

Product Brief



SEMTECH WIRELESS & SENSING PRODUCTS

SX1701 LNA Family

Multi-Channel Highly Linear Wideband LNAs



Multi-channel differential outputs and wide linearity simplify your designs, saving board space and lowering BOM costs

The SX1701 wideband low noise amplifiers (LNAs) offer excellent RF performance and provide differential outputs compatible with current set-top-box (STB) front-end tuner devices. The SX1701 platform eliminates the need for PCB baluns, and requires a minimal number of external components. SX1701 devices are offered in 1-, 2- and 3-channel versions with each active channel having independently selectable gain of +6 dB, +12 dB and +18 dB, ideal for a wide dynamic range of input RF signals.

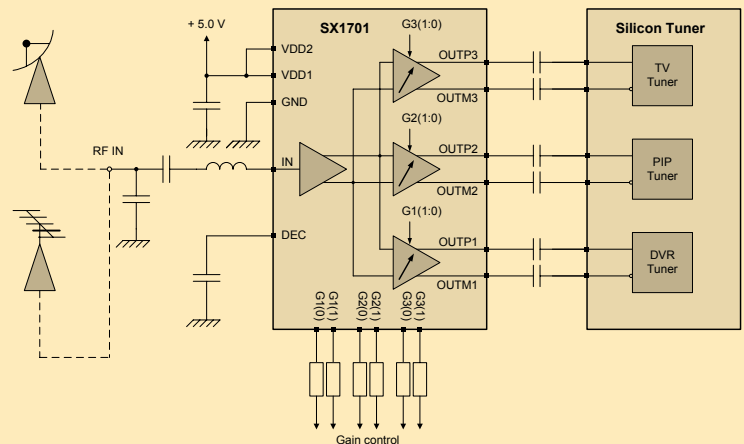
Key Features:

- Single 5V supply
- 40 MHz to 2500 MHz frequency range
- +6 / +12 / +18 dB gain per output channel
- 75 Ω input and 100 Ω output impedance
- 53 dBm OIP2, 23 dBm OIP3
- Low IRL, 12 dB, and ORL, 17 dB, @ 2GHz

Applications:

- Digital Set Top Boxes (Satellite and Terrestrial)
- CATV Distribution Systems
- Data Communications Systems

Application Diagram:



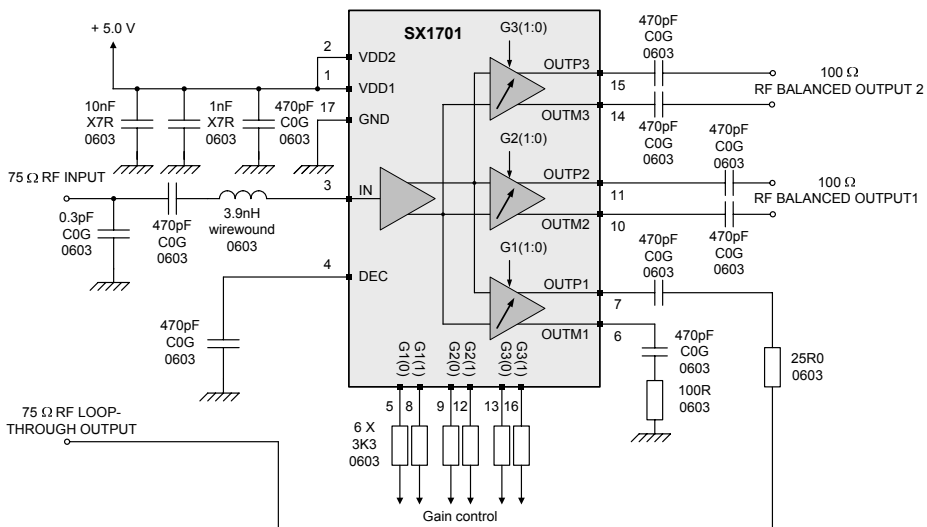
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Characteristics

Parameter	Description	Min	Typ	Max	Unit	Condition
Operating Conditions						
Operating temperature range		-40		85	°C	
Operating supply voltage		4.5		5.3	V	
Electrical characteristics						
RIN	Input impedance	-	75	-	W	Single-ended
ROUT	Output impedance	-	100	-	W	Differential
FR	Frequency range	0.04	-	2.5	GHz	
G	Small signal gain	-	6	-	dB	
		-	12	-		
		-	18	-		
GFLAT	Gain flatness		±1		dB	Rs = 75Ω, maximum gain
NF	Noise figure	-	7	-	dB	G = 18 dB, Rs = 75Ω
		-	9	-		G = 12 dB, Rs = 75Ω
		-	13	-		G = 6 dB, Rs = 75Ω
P1dB	Input P1dB compression point	-	13	-	dBm	
OIP3	Output 3 rd order intermodulation (differential)	-	22	-	dBm	G = 18 dB, f1 = 1 GHz, f2 = 1.1 GHz
		-	21	-		G = 12 dB, f1 = 1 GHz, f2 = 1.1 GHz
		-	19	-		G = 6 dB, f1 = 1 GHz, f2 = 1.1 GHz
OIP2	Output 2 nd order intermodulation (differential)	-	53	-	dBm	f1 = 1 GHz, f2 = 1.1 GHz
IRL	Input return loss	-	15	-	dB	
ORL	Output return loss	-	20	-	dB	
ISOUTIN	RF out to RF in isolation	50	-	-	dB	
ISOUTOUT	RF out i to RF out j isolation	-	35	-	dB	G = 6 dB
ISOUTDWN	RF in to RF out isolation in shutdown mode	-	50	-	dB	
CMRR	Common mode rejection at the output	-	20	-	dB	
VESD	ESD robustness on all pins	3	-	-	kV	Human body model
IDD	Current consumption	-	130	-	mA	One channel enabled
		-	200	-		Two channels enabled
		-	270	-		Three channels enabled

Conditions: VDD = 5.0 V, temperature = 25 °C, input frequency = 1 GHz, gain = 18 dB, unless otherwise specified.

3-Channel Loop-Thru Application



Ordering Information

Part Number	# of Channels	Package
SX1701AI085TRT	1	4x4mm MLPQ-16
SX1701BI085TRT	2	4x4mm MLPQ-16
SX1701I085TRT	3	4x4mm MLPQ-16