

RC Oscillator 5.5MHz

SPECIFICATION

1 FEATURES

- TSMC CMOS 65 nm
- Internal RC oscillator
- Low power consumption (<5 uA)
- Supported foundries: TSMC, UMC, Global Foundries

2 APPLICATION

- RF ID
- Timekeeping instruments with high precision
- GPS equipment to reduce time to first fix
- Applications that require an accurate process timing
- Products with long automated unattended operation time

3 OVERVIEW

IP is a low power high resolution RC oscillator nominally operates at 5.5 MHz output clock from a 1.2 V supply. The IP consumes only 4.6 uA as a worst case at the maximum oscillation frequency. It has an auto. No external components are required. The oscillator operates in a voltage range of 1.2 V +/-10% and is qualified over a broad temperature range of -40°C to 85°C. The oscillator has excellent nominal duty cycle specifications (50% +/-10%).

4 STRUCTURE

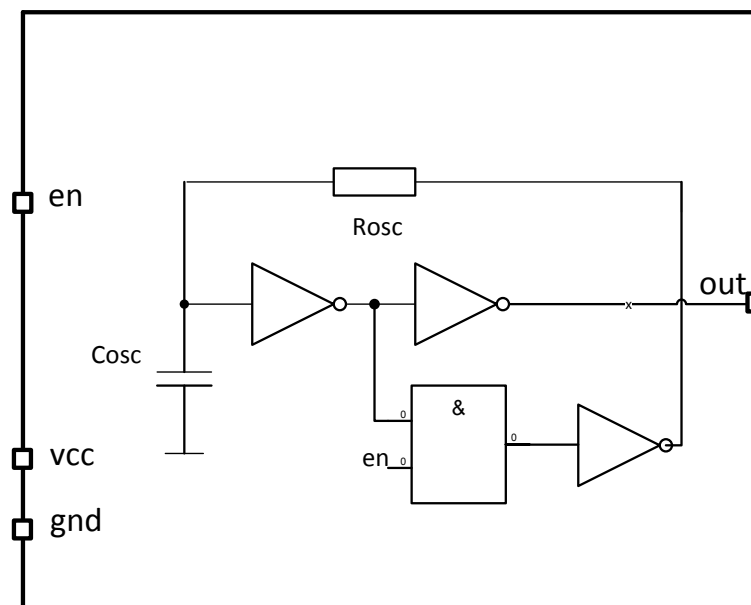


Figure 1: RC Oscillator 5.5 MHz structure

5 PIN DESCRIPTION

Name	Direction	Description
en	I	Enable/ disable
out	O	Oscillator digital output
vcc	IO	Supply voltage
gnd	IO	Ground

6 LAYOUT DESCRIPTION

The block dimensions are given in the table 1.

