

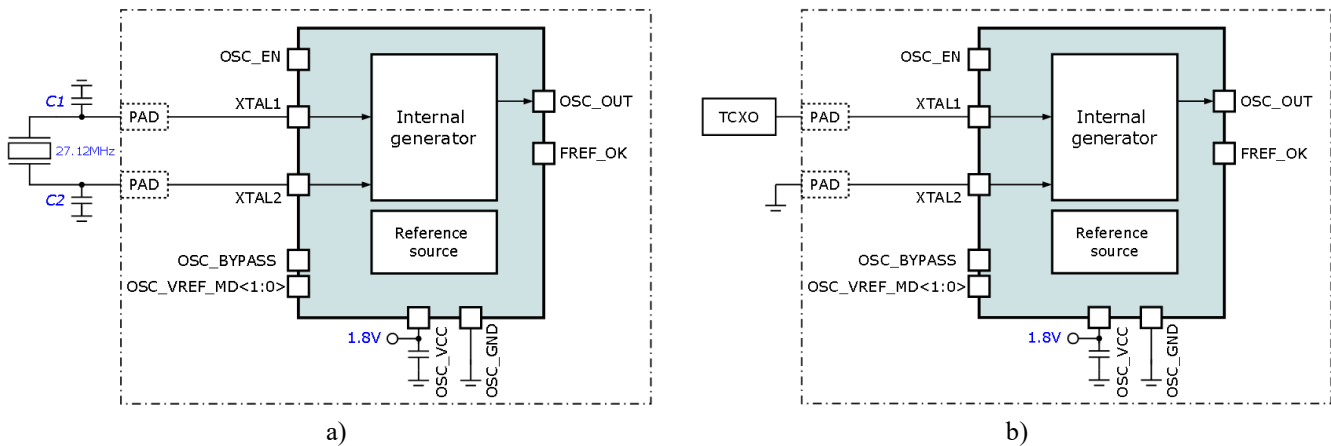
## 27.12 MHz crystal oscillator

### OVERVIEW

180TSMC\_OSC\_05 is a reference frequency generator designed to form a 27.12 MHz reference signal. The reference signal indicator informs the control system about the generation failure or the reference signal absence.

Oscillator has two modes:

- quartz mode (XTAL) Figure a
- internal generator mode (TCXO) Figure b



IP technology: TSMC 180nm 1.8V/5.0V CMOS MIXED Signal

IP status: pre-silicon verification

Area: 0.034mm<sup>2</sup>

### ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Conditions	Value			Unit	
			min	typ.	max		
Supply voltage	V <sub>CC</sub>	-	1.62	1.8	1.98	V	
Operating temperature range	T <sub>J</sub>	Nominal	-40	+27	+125	°C	
Current consumption	I <sub>CC</sub>	XTAL mode (start up; 0 to t <sub>stab</sub> )	1.7	2.4	3.2	mA	
		XTAL mode (after t <sub>stab</sub> )	-	0.2	0.3		
		BYPASS mode	-	0.1	0.15	nA	
		Standby mode	-	3	430		
Output frequency	F <sub>out</sub>	-	-	27.12	-	MHz	
Peak-to-peak input voltage	A <sub>in</sub>	For TCXO mode	0.6	1	1.8	V	
Peak-to-peak output voltage	A <sub>out</sub>	-	1.62	1.8	1.98	V	
Frequency stabilization time*	t <sub>stab</sub>	-	-	0.1	0.2	ms	
Oscillation frequency tolerance*	dF/F	Only for quartz mode	-	-	±10	ppm	
Phase noise (XTAL mode)	PN <sub>XTAL</sub>	F <sub>out</sub> = 27.12 MHz	@100 Hz	-	-105	-	dBc/Hz
			@1 kHz	-	-129	-	
			@10 kHz	-	-136	-	
			@100 kHz	-	-140	-	
Output signal duty cycle	DC <sub>OSC</sub>	-	40	-	60	%	

\* Simulated with Dong In AS50AN-027120-T06-YFP-YDNA Quarts Crystal