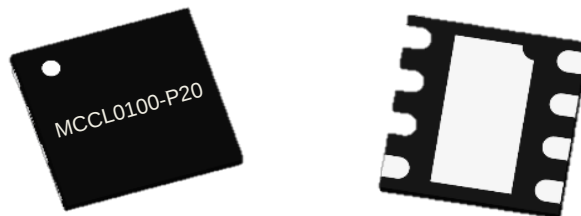


Product Overview

The MCCL0100-P20 is a signal -stage pHEMT ultra low noise amplifier for indoor/outdoor wireless application. It covers DC to 10GHz with high-linearity. At 3GHz and can deliver 19dB power gain, 0.5dB noise figure and excellent linearity. The MCCL0100-P20 input port is internally matched 50Ω and integrated temperature compensation circuits within a tiny 2×2mm DFN package.

ROHS compliant

Evaluation boards are available upon request.



8pin 2×2 mm DFN Package

Figure1.

Functional Block Diagram

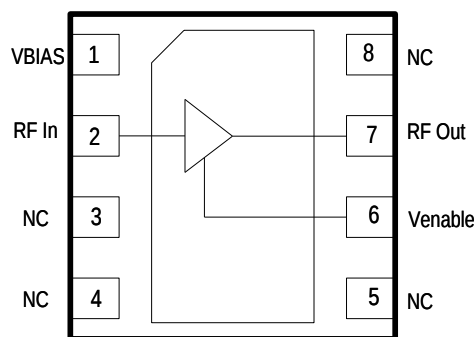


Figure2.

Key Features

- Frequency Range: DC-10GHz
- 0.5dB noise figure @3.5GHz
- 18dB Gain @3.5GHz
- 20dBm P1dB power
- Compact and low-cost 2mm×2mm DFN package (MSL3, 260°C per JEDEC J-STD-020)

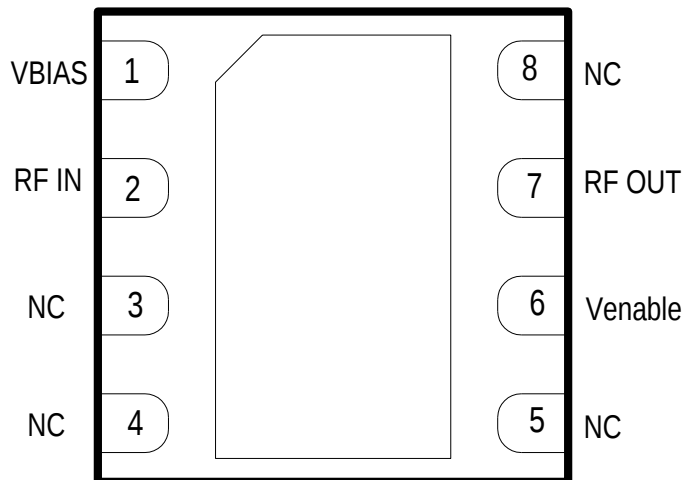
Applications

- 5G massive MIMO Base station
- Wireless Communication Systems
- Repeater/DAS
- Automotive
- UWB
- Wideband amplifiers

Ordering info

Part No.	Description
MCCL0100-P20	7' Reel with 1500 pcs

Pin Description



Pin	Name	Description	Pin	Name	Description
1	VBIAS	Bias circuit Voltage	5	NC	Not Connected
2	RF IN	RF input port	6	Venable	On state(low), Off state(high)
3	NC	Not Connected	7	RF OUT	RF output port
4	NC	Not Connected	8	NC	Not Connected

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}		/W
Operating Voltage, V _{cc}	5.5	V
Input Power, P _{IN}	0	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	DC		10	GHz
Operating Temp, Tc	-40	25	85	
Operating Voltage, Vcc	3	5	5.5	V
Vbias pin Voltage, Vbias				V
Vbias pin Current, Ibias				mA

