

# VariClock datasheet Ver2.0

VariClock, available to insert directly into a board pattern for standard DIP-size oscillator, is a frequency adjustable oscillator that can generate LVTTTL-level clock source for digital circuit. Two line-ups, VC250M14P and VC100M14P, are available. VC250M14P, high-speed model, can generate clock signal up to the maximum frequency of 400 MHz in case of no load. VC100M14P, high-resolution model, can generate clock signal by every 100KHz (25MHz – 50MHz) or 200KHz (50MHz – 100MHz) frequency step.

## Features

- Ultra small (About the size of a stamp: L33mm \* W21 mm)
- Directly insertion within a 14pin DIP-size oscillator socket
- Wide Frequency Range: 25 to 400MHz for VC250M14P. (Guaranteed up to 250 MHz.)  
25 to 100MHz for VC100M14P.
- Frequency Adjustable: By every 1MHz for VC250M14P.  
By every 100KHz (25 – 50MHz) or every 200KHz (50 – 100MHz) for VC100M14P.
- Easy setting frequency by three rotary switches
- LVTTTL output
- Support both of 5V or 3.3V power supply
- High accuracy: error by below 0.1% of the frequency
- External oscillation enable function
- LED to identify status

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<b>Product No.</b>	<b>VC250M14P</b>	<b>(High speed model for 250MHz oscillation)</b>
	<b>VC100M15P</b>	<b>(High resolution model by every 100K/200KHz step)</b>

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- Specification

Caution: All the specification is valid under 20pF load condition.

### 1: General Specification

#	Item	Specification	Remark
1-1	Size	L30.48mm * W22.86mm * H12.0mm	Without connector protuberance
1-2	Weight	Less than 15 grams	
1-3	Direction	Insert directly into a 14pin DIP-size oscillator socket	Compatible with board pattern of standard oscillator
1-4	Setting frequency	Setting by three rotary switches	Setting as 1MHz step
1-5	Power supply	Supplied by the user board via Pin#14 (Vcc)	
1-6	Power voltage	5V or 3.3V	Selectable with jumper socket
1-7	Output Clock	Clock source output from Pin#8 of the module.	
1-8	Current consumption	Less than 150mA (freq=25 - 250MHz)	In case of no load

### 2: Conditions

#	Item	Specification	Remark
2-1	Absolute storage temp.	-55 to 125 [Celsius]	
2-2	Absolute Active temp.	-30 to 85 [Celsius]	
2-3	Recommended operation temp.	-10 to 70 [Celsius]	
2-4	Absolute power voltage	+5V selected : -0.3V - +6.0V +3.3V : -0.3V - +3.8V	
2-5	Operating power voltage	+5V selected : +4.5V - +5.5V +3.3V selected : +3.15V - +3.45V	
2-6	Absolute input voltage	-0.3V - +6.0V	Pin#1(ENB Pin)
2-7	Operating input voltage	High Level: +2.0V - +5.5V Low Level : 0V - +0.8V	Pin#1(ENB Pin)

### 3: Frequency Specification (VC250M14P)

#	Item	Specification	Remark
3-1	Guaranteed frequency	25MHz - 250MHz	Range of guaranteed frequency
3-2	Feasible setting frequency	25MHz - 400MHz	Range of feasible setting frequency (*1)
3-3	Frequency setting resolution	1MHz step	
3-4	Frequency error	Less than +0.1% / -0.1%	Error by setting frequency

Note: \*1: As feasible setting frequency, clock oscillation itself and other specification could not guarantee the quality in case the frequency settings is in between 251MHz - 400MHz.

### 4: Frequency Specification (VC100M14P)

#	Item	Specification	Remark
4-1	Guaranteed frequency	25MHz – 100MHz	Range of guaranteed frequency
4-2	Feasible setting frequency	25MHz – 100MHz	Range of feasible setting frequency
4-3	Frequency setting resolution	25.0 – 50.0MHz : 100KHz step 50.0 – 100.0MHz : 200KHz step (*2)	100.0MHz clock can be generated by 0.0MHz setting.
4-4	Frequency error	Less than +0.1% / -0.1%	Error by setting frequency

Note: \*2: When odd number in 100KHz place is set from 50MHz to 100MHz frequency, actual clock frequency is 100KHz lower than the setting frequency. For example, 99.8MHz clock is generated if 99.9MHz is set.

### 5: Output Specification

#	Item	Specification	Remark
5-1	Output level	High level over 2.4V Low level below 0.4V	LVTTTL output
5-2	Output current	+24mA / -24mA	
5-3	Set up time	Less than 1000ps	0.8Vto2.0V, Load 20pF
5-4	Set down	Less than 1000ps	2.0Vto0.8V, Load 20pF
5-5	RMS jitter	+26ps / -26ps (Period Jitter)	25MHz frequency @25 Celsius

### 6: Other functions

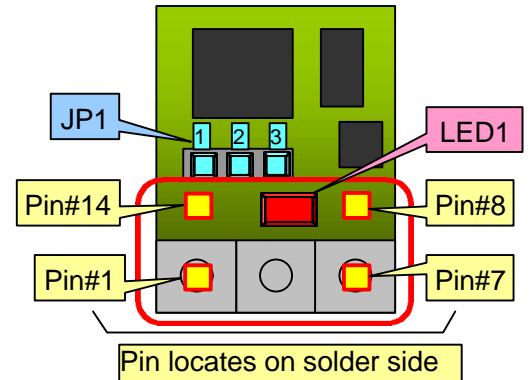
#	Item	Function
6-1	External Disable	Available by external level control of Pin#1(ENB) input
6-2	LED indicator	Indicate each setting status by Bi-color LED

