

General Description

The crystal oscillator COSC1 is a clock generator. The oscillation frequency is mainly determined by the external quartz crystal. It is designed to operate in the frequency range of 1 to 12MHz. Its purpose is to provide an accurate clock signal for clocked circuits, usually digital sequential logic 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. 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.

Ratings, Parameters and Conditions

Parameter / Condition	Symbol	Min	Typ.	Max	Unit	Comment
Electrical Parameters:						
Supply Voltage	V_{dd}	4.75	5	5.25	V	
Supply Current	I_{dd}	200	500	700	μ A	@ 8MHz, incl. clock buffer
oscillation frequency	F_{OSC}	1	8	12	MHz	
power up time	T_{up}		500	2000	us	
ClkOut duty cycle	DC_{ClkOut}	45	50	55	%	
input resistance	R_{XTin}		500		kOhm	
crystal series resistance	R_{series}		2		kOhm	
external load capacitance	C1, C2	15	22	33	pF	
small signal transconductance	Gm		1000		uS	
Absolute Maximum Ratings:						
Operating Temperature	T_{range}	-40		120	$^{\circ}$ C	
Supply Voltage	V_{dd}	-0.3		7	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}	-20	27	80	$^{\circ}$ C	

IO-Description

Interface	I/O	Function	Comment
GNDA	Input	Supply	
VDDA	Input	Supply	
Bias10u	Input	Supply	bias current input
XTIN	Input	crystal input	can be driven by external clock source (do not connect capacitors C1 and C2 in this case)
XTOUT	Output	crystal	
CLKOUT	Output	clock	logic level

Symbol / external schematic

