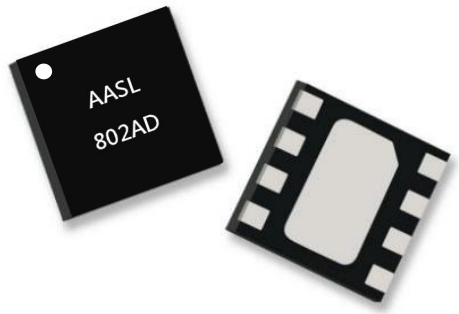
AASL802AD

1-2 GHz Low Noise Amplifier



Features

- 8 Pin 2X2 mm DFN Package
- NF≤0.85dB across 1GHz to 2GHz
- ≥20.8dB gain across 1GHz to 2GHz
- >25dBm OIP3 @ 20mA IDD, 2GHz
- Shut-down mode pin with 1.8V TTL logic
- +3.3V supply; does not require -Vgg
- Maintains OFF state with high input power drive
- Unconditionally stable
- Tested in accordance with AEC-Q100 Grade2

Applications

- LTE / WCDMA / CDMA / GSM / Massive MIMO
- Repeaters / DAS
- TDD or FDD systems
- General Purpose Wireless

Description

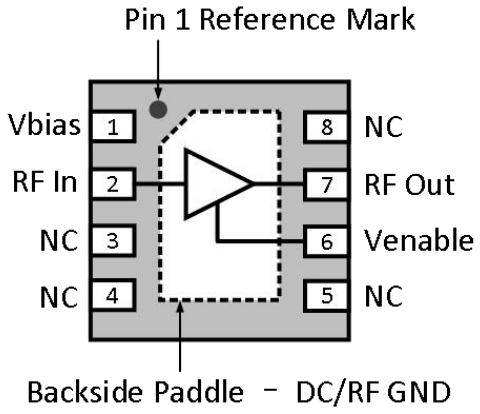
The AASL802AD is a low noise amplifier (LNA) that operates in the 1GHz to 2GHz frequency

AASL802AD

1-2 GHz Low Noise Amplifier

range. The device incorporates on-chip input/output matching circuits and is fabricated with GaAs pHEMT process. Its industry-leading noise figure, together with high linearity, makes it ideal as a first stage LNA. This LNA integrates a Venable biasing capability to allow for operation in TDD applications. The AASL802AD is provided in a 2x2 mm, 8 pin DFN package.

Functional Block Diagram



Ordering Information

- AASL802AD

AASL802AD

1-2 GHz Low Noise Amplifier

Absolute Maximum Ratings

Parameter		Units	Min	Typ	Max
DC Supply Voltage (VDD)		V	0	—	7
DC Control Voltage		V	0	—	6
RF Input Power (Pin), CW, 50ohms, T=25℃		dBm	—	—	30
RF Input Power (Pin), CW, Off State, T=25℃		dBm	—	—	30
Storage Temperature		℃	-65	—	+150
ESD Rating	HBM	V	—	1000	—
	CDM	V	—	1000	—
MSL Rating				Level 3	

Recommended Operating Conditions

Parameter	Units	Min	Typ	Max
DC Supply Voltage (VDD)	V	3	3.3	3.6
Operational Frequency Range	GHz	1	—	2
Enable Voltage (Venable) On	V	0	—	0.65
Enable Voltage (Venable) Off	V	1.1	—	VDD
Operating Temperature	℃	-40	—	105

AASL802AD

1-2 GHz Low Noise Amplifier

Electrical Specifications

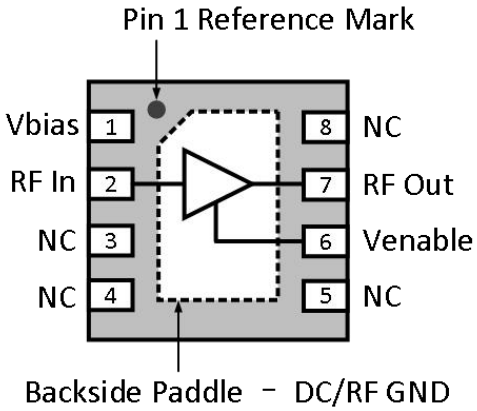
Test Conditions: 50Ω system, VDD=3.3V, IDD=20mA, Temp=+25℃, (de-embedded data);

