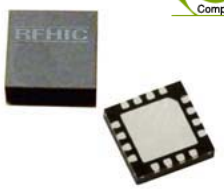
Product Features

- 2-Way Splitter
- 30 ~ 1200MHz(1dB Flat)
- Small size (3X3 mm)
- QFN SMD Type package
- Higher productivity
- Lower manufacturing cost
- -59dBc CSO 135 Channels @ +15dBmV/ch
- -71dBc CTB 135 Channels @ +15dBmV/ch
- -73dBc XMD 135 Channels @ +15dBmV/ch
- 3.5 dB Typical Noise Figure
- 75 ohm input and outputs

Applications

- Multi Tuner Set-Top Boxes
- Home Gateways
- FTTx (G-PON, GE-PON)



Package Type : QFN 3X3

Description

AD254 is designed as low cost Active Divider for many applications including FTTH, CATV System.
This MMIC is based on Gallium Arsenide Enhancement Mode pHEMT which shows low current draw and very low noise.
The data in this spec sheet is valid only for 75ohm application.

Electrical Specifications

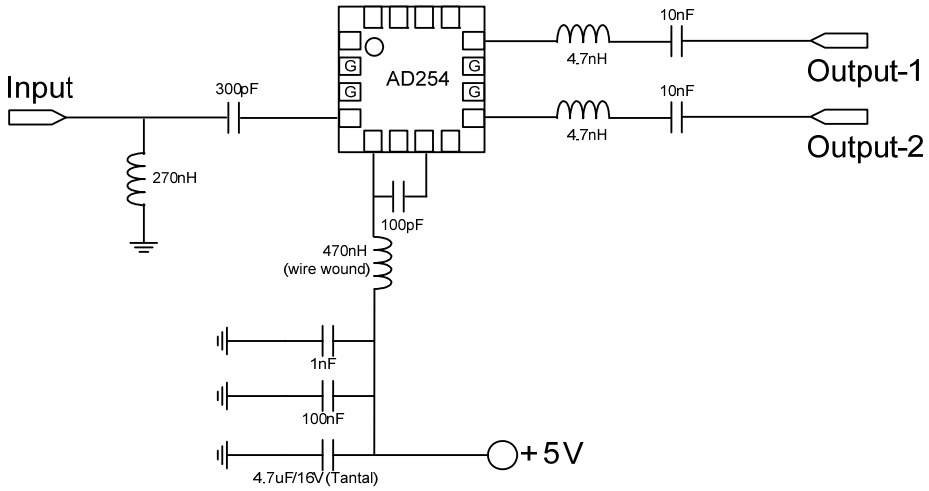
PARAMETER		UNIT	MIN	TYP	MAX	Typ
Frequency		MHz		30 ~ 1000		-
Gain		dB	3.0	4.5	-	4
Gain Flatness		dB		0.6	1	1
Input Return Loss		dB	-	-16	-	-14
Output Return Loss		dB	-	-21	-	-20
IN&OUT Port Isolation		dB	-	-30	-	-30
OUT&OUT Port Isolation		dB	-	-20	-	-20
Output IP3		dBm	24	28	-	28
1dB Compression Point		dBm	8	12	-	8
Noise Figure		dB	-	3.5	5	3.5
CSO	50 ~ 870MHz 135 channel@ Input Power +15dBmV/ch	dBc	-	-59	-	-55
CTB		dBc	-	-71	-	-62
XMOD		dBc	-	-73	-	-61
DC Current		mA	-	110	-	75
Supply Voltage		V		5		3.3

Note
1. Test conditions unless otherwise noted. Test Freq = 500MHz, T=25℃, Vdd=5V, 75Ω system
2. OIP3 measured with 2 tones at an output power of +0dBm/tone separated by 1MHz, Test Freq = 500MHz

