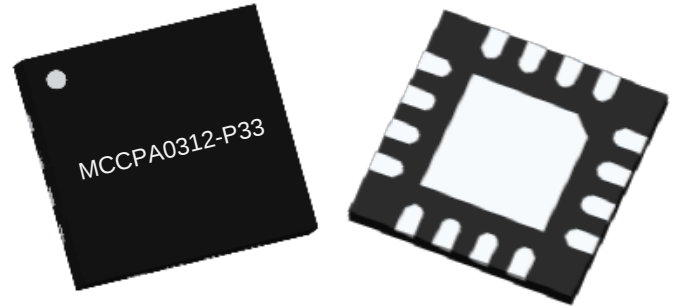


Product Overview

The MCCPA0312-P33 is a two stage HBT high power amplifier for indoor/outdoor wireless application such as RFID,Lora system application.It works for 900MHz and can deliver 33dBm output peak power with 31dB power gain,and excellent linearity.The MCCPA0312-P33 input port is internally matched 50Ω 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

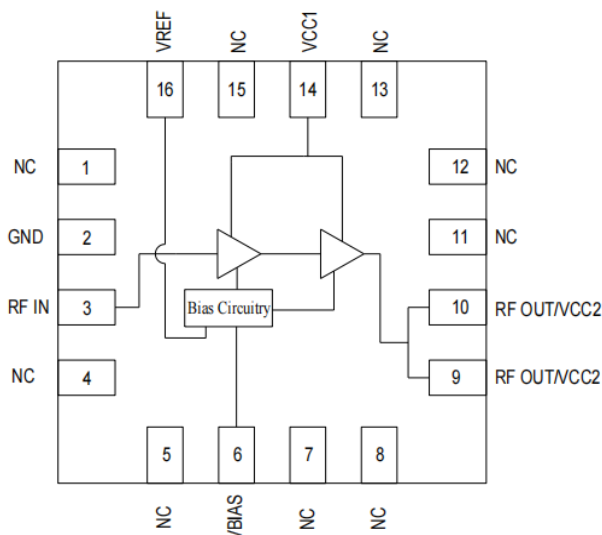


Figure2.

Key Features

- Frequency Range: 300-1200MHz
- 33dB Gain
- 50% PAE at 33dBm output power
- 33dBm 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 Permisses Equipment (CPE)
- Automatic Meter Readers
- RFID Readers

Ordering info

Part No.	Description
MCCPA0312-P33	13' Reel with 4000pcs

Pin Description

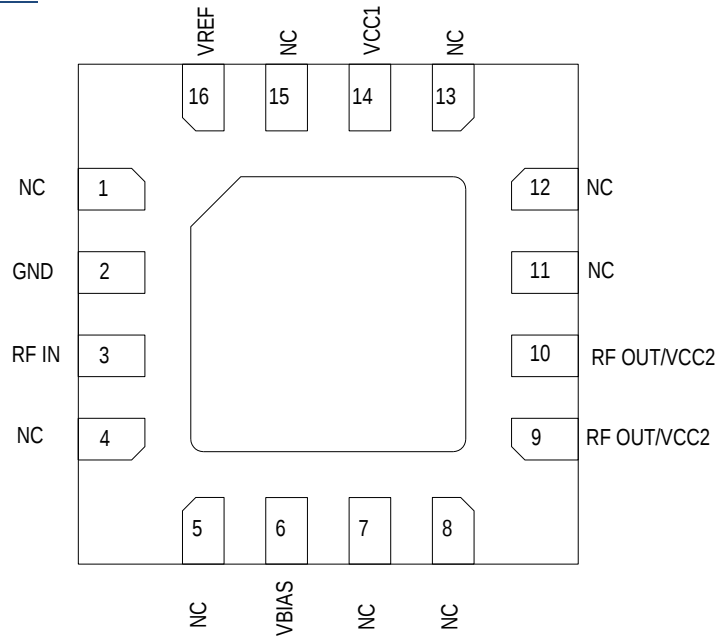


Figure 3. Pinout (Top View)