Parameter	Conditions	Units	Min	Typ	Max
Operational Frequency Range	—	GHz	1	-	2
Test Frequency	—	GHz	—	1.8	—
Input Return Loss	—	dB	—	10.4	—
Output Return Loss	—	dB	—	13.9	—
Gain	—	dB	—	20.8	—
Reverse ISO	—	dB	—	27	—
Off State Gain	Pin=20dBm	dB	—	-25	—
OP1dB	—	dBm	—	20.5	—
OIP3	Pout=+5 dBm/tone Δf=1 MHz	dBm	—	25.3	—
Noise Figure	—	dB	—	0.88	—
Drain Current	Venable=0V	mA	—	20	—
Drain Current	Venable=2V	mA	—	2	—
Venable Current	Venable=2V	uA	—	400	—
Switching Time	Switching OFF	ns	—	100	—
	Switching ON	ns	—	100	—

AASL802AD

1-2 GHz Low Noise Amplifier

Pin Assignments and Description

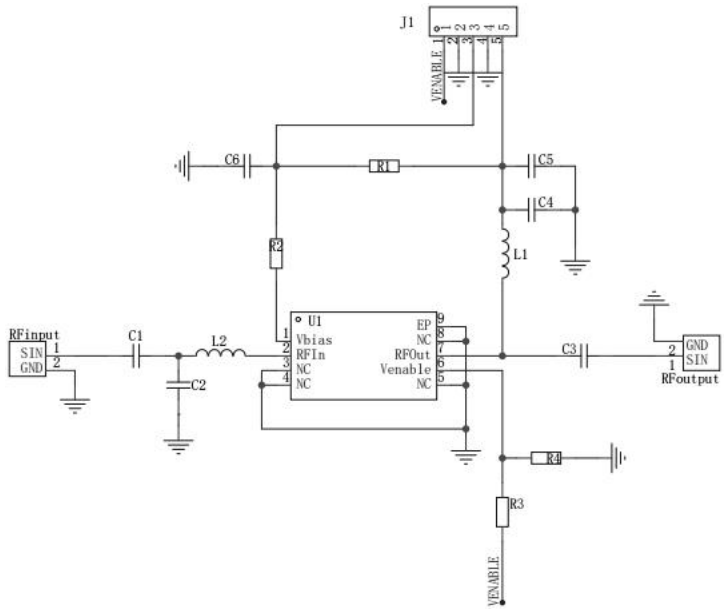


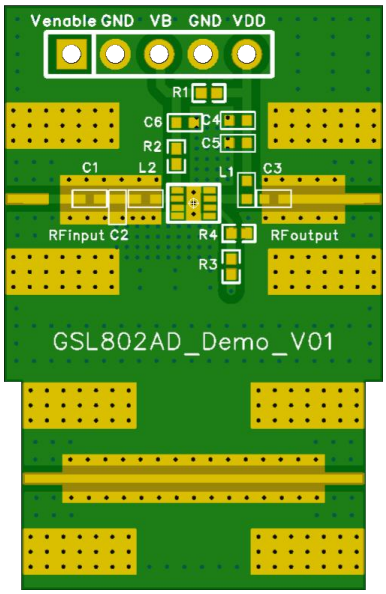
Pin	Name	Description
1	Vbias	Setting the Icq bias point for the device.
2	RF In	RF Input pin, DC Block is required.
3, 4, 5, 8	NC	No electrical connection. Provide grounded land pads for PCB mounting integrity.
6	Venable	A high voltage (≥1.1V) turning off the device.
7	RF Out	RF output pin.
Backside Paddle	DC/RF GND	Use recommended via pattern to minimize inductance and thermal resistance.

