

**H**

Thru-Hole

SMD

TTL / CMOS

1.8V

2.5V

3.3V

5.0V

Min.

20KHz

Max.

160MHz

## Applications

- CPU , Graphics , Multimedia A / V clocks
- Fast Ethernet and Gigabit Ethernet clocks
- MPEG / DVD / HDTV clocks
- NTSC / PAL encoder / decoder clocks
- Laser engine pixel / set - top clocks
- PLL / synthesizer clocks
- OC-3 , OC-12 , OC-48 and OC-192 clocks
- Fibre channel and ADSL clocks
- SONET / SDH / ATM clocks



RoHS Compliance

General Specifications [ TA = +25°C , V<sub>DD</sub>= at specified voltage , Load : 15 pF ]

Model		" H " series				
Input Voltage ( V <sub>DD</sub> )		+ 1.8V D.C.±5%	+ 2.5V D.C.±5%	+ 3.3 V D.C.±5%	+ 5.0V D.C.±10%	
		code is " 18 "	code is " 25 "	code is " 3 "	code is " 5 "	
Frequency Range		1.8 MHz ~ 60 MHz	0.3 MHz ~ 125 MHz	20KHz ~ 130 MHz	20 KHz ~ 160 MHz	
Output Wave Form		CMOS	CMOS	T T L / CMOS	T T L / CMOS	
Output Logic High " 1 "		T T L		2.4 V ( min. )	2.4 V ( min. )	
		CMOS	1.62 V ( min. )	2.25 V ( min. )	2.97 V ( min. )	4.5 V ( min. )
Output Logic Low " 0 "		T T L		0.4 V ( max. )	0.4 V ( max. )	
		CMOS	0.18 V ( max. )	0.25 V ( max. )	0.33 V ( max. )	0.5 V ( max. )
Frequency Stability <sup>(1)</sup> Codes		Frequency Stability over Operating Temperature Range	± 25 ppm	± 50 ppm	± 100 ppm	If non-standard , please enter the desired stability after the " C " or " I " For example : " C20 " ±20 ppm over -10°C to +70°C ; " I20 " ± 20 ppm over -40°C to +85°C
		Commercial ( -10°C to +70°C )	A	B	C	
		Industrial ( -40°C to +85°C )	D	E	F	
Output Load		T T L	2 ~ 10 (LS) T T L gates			
		CMOS	15 pF typical; 30 pF load for frequencies up to 70 MHz ; Contact Mercury for 50 pF load			
Rise Time ( Tr )		T T L	10 n sec.(max.) ; 3 n sec.(typical) . Measured between 0.4V <sub>DC</sub> ↔ 2.4V <sub>DC</sub> ( RL=390Ω ; CL = 15pF )			
Fall Time ( Tf )		CMOS	10 n sec.(max.) ; 3 n sec.(typical) . Measured between 10% to 90% wave form ( CL=15pF )			
Duty Cycle		T T L	40% (min.) , 60%(max.) Measured at +1.4V			
		CMOS	40% (min.) , 60%(max.) Measured at 50% of wave form [ 50% ± 5% is also available , add " S " at the end of the part number			
Start-Up Time (Ts)		10 m sec. (max.) ; 5 m sec. (typical)				
Current Consumption		10 ~ 45 mA ( frequency dependent )				
Storage Temperature		- 50°C to 100°C				
Aging		±5 ppm per year (max.)				
Tri-State Option.		Output is high impedance when " 0 " is applied to pin 1 . Disable time is 150 n sec. max. Add " T " in part number for Tri-State option				

Mercury [www.mercury-crystal.com](http://www.mercury-crystal.com)

# Clock Oscillators [ TTL / CMOS ]

Outline Dimensions ( Unit : mm ) , Suggested pad Layout for SMDs

[ Please refer to page 3 for product series selections . ]

