



• HO-12&15 Series



The HO-12 series oscillator is TTL/HCMOS compatible HO-15 series is with 3.3V powersupply voltage. The metal package with pin #7 case ground acts as shielding to minimize EMI radiation.

FEATURES

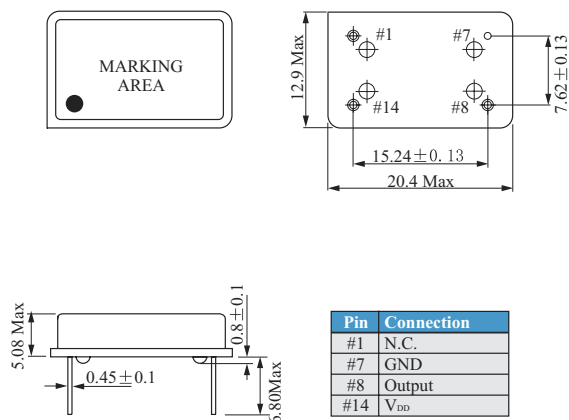
- TTL/HCMOS Output compatible
- 14 Pin Full Size
- Industry Standard
- Wide Frequency Range
- Low Cost
- Resistance Weld Package
- 3.3V available

Electrical Specifications

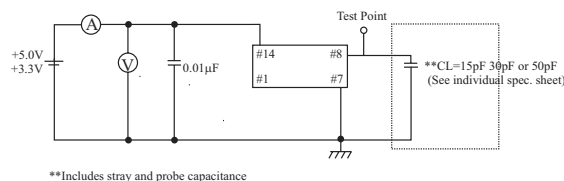
Parameter		Condition	HO-12	HO-15
Frequency Range	F _o		0.5MHz~100.00MHz	0.5MHz~125.00MHz
Frequency Stability*		All Condition*	±25ppm, ±50ppm, ±100ppm	
Operating Temperature Range	T _{OPR}		0°C~70°C(-40°C~+85°C option)	
Storage Temperature Range	T _{STG}		-55°C~+125°C	
Power supply Voltage	V _{DD}		5.0V+/-10%	3.3V+/-10%
Aging(First Year)		25°C ±3°C	±5ppm	
Supply Current	I _{DD}	0.5MHz to 23.999MHz	20mA Max	15mA Max
		24.000MHz to 49.999MHz	30mA Max	20mA Max
		50.000MHz to 69.999MHz	40mA Max	30mA Max
		70.000MHz to 125.000MHz	60mA Max	45mA Max
Output Symmetry	Sym	1/2V _{DD}	40/60%(45/55% Option)	
Rise time	T _r	10%V _{DD} ~90%V _{DD}	10 nS Max	8 nS Max
Fall Time	T _f	90%V _{DD} ~10%V _{DD}	10 nS Max	8 nS Max
Output Voltage	V _{OH}		90% V _{DD} min	
	V _{OL}		10% V _{DD} max	
Output load	TTL Load		1~10TTL	1~5TTL
	HCMOS Load		~50M:50pF ~70M:30pF ~100M:15pF	~50M:30pF ~125M:15pF
Start-up Time		T _s	10mS Max	

*Include: 25°C tolerance, operating temperature range, input voltage change, aging, load change, shock and vibration

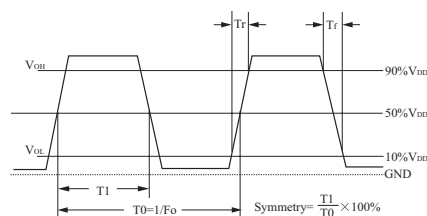
Mechanical Dimensions(mm)



HCOMS Test Circuit



HOCMS Output Waveform



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Specifications are subject to change without notice

ORDERING GUIDE

CLOCK OSCILLATOR



This guide is a terms and definitions of crystal oscillator, it is used to assist anyone in your organizations to select or order Hosonic's crystal oscillator. Please enter your company information. Hosonic maintains a customer database so updated specifications and new product information can be noticed.