AASL802AD

1-2 GHz Low Noise Amplifier

PCB Evaluation Board





Evaluation Board BOM

Reference Des.	Conditions	Value	Manuf.	Part Num.
PCB	N/A	N/A	SDSX	GSL802AD_Demo_V01
U1	N/A	N/A	SDSX	GSL802AD
R1	N/A	0Ω	muRata	0402
R2	N/A	13kΩ	muRata	0402
R3	N/A	0Ω	muRata	0402
R4	N/A	NA	NA	NA
C1	N/A	22pF	muRata	0402
C2	N/A	1pF	muRata	0402
C3	N/A	15pF	muRata	0402

C4	N/A	100pF	muRata	0402
C5	N/A	1uF	muRata	0402
C6	N/A	100nF	muRata	0402
L1	N/A	18nH	muRata	0402
L2	N/A	2.4nH	muRata	0402

AASL802AD

1-2 GHz Low Noise Amplifier

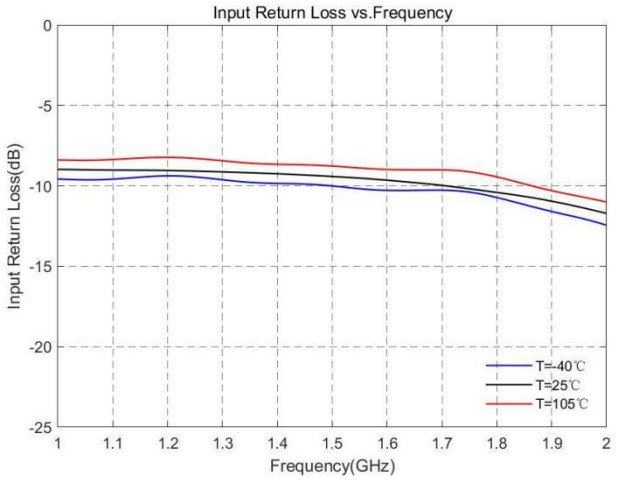
Typical Performance

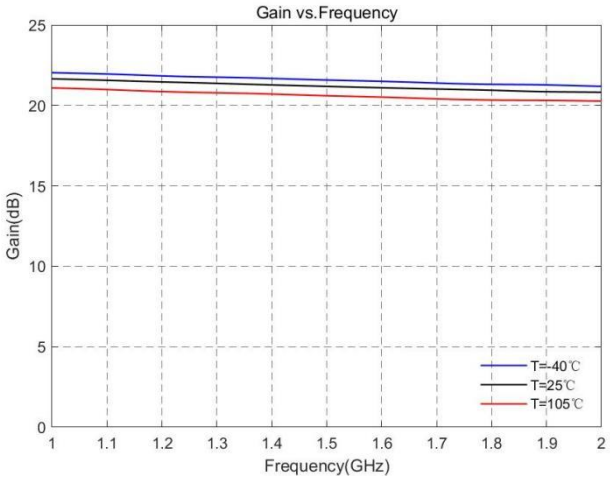
Test Conditions: 50Ω system, VDD=3.3V, IDD=20mA, Temp=+25℃, (de-embedded data);

Parameter	Conditions	Units	Typical					
Frequency	—	GHz	1	1.2	1.4	1.6	1.8	2.0
Input Return Loss	—	dB	9	9	9.2	9.6	10.4	11.7
Output Return Loss	—	dB	13.6	14	13.9	13.8	13.9	14.3
Gain	—	dB	21.6	21.5	21.3	21.1	21	20.8
OP1dB	—	dBm	19.7	19.9	20.2	20.4	20.5	20.5
OIP3	Pout=+5 dBm/tone Δf=1 MHz	dBm	23.2	23.9	24.6	25.4	25.4	25.2
Noise Figure	—	dB	0.75	0.8	0.81	0.83	0.85	0.82

