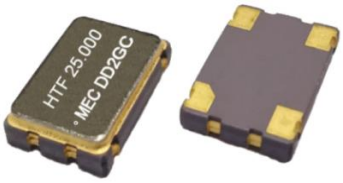
Crystal Oscillators [Programmable Quick Turn]

HTF _ _	Quick - Turn Clock Oscillators	SMD	CMOS	1.8 V	2.5 V	3.3 V	Min. 1.0 MHz	Max. 200 MHz

Features

0.9 ps Phase Jitter (typical)

- Short lead time. From 1 day to 1 week
- Low jitter , RMS jitter is 0.9 ps typical
- Custom frequencies can easily be configured
- 1.8V, 2.5V or 3.3V supply voltages.



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

Model [Output Logic]	" HTF " series [CMOS]				
Type	**HTF21**	**HTF22**	**HTF32**	**HTF53**	**HTF57**
Dimensions	2.0 * 1.6 * 0.8 mm	2.5 * 2.0 * 0.8 mm	3.2 * 2.5 * 1.0 mm	5.0 * 3.2 * 1.2 mm	7.0 * 5.0 * 1.3 mm

Supply Voltage (V_{DD})	+1.8 V ± 5%	+2.5 V ± 10%	+3.3 V ± 10%
Available Frequency Range	1.0 ~ 125.0 MHz	1.0 ~ 200.0 MHz	1.0 ~ 200.0 MHz
Current Consumption	20 mA (typ.) 30 mA (max.)	28 mA (typ.) 35 mA (max.)	30 mA (typ.) 40 mA (max.)
Rise Time (Tr) / Fall Time (Tf) 10% ⟷ 90% Waveform	2.0 ns (typ.) 5.0 ns (max.)	1.4 ns (typ.) 3.0 ns (max.)	1.1 ns (typ.) 3.0 ns (max.)

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 " F " represents. For example : " C20 " ± 20 ppm over -20°C to +70°C ; " F30 " ± 30 ppm over -40°C to +85°C
	Commercial (*-20°C to +70°C*)	*A*	*B*	*C*	
	Industrial (*-40°C to +85°C*)	*D*	*E*	*F*	

Output Logic " High " , " 1 "	V_{DD} - 0.4V (min.)							
Output Logic " Low " , " 0 "	0.4V (max.)							
Duty Cycle	1 MHz to 150 MHz : 50% ± 5% 151 MHz to 200 MHz : 50% ± 10%							
Output Load	15 pF							
Start-up Time	4.5 msec (typ.) ; 10 msec (max.)							
Storage Temperature	-55°C to +150°C							
Aging at Ta=+25ºC	± 3 ppm (max.) first year ; ± 2 ppm (max.) per year thereafter							
SSB Phase Noise	Offset	10 Hz	100 Hz	1 kHz	10 kHz	100 kHz	1 MHz	10 MHz
125.000 MHz @ 3.3 V	dBc/Hz	-61	-89	-110	-119	-119	-142	-149
RMS Jitter (12kHz ~ 20 MHz)	0.9 psec (typ.)							

Output Enable / Disable Function		
Output Enable / Disable		70% of V_{DD} (min.) to Enable.
		30% of V_{DD} (max.) to Disable.
Pad 1 Options	Power Down Mode (code : PD)	Disable Current : 300 uA (typ.) ; 400 uA (max.)
		Output Enable Time : 4.5 msec. (typ.) ; 10 msec. (max.)
	OE Mode. High Enable (code : OE)	Disable Current : 18 mA (typ.) ; 22 mA (max.)
		Output Enable Time : 10 nsec. (max.)

