Crystal Oscillators [32.768 KHz , 10.0 ~ 100.0 KHz]

CMOS output

HA _ _

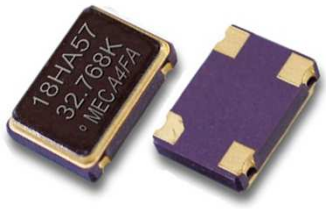
32.768 KHz

uA Current Consumption

SMD | LVCMOS | 1.8 V | 2.5 V | 3.3 V | Min. 10 KHz | Max. 100 KHz

Features

- Features an AT-Cut crystal for high frequency stability, while providing a low micro Amp (μA) current consumption that would normally only be available from an X-Cut tuning fork crystal
- 32.768 KHz is popular for Real Time Clocks and other timing applications
- For even tighter frequency stability (± 5 ppm over -40 to 85 °C) and lower current consumption (1.2 uA at 3.3V) , please contact Mercury



RoHS Compliance

General specifications of all available packages , at Ta=+25°C , CL=15pF

Model [Output Logic]	" HA " series [LVCMOS]		
Type	**HA32**	**HA53**	**HA57**
Dimemsions	3.2 * 2.5 * 1.0 mm	5.0 * 3.2 * 1.2 mm	7.0 * 5.0 * 1.4 mm
Available Frequency Range	32.768 KHz , 14.0 ~ 100.0 KHz	32.768 KHz , 12.0 ~ 100.0 KHz	32.768 KHz , 10.0 ~ 100.0 KHz

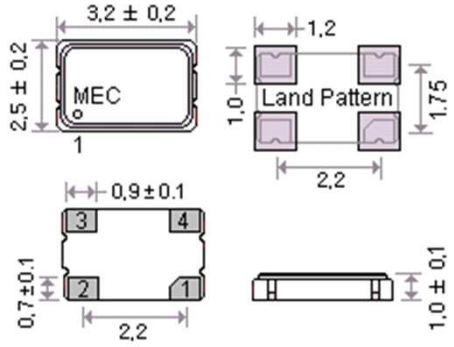
Supply Voltage V_{DD}	Current Consumption	Output Logic " High " , " 1 "	Output Logic " Low " , " 0 "	Rise Time (Tr) / Fall Time (Tf)
1.8 V_{DD} ± 10% Voltage code is " 18 "	65 uA (typical) 80 uA (max.)	1.62 V (min.)	0.18 V (max.)	5.0 ns (typical) ; 10 ns (max.) 10 % ⟷ 90 % of V_{DD} (CL = 15 pF)
+2.5 V_{DD} ± 10% Voltage code is " 25 "	70 uA (typical) 90 uA (max.)	2.25 V (min.)	0.25 V (max.)	4.0 ns (typical) ; 10 ns (max.) 10 % ⟷ 90 % of V_{DD} (CL = 15 pF)
+3.3 V_{DD} ± 10% Voltage code is " 3 "	75 uA (typical) 100 uA (max.)	2.97 V (min.)	0.33 V (max.)	3.0 ns (typical) ; 12 ns (max.) 10 % ⟷ 90 % of V_{DD} (CL = 15 pF)

Frequency Stability 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 ; " I30 " ± 30 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*	

Supply Voltage vs Freq. Sensitivity	± 1.0 ppm (max.)
Load	15 pF (CMOS)
Start-up Time	0.8 m sec. (typical) ; 5.0 m sec. (max.)
Duty Cycle	50% ± 5% (measured at 50% V_{DD})
Tri-state Function on pad No. 1	High Enable
Enable / Disable Time	Enable : 1 m sec. (max.) ; Disable : 0.1 u sec. (max.)
Storage Temperature	-55°C to + 150°C
Aging at Ta=+25ºC	± 3 ppm max. first year ; ± 2 ppm max. per year thereafter

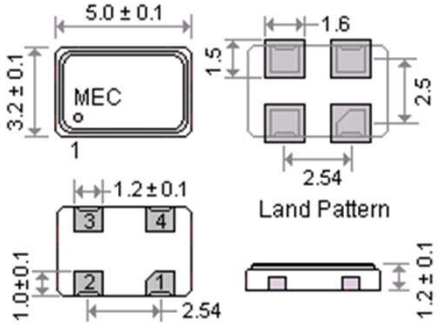
Outline Dimensions (Unit : mm) , Suggested pad Layout for SMDs

[HA32]



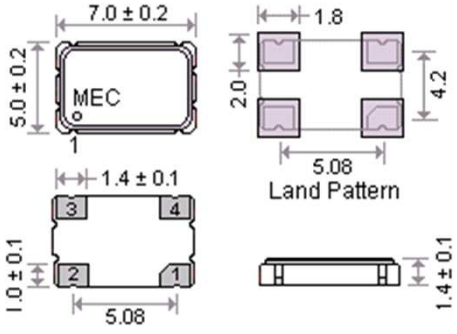
Pin connections :
pin 1 : Enable / Disable pin 2 : Ground
pin 3 : Output pin 4 : Supply Voltage

[HA53]



Pin connections :
pin 1 : Enable / Disable pin 2 : Ground
pin 3 : Output pin 4 : Supply Voltage

[HA57]



Pin connections :
pin 1 : Enable / Disable pin 2 : Ground
pin 3 : Output pin 4 : Supply Voltage

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