Performance Plots

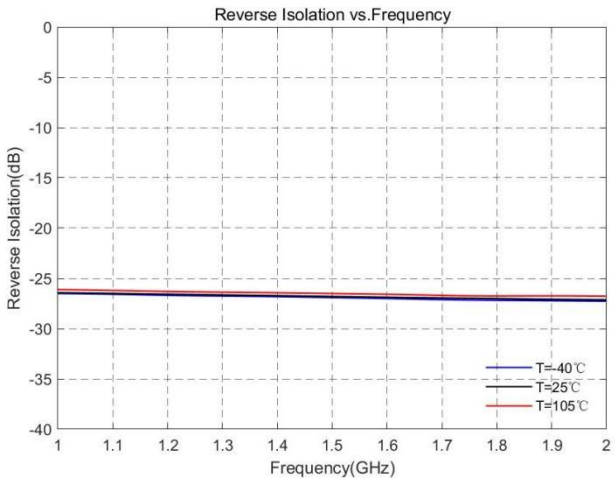
Test Conditions: 50Ω system, VDD=3.3V, IDD=20mA, (de-embedded data);

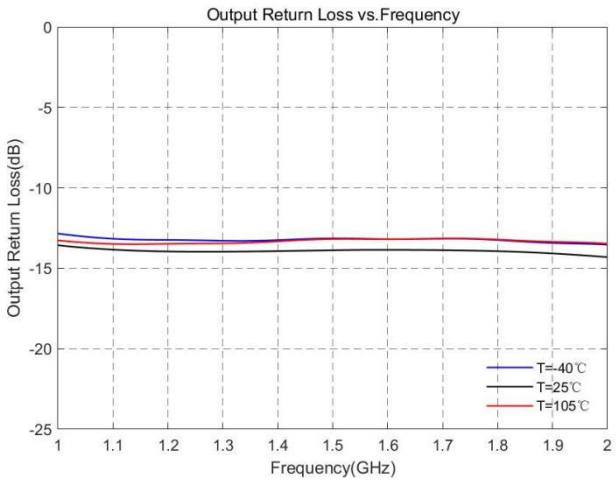




AASL802AD

1-2 GHz Low Noise Amplifier



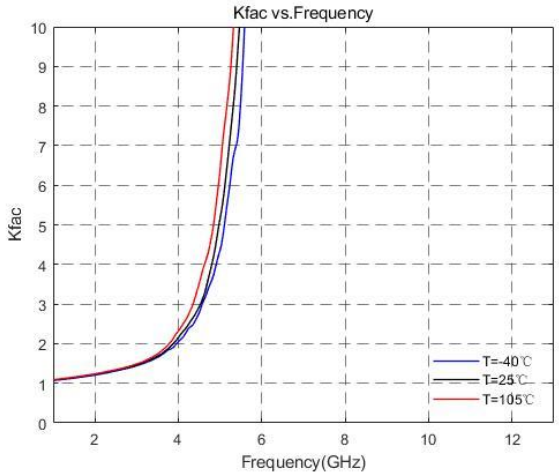