Electrical Specifications¹

Parameter	Conditions	Min	Typ	Max	Unit
Frequency		DC	3500	10000	MHz
Output P1dB	430MHz		20		dBm
	900MHz		20.5		dBm
	1800MHz		21.5		dBm
	2600MHz		21.5		dBm
	3500MHz		19		dBm
	5800MHz		17.5		dBm
	7100MHz		15.5		dBm
Noise figure	430MHz		0.5		dB
	900MHz		0.5		dB
	1800MHz		0.3		dB
	2600MHz		0.3		dB
	3500MHz		0.5		dB
	5800MHz		0.9		dB
	7100MHz		1.1		dB
Gain	430MHz		26		dB
	900MHz		26		dB
	1800MHz		22.5		dB
	2600MHz		20		dB
	3500MHz		18		dB
	5800MHz		14.8		dB
	7100MHz		14.6		dB
Quiescent current			50		mA
Input return loss	1-10GHz		-10		dB
Output return loss	1-10GHz		-9		dB

Notes¹ : Vcc=5V, Ven=0V, Tc=25°C Input/Output Load=50Ω

Evaluation Board Schemic

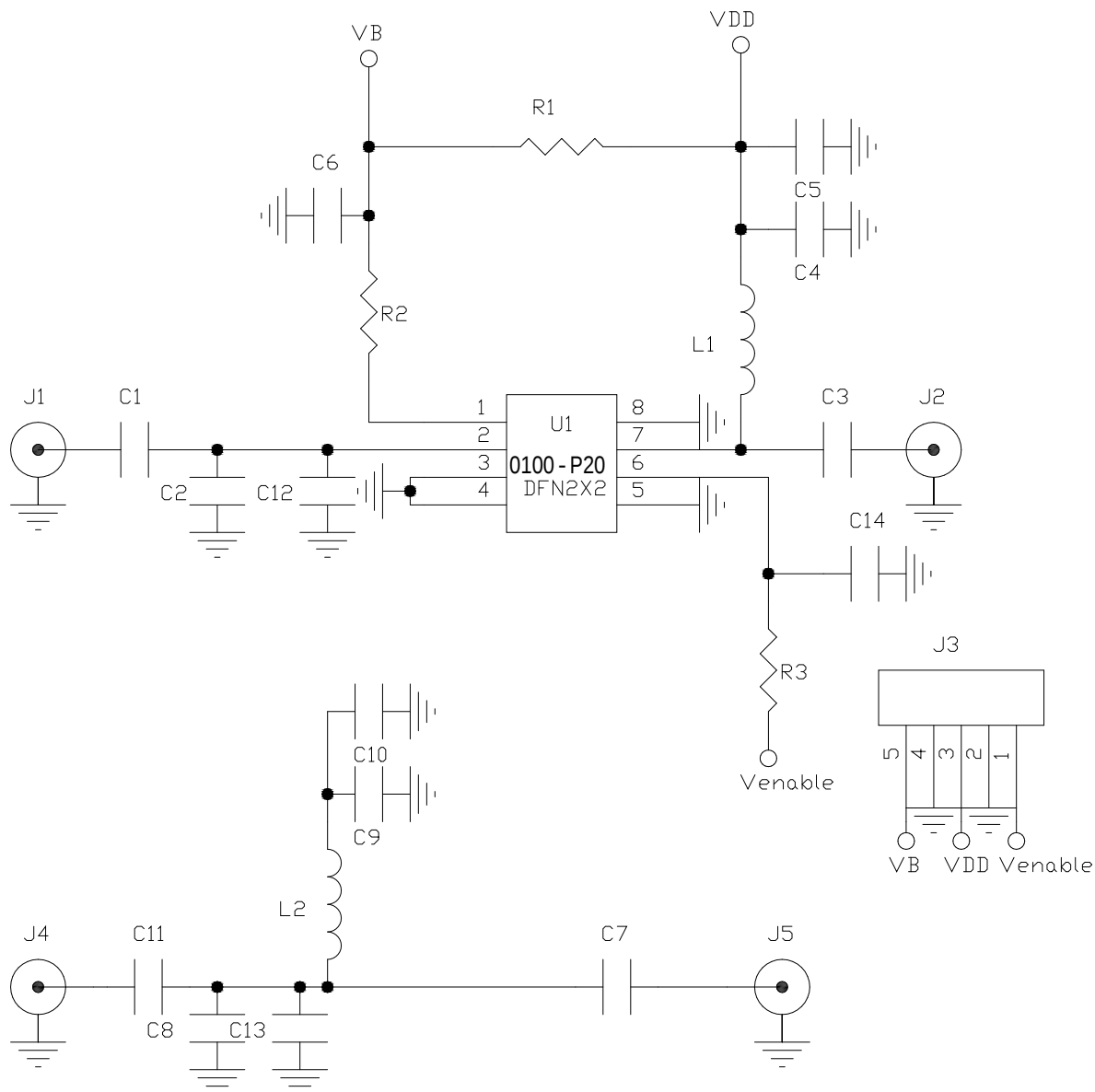


Figure 4.Evaluation Board Schemaic

Performance Of 1– 10GHz EVB

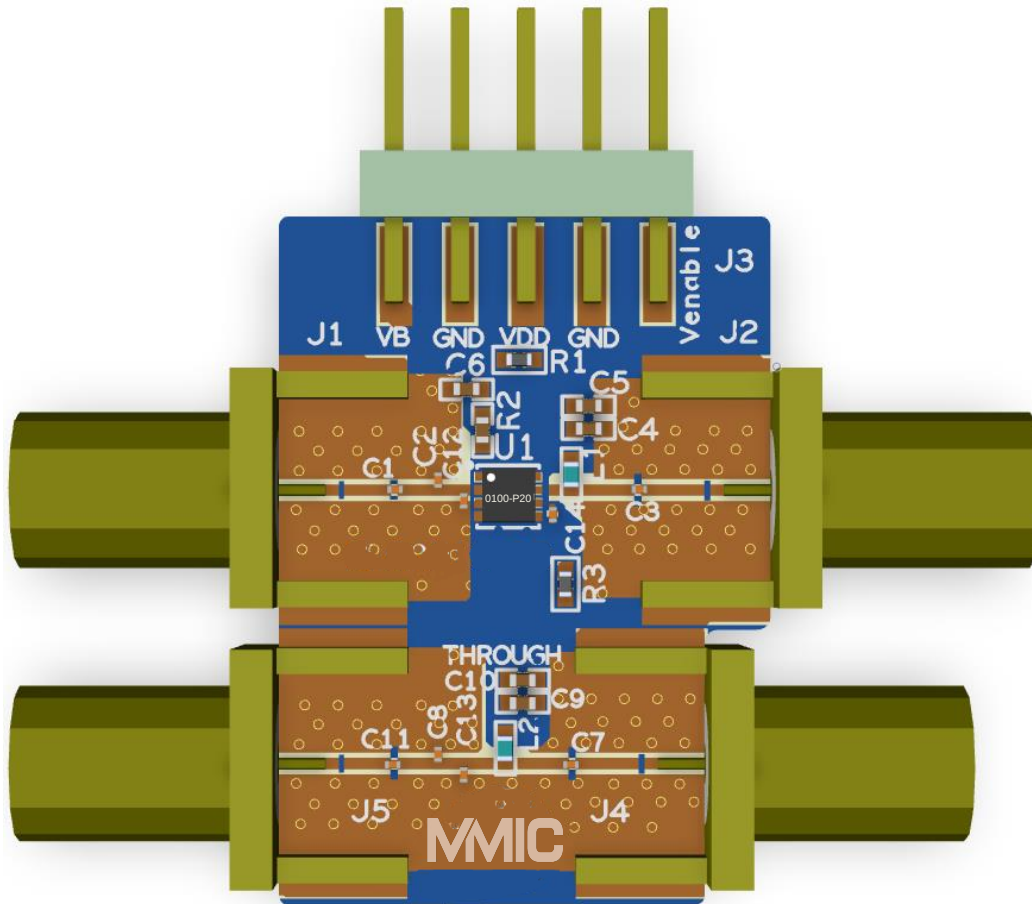


Figure 5. Evaluation Board PCB information

Ref Des	Value	Size
C1,C3,C14	22pF	C0201
C2	0.2pF HQ	C0201
C4,C6	100pF	C0402
C5	100nF	C0402
L1	22nH, wire inductor	L0402
R2,R3	1K Ω	R0402

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

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 Vcc to 5V, turn on Venable=0V in order.
3. Apply RF signal.

