

Features

- Frequency: 0.03~18GHz
- Gain: 20dB
- Noise Figure: 1.8dB Typ. 2.5dB Max.
- Output P_{-1dB}: 13dBm
- Supply Voltage: +5V/60mA Single Supply
- Die Size: 0.5mmx0.65mmx0.1mm

Typical Applications

- Telecommunication

General Description

SAC4017A is a MMIC Low Noise Amplifier die which operates between 0.03GHz~18GHz. The amplifier can provide 22dB gain, 13dBm Output P_{-1dB}, 1.8dB noise figure from a 60mA supply current.

The bare chip offers full passivation for increased reliability and moisture protection. This amplifier is the perfect alternative to higher cost hybrid amplifiers.

Electrical Performance

T_A=25°C, V_D=+5V, I_D=60mA, Z₀=50Ω

Parameter	Min.	Typ.	Max.	Units
Frequency Range	0.03~18			GHz
Gain	17	20	—	dB
Gain Flatness	—	±1	±1.5	dB
Input/Output VSWR	—	1.5	2.5	:1
Noise Figure*	—	1.8	2.5	dB
Reverse Isolation	—	-30	—	dB
Output Power for 1 dB Compression (OP _{-1dB})	11	13	—	dBm
Supply Current (I _D)	—	60	90	mA

* f=0.03~18GHz

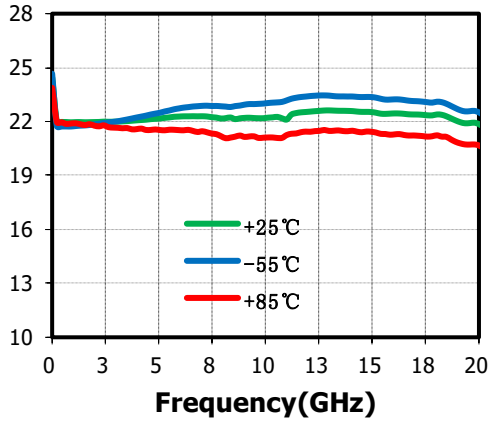
Absolute Maximum Ratings

Maximum Input Power	+16dBm, CW 30s	Operating Temperature	-55°C~+85°C
Channel Temperature	+150°C	Storage Temperature	-55°C~+150°C
VD Bias	+7V	RF input port reverse withstand voltage	-2V