Crystal Oscillators [Programmable Quick Turn]

HTF _ _	Quick - Turn Clock Oscillators	SMD	CMOS	1.8 V	2.5 V	3.3 V	Min. 1.0 MHz	Max. 200 MHz

Part Number Format and Examples

0.9 ps Phase Jitter (typical)

	[1] Supply Voltage	[2] Holder Type	-	[3] Frequency Stability	[4] T	-	[5] Center Frequency	-	[6] Disable Options
Examples (1)	18	HTF57	-	B	T	-	25.000	-	PD
(2)	25	HTF53	-	C30	T	-	100.000	-	OE
(3)	3	HTF32	-	E	T	-	200.000	-	PD

Ex (1) : 18HTF57 - BT - 25.000 - PD [1.8V , HTF57 type , ±50ppm @ -20°C to +70°C , E/D , 25.000MHz , Power Down Mode]

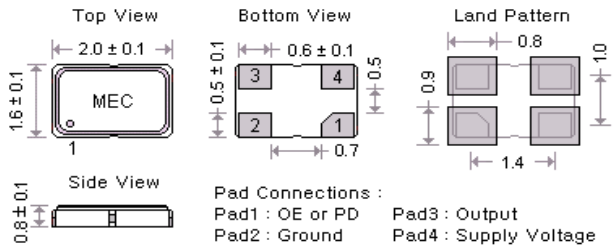
Ex (2) : 25HTF53 - C30T - 100.000 - OE [2.5V , HTF53 type , ±30ppm @ -20°C to +70°C , E/D , 100.000MHz , OE Mode]

Ex (3) : 3HTF32 - ET - 200.000 - PD [3.3V , HTF32 type , ±50ppm @ -40°C to +85°C , E/D , 200.000MHz , Power Down Mode]

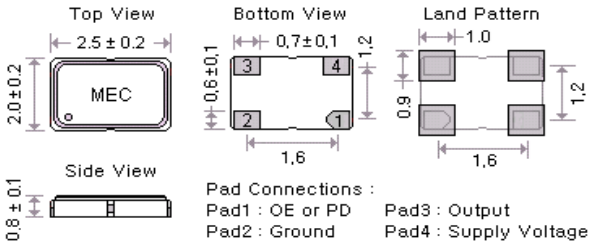
[1]	Supply voltage , " 18 " for +1.8V ; " 25 " for +2.5V ; " 3 " for +3.3V	
[2]	Holder Type	
[3]	-20°C ~ 70°C	" A " ± 25ppm ; " B " ± 50ppm ; " C " ± 100ppm ;
		If non-standard please enter the desired stability after " C " ; example " C15 " : represents ±15ppm over -20 to +70°C
	-40°C ~ 85°C	" D " ± 25ppm ; " E " ± 50ppm ; " F " ± 100ppm ;
		If non-standard please enter the desired stability after " F " ; example " F30 " : represents ± 30ppm over -40 to +85°C
[4]	" T " for Output Enable/Disable Function	
[5]	Frequency in MHz	
[6]	Pad 1 Options , " PD " Power Down Mode ; " OE " OE Mode. High Enable	