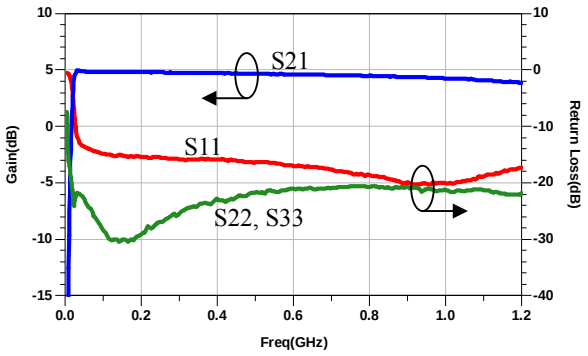
Absolute Maximum Ratings

PARAMETER	UNIT	MIN	TYP	MAX
Device Voltage	VDC	-	5	5.5
Operating Temperature	℃	-40	-	85
Storage Temperature	℃	-40	-	150
ESD Human Body Model	-	-	Class 1A	-
Moisture sensitivity Level	-	-	MSL1	-

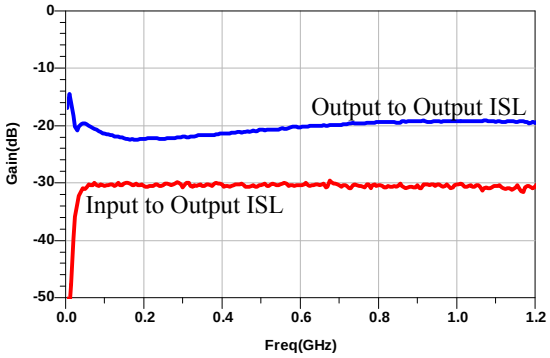
Application Circuit @ 30 ~ 1000MHz, Vdd = +5V, 75ohm System