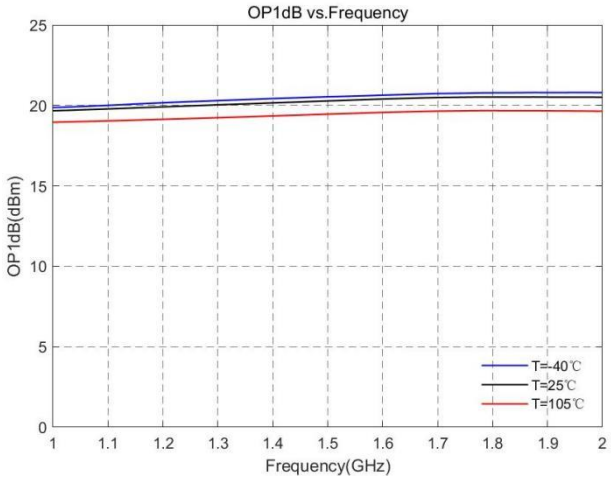
AASL802AD

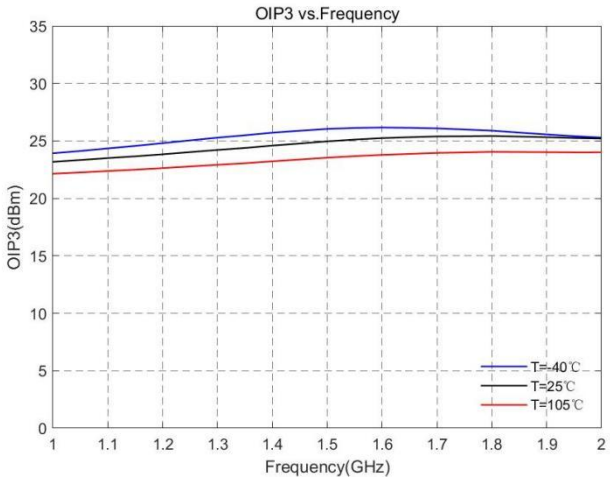
1-2 GHz Low Noise Amplifier

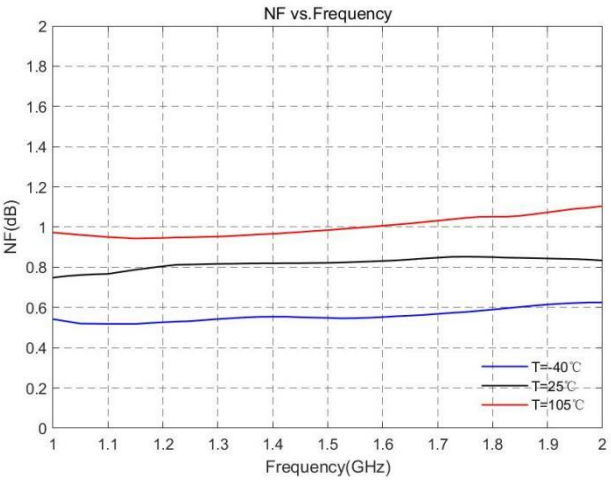
Performance Plots

Test Conditions: 50Ω system, VDD=3.3V, IDD=20mA, (de-embedded data);









