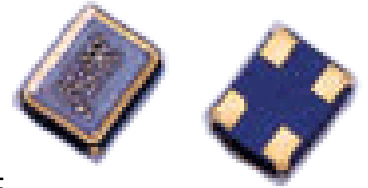# CLOCK OSCILLATORS
"H32" series   3.2x2.5x1.1 mm;   Wave Form: Square wave

Logic: HCMOS

MEC   MERCURY
Since 1973

- Suitable for light weight and compact consumer electronic devices
- Ideal for high density boards
- Mercury's smallest footprint clock oscillators.
- RoHS compliant and lead-free product

General Specifications $T_A = +25°C$, V_{DD} at specified voltage, $CL = 15$ pF

Input Voltage (V_{DD})		$V_{DD} = +3.3$ V D.C. $\pm 5\%$		$V_{DD} = +5.0$ V D.C. $\pm 5\%$
Mercury Model		**25H32**	**3H32**	**5H32**
Frequency Range		16.0 MHz ~44.0 MHz		
Output Logic		HCMOS		
Output Voltage HIGH "1"		90% V_{DD} min.		
Output Voltage LOW "0"		10% V_{DD} max.		
Rise Time / Fall Time ($0.1V_{DD} \leftrightarrow 0.9\ V_{DD}$)		10 n sec. max..		
Output Load		15 pF		
Current Consumption		5 mA max. at 20 MHz 9 mA max. at 40 MHz	9 mA max. at 16 MHz 12 mA max. at 40 MHz.	12 mA max. at 16 MHz 20 mA max. at 40 MHz
Frequency Stability[1]	**Commercial (0°C to +70°C) Temperature code is 'C'**	Stability code "**A**":± 25 ppm over 0°C to +70°C Stability code "**B**":± 50 ppm over 0°C to +70°C Stability code "**C**": ± 100 ppm over 0°C to +70°C") If non-standard please enter the desired stability after the "**C**". For example "C20" represents ± 20 ppm over 0 to +70°C		
	Wider Commercial Range: (-20°C to +70°C) T	Stability code "**G**":± 25 ppm over -20°C to +70°C Stability code "**H**":± 50 ppm over -20°C to +70°C Stability code "**J**":± 100 ppm over -20°C to +70°C		
Duty Cycle (symmetry)		Standard: 50%± 10%. Option: 50%± 5%. At 50% V_{DD}		
Start-up Time (Ts)		10 m sec. max.		
Phase Jitter RMS		10 p sec. typical		
Pin 1		If no connection or voltage of 2.2 V or greater is applied to pad No. 1.: The output is active If voltage of 0.8 V or lower is applied to pad 1: The output is high impedance.		
		Enable Disable Delay Time is 100 n sec. max..		
Aging		± 5 ppm first year max. At +25°C		
Packaging		178 mm reel; 8 mm tape; 1000 pcs per reel.		

[1]Inclusive of 25°C tolerance, operating temperature range, ± 10% input voltage variation, load change, aging, shock and vibration.

MERCURY   www.mercury-crystal.com
Taiwan: TEL (886)-2-2406-2779, FAX (886)-2-2496-0769, e-mail: sales-tw@mercury-crystal.com
U.S.A.: TEL (1)-909-466-0427,   FAX (1)-909-466-0762,   e-mail: sales-us@mercury-crystal.com

