

## Low Power Dual Mode EMI Reduction Oscillator

### Features

- FCC approved EMI attenuation
- Proprietary Low EMI Phase Modulated SaΦ ic™ Oscillator
- Dual Mode Clock Output : Low phase jitter clock or Low EMI clock
- RoHS compliant & Pb free
- AEC-Q100 G1
- Frequency range 20MHz ~ 40MHz
- Supply voltage 1.62V ~ 3.63V
- CMOS output
- Operating temperature -40~125°C
- SMD seam sealing ceramic package 2.0mm x 1.6mm

### Electrical Specifications

Item	Specification
Frequency	20MHz ~ 40MHz
Supply Voltage (VDD)	1.8V ~ 3.3V <sup>[1]</sup> , ±10%
Output Type	CMOS
Output Load	15 pF
Oscillation Mode	Fundamental
Frequency Stability	±50 ppm <sup>[1]</sup> <sup>[2]</sup> <sup>[3]</sup>
Operation Temperature Range	-40°C ~ 125°C <sup>[1]</sup>
Storage Temperature Range	-55°C ~ 125°C
Output Voltage Low (V <sub>OL</sub> ) @ VDD = 3.3V, I <sub>OL</sub> = 12mA @ VDD = 1.8V, I <sub>OL</sub> = 4mA	0.2VDD Max.
Output Voltage High (V <sub>OH</sub> ) @ VDD = 3.3V, I <sub>OH</sub> = -12mA @ VDD = 1.8V, I <sub>OH</sub> = -4mA	0.8VDD Min.
Rise(Tr) / Fall(Tf) Time <sup>[4]</sup>	6 ns Max.
Dynamic Supply Current <sup>[5]</sup>	2.5mA EN=High / 4.0mA EN=Low
Duty Cycle <sup>[6]</sup>	45% ~ 55%
Start-Up Time	1 ms Max.
Phase Jitter (12kHz~5MHz)	0.5 ps Max. <sup>[3]</sup> <sup>[5]</sup>
Aging (at 25°C)	±3 ppm/year Max.
Modulation Output Clock Mode	Pin 1 selectable

[1] Ordering options

[2] Inclusive of frequency tolerance at 25°C, variations over operating temperature, supply voltage, load and 1st year aging at 25°C.

[3] Modulation output clock mode is disabled.

[4] Tr measure between 10% to 90%, Tf measure between 90% to 10% at 15pF load and VDD 1.8V~3.3V

[5] Measure at 24MHz, VDD 1.8V

[6] Measure at VDD / 2

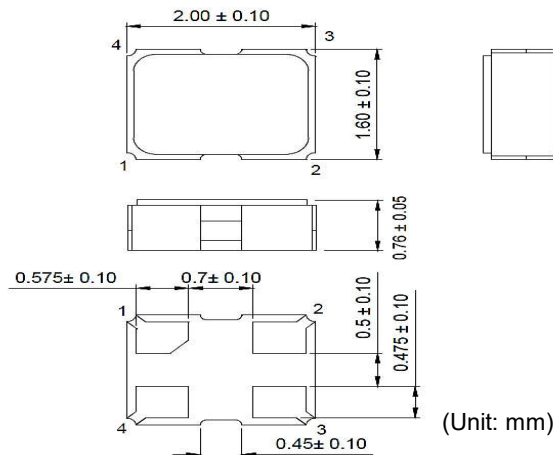
## Modulation Output Deviation [7], [8]

Frequency (MHz)	Deviation range (%) @25°C		
	VDD 1.8V	VDD 2.5V	VDD 3.3V
20	± 0.38	± 0.22	± 0.17
24	± 0.42	± 0.27	± 0.19
25	± 0.45	± 0.28	± 0.20
27	± 0.50	± 0.29	± 0.23

[7] The deviation range can vary by ±20% over voltage and temperature.

[8] Modulation output mode is enabled, contact us for available frequencies and deviation range.

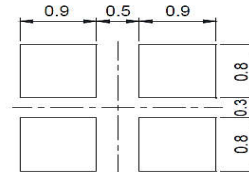
## Dimensions



### Pad Function

- 1 EN
- 2 GND
- 3 OUTPUT
- 4 VDD

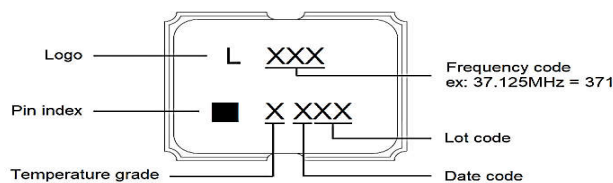
### Suggested Layout



## Pin Definition

Pin#	Symbol	Functionality
1	EN	Modulation Output Clock Mode Enable Pin H (Logic "1") : Disable L (Logic "0") : Enable Internal pull-high resistor
2	GND	System ground reference
3	OUTPUT	Oscillator output
4	VDD	System power supply

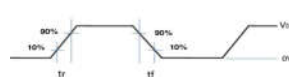
## Marking



### Duty Cycle Timing

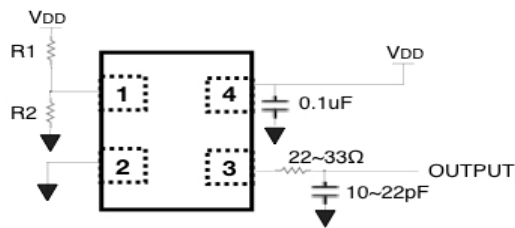


### Output Rise/Fall Timing



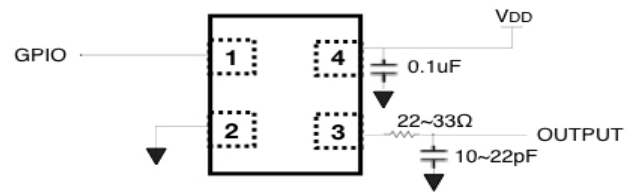
Temperature grade	Temperature range	Frequency stability (ppm)
A	-40°C ~ 125°C	±50

## Schematics



Non-modulated clock output when R1 = NC or 4.7KΩ , R2 = NC

Modulated clock output when R1 = NC & R2 = 0Ω



Non-modulated clock output when GPIO = High

Modulated clock output when GPIO = Low

## Ordering Information

LO203	A	-	24.576M	-	50	-	C
Product series			Frequency in Hz			Supply voltage	
Operating temperature range						A : 3.3V	
A : -40~125°C						B : 2.5V	
						C : 1.8V	
						Frequency stability	
						50: +/-50ppm	