Pin	Name	Description	Pin	Name	Description
1	NC	Not Connected	9	RFOUT/VCC2	RF output port and Stage2 Collector Voltage
2	GND	Ground	10	RFOUT/VCC2	RF output port and Stage2 Collector Voltage
3	RFIN	RF input port	11	NC	Not connected
4	NC	Not connected	12	NC	Not connected
5	NC	Not connected	13	NC	Not connected
6	VBIAS	Bias circuit voltage	14	VCC1	Stage1 Collector voltage
7	NC	Not connected	15	NC	Not connected
8	NC	Not connected	16	VREF	Reference voltage

Absolute Maximum Ratings¹

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 _{θjc}		/W
Operating Voltage, VCC1, VCC2, VBIAS	5.5	V
Inuput Power, P _{IN}	10	dBm

Notes¹: 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	300		1200	MHz
Operating Temp,TC	-40	25	85	
Operating Voltage,VCC1,VCC2,VBIAS	3	5	5.5	V
VREF Reference Voltage,VREF		3		V
IREF Current ,IREF		8	15	mA

Electrical Specifications¹

Parameter	Conditions	Min	Typ	Max	Unit
Frequency			920		MHz
Output P1dB			32		dBm
Output P3dB			33		dBm
Gain@20dBm			33		dB
Power added efficiency	@Psat		50		%
Quiescent currnt			300	350	mA
ACPR@20dBm	20MHz LTE E-TM 1.1,9.5dB PAR		-46		dBc
Input return loss			-10		dB

