

ABT1117A

Nov 2014 preliminary

1.1 GHz - 1.7 GHz

Low Noise Amplifier

Data Sheet

Description

ABT1117A is 1.1 GHz to 1.7 GHz wideband low noise amplifier with very flat gain. The input and output are matched to 50 Ω with DC blocking capacitors. No external matching components or DC bypassing capacitor are needed.

ABT1117A offers good output P1dB under low current consumption. The compact size and thin thickness design are suitable for portable device applications.

Features

- 250 mil x 350 mil surface mount package
- Excellent flatness in S21
- Fully matched input and output
- High linearity and P1dB
- Unconditionally stable across load condition
- Single 3.3V supply

Applications

- Mobile Infrastructures
- WiMAX
- Defense
- Security System
- Measurement
- Fixed Wireless

Specifications at 1.4 GHz 3.3V 25mA(typical)

- 0.54 dB noise figure
- 7.5 dBm output P1dB
- 19.5 dB input return loss
- 26.9 dB output return loss
- 30.8 dB gain

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Electrical Specifications at room temperature

index	Testing Item	Symbol	Test Conditions	min	nom	max	unit
1	Gain	S21	1.1 GHz-1.7 GHz	30	31.3	33	dB
2	Gain variation	ΔG	1.1 GHz-1.7 GHz		+/-0.5	+/-0.8	dB
3	Input return loss	S11	1.1 GHz-1.7 GHz	14	19		dB
4	Output return loss	S22	1.1 GHz-1.7 GHz	14	24		dB
5	Reverse isolation	S12	1.1 GHz-1.7 GHz	40	46		dB
6	Noise figure	NF	1.1 GHz-1.7 GHz		0.53	0.65	dB
7	Output power 1dB compression point	OP1dB	1.1 GHz-1.7 GHz	5.7	7.3		dBm
8	Output-Third-Order interception point	OIP3	1.1 GHz-1.7 GHz	21	23		dBm
8	Current consumption	I _{dd}	25°C	23	25	27	mA
9	Power supply operating voltage	V _{dd}		3	3.3	3.5	V
10	Maximum average RF input power	P _{in,max}	DC to 6 GHz			10	dBm
11	Operating Temperature	T _o		-55		85	°C
12	Storage temperature	T _o		-55		150	°C

Ordering information

Model Number	ABT1117A
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Marking : ABT1117A

Solder reflow.

The high temperature solder SN100 was used for the inside assembly of ABT, MLN and MLT series modules. The melting temperature point of the high temperature solder SN100 is around 227 °C. Thus, melting temperature of the solder paste should be below 205 °C for assembling ABT, MLN and MLT series module on the test board. SN63 solder paste melting temperature point is around 183 °C and is suitable for the assembly purpose.



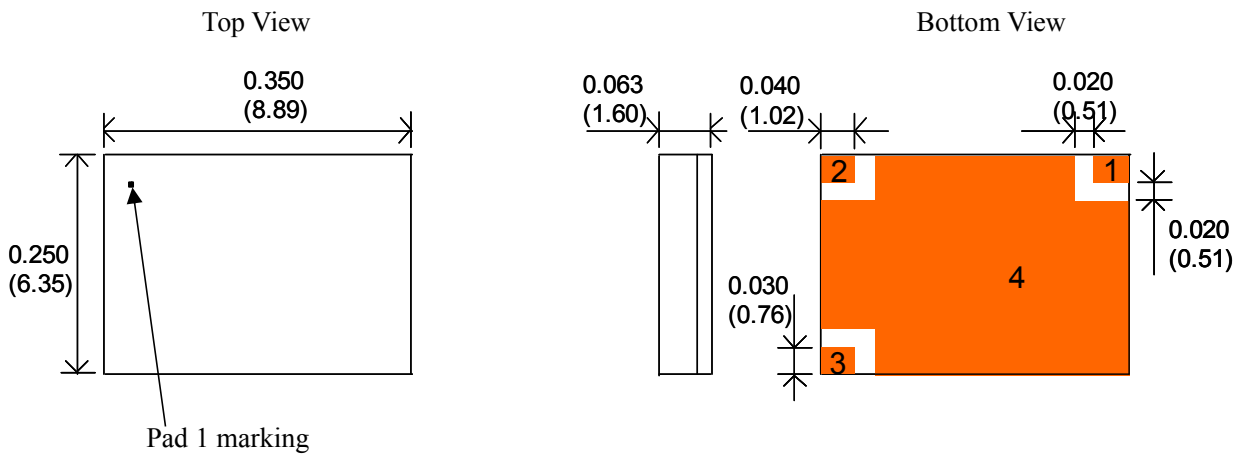
Caution! ESD sensitive device.

