

25 to 1750 MHz quadrature mixer

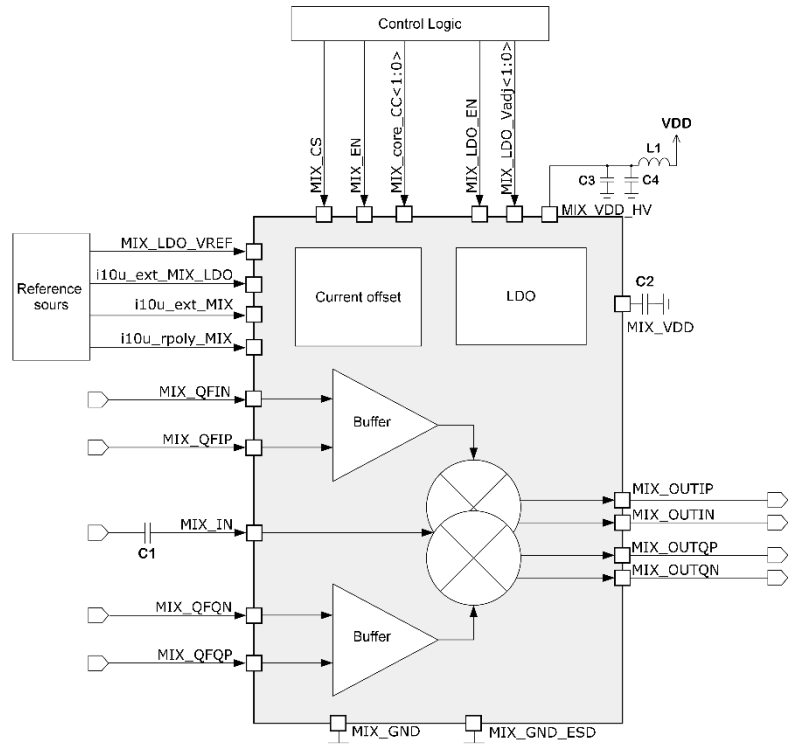
OVERVIEW

055_MIX_03 is a quadrature mixer that provides 25 - 1750 MHz operation frequency range without external matching components. 2 kOhm output impedance allows to select analog filters for operation with up to 3 MHz output bandwidth. The buffer of the local oscillator signal provides the necessary differential range of the local oscillator signal over the entire operating frequency range. Embedded LDO allows operation from 2.25V to 3.6V input supply voltage and improves mixer's PSRR.

IP technology: TSMC CMOS 55nm

IP status: silicon proven

Total area: 0.36 mm²



ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Conditions	Value			Units
			min	typ.	max	
Input supply voltage	V _{DD}	-	2.25	2.5	3.6	V
Operating temperature range	T _J	Nominal	-45	+25	+85	°C
LDO output voltage	V _{LDO_OUT}	-	-	1.2	-	V
Current consumption	I _{CC}	Operating mode	3.5	4.2	4.7	mA
		Standby mode	-	110	-	nA
Input reference current	I _{10u}	-	-	10	-	uA
Input reference voltage	V _{REF}	-	595	600	605	mV
DC level at the output of the quadrature former	V _{QF_DC}	-	-	600	-	mV
DC level at the mixer input	V _{IN_DC}	MIX_IN AC decoupling	-	320	-	mV
Input logic-low level	V _{IL_DD}	For digital inputs	0	-	0.25	V
Input logic-high level	V _{IH_DD}		V _{DD} -0.25	-	V _{DD}	V
Input frequency range	F _{RF}	-	25	-	1750	MHz
Output frequency range	F _{OUT}	-	2.4	-	3000	kHz
LO frequency range	F _{LO}	-	25	-	1750	MHz
Cut-off frequency	F _{cut}	3dB	-	7	-	MHz
Gain	G	-	-	-1.5	-	dB
Noise figure	NF	F _{RF} = 25-1000 MHz	-	7.3	15.1	dB
		F _{RF} = 1000-1750 MHz	-	7.8	19.9	
LO differential swing	V _{LO(dp-p)}	-	-	2.4	-	V
Compression point (in relation to mixer input)	ICP _{1dB}	-	-	-14.6	-	dBm
3rd order intercept point (in relation to mixer input)	IIP3	-	-	-4.5	-	dBm
Output impedance	R _{IN_MIX}	-	-	1.15	-	kOhm
VSWR input	VSWR _{IN}	50Ohm	-	1.65	-	-