Turn-off sequence

- 1 . Turn off RF signal.
- 2 . Turn off VCC, Venable in order.

Package Dimensions

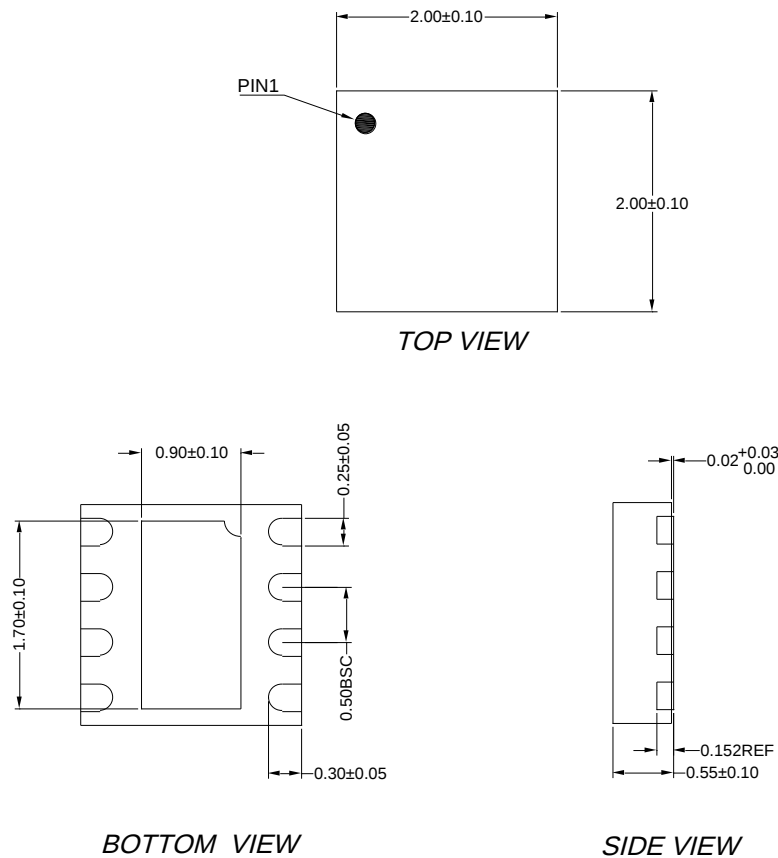


Figure 6.