Notes¹:VCC1=VCC2 =VBAIS=5V,VREF=3V,f=900MHz,TC=25 , Input/Output Load=50Ω

Performance Data

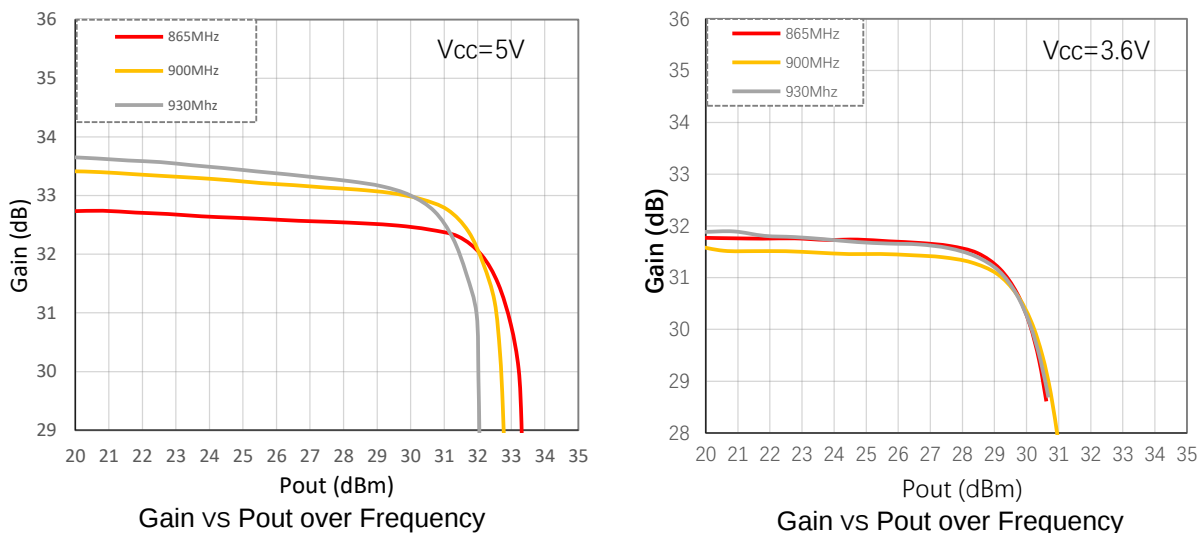


Figure 4

Evaluation Board Schematic

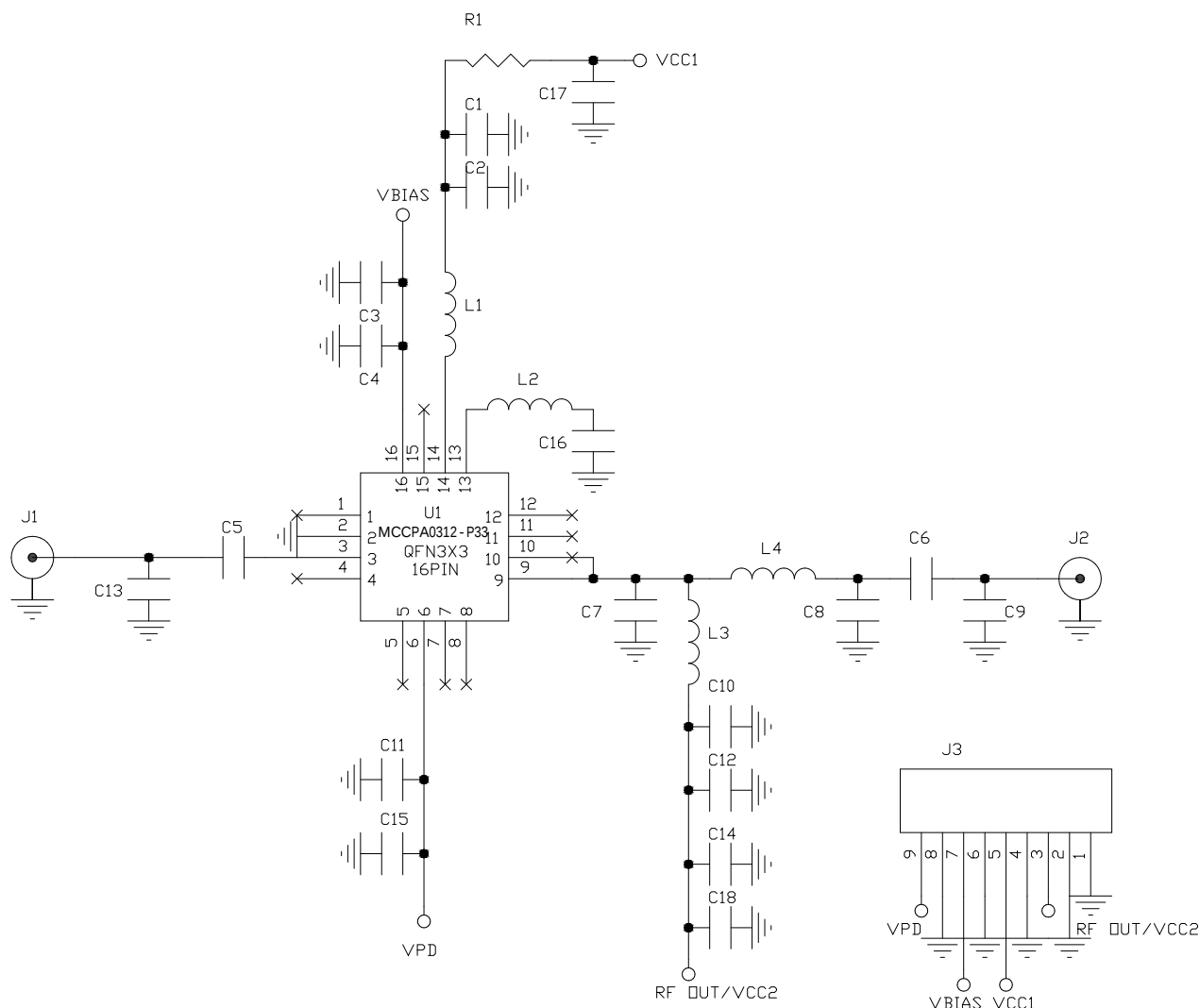


Figure 5 . Evaluation Board Schematic

Bill of Materials ---860-925MHz 5V application

Ref,Des	Value	Size
C1, C4, C10, C11	1000pF 25V ±10% X7R	C0402
C2, C12	100pF 25V ±10% X7R	C0402
C5, C6	47pF 25V ±10% X7R	C0402
C7	10pF 25V ±10% X7R	C0402
C8	4.7pF 25V ±10% X7R	C0402
C17, C18	4.7uF 16V ±10% X7R	C1206
R1	0R ±5% 1/16W	R0402
L1	3.5nH	L0402
L3	10nH	L0603
L4	2.4nH	L0402

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

Bill of Materials ---860-925MHz 3.6V application

Ref,Des	Value	Size
C1, C4, C10, C11	1000pF 25V ±10% X7R	C0402
