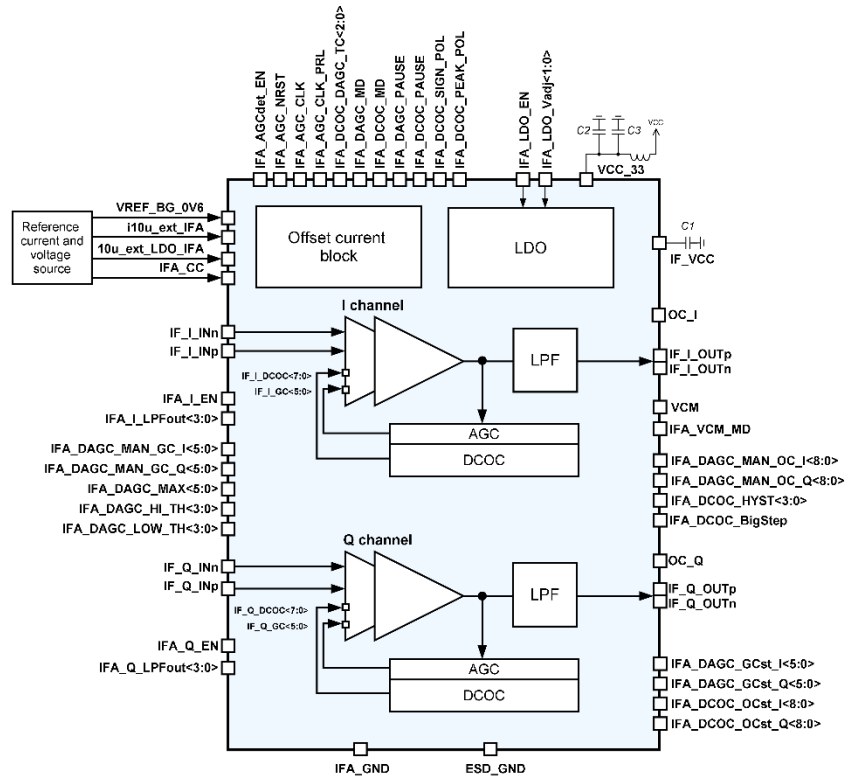


120 to 250 kHz Intermediate frequency amplifier with AGC

OVERVIEW

055TSMC_IFA_01 is an intermediate frequency amplifier (IFA) designed to amplify and transmit differential signals in the frequency range from 120kHz to 250kHz. The amplifier consists of two cascades, external gain control system, DC (voltage) offset compensation system, LDO and offset current block. The system of amplifying cascades provides the necessary gain and DC level of the signal. The AGC system provides a discrete gain change in the range from -10dB to +45dB and has a configurable operating mode (automatic, programmable and controlled via an analog output).
 IP technology: TSMC CMOS 55nm
 IP status: silicon proven
 Total area: 3.072 mm²



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	-	2.55	3.7	mA
		Standby mode	-	25	93	uA
		Power off	-	1	25	nA
10uA input reference current (outflow)	i _{10u_ext_LDO}	-	-	10	-	uA
20uA input reference current (outflow)	i _{10u_ext_IFA}	-	-	20	-	uA
Reference voltage	V _{REF}	-	595	600	605	mV
Input logic-low level	V _{IL}	-	0	-	0.25	V
Input logic-high level	V _{IH}	-	V _{CC} -0.25	-	V _{CC}	V
Output logic-low level	V _{OL}	-	0	-	0.25	V
Output logic-high level	V _{OH}	-	V _{CC} -0.25	-	V _{CC}	V
DC level at IFA differential output	V _{DC_IFA}	-	-	0.6	-	V
Operating frequency range	F	G<40dB, C _{LOAD} =15pF	120	-	250	kHz
Gain	G	Minimum	-12.5	-10.1	-9.4	dB
		Maximum	43	45.5	46.0	
Gain adjustment range	ΔG	-	-	55.6	-	dB
Gain adjustment step	ΔG _{STEP}	-	0.9	1.1	1.25	dB
Noise figure	NF	G > 15dB	-	12	15	dB
		G = 0dB	-	18	22	
Output signal voltage	V _{DPP}	Differential	-	660	-	mV
Third order intermodulation	IM3	G > 10dB, at IFA_CC="1"	-	-55	-	dB
Input resistance	R _{IN}	Nondifferential	-	1.5	-	kOhm