### 7: Pin Assignment

Pin No.	Assign	Description
Pin#1	ENB	Frequency control (Low-level = stop oscillation, High-level/Open = normal oscillation)
Pin#7	GND	Signal Ground
Pin#8	OUT	Clock output (LVTTTL level)
Pin#14	VCC	Power Supply (+5V or +3.3V)

### 8: Jumper JPI setting

JP1 Setting	Description
Shorting 1-2	+5V power supply (Internal +3.3V power supply is generated by on-board power regulator)
Shorting 2-3	+3.3V (Pin#14 will be directly connected with internal power supply of +3.3V)



[Fig.1] VariClock (Top View)

### 9: LED Status Indication (VC250M14P)

LED1 color	Description
Green	Frequency setting is in the guaranteed range (25 - 250MHz)
Orange (R&G)	Frequency setting is out of guaranteed range (251 - 400MHz)
Red	Frequency setting error (0 - 24 / 401 - 999MHz) *3
No light	Power off or stop oscillation by ENB=Low

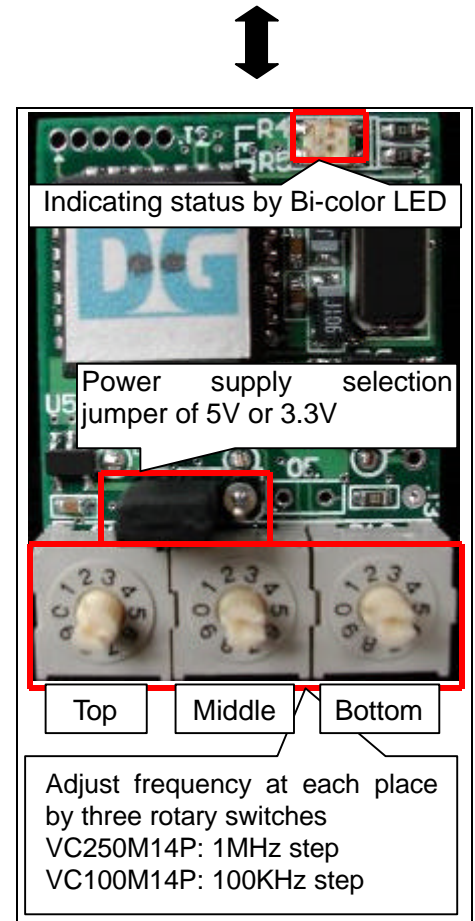
Note: \*3: When frequency setting error occurs, clock oscillation will stop

### 10: LED Status Indication (VC100M14P)

LED1 color	Description
Green	Frequency is properly set. (1)0(=100)MHz, (2)25 - 50MHz, or (3)50 - 100MHz and multiple of 200KHz
Orange (R&G)	Frequency setting is not accurate. (Not the multiple of 200KHz in 50 - 100MHz range.) *4
Red	Frequency setting error (0.1 - 24.9MHz) *5
No light	Power off or stop oscillation by ENB=Low

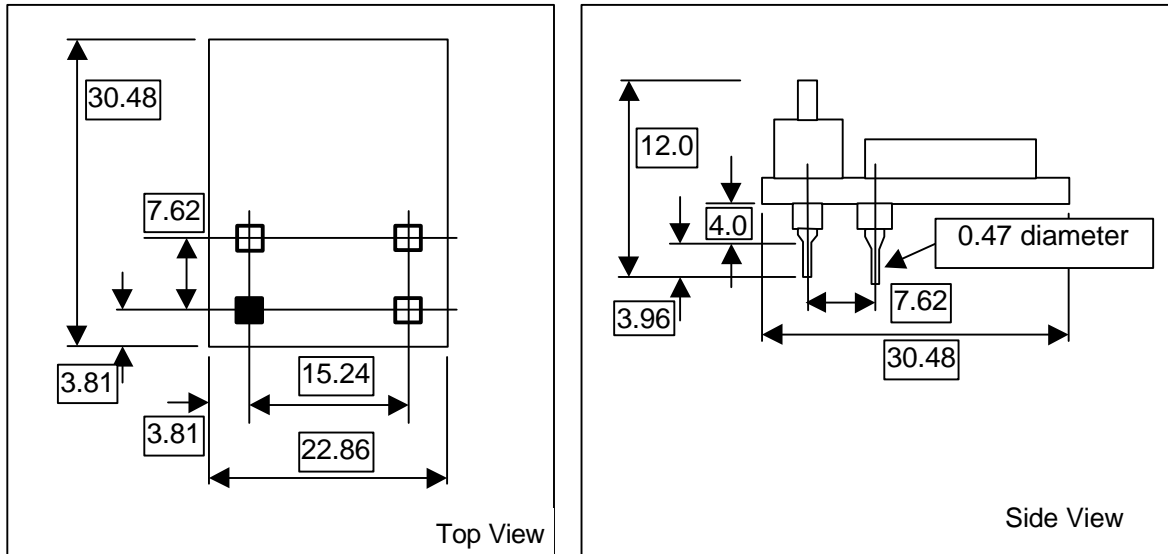
Note: \*4: In this case oscillation frequency is 100KHz lower than setting frequency.

Note: \*5: When frequency setting error occurs, clock oscillation will stop.



[Fig.2] VariClock (Top View)

9: Size figure (unit: mm)



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History

No	Version	Date	Contents
1	0.1	Dec/10/2002	Publish first draft version.
2	0.2	Dec/11/2002	Fixed maximum absolute power supply voltage specification.
3	1.0	Dec/17/2002	Change maximum setting frequency, add item [6]-[9], and released as initial Ver1.0.
4	1.1	Jan/29/2003	Changed minimum setting frequency.
5	2.0	Feb/11/2003	Added new line-up of VC100M14P specification.

[Inquiry]

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