C2, C12	100pF 25V ±10% X7R	C0402
C5, C6	47pF 25V ±10% X7R	C0402
C7	10pF 25V ±10% X7R	C0402
C8	4.3pF 25V ±10% X7R	C0402
C17, C18	4.7uF 16V ±10% X7R	C1206
R1	0R ±5% 1/16W	R0402
L1	3.5nH	L0402
L3	10nH	L0603
L4	1.7nH	L0402

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

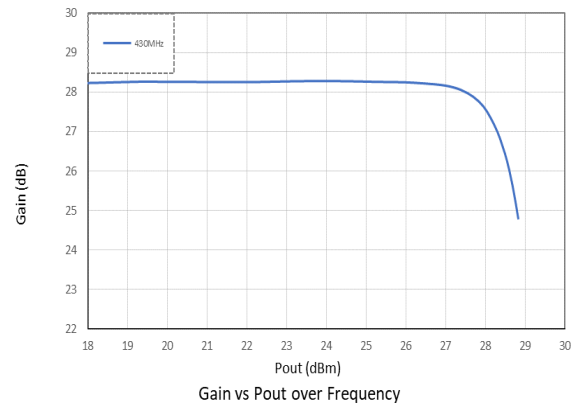
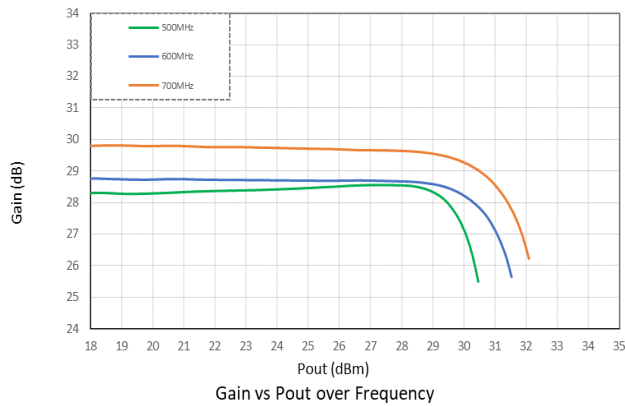


Figure 6

Bill of Materials --- 400-700MHz 5V application

Ref,Des	Value	Size
C1, C4, C10, C11	1000pF 25V ±10% X7R	C0402
C2, C12	100pF 25V ±10% X7R	C0402
C5, C6	100pF 25V ±10% X7R	C0402
C7	22pF 25V ±10% X7R, Close to output Pin	C0402
C8	8pF 25V ±10% X7R	C0402
C17, C18	4.7uF 16V ±10% X7R	C1206
R1	0R ±5% 1/16W	R0402
L1	3.5nH	L0402
L3	10nH	L0603
L4	6.4nH Sunlord MWSD1005C2N4CTM81	L0402

