

CLOCK OSCILLATORS

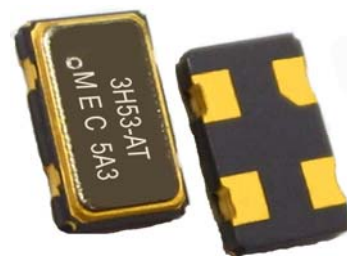
"H53" series 5x3.2 mm

Logic: HCMOS
Wave Form: Square wave



MERCURY
Since 1973

H53 (5x3.2x1.2 mm) is Mercury smallest footprint and lowest profile SMD clock oscillators. Its applications include PDAs, ATM, PCMCOA, networking, laptops, digital camera, wireless LAN and disk and tape drives. Output is TTL/CMOS compatible and Tri-state enable/disable is standard on pad 1.



General Specifications

$T_A = +25^{\circ}\text{C}$, V_{DD} at specified voltage, $CL = 15\text{ pF}$

Input Voltage (V_{DD})		$V_{DD} = +3.3\text{ V D.C. } \pm 10\%$	$V_{DD} = +5.0\text{ V D.C. } \pm 10\%$
Mercury Model		3H53	5H53
Frequency Range		2.5 MHz ~66.0 MHz	
Output Logic		HCMOS	
Output Voltage HIGH "1"		2.97 V min.	4.5 V min.
Output Voltage LOW "0"		0.33 V max.	0.5 V max.
Rise Time / Fall Time ($0.1V_{DD} \leftrightarrow 0.9V_{DD}$)		5 n sec. max.	7 n sec. max.
Output Load		15 pF	
Current Consumption		2.5 ~19.9 MHz: 8 mA max. 20.0 ~40.0 MHz: 15 mA max. 40.1 ~59.9 MHz: 22 mA max. 60.0 ~66.0 MHz: 25 mA max.	2.5 ~19.9 MHz: 15 mA max. 20.0 ~40.0 MHz: 25 mA max. 40.1 ~59.9 MHz: 40 mA max. 60.0 ~66.0 MHz: 45 mA max.
Frequency Stability ⁽¹⁾	Commercial (0°C to $+70^{\circ}\text{C}$) Temperature code is 'C'	Stability code "A": ± 25 ppm over 0°C to $+70^{\circ}\text{C}$ Stability code "B": ± 50 ppm over 0°C to $+70^{\circ}\text{C}$ Stability code "C": ± 100 ppm over 0°C to $+70^{\circ}\text{C}$) If non-standard please enter the desired stability after the "C". For example "C20" represents ± 20 ppm over 0 to $+70^{\circ}\text{C}$	
	Industrial (-40°C to $+85^{\circ}\text{C}$) Temperature code is 'I'	Stability code "D": ± 25 ppm over -40°C to $+85^{\circ}\text{C}$ Stability code "E": ± 50 ppm over -40°C to $+85^{\circ}\text{C}$ Stability code "F": ± 100 ppm over -40°C to $+85^{\circ}\text{C}$ If non-standard please enter the desired stability after the "I". For example "I20" represents ± 20 ppm over -40 to $+85^{\circ}\text{C}$	
Duty Cycle (symmetry)		Standard: $50\% \pm 10\%$. Option: $50 \pm 5\%$	
Start-up Time (T_s)		2.5 ~ 32 MHz: 5 m sec. max. 32+ MHz: 10 m sec. max.	
Phase Jitter RMS		10 p sec. typical	
Pin 1		If no connection or voltage of 2.2V or greater is applied to pad No. 1.: The output is active If voltage of 0.8V or lower is applied to pad 1: The output is high impedance Internal 10K ohms pull-up resistor Disable time is 100 n sec. max.; Enable time is 100 m sec. max.	
Storage Temperature		-50°C to $+100^{\circ}\text{C}$	
Aging		± 5 ppm per year max.	

⁽¹⁾Inclusive of 25°C tolerance, operating temperature range, $\pm 10\%$ input voltage variation, load change, aging, shock and vibration.

MERCURY www.mercury-crystal.com

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Environment Performance Specifications

Green Requirement	RoHS compliant; Pb-free product
Storage temp. range	-55 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
Packaging	12 mm tape and reel; 1000 pcs /reel

Part Number Format and Example:

Example: 3H53-AT-13.000-S

Explanation: H53 clock oscillator with pad 1 Tri-state, +3.3 V supply voltage, ± 25 ppm frequency stability over 0 to +70°C, 13.000 MHz, duty cycle is 45% / 55%.