<p style="text-align: center;">[ H22 ]</p> <p>MEC package dimensions: 2.5 ± 0.2 (width), 2.0 ± 0.2 (height), 0.675 (width to pin 1), 0.95 max (height).</p> <p>Pad layout dimensions: 1.625 (width), 1.225 (height), 1.0 (width between pads), 0.9 (height between pads).</p> <p>Pin connections: 1, 2, 3, 4.</p> <p>Pad Connections :          Pad 1 : No Connection [ 1.0V , 1.2V ]                    Tri - state [ 1.8V , 2.5V , 3.3V , 5.0V ]          Pad 2 : Ground          Pad 3 : Output          Pad 4 : Supply Voltage</p>	<p style="text-align: center;">[ H32 ]</p> <p>MEC package dimensions: 3.2 ± 0.2 (width), 2.5 ± 0.2 (height), 0.7 ± 0.1 (width to pin 1), 1.0 ± 0.1 (height).</p> <p>Pad layout dimensions: 2.2 (width), 1.75 (height), 1.2 (width between pads), 1.0 (height between pads).</p> <p>Pin connections: 1, 2, 3, 4.</p> <p>Pad Connections :          Pad 1 : No Connection [ 1.0V , 1.2V ]                    Tri - state [ 1.8V , 2.5V , 3.3V , 5.0V ]          Pad 2 : Ground          Pad 3 : Output          Pad 4 : Supply Voltage</p>						
<p style="text-align: center;">[ H_53 ]</p> <p>MEC package dimensions: 5.0 ± 0.1 (width), 3.2 ± 0.1 (height), 1.0 ± 0.1 (width to pin 1), 1.2 ± 0.1 (height).</p> <p>Land Pattern (reference) dimensions: 2.54 (width), 2.5 (height), 1.6 (width between pads), 1.5 (height between pads).</p> <p>Pin connections: 1, 2, 3, 4.</p> <p>Pad Connections :          Pad 1 : Enable / Disable          Pad 2 : Ground          Pad 3 : Output          Pad 4 : Supply Voltage</p>	<p style="text-align: center;">[ SWO ] , [ H_57 ]</p> <p>MEC package dimensions: 7.0 ± 0.2 (width), 5.0 ± 0.2 (height), 1.0 ± 0.1 (width to pin 1), 1.4 ± 0.1 (height).</p> <p>Land Pattern (reference) dimensions: 5.08 (width), 4.2 (height), 1.8 (width between pads), 2.0 (height between pads).</p> <p>Pin connections: 1, 2, 3, 4.</p> <p>Pad Connections :          Pad 1 : Enable / Disable          Pad 2 : Ground          Pad 3 : Output          Pad 4 : Supply Voltage</p>						
<p>[ H42 , HF42 , HW42 , HV42 ] , [ H44 , HF44 , HW44 , HV44 ]</p>							
<p>MEC package dimensions: 9.6 ± 0.2 (width), 11.4 ± 0.2 (height), 1.0 ± 0.1 (width to pin 1), 1.4 ± 0.1 (width to pin 4), 5.08 (width to pin 3), 0.6 (width to pin 2), H (height).</p> <p>Pin connections: 1, 2, 3, 4.</p> <p>Pad Connections :          Pad 1 : No connection          Pad 2 : Ground          Pad 3 : Output          Pad 4 : Supply voltage</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>MEC P/N</th> <th>H ( height )</th> </tr> </thead> <tbody> <tr> <td>H42</td> <td>2.5 ± 0.2</td> </tr> <tr> <td>H44</td> <td>4.7 ± 0.2</td> </tr> </tbody> </table>	MEC P/N	H ( height )	H42	2.5 ± 0.2	H44	4.7 ± 0.2	<p>MEC package dimensions: 7.0 ± 0.2 (width), 5.0 ± 0.2 (height), 1.2 ± 0.1 (width to pin 1), 1.4 ± 0.1 (width to pin 3), 2.6 ttp (height).</p> <p>Bottom View dimensions: 5.08 (width), 5.08 (height).</p> <p>Pin connections: 1, 2, 3, 4, 5, 6.</p> <p>Pad Connections :          pad 1 : Tri - state ( H_5761 ) or No connection          pad 2 : Tri - state ( H_5762 ) or No connection          pad 3 : Ground          pad 4 : Output          pad 5 : No connection          pad 6 : Supply Voltage</p>
MEC P/N	H ( height )						
H42	2.5 ± 0.2						
H44	4.7 ± 0.2						
<p style="text-align: center;">[ H14 , HF14 , HW14 , HV14 ]</p> <p>MEC package dimensions: 20.2 ± 0.2 (width), 12.8 ± 0.2 (height), 10.7 (width to pin 1), 10.7 (width to pin 7), 15.2 ± 0.1 (width to pin 8), 7.6 ± 0.1 (width to pin 14), 5.3 ± 0.1 (width to pin 14).</p> <p>Side view dimensions: 0.8 (width to pin 1), 5.08 max (height to pin 1), 6.3 max (height to pin 14), Ø 0.45 (stand-off diameter).</p> <p>Pin connections: 1, 7, 8, 14.</p> <p>4-Ø1.8 glass stand-off</p> <p>Pin Connections :          Pin 1 : (1) No connection                    (2) Output disabled when low          Pin 7 : Ground          Pin 8 : Output          Pin 14 : Supply voltage</p>	<p style="text-align: center;">[ H8 , HF8 , HW8 , HV8 ]</p> <p>MEC package dimensions: 12.8 ± 0.2 (width), 12.8 ± 0.2 (height), 10.8 (width to pin 1), 10.8 (width to pin 4), 7.6 ± 0.1 (width to pin 5), 7.6 ± 0.1 (width to pin 8).</p> <p>Side view dimensions: 0.8 (width to pin 1), 5.08 max (height to pin 1), 6.3 max (height to pin 8), Ø 0.45 (stand-off diameter).</p> <p>Pin connections: 1, 4, 5, 8.</p> <p>3-Ø1.6 glass stand-off</p> <p>Pin Connections :          Pin 1 : (1) No connection                    (2) Output disabled when low          Pin 4 : Ground          Pin 5 : Output          Pin 8 : Supply voltage</p>						

