

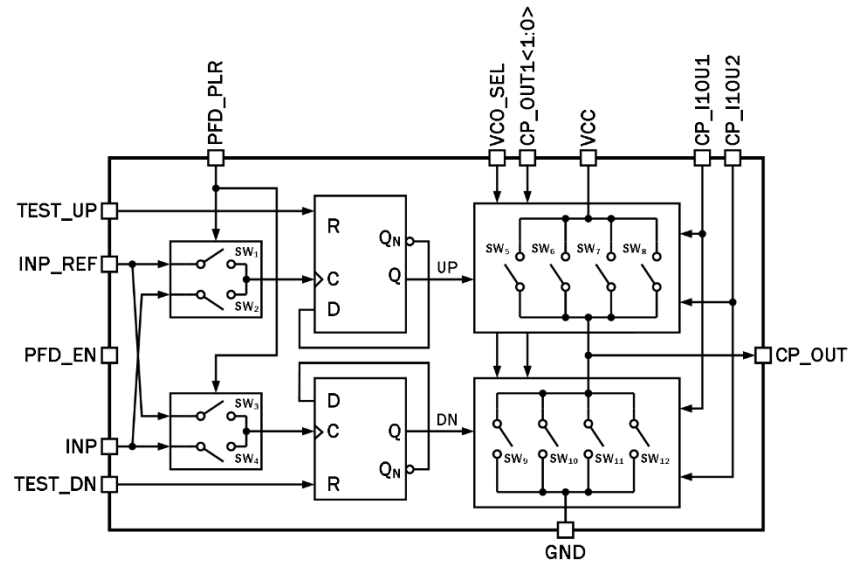
0.1 to 25 MHz Phase-frequency detector with charge pump
OVERVIEW

180TSMC_PFD_03 is a phase-frequency detector (PFD) forms control signal for VCO tuning. PFD compares phases of divided VCO signal and divided reference oscillator signal and detects phase difference. Charge pump generates pulses for loop filter.

IP technology: TSMC018 SiGe BiCMOS 0.18 μ m.

IP status: silicon proven.

Area: 0.015mm².


ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Conditions	Value			Units
			min	typ.	max	
Supply voltage	V_{CC}	-	3.0	3.15	3.6	V
Operating temperature range	T_j	-	-40	+27	+85	°C
Reference frequency	F_{ref}	-	0.1	20	25	MHz
Input amplitude	$A_{in\ p-p}$	For inputs INP, INP_REF	$V_{CC}-0.4$	V_{CC}	$V_{CC}+2.4$	V
Output current	I_{out}	Preset 1	44	45	51.5	uA
		Preset 2	49.5	50	57.5	
		Preset 3	65	66	75.5	
		Preset 4	75	76.5	87.5	
		Preset 5	87.5	89	99.5	
		Preset 6	98	99.5	111.5	
		Preset 7	128.5	131	146.5	
		Preset 8	149	152	170	
		Preset 9	174	176.5	194	
		Preset 10	194	197	216.5	
		Preset 11	255.5	260	285	
		Preset 12	296	300.5	330	
		Preset 13	345.5	350	379.5	
		Preset 14	386.5	391.5	424	
		Preset 15	508	515	558	
		Preset 16	589.5	597	647	
PFD reset time	t_{rst}	-	0.74	1.07	1.87	ns
Supply current	I_{cc}	$I_{out} = 45\ \mu A$	0.06	0.07	0.08	mA
		$I_{out} = 597\ \mu A$	0.13	0.14	0.15	
Stand-by current	I_{stb}	$I_{out} = 597\ \mu A$	0.25	0.67	12.5	nA
Input logic-level high	V_{IH}	For digital inputs	$0.7V_{CC}$	-	$V_{CC}+0.25$	V
Input logic-level low	V_{IL}		-0.25	-	0.3	V