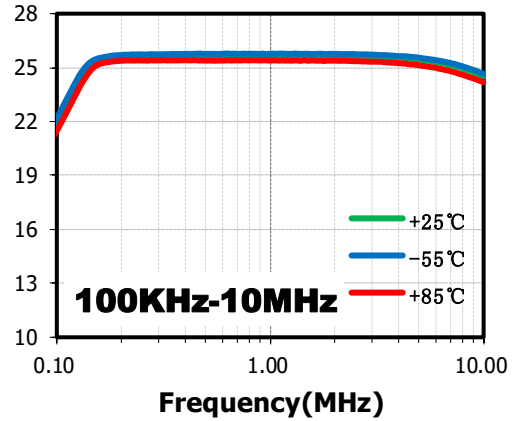
Typical Performance Curve

$V_D=+4V, I_{DQ}=60mA, VNA\ Bias$

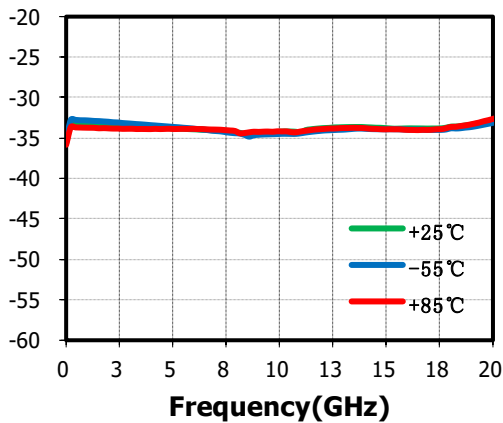
Small Signal Gain(dB) vs.Temperature



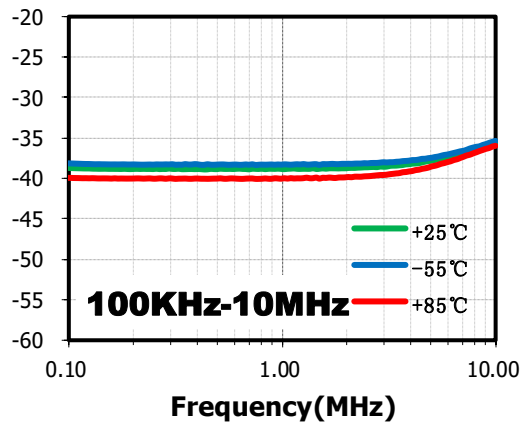
Small Signal Gain(dB) vs.Temperature



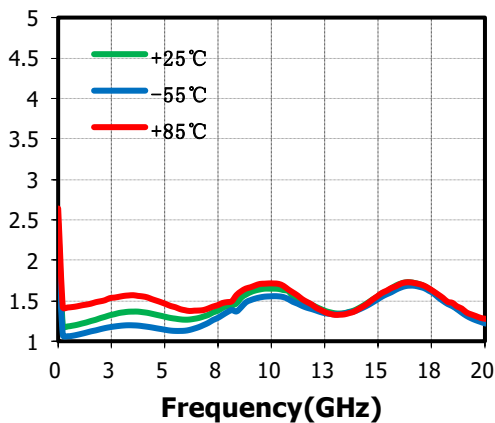
Reverse Isolation(dB) vs.Temperature



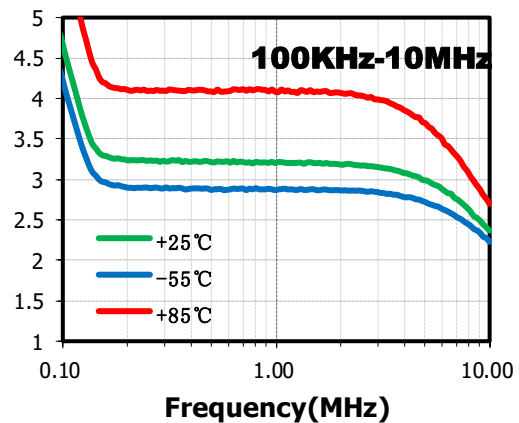
Reverse Isolation(dB) vs.Temperature



Input VSWR(:1) vs.Temperature



Input VSWR(:1) vs.Temperature



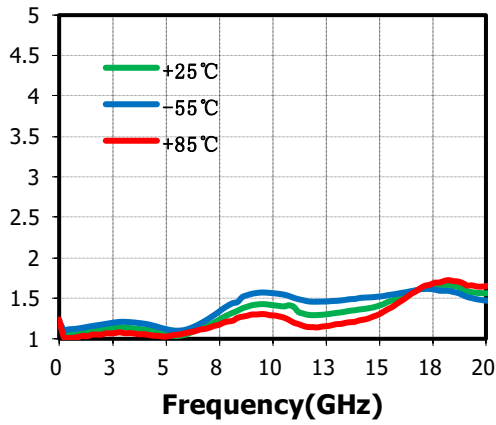
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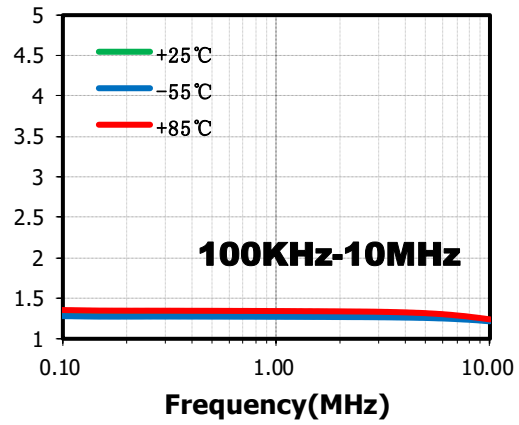
MMIC Low Noise Amplifier
0.03~18GHz