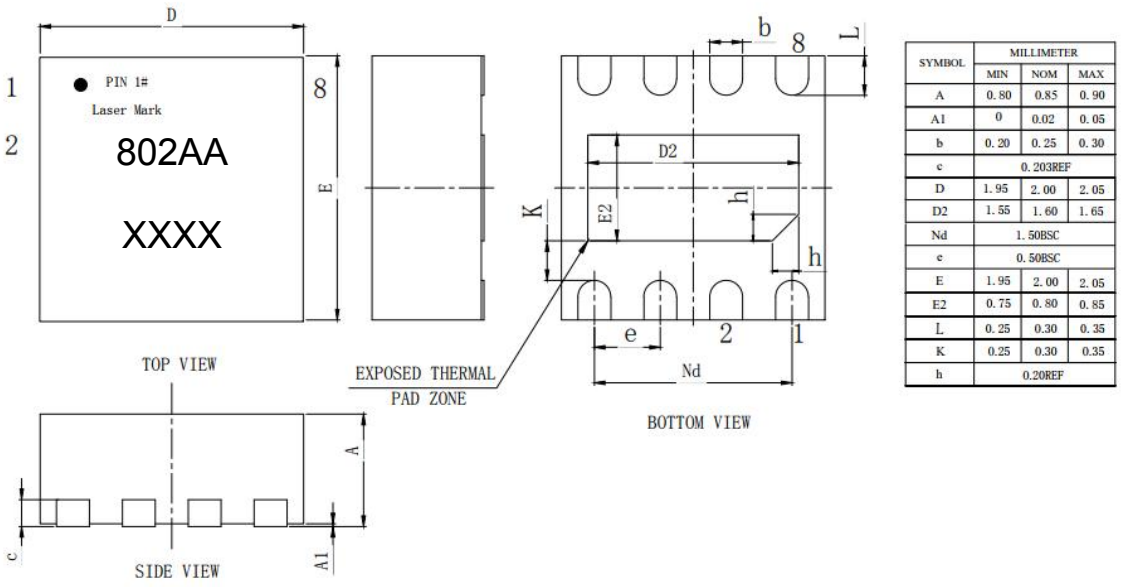
AASL802AD

1–2 GHz Low Noise Amplifier

Package Marking and Dimensions

Marking: Part number – 802A

Lot code – XXXX



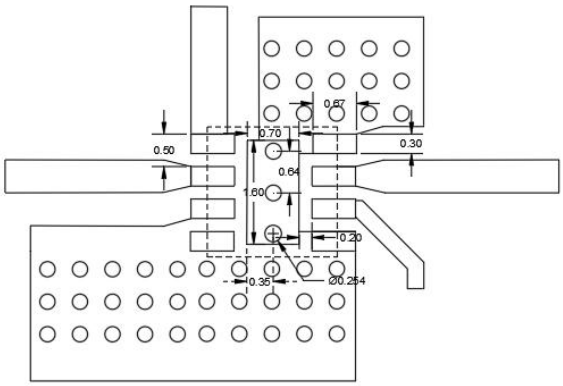
SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.80	0.85	0.90
A1	0	0.02	0.05
b	0.20	0.25	0.30
c	0.203REF		
D	1.95	2.00	2.05
D2	1.55	1.60	1.65
Nd	1.50BSC		
e	0.50BSC		
E	1.95	2.00	2.05
E2	0.75	0.80	0.85
L	0.25	0.30	0.35
K	0.25	0.30	0.35
h	0.20REF		

Notes: 1. All dimensions are in millimeters.

2. Coplanarity applies to the exposed heat sink slug as well as the terminals.

3. DFN 8 pin 2x2x0.85mm Package.

PCB Mounting Pattern



PCB Layout Footprint (Top View)

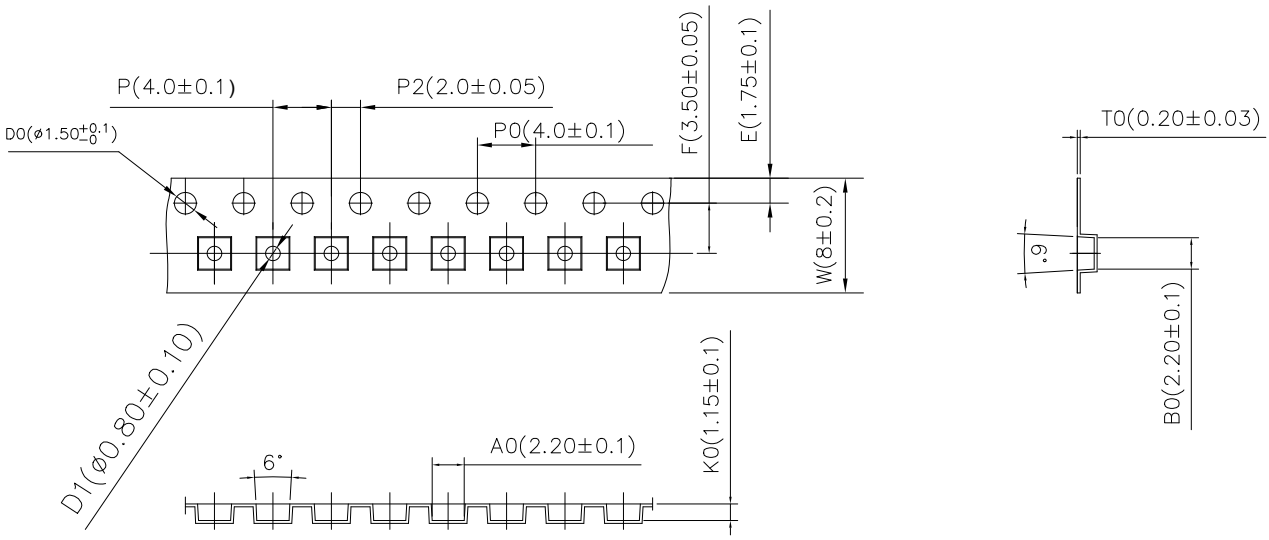
Notes: 1. All dimensions are in millimeters.