Table 1: Block dimensions

Dimension	Value	Unit
Height	18	μm
Width	23	μm

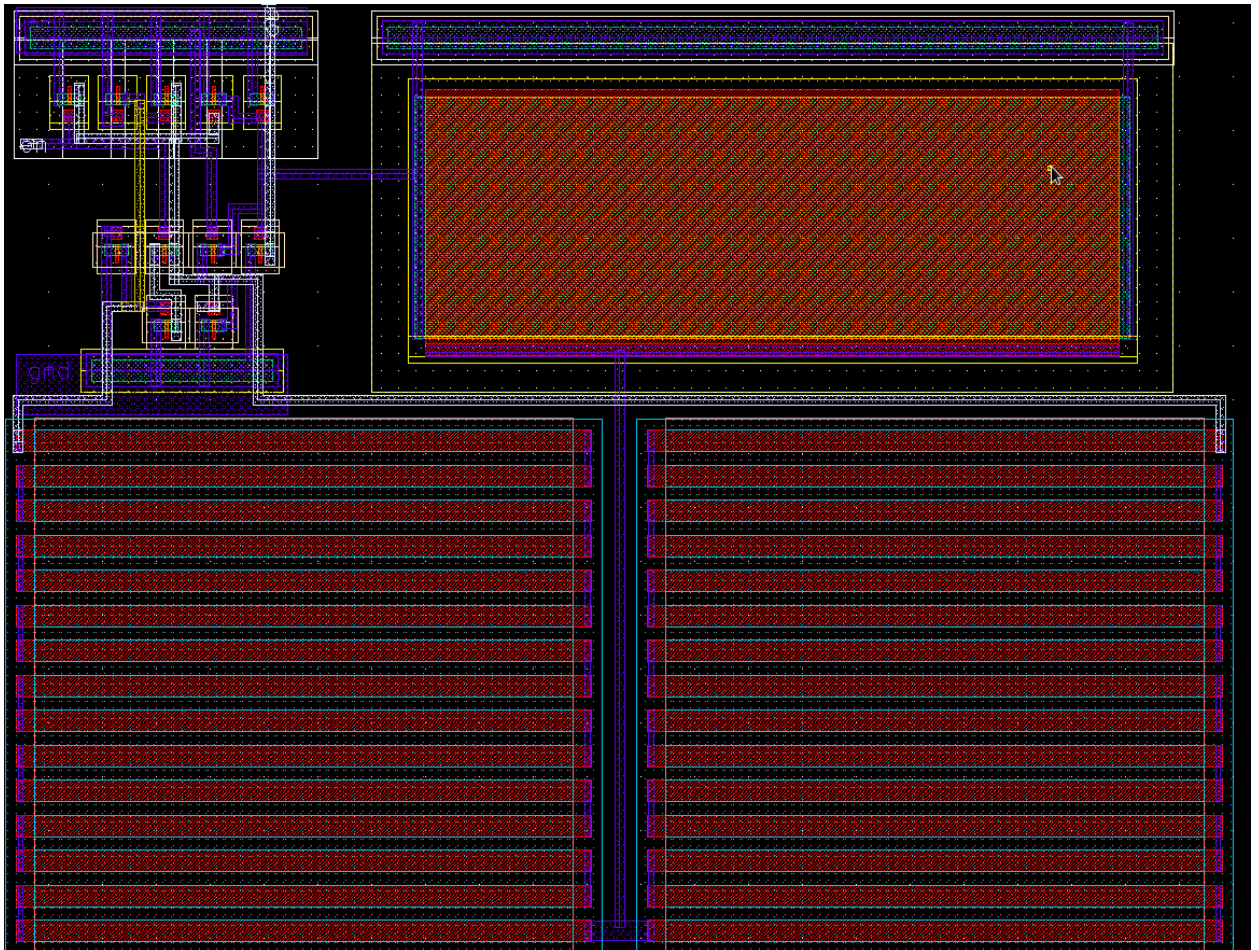


Figure 2: OSC layout structure

7 OPERATING CHARACTERISTICS

7.1 TECHNICAL CHARACTERISTICS

Technology _____ TSMC CMOS 65 nm
 Status _____ silicon proven
 Area _____ 0.0005 mm²

7.2 ELECTRICAL CHARACTERISTICS

The values of electrical characteristics are specified for $V_{cc} = 1.1 \div 1.3$ V and $T = -45 \div +85$ °C. Typical values are at $V_{cc}=1.2$ V and $T = +27$ ° C, unless otherwise specified.

Parameter	Symbol	Condition	Value			Unit
			min	typ.	max	
Supply voltage	V_{cc}	-	1.1	1.2	1.3	V
Oscillator operating temperature range	T	-	-40	27	85	°C
Start up time		-	-	<10	-	cycle
Output frequency	F_{out}	-	4.546	5.5	6.391	MHz
Current consumption	I_{cc}	-	-	4.6	11	uA
Current consumption in a standby mode	I_{stb}	-	-	-	28	nA

8 TYPICAL OPERATING CHARACTERISTICS

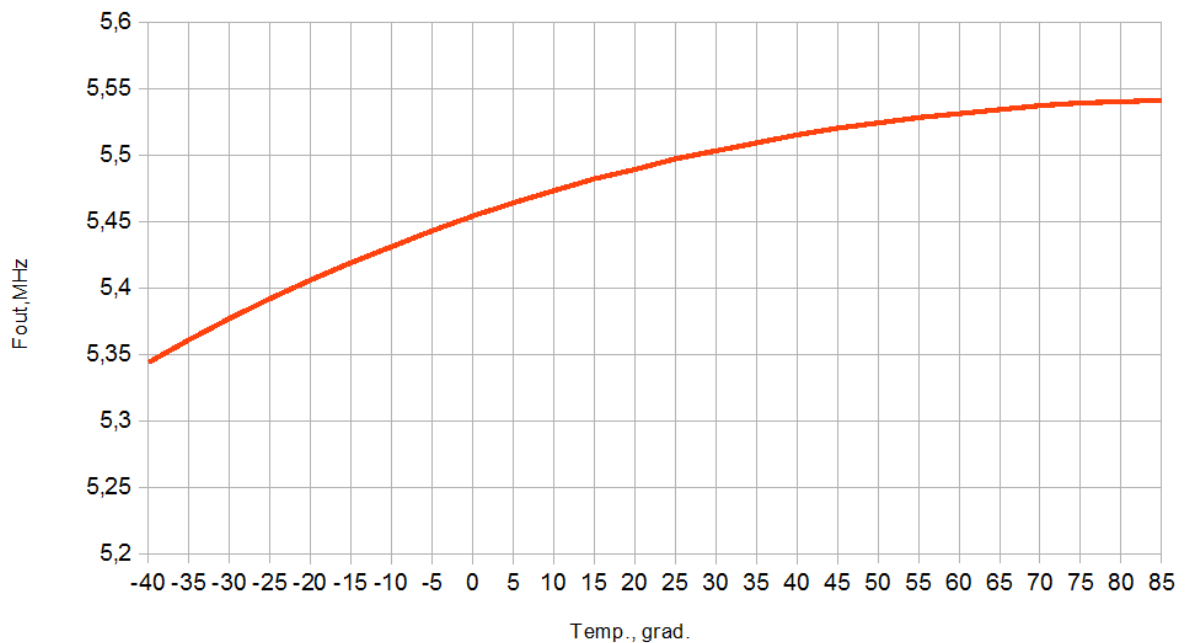


Figure 3: OSC output frequency dependence on temperature

9 DELIVERABLES

Depending on license type IP may include:

- Schematic or NetList
- Abstract view (.lef and .lib files)
- Layout (optional)
- Verilog behavior model
- Extracted view (optional)
- GDSII
- DRC, LVS, antenna report
- Test bench with saved configurations (optional)
- Documentation