

General Description

The IP Cell XTOSC1_XH018 is a Pierce Quartz oscillator. The oscillation frequency is mainly determined by the external quartz crystal. It is designed to operate in the frequency range of 20 to 50MHz. Its purpose is to provide an accurate digital clock signal for clocked circuits.

The circuit can also be driven by an external logic level clock source. This can be useful when exact synchronisation of several ICs is essential or the ASIC should be operated in a test mode. In this case, the clock source is connected to the XTIN pin. The maximum achievable accuracy is primarily determined by the used crystal precision. Please refer to the crystal manufacturer's data sheet for further information. The circuit uses a 10µA bias current for operation of the internal amplifier and for a reliable start up after supply voltage is supplied.

Ratings, Parameters and Conditions

Parameter / Condition	Symbol	Min	Typ.	Max	Unit	Comment
Electrical Parameters:						
Supply Voltage	V_{dd}	3,0	3,3	3,6	V	
Active Supply Current	I_{gd}		0,7	1,1	mA	
oscillation frequency	f_{OSC}	20	40	50	MHz	
power up time	T_{up}		1,6	2,5	ms	
ClkOut duty cycle	DC_{ClkOut}	45	50	55	%	
crystal series resistance	R_{series}	20	50	100	Ohm	
power loss quartz	P_{loss_quartz}	2		120	µW	
external load capacitance	C1, C2	0		4	pF	only if needed
Bias current	I_{bias}		10		µA	
Absolute Maximum Ratings:						
Operating Temperature	T_{range}	-40		140	°C	
Supply Voltage	V_{dd}	-0,3			V	
Input Voltage	V_{in}	-0,3		$V_{dd}+0,7$		
Output Voltage	V_{out}	-0,3		$V_{dd}+0,7$		
Operating Conditions:						
Ambient Temperature	T_{amb}	-40	27	85	°C	

Interface and Symbol

IO-Description			
Interface	I/O	Function	Comment
VSS	input	Supply	
VDD	Input	Supply	
XTIN	Input	Crystal Input	
XTOUT	Output	Crystal Output	
IBN	Input	Bias Input	
CLK	Output	Clock Output	