2.Vias are required under the backside paddle of this device for proper RF/DC grounding and thermal dissipation.

AASL802AD

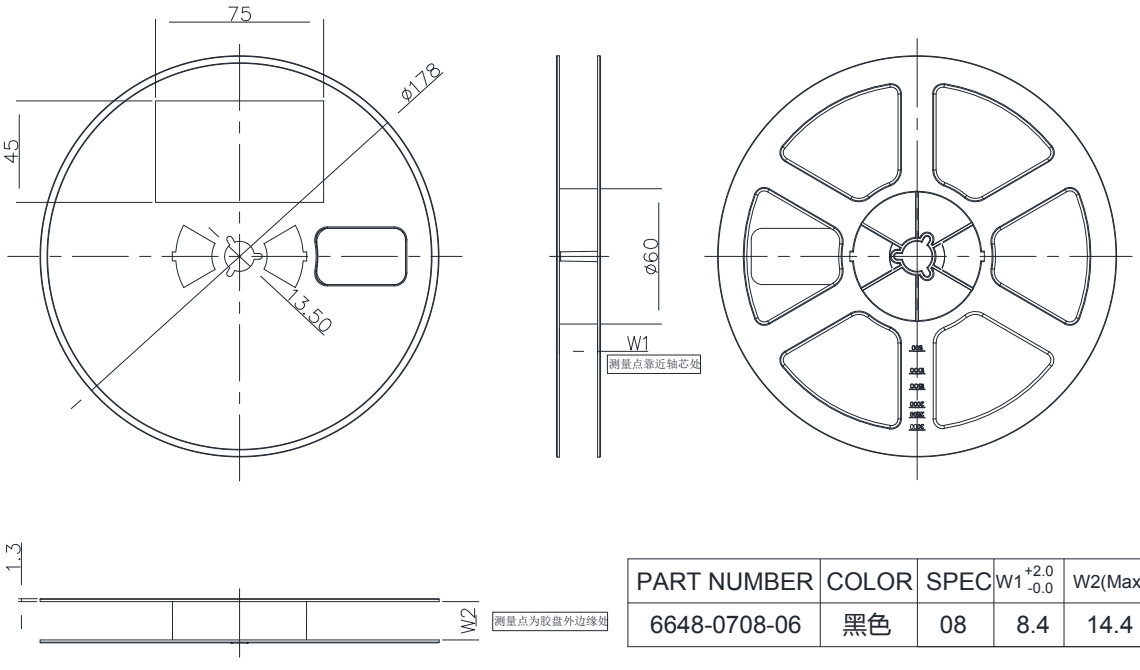
1-2 GHz Low Noise Amplifier

Tape and Reel Information -Carrier and Cover Tape Dimensions



Tape and Reel Information-Reel Dimensions

Standard T/R size=3,000 pieces on a 7'' rell.



PART NUMBER	COLOR	SPEC	W1 +2.0 -0.0	W2(Max.)
6648-0708-06	黑色	08	8.4	14.4

AASL802AD

1-2 GHz Low Noise Amplifier

Handling Precaution

ESD countermeasure methods should be developed and used to control potential ESD damage during handling in a factory environment at each manufacturing site.

Solderability

Compatible with lead-free (260 ℃ maximum reflow temperature) soldering processes.

RoHS Compliance

This product is compliant with the EU RoHs2.0, EU Directive 2015/863.