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

Evaluation Board Information

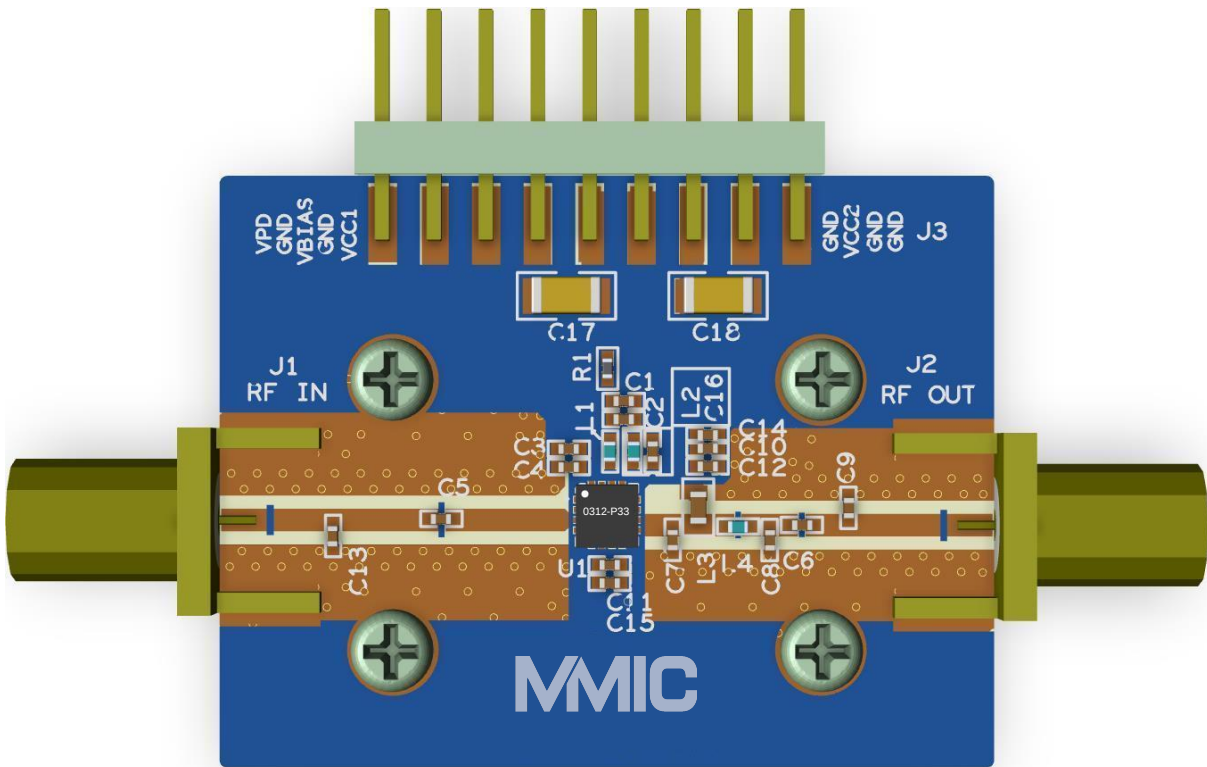


Figure 7

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 and VBIAS to 5V,turn on VREF to 3V in order.
- 3.Apply RF signal

