

500-1750MHz LNA with 1dB NF and 19dB gain
OVERVIEW

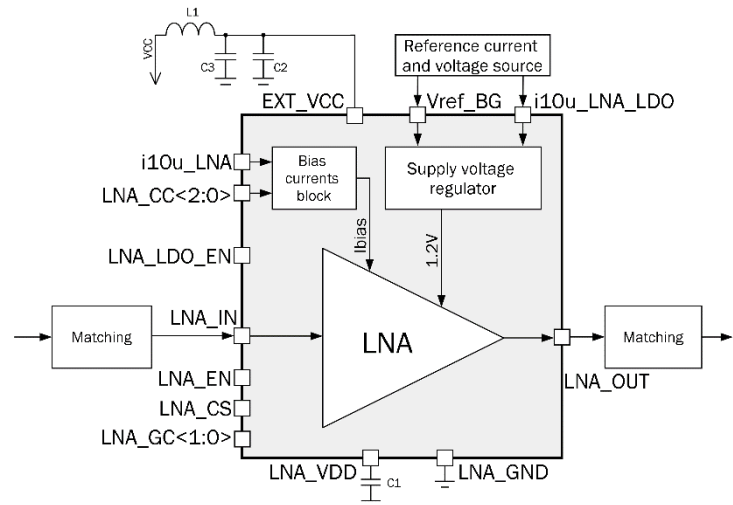
055TSMC_LNA_01 is an electronic amplifier intended to amplify a very low power signal without significantly degrading its SNR. The operating frequency range from 500 to 1750MHz is achieved using several matching schemes.

The IP block contains voltage supply regulator intended to keep internal LNA V_{cc} at selected level.

IP technology: TSMC CMOS 55nm.

IP status: silicon proven.

Area: 0.1mm².


ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Conditions	Value			Units
			min	typ.	max	
Supply voltage	V_{CC}	-	2.25	2.5	3.6	V
Operating temperature range	T_J	Nominal	-45	+25	+85	°C
Current consumption	I_{CC}	Operating mode	-	6.52	-	mA
		Standby mode	-	48	-	pA
Input logic-level low	V_{IL}	-	0	-	0.25	V
Input logic-level high	V_{IH}	-	$V_{CC}-0.25$	-	V_{CC}	V
Output logic-level low	V_{OL}	Load current 10mA	0	-	0.25	V
Output logic-level high	V_{OH}	Load current 10mA	$V_{CC}-0.25$	-	V_{CC}	V
LNA input reference current (outflow)	I_{REF_LNA}	-	-	10	-	μA
LDO input reference current (outflow)	I_{REF_LDO}	-	-	10	-	μA
Reference voltage	V_{REF}	-	595	600	605	mV
LDO output voltage	V_{LDO_OUT}	-	-	1.2	-	V
LNA input DC level	V_{IN_DC}	AC coupling	-0.3	-	V_{CC}	V
LNA output DC level	V_{OUT_DC}	AC coupling	-0.3	-	V_{CC}	V
Operating frequency range	F_{IN}	-	500	-	1750	MHz
Gain	G	-	17	19	22	dB
Noise figure	NF	-	0.8	1.0	1.5	dB
Input compression point	IP_{1dB}	-	-23	-21	-18	dBm
3 rd order intermodulation point	IP_3	-	-	-23.7	-	dBm
Input resistance	R_{LNA_IN}	-	-	50	-	Ω
Output resistance	R_{LNA_OUT}	-	-	50	-	Ω
Input VSWR	$VSWR_{IN}$	50Ω	-	-	3	-
Output VSWR	$VSWR_{OUT}$	50Ω	-	-	3	-