Rev 1.0

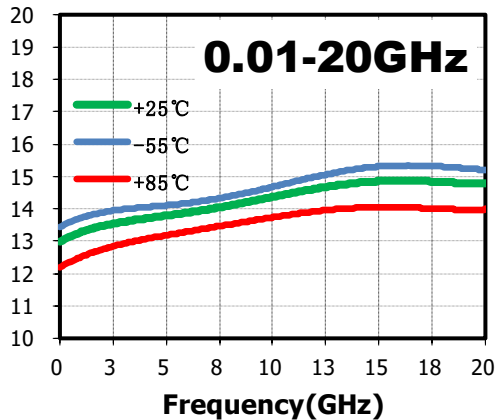
Output VSWR(:1) vs.Temperature



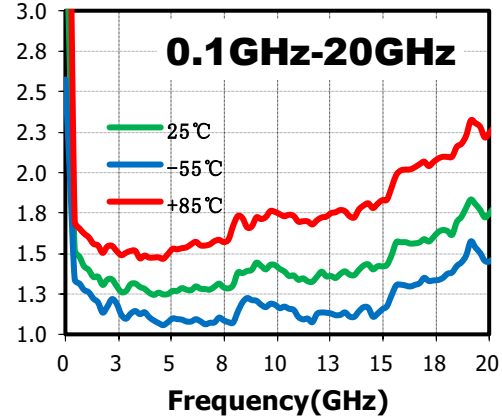
Output VSWR(:1) vs.Temperature



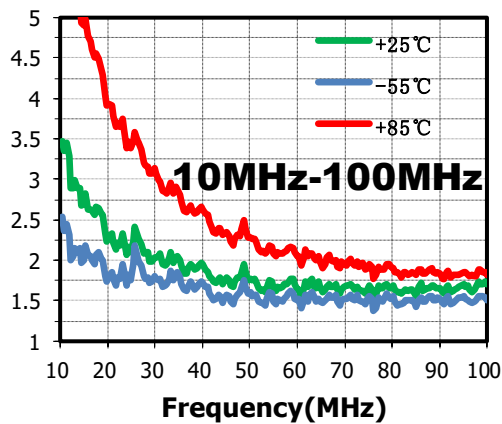
Output P-1dB(dBm) vs.Temperature



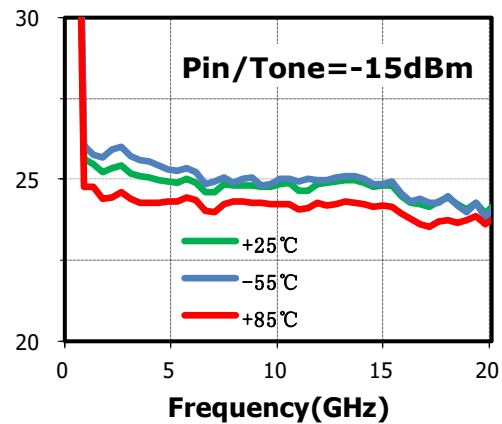
Noise Figure(dB) vs.Temperature



Noise Figure(dB) vs.Temperature



Output IP₃(dBm) vs.Temperature



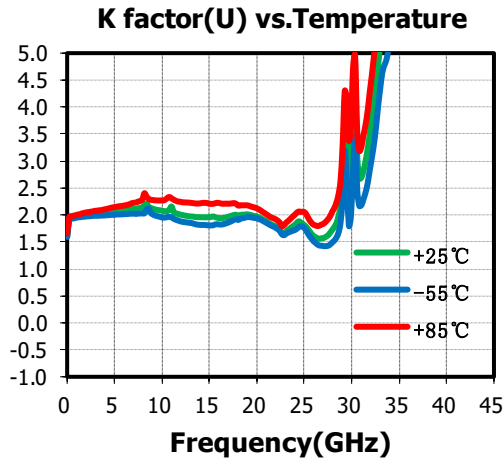
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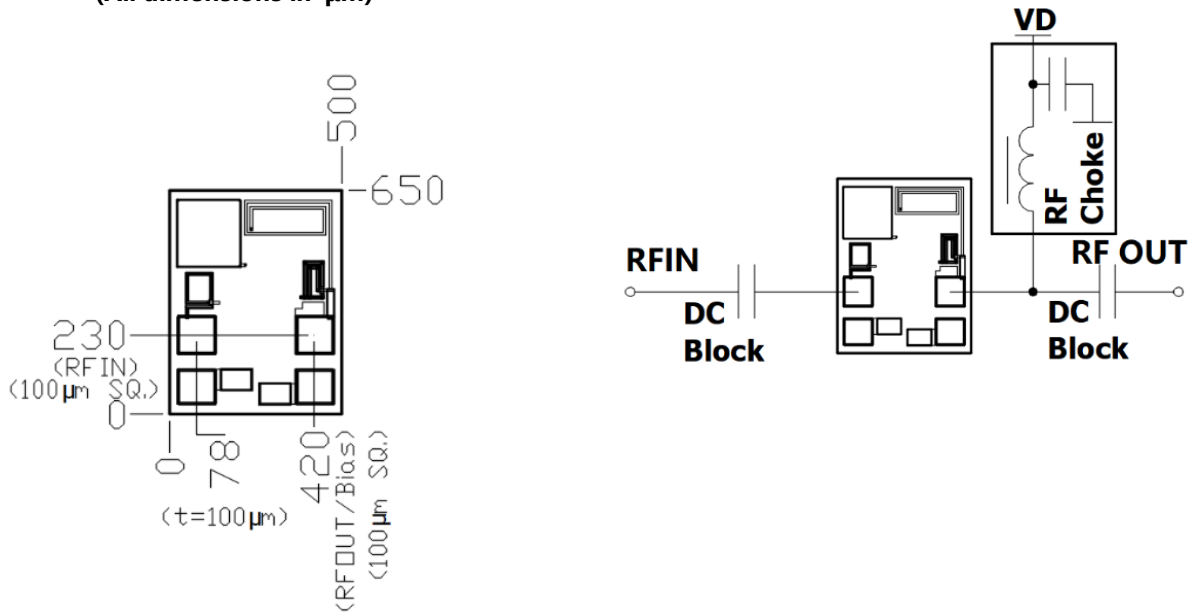
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Rev 1.0



Die Outline Drawing

(All dimensions in μm)



Attention:

1. Bare chips need to be stored in a dry, nitrogen environment and used in an ultra-clean environment;
2. The chip should be sintered with conductive adhesive or alloy (the alloy temperature should not exceed 300 °C, and the time should not exceed 30 seconds) to ensure sufficient grounding;
3. The gap between the chip microwave port and the substrate should not exceed 350 μm Φ 18 μm wire bonding, recommended wire length 250-350 μm ;

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4. The moisture proof level of the packaged product is Class 1a, and the storage environment is less than or equal to 30 °C/60% RH, with a lifespan of four workshops;
5. The ESD Sensitivity (HBM) of SAC4017A is Class 0.

Revision History

Revision	Date	Comment
1.0	Jan 16, 2024	First Release

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