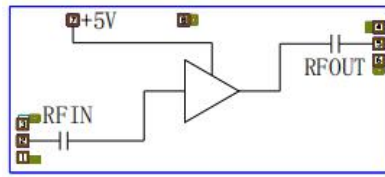


**Key features**

- Freq: 1.0-20.0GHz
- NF: 1.8dB
- Gain: 18dB
- Gain Flatness: ±1.4dB
- OP-1dB: 14dBm
- Psat Satisfaction: 16dBm
- OIP3: 25.5dBm
- Single power supply: +5V/71mA
- 50Ω Input/Output
- Size: 3.45×1.5×0.1mm<sup>3</sup>

**Functional Diagram**



**Description**

MC1086 is a low noise amplifier Chip, working at 1.0-20.0GHz, single power supply +5V work. Under 71mA current, it can provide 18dB gain and 14dBm P-1dB output power, the typical noise figure is 1.8dB.

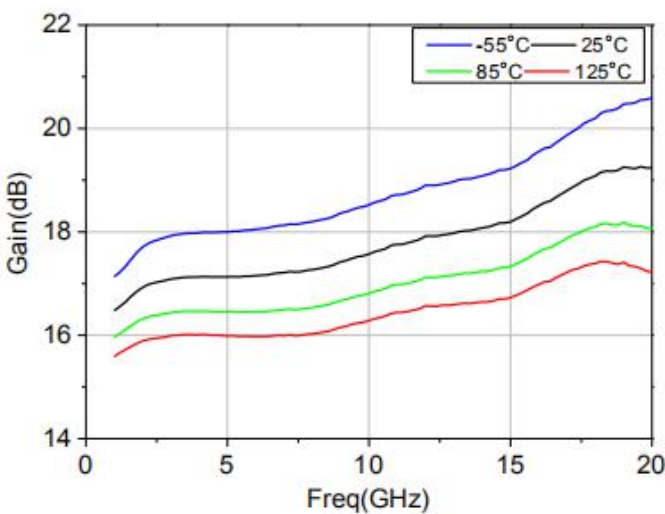
The low-noise amplifier chip adopts an on-chip metallized through-hole process without additional grounding measures, and is simple and convenient to use; the back of the chip is metallized, which is suitable for conductive adhesive bonding or eutectic mounting process.

**Electrical Specifications (T<sub>A</sub>=+25°C, 50Ω system, V<sub>D</sub>=+5V, I<sub>dd</sub>=71mA)**

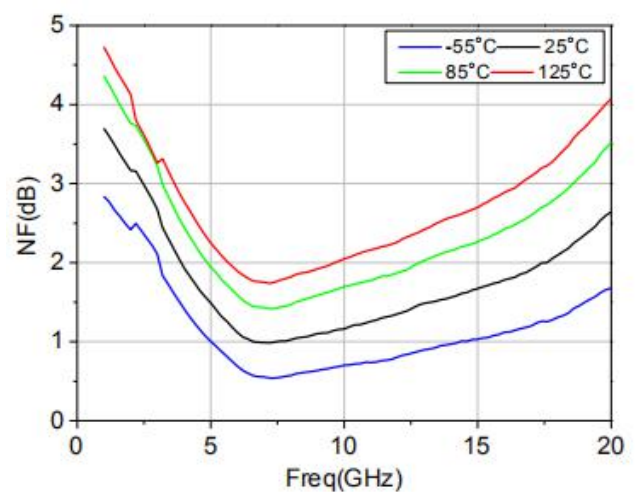
Parameters	Function	Min.	Typ.	Max.	Units
Working Frequency	Freq	1.0	-	20.0	GHz
Gain	Gain	-	18	-	dB
Gain Flatness	Δ Gain	-	±1.4	-	dB
Noise Figure	NF	-	1.8	-	dB
OP-1dB	P-1dB	-	14	-	dBm
Input Return Loss	IRL	-	-17	-	dB
Output Return Loss	ORL	-	-17	-	dB
Saturated Output Power	Psat	-	16	-	dBm
Output Third Order Intercept Point	OIP3	-	25.5	-	dBm
Quiescent Current	I <sub>dd</sub>	-	71	-	mA

[1] The chips are 100% DC and RF tested.