Environment Performance Specifications

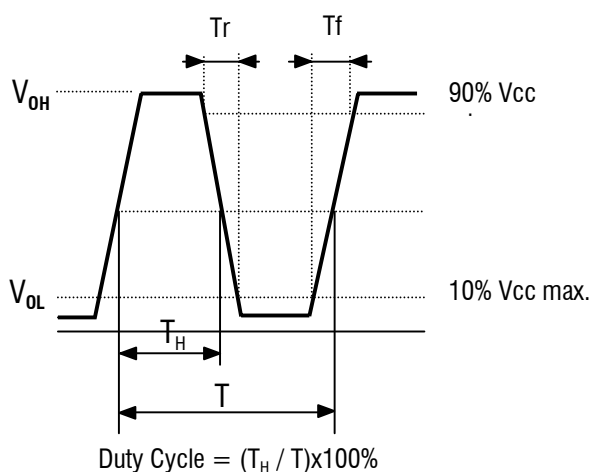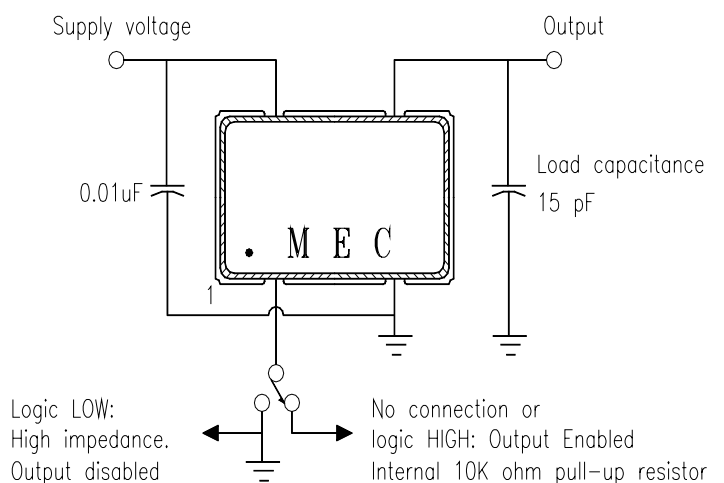| Green Requirement	RoHS compliant; Pb-free product
Storage temp. range	-50 to +125°C
Humidity	85% RH, 85°C, 48 hours
Hermetic seal	Lead rate 2×10^{-8} ATM-cm^3/sec max.
Solderability	MIL-STD-202F method 208E
Reflow	260°C for 10 sec.
Vibration	MIL-STD-202F method 204, 35G, 50 to 2000 Hz
Shock	MIL-STD-202F method 213B, test condi. E, 1000GG ½ sine wave
MIL-0-55310	Exceeds environmental and electrical spec. of equivalent MIL-0-55310

Part Number Format and Example:

Example: 3H32-AT-16.000-S
Explanation: H32 clock oscillator with pad 1 Tri-state, +3.3 V supply voltage, ±25 ppm frequency stability over 0 to +70°C, 16.000 MHz, duty cycle is 45% / 55%.

✍			✍	✍		✍	✍	
3	H32	—	A	T	—	16.000	S	
❶	❷		❸	❹		❺	❻	

❶: Voltage codes: "**25**" for +2.5 V; "**3**" for +3.3 V ; "**5**" for +5 V
❷: Product series   ❸: Frequency stability code: "**A**" ~ "**J**" or custom. See table above.
❹: "**T**": Tri-state option on pad 1 (Tri-state option is standard if not specified), leave blank if tri-state is not required ❺ Frequency in MHz ❻: "**S**" for 45% / 55% duty cycle option. Leave blank if duty cycle is 40% / 60% (standard).

H32 OUTPUT WAVEFORM:

Duty Cycle = $(T_H / T) \times 100\%$

H32 Test Circuit:

Logic LOW: High impedance. Output disabled

No connection or logic HIGH: Output Enabled Internal 10K ohm pull-up resistor
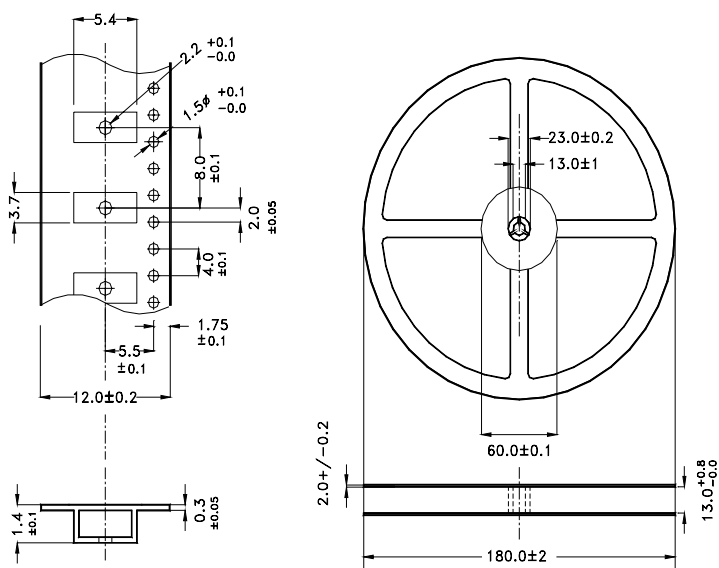
H32 Package Dimensions and Recommended Pad Layout: unit mm[inches]

H32 Tape and Reel Dimensions   unit: mm   **Reflow Soldering Condition**

1000 pcs per reel

5.4
2.2 +0.1 −0.0
1.5φ +0.1 −0.0
8.0 ±0.1
3.7
2.0 ±0.05
4.0 ±0.1
1.75 ±0.1
5.5 ±0.1
12.0±0.2
1.4 ±0.1
0.3 ±0.05

23.0±0.2
13.0±1
60.0±0.1
2.0+/−0.2
13.0 +0.8 −0.0
180.0±2

Temperature (°C)
Peak temp. 235°C
230
170
150
pre-heat
reflow
Time
60~90 sec.
30 sec. min.
10 sec. max.