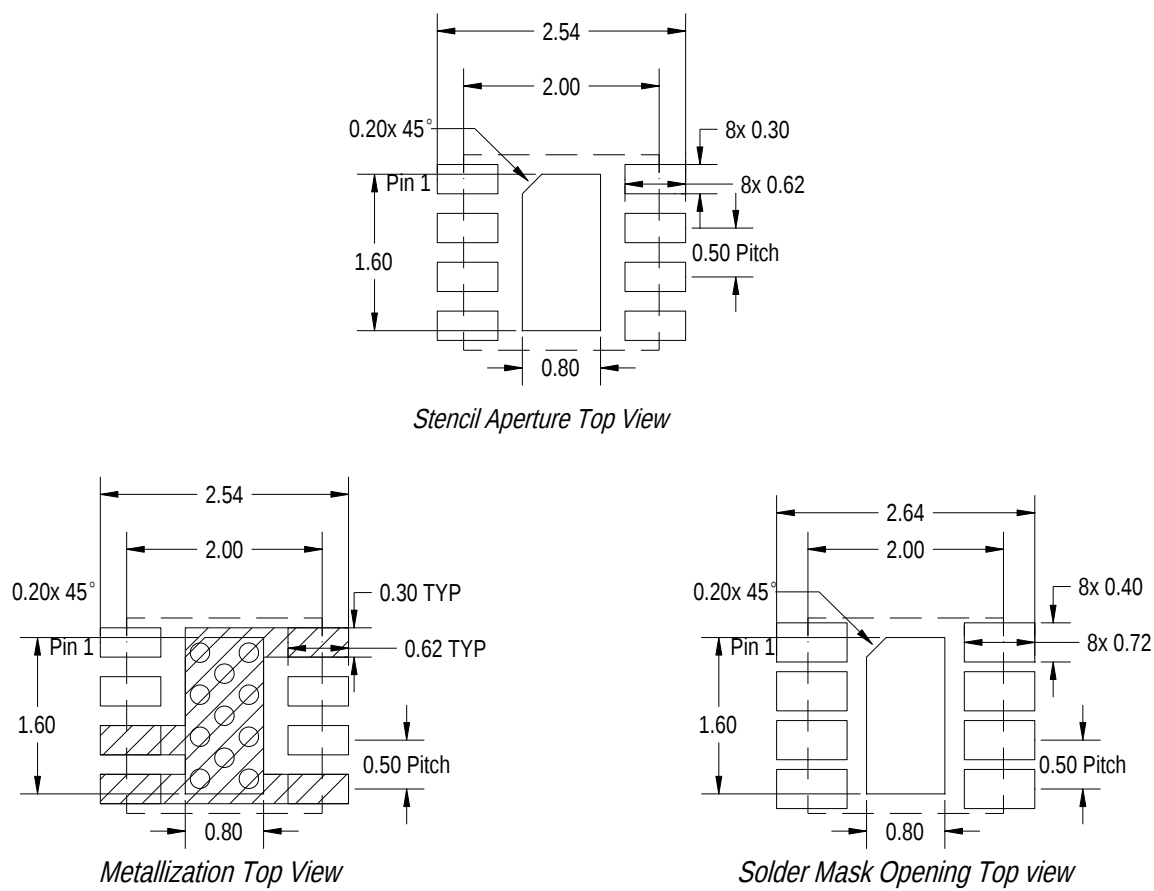
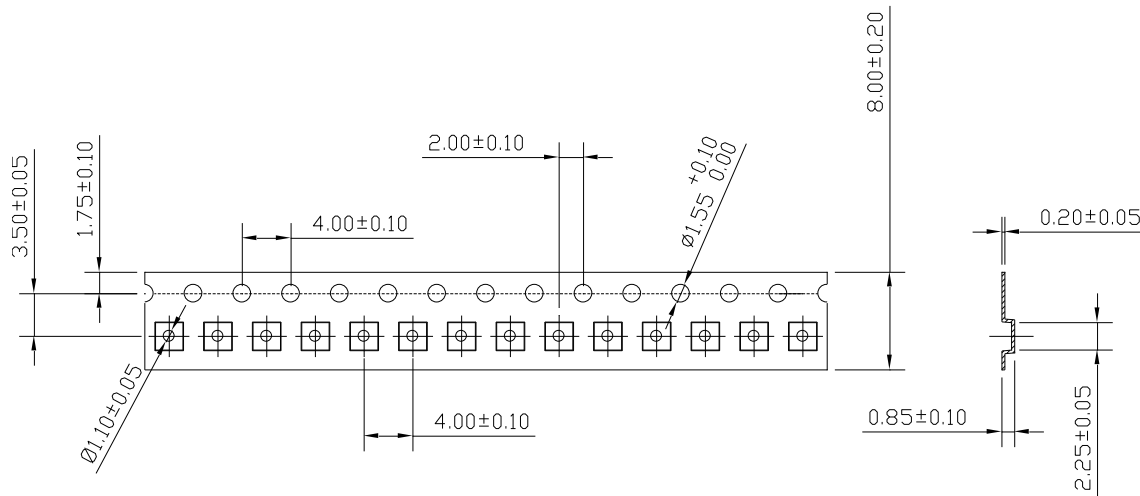


Figure7.PCB Layout Footprint

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 $\leq 1\text{mm}/100\text{mm}$;
3. Roughness: $Ra < 0.8\mu\text{m}$;
4. Carrier tape color: Black.

Figure.8