# Clock Oscillators [ T T L / CMOS ]

## Part Number Format and Examples

	[ 1 ]	[ 2 ]	-	[ 4 ]	[ 5 ]	-	[ 6 ]
	Supply Voltage	Holder Type		Frequency Stability	T		Center Frequency
Examples	(1)	18		B	T		25.000
	(2)	5		C30			10.000
	(2)	3	HDW5761		E		156.250

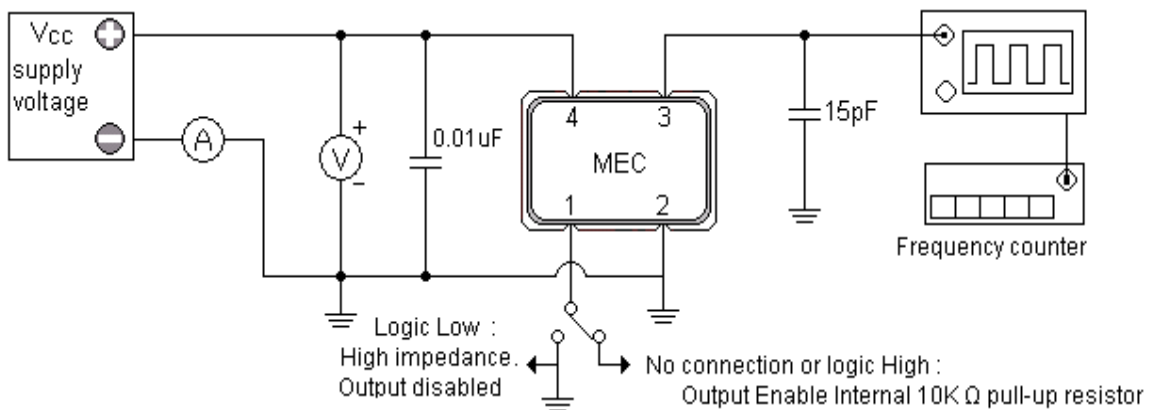
Ex (1) : 18SWO - BT - 25.000 [ 1.8V , SWO type , ±50ppm from -10°C to 70°C , Tri-state , 25.000MHz , ]

Ex (2) : 5H14G - C30 - 10.000 [ 5.0V , H14 type , RoHS , ±30ppm from -10°C to 70°C , 10.000MHz ]

Ex (3) : 3HDW621G - E - 156.250 [ 3.3V , ( HDW62 type , Tri-state on pin 1 ) , RoHS , ±50ppm from -40°C to 85°C , 156.250MHz ]

[1]	Supply voltage , " 1 " for +1.0V ; " 12 " for +1.2V ; " 18 " for +1.8V ; " 25 " for +2.5V ; " 28 " for +2.8V ; " 3 " for +3.3V ; " 5 " for +5.0V	
[2]	Holder Type	
[3]	Please add "G" after the " type code " for RoHS compliant ( Does not apply to SWO , H_53 , H_32 , H22 , H_576_ , H_534 series )	
[4]	-10°C ~ 70 °C	" A " ± 25ppm ; " B " ± 50ppm ; " C " ± 100ppm ; If non-standard please enter the desired stability after " C " , for example " C15 " : represents ±15ppm over -10 to +70°C
	-40°C ~ 85 °C	" D " ± 25ppm ; " E " ± 50ppm ; " F " ± 100ppm ; If non-standard please enter the desired stability after " I " , for example " I20 " : represents ±20ppm over -40 to +85°C
[5]	" T " for Tri-state , Leave this space blank if no connection on pin 1 or pad 1 .	
[6]	Frequency in MHz	
	Assigned by Mercury if customer spec , (1) : S ---- duty cycle ± 5% , ex : " - S " ; (2) : 50p ---- output load 50pF , ex : " - 50p "	

### T T L / HCMOS Square Wave Test Circuit



### T T L / HCMOS Output Wave Form