- 1. Nominal Frequency** - Is the number of cycles per second(Hz) of an alternating electric current. Enter the frequency in MHz or KHz.
- 2. Hosonic Model number** - As stated on catalogue page.
- 3. Package Style** - Determines types of layout, through-hole or surface mount(SMD). Pls see catalogue for your ideal package.
- 4. Output Load** - Is the capacity of the oscillator to drive other devices. TTL devices are specified in number of gates that can be driven e.g. 10 TTL gates. CMOS output is specified in picofarads(pF) e.g., 15pF or 50pF loads.
- 5. Tri-State** - Tri-state Enable/Disable is the ability to turn on or off the output using pin one for control. The output will go to a high impedance when disabled, which facilitates the use of Auto Test Equipment.
Note:Tri-state may be substituted for non-tri-state if pin #1 is left open or held high.
- 6. Frequency Stability** - Is how far the oscillator will drift from the desired frequency over a specified temperature range. Stability is inclusive of tolerance @ 25°C, operation temperature, voltage fluctuations, load changes, aging, shock and vibration, and is measured in parts per million(ppm)
- 7. Operating Temperature range** - The maximum and minimum temperatures that the crystal device can be exposed to during oscillation. Among this temperature range, all of the specified device operating parameters are guaranteed.
- 8. Supply Voltage** - The Maximum voltage which can safely be applied to the V_{CC} terminal with respect to ground.
- 9. Supply Current** - The amount of current consumption by an oscillator from the power supply, specified in milliamps(mA).
- 10. Output Symmetry** - This measure of output waveform uniformity. This term is also called duty cycle, is a measurement of the time that the output waveform is in a logic high state, expressed as a percentage(%). This parameter is measured at a specified voltage threshold or at a percentage of the output waveform amplitude.
- 11. Rise/Fall time** - Rise and fall time is defined as the transition time of the output wave form from low to high state and high to low state. The transition time is measured between 90% and 10% of the falling edge of the switching wave form for CMOS devices.
- 12. Start-up time** - The start-up time of an oscillator is defined as the time an oscillator takes to reach its specified RF output amplitude. The start-up time is determined by the closed loop time constant and the loading condition of its circuit.
- 13. Jitter** - The modulation in phase or frequency of the oscillator output.
- 14. Stand by** - A function that temporary turns off the oscillator and other devices to save power. Logic 0 level will enable stand by mode. The disable current at stand by mode varies from few micro-amperes to tens of micro-amperes(5μA typical). Because oscillation is halted, there is a maximum of 10ms(same amount of start-up time). Before output stabilizes.
- 15. Marking** - the marking in normal is Hosonic's standard marking, also customer can select the OEM marking then need to inform us the detiles.
- 16. Special Option** - Special option is our value add service and customer can add cut lead, gull wing, or other special options.
- 17. Please inform us what quantity you required**
- 18. Please inform us your required delivery time**
- 19.** Please enter all possible information for the use of the clock oscillator you are ordering. If you can attached the schematic that is very useful and our sales engineer will review the information and help you to select the appropriate oscillator for your need.

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PART NUMBERING SYSTEM

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Through Hole Clock Oscillator Part Numbering System

Package	Frequency Stability	Nominal Frequency [in MHz]	Operating temperature Range	Output symmetry	Output Load	Option
11=HO-11 12=HO-12 13=HO-13 21=HO-21 22=HO-22 23=HO-23 15=HO-15 16=HO-16 25=HO-25 26=HO-26	A=±25ppm B=±50ppm C=±100ppm T=±10ppm G=±20ppm F=±15ppm	Please enter the nominal frequency	N=0°C to +70°C W=-40°C to +85°C M=-10°C to +70°C	N=40/60% T=45/55% R=47.5/52.5%	S=Standard H=high Output Load	L=Cut Lead G=Gull Wing P=PLL X=Special

SMD Clock Oscillator Part Numbering System

Package	Frequency Stability	Nominal Frequency[in MHz]	Operating temperature Range	Output symmetry	Output Load	Option
32=HXO-32 33=HXO-33 35=HXO-35 36=HXO-36 43=HXO-43 46=HXO-46	A=±25ppm B=±50ppm C=±100ppm T=±10ppm G=±20ppm F=±15ppm	Please enter the nominal frequency	N=0°C to +70°C W=-40°C to +85°C M=-10°C to +70°C	N=40/60% T=45/55% R=47.5/52.5%	S=Standard H=high Output Load	P=PLL T=1.50mm Max Thickness X=Special

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ORDERING SHEET

CLOCK OSCILLATOR

This form was developed to assist you in placing orders with Hosonic.