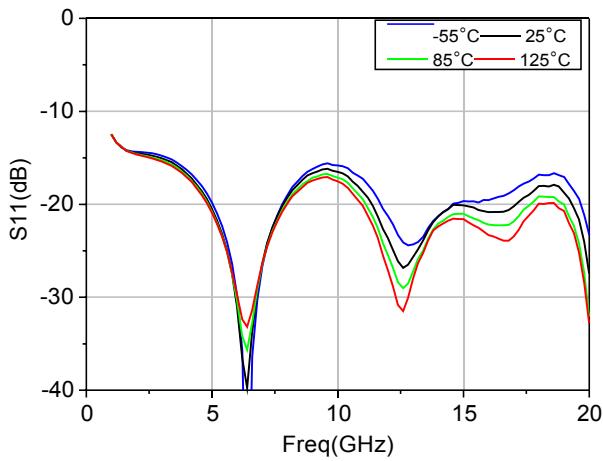
**Typical Testing Characteristics**



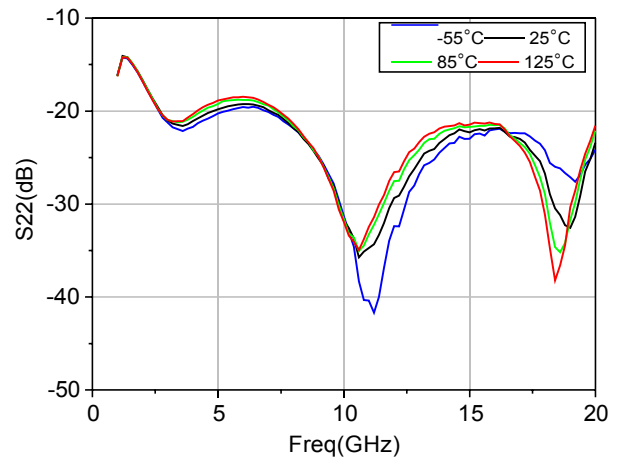
Gain vs Frequency



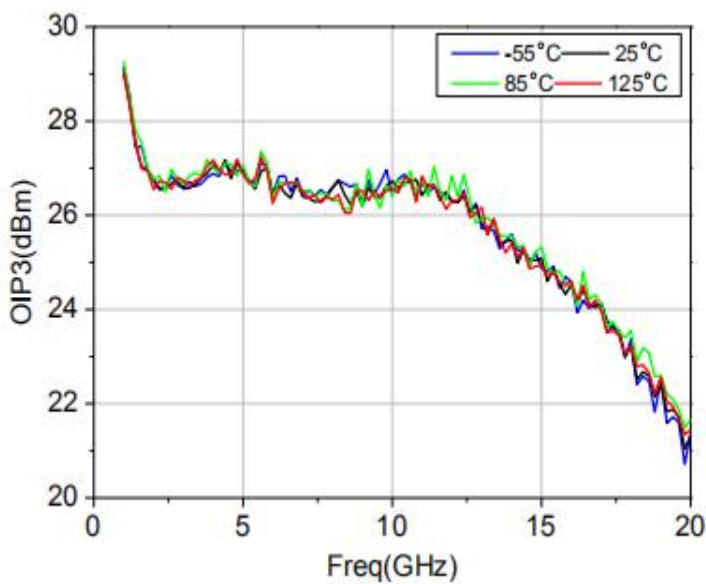
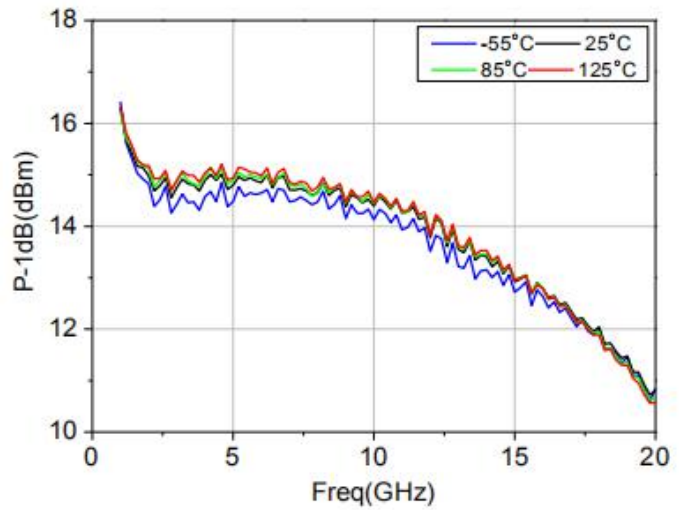
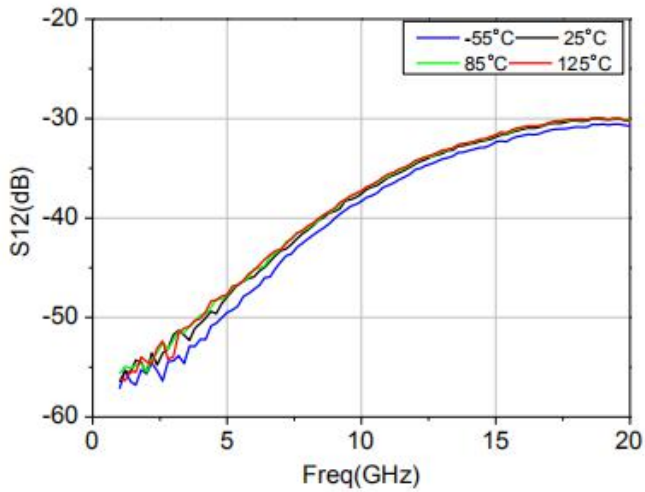
NF vs Frequency