Turn-on sequence

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

Package Dimensions

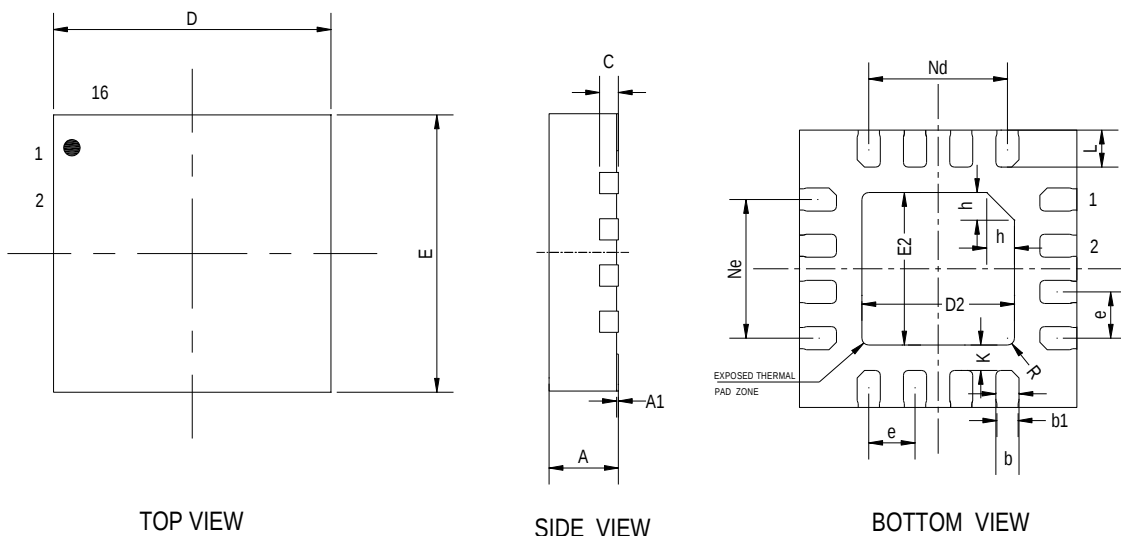


Figure 8 .