Following three suggestions that can avoid ESD effectively:

- Workers who directly handle ABT, MLN and MLT series or boards on which devices have been mounted can wear both wrist straps and ESD protective shoes.
- Gloves and finger sacks with ESD protection should be used. Especially, the finger sacks used when handling devices with bare hands must be conductive or electrostatic diffusive.
- Workers should make efforts to wear clothing made from materials that do not generate static electricity.

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Dimension is in inch(milimeter)

- Pad 1 : RF input
- Pad 2 : RF output
- Pad 3 : Vdd 3.3V input
- Pad 4 : Ground

Typical Data

S11: Input return loss vs Temperature

25°C (77°F)		85°C (185°F)		-55°C (-67°F)	
S11		S11		S11	
GHz	dB	GHz	dB	GHz	dB
1.1	-23.57	1.1	-21.56	1.1	-24.67
1.3	-20.19	1.3	-19.68	1.3	-19.45
1.5	-18.86	1.5	-19.28	1.5	-17.53
1.7	-16.41	1.7	-17.06	1.7	-14.73

S22: Output return loss vs Temperature

25°C (77°F)		85°C (185°F)		-55°C (-67°F)	
S22		S22		S22	
GHz	dB	GHz	dB	GHz	dB
1.1	-18.52	1.1	-18.58	1.1	-14.83
1.3	-22.27	1.3	-21.9	1.3	-18.12
1.5	-31.62	1.5	-34.95	1.5	-22.18
1.7	-17.32	1.7	-17.49	1.7	-16.84

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S21: Gain vs Temperature

25°C (77°F)		85°C (185°F)		-55°C (-67°F)	
S21		S21		S21	
GHz	dB	GHz	dB	GHz	dB
1.1	31.75	1.1	31.89	1.1	31.44
1.3	30.96	1.3	31.09	1.3	30.71
1.5	30.77	1.5	30.9	1.5	30.52
1.7	31.3	1.7	31.46	1.7	30.96

Noise figure vs Temperature

25°C (77°F)		85°C (185°F)		-55°C (-67°F)	
NF		NF		NF	
GHz	dB	GHz	dB	GHz	dB
1.1	0.563	1.1	0.644	1.1	0.48
1.3	0.554	1.3	0.636	1.3	0.45
1.5	0.526	1.5	0.573	1.5	0.431
1.7	0.498	1.7	0.58	1.7	0.401

P1dB compression point vs Temperature

25°C (77°F)		85°C (185°F)		-55°C (-67°F)	
P1dB		P1dB		P1dB	
GHz	dBm	GHz	dBm	GHz	dBm
1.1	5.798	1.1	7.629	1.1	3.266
1.3	7.029	1.3	8.843	1.3	4.559
1.5	8.095	1.5	9.799	1.5	5.871
1.7	8.906	1.7	10.311	1.7	6.277

OIP3 vs Temperature

25°C (77°F)		85°C (185°F)		-55°C (-67°F)	
OIP3		OIP3		OIP3	
GHz	dBm	GHz	dBm	GHz	dBm
1.1	21.62	1.1	22.94	1.1	18.875
1.3	23.355	1.3	24.465	1.3	20.355
1.5	23.89	1.5	24.505	1.5	21.905
1.7	24.455	1.7	25.64	1.7	23.625