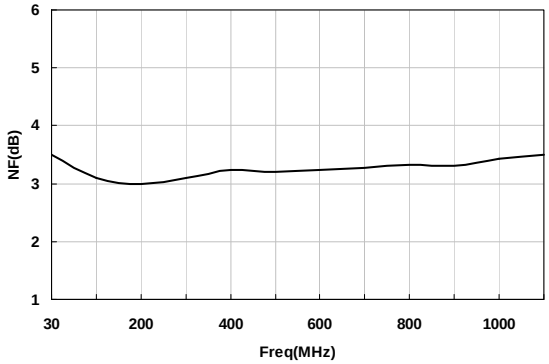
S-Parameter



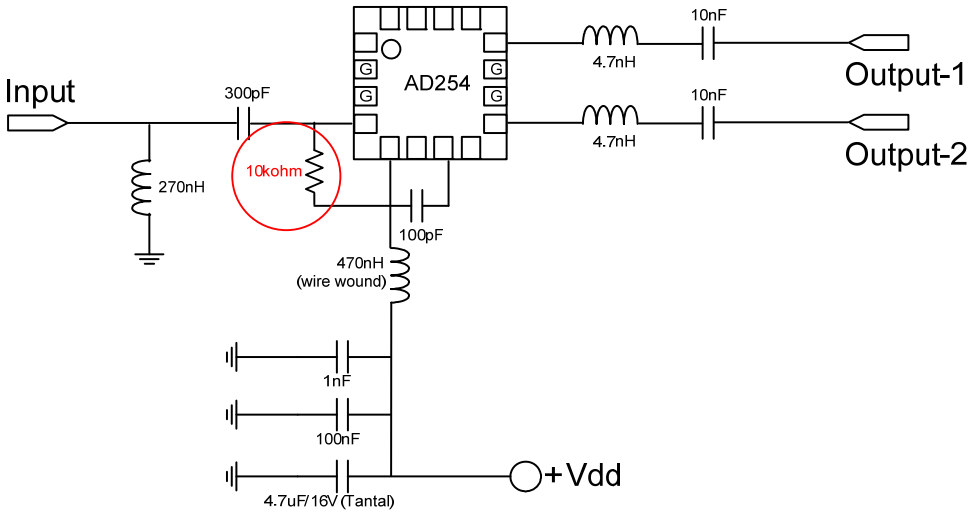
Isolation



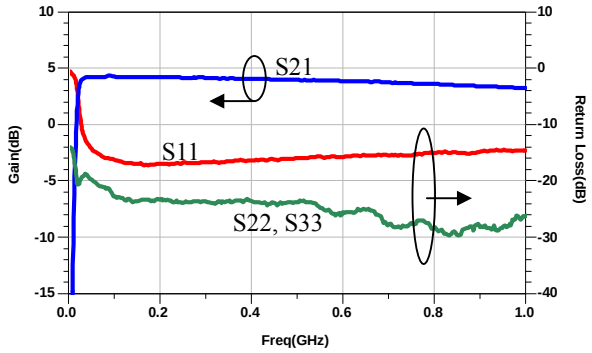
Noise Figure



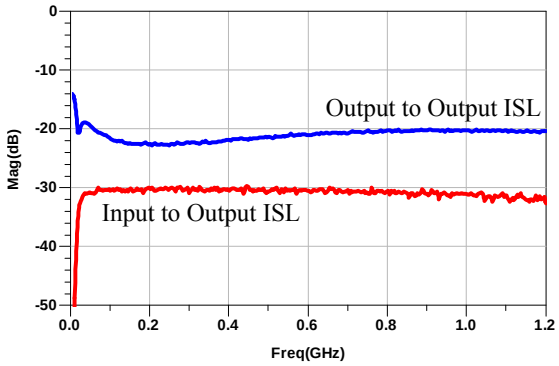
Application Circuit @ 30 ~ 1000MHz, +3.3V, 75ohm System



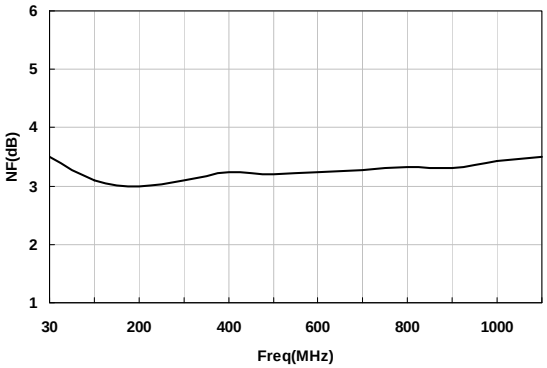
S-Parameter



Isolation



Noise Figure



Multi-Tone Test : 135CH_FLAT@Input Power +15dBmV/Ch

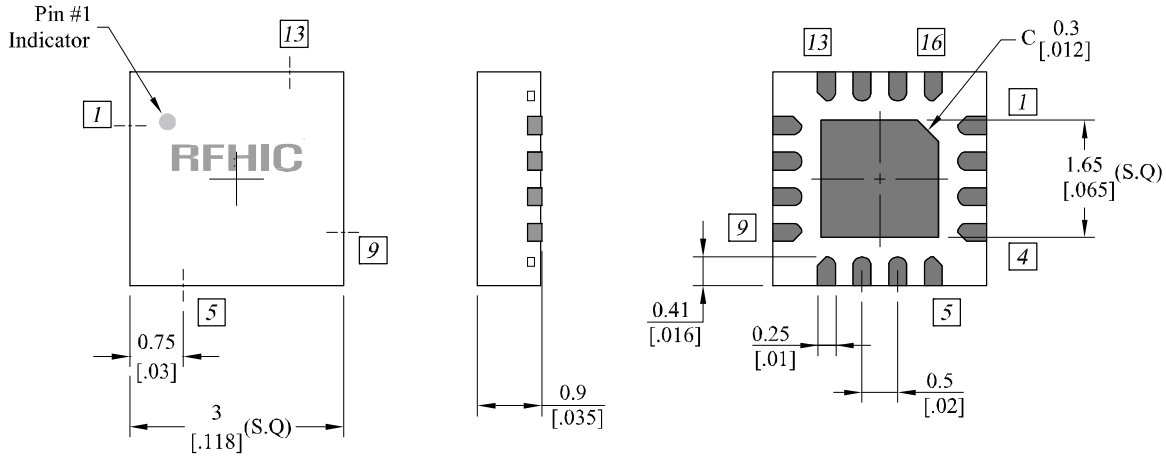
Level : Input +15dBmV Tilt : 135CH										
FRQ	**XMOD**	**CTB RAW**	**CTB COR**	**N-FLR**	**CSU RAW**	**CSU COR**	**CSU FRQ**	**CSL RAW**	**CSL COR**	**CSL FRQ**
55.25	76.5	79.8	84.1	81.5	78.6	82.2	55.99	59.3	59.3	53.99
77.25	82.6	80.2	84.6	81.7	60.3	60.3	77.99	81.3	85.6	76.61
109.25	82.2	80.1	84.4	81.5	78.4	80.9	109.99	61.2	61.2	107.99
211.25	84.6	77.9	80.9	81	76.9	79.1	211.99	62.7	62.7	209.99
331.25	82	75.7	77.6	80	75.3	77.2	331.99	63.1	63.1	329.99
547.25	78	72.9	74.2	79	74.3	76.2	548.49	64.1	64.3	545.99
637.25	75.7	72	73.1	78.7	74.2	76.1	638.49	66.3	66.6	635.99
745.25	75	71.5	72.5	78.7	73.2	74.6	746.49	69.6	70.2	743.99
859.25	73.3	70.9	72.4	76.7	71.7	73.3	860.49	75.6	79.9	858.49
Min	73.3	70.9	72.4	76.7	60.3	60.3	55.99	59.3	59.3	53.99
Max	84.6	80.2	84.6	81.7	78.6	82.2	860.49	81.3	85.6	858.49