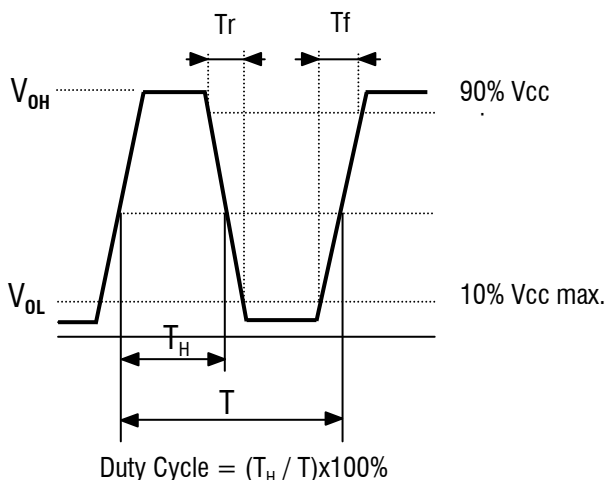
3	H53	—	A	T	—	13.000	S	
①	②		③	④		⑤	⑥	

①: Voltage codes: "3" for +3.3 V; "5" for +5.0 V

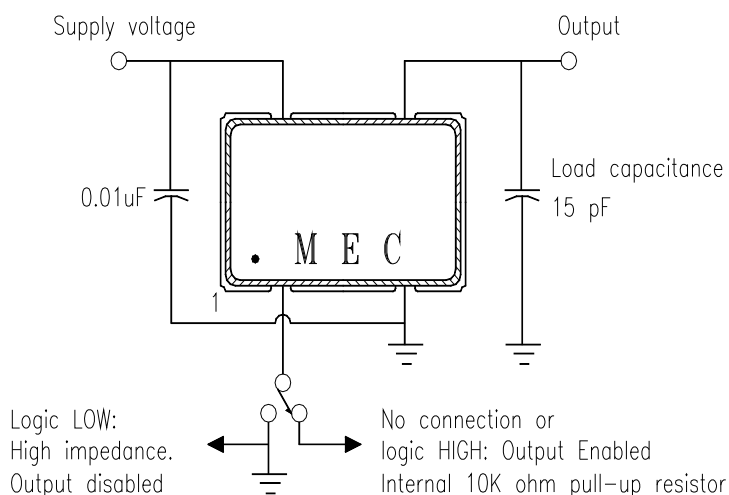
②: Product series ③: Frequency stability code: "A" ~ "F" or custom. See table above.

④: "T": Tri-state option on pad 1 (Tri-state option is standard if not specified), leave blank if tri-state is not required ⑤ Frequency in MHz ⑥: "S" as prefix for 45% / 55% duty cycle option. Leave blank if duty cycle is 40% / 60% (standard).

H53 OUTPUT WAVEFORM:

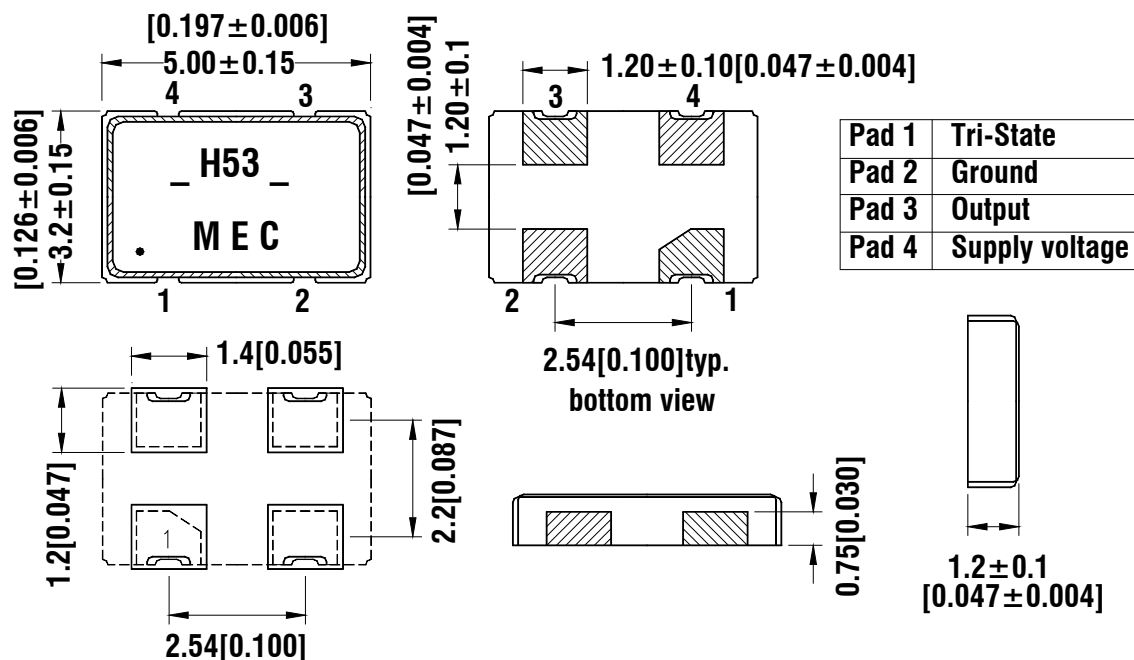


H53 Test Circuit:



H53 Package Dimensions and Recommended Pad Layout:

unit mm[inches]



Chamfered pad is pad No. 1. Count counter-clockwise when looking at top view.
 Count clockwise when looking at bottom view.

H53 Tape and Reel Dimensions

unit: mm

Reflow Soldering Condition

1000 pcs per reel