Company information

Company Name _____

Address _____

City _____ Province _____ Zip Code _____

Contact _____ Title _____

Phone _____ Fax _____

Email _____ Web Site _____

Quantity _____ pcs

Required Delivery Time _____ days

Clock Oscillator

Product Specification

1).Frequency _____ MHz KHz

2).Hosonic Model Number _____

3).Package Style 14pin(full size) 8pin(half size) SMD 5 7 J-lead plastic

4).Output Load TTL CMOS TTL/CMOS

5).Tri-state YES NO

6).Frequency Stability: 100ppm 50ppm 25ppm Others _____ ppm

7).Operating Temperature Range Standard Special _____ to _____

8).Supply Voltage 5.0V 3.3V

9).Supply current _____ mA

10).Output symmetry Standard(40/60%) Tight(45/55%) Others _____

11).Marking Standard Special

Line 1 _____

Line 2 _____

Line 3 _____

12).Special Options: L--- Cut Lead _____ mm

G--- Gull Wing

P--- PLL

X--- Others, Pls Specity _____

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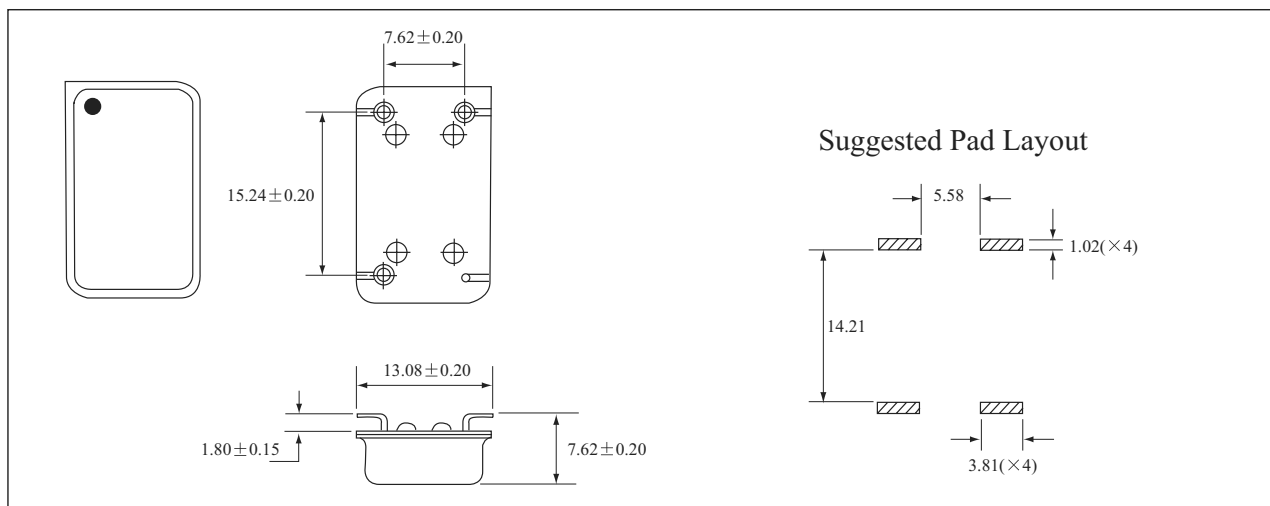
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VALUE ADDED OPTIONS

CLOCK OSCILLATOR

Full Size Gull Wing & Suggested Solder Pad Layout

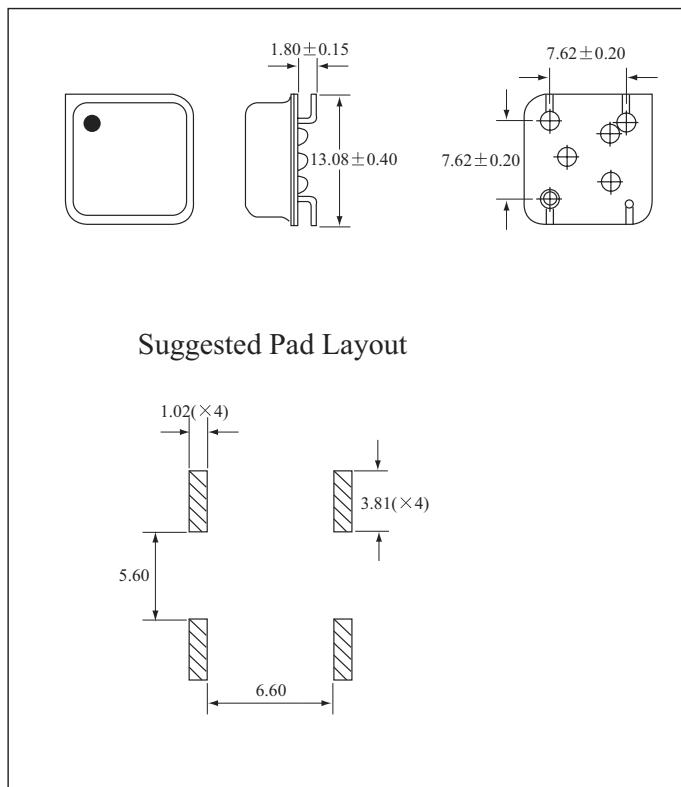
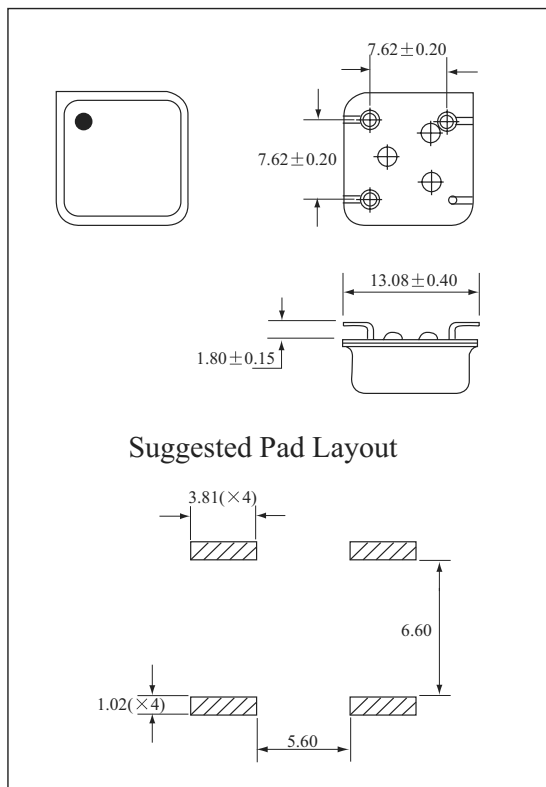


Clock Oscillator

Half Size Gull Wing & Suggested Solder Pad Layout

Fig 1

Fig 2



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