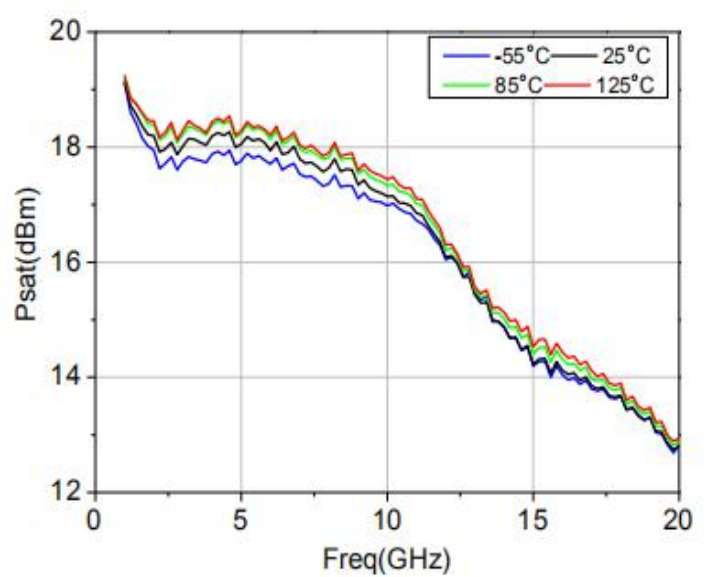
Input Insertion Return Loss vs Frequency



Output Insertion Return Loss vs Frequency



OIP3 vs Frequency



PSat vs Frequency

### Absolute Maximum Ratings

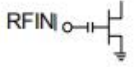
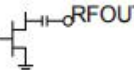



Parameter Limits	Values
Pin, 50Ω	15dBm
Drain Voltage VD	+6V
Storage Temperature	-65~+150°C
Operating Temperature	-55~+125°C
Mounting Temperature (30s, N <sub>2</sub> Protection)	300°C
Exceeding the above conditions may cause permanent damage to the chip.	



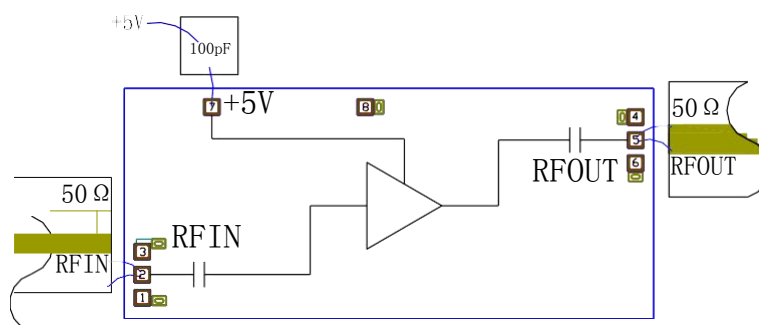
This product is ESD sensitive. Proper ESD precautions shall be taken to avoid performance degradation or loss of functionality.

- Assembling in a clean environment.
- Avoiding rapid temperature changes during the mounting process.
- Do not touch the surface or use dry /wet chemical methods to clean the surface.
- Using 2 bonding wires(shaped as figure eight for input and output,the bonding wires should be as short as possible).
- Storing in a dry, N<sub>2</sub> protection environment.

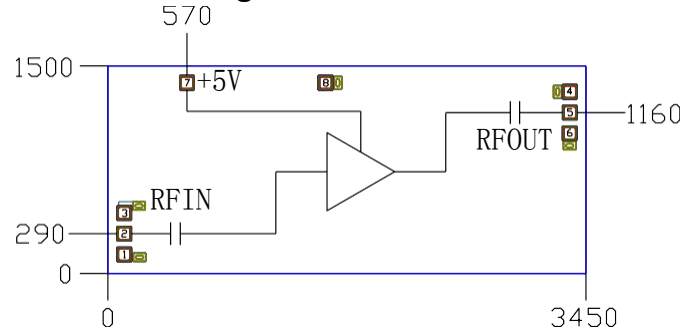
### Pad Description

Pad No.	Function	Description	Interface Schematic
2	RFIN	RF signal input, External 50Ω system, no need for DC blocking capacitor	
5	RFOUT	RF signal Output, External 50Ω system, no need for DC blocking capacitor	
7	VD	Amplifier working voltage feed end, external 100pF power filter capacitor required	
1, 3, 4, 6, 8	GND	Ground pressure pad for probe test	
Die bottom	GND	The bottom of the chip needs to be in good contact with the RF and DC ground	

### Assembly Diagram



### Outline Drawing



### Notes:

1. Unit: μm
2. Back side Metallization: Gold
3. Back side metal is ground
4. Bonding pas size: 100μm
5. Outline Dimensional Tolerance: ±50μm