Multi-Tone Test : 135CH_FLAT@Input Power +15dBmV/Ch, Vdd = +3.3V

Level : Input +15dBmV Tilt : 135CH_FLAT										
FRQ	**XMOD**	**CTB RAW**	**CTB COR**	**N-FLR**	**CSU RAW**	**CSU COR**	**CSU FRQ**	**CSL RAW**	**CSL COR**	**CSL FRQ**
55.25	68.3	65.6	69.9	65.8	65.4	69.8	55.99	55.7	56.1	54
77.25	69.8	65.5	69.8	65.9	56.4	56.9	77.99	65.5	69.9	76.61
109.25	70.6	65.6	69.9	66	65.1	69.5	109.99	56.3	56.8	107.99
211.25	69.7	65.2	69.6	66.1	65.3	69.7	211.99	56.7	57.2	209.99
331.25	68.7	64	68.3	65.1	64.2	68.5	331.99	57.2	57.9	329.99
445.25	67.1	63.8	68.1	65.6	63.5	67.8	446.49	57	57.6	443.99
547.25	66.1	63.3	67.7	64.7	62	65.1	548.49	57.7	58.6	545.99
637.25	64.8	62.8	67.1	64.8	60.9	63.1	638.49	58.7	59.8	635.98
745.25	63	62.7	67	64.9	59.5	60.9	746.49	60.4	62.3	743.99
859.25	61.4	62.6	67	64.2	59	60.6	860.49	63.4	67.7	858.49
Min	61.4	62.6	67	64.2	56.4	56.9	55.99	55.7	56.1	54
Max	70.6	65.6	69.9	66.1	65.4	69.8	860.49	65.5	69.9	858.49

Package Dimensions (Type: QFN3x3)

* Unit: mm[inch] | Tolerance: ±0.2[.008]



▲ Top View ▲ Side View ▲ Bottom View

Pin Description							
Pin No	**Function**	**Pin No**	**Function**	**Pin No**	**Function**	**Pin No**	**Function**
1	NC	5	Bias/Port1	9	Output-1	13	NC
2	GND	6	NC	10	GND	14	NC
3	GND	7	Port2	11	GND	15	NC
4	Input	8	NC	12	Output-2	16	NC

*** Mounting Configuration Notes**

1. Ground / thermal via holes are critical for the proper performance of this device.
2. Add as much copper as possible to inner and outer layers near the part to ensure optimal thermal performance.
3. Mounting screws can be added near the part to fasten the board to a heatsink. Ensure that the ground / thermal via hole region contacts the heatsink.
4. Do not put solder mask on the backside of the PCB in the region where the board contacts the heatsink.
5. RF trace width depends upon the PCB material and construction.
6. Use 1 oz. Copper minimum.

Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
AD254	2013.01.08	1.3	Change by a new dimension form	-
AD254	2012.09.10	1.2	Change by a new document form	-
AD254	2012.02.06	1.1	3.3V Application Circuit was added	-

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