.225	0.275	0.325
R	0.075REF		

Tape and Reel Information



Technical requirements:

1. The accumulative error of the distance between any 10 transmitting holes is ± 0.1 mm;
2. The lateral bending of the belt along the length direction is ≤ 1 mm/100mm;
3. Roughness: $Ra < 0.8\mu\text{m}$;
4. Carrier tape color: Black;