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		

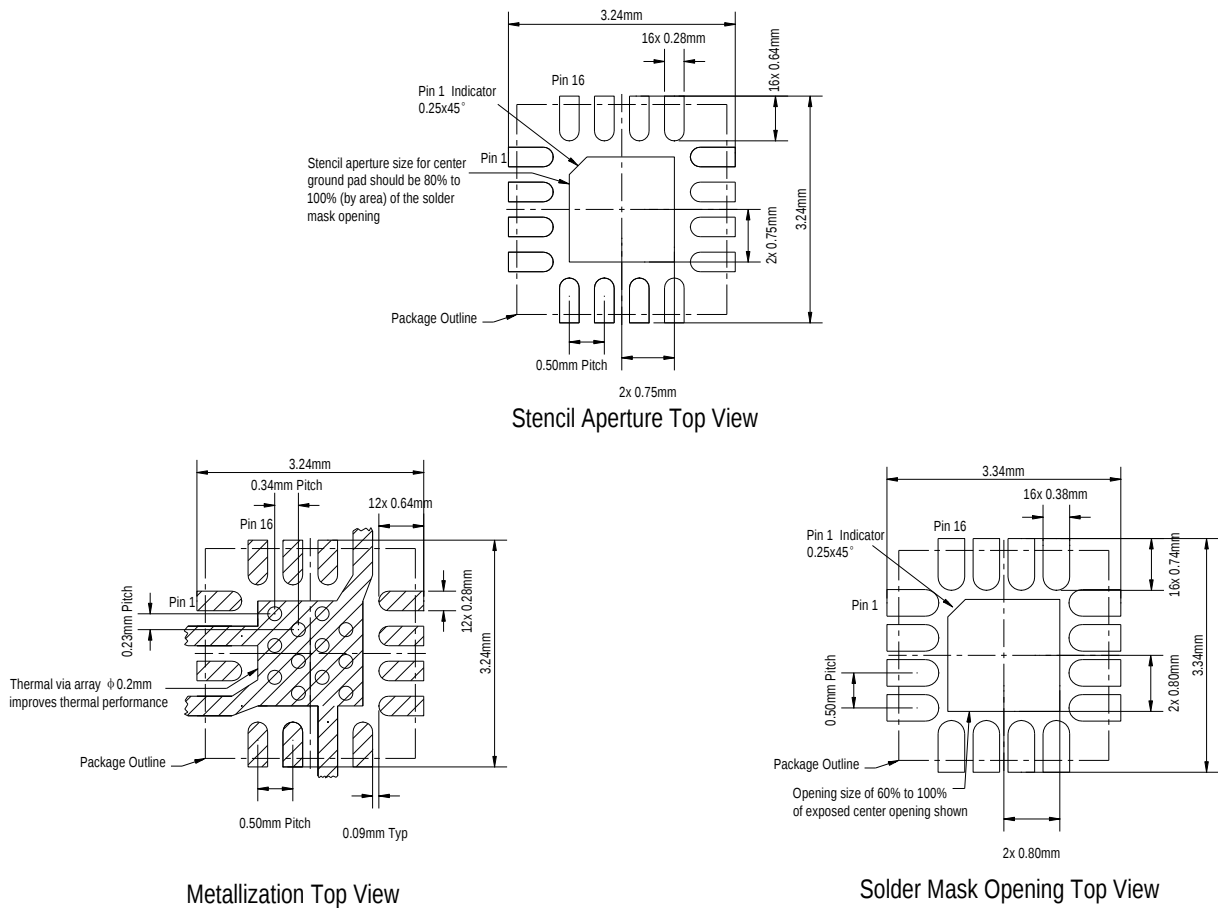


Figure 9.PCB Layout Footprint

Tape and Reel Information

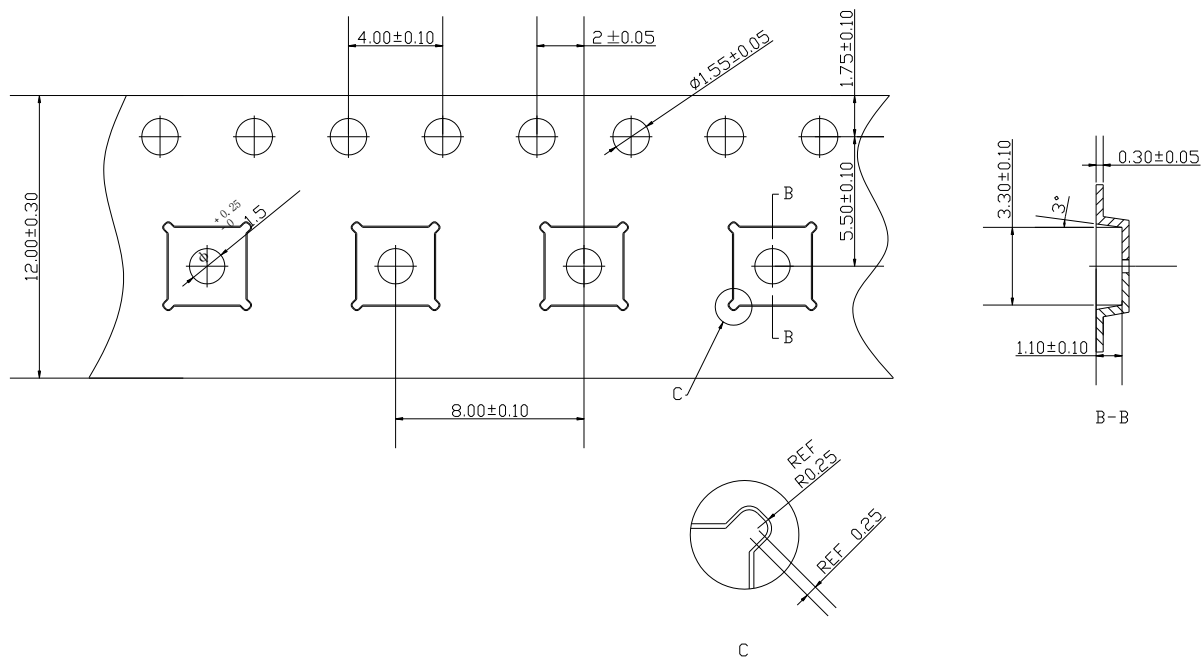


Figure 1 0 .

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;