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

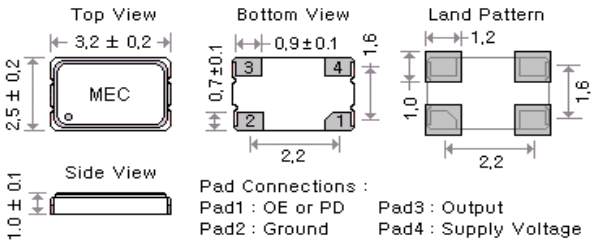
HTF21



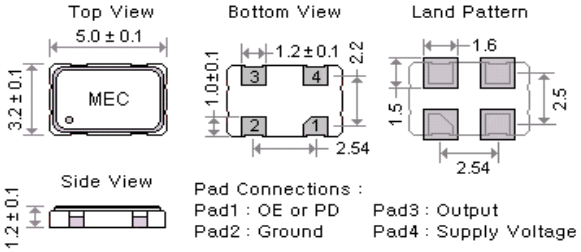
HTF22



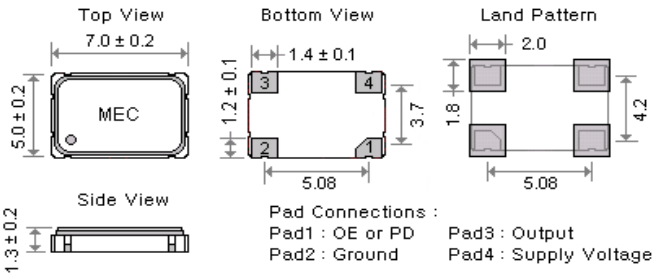
HTF32



HTF53

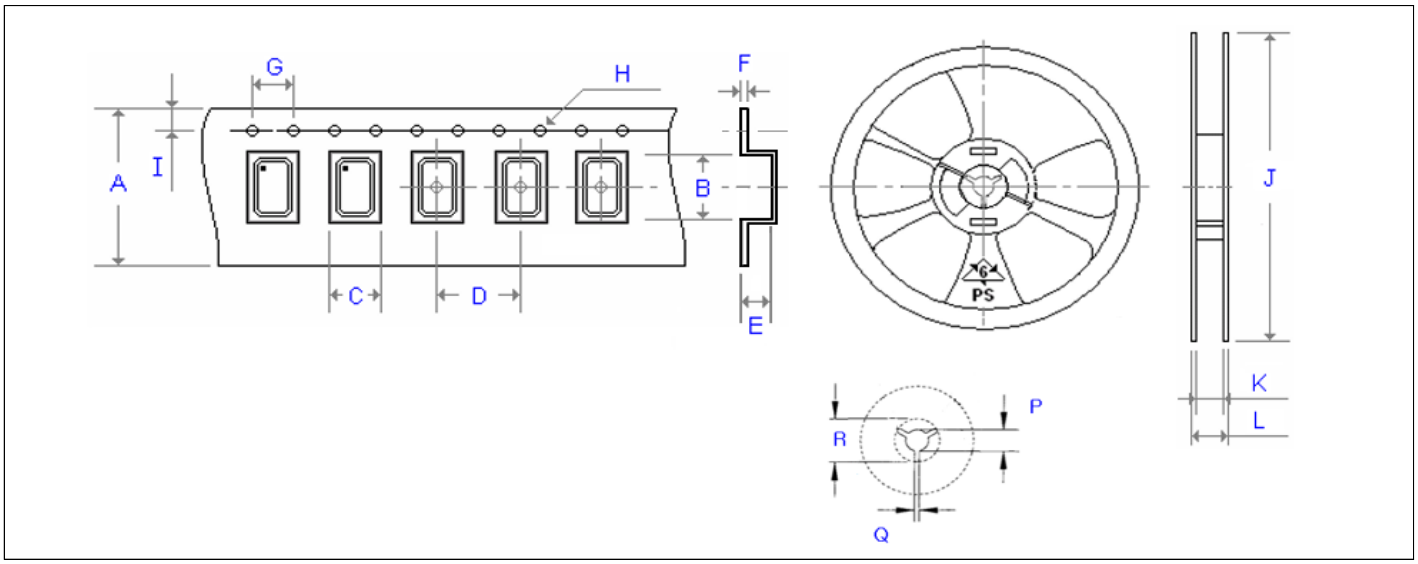


HTF57



Emboss Taping and Reel Specifications

[Crystal Oscillator Units]



Carrier Type Dimensions (unit : mm) ±0.3mm

	A	B	C	D	E	F	G	H	I	pcs / reel
H21	8.00	2.30	1.90	4.00	0.90	0.25	4.00	Ø 1.50	1.75	3000
H_22	8.00	2.80	2.25	4.00	1.10	0.30	4.00	Ø 1.50	1.75	3000
H_32	8.00	3.40	2.70	4.00	1.40	0.25	4.00	Ø 1.50	1.75	3000
H_53	12.00	5.30	3.60	8.00	1.40	0.30	4.00	Ø 1.50	1.75	1000
H_57	16.00	7.30	5.30	8.00	1.90	0.30	4.00	Ø 1.50	1.75	1000
SWO	16.00	7.20	5.40	8.00	1.80	0.30	4.00	Ø 1.50	1.75	1000
H _ 216	8.00	2.30	1.90	4.00	0.90	0.25	4.00	Ø 1.50	1.75	3000
H _ 226	8.00	2.80	2.25	4.00	1.10	0.30	4.00	Ø 1.50	1.75	3000
H _ 326	8.00	3.40	2.70	4.00	1.40	0.25	4.00	Ø 1.50	1.75	3000
H _ 536	12.00	5.30	3.60	8.00	1.40	0.30	4.00	Ø 1.50	1.75	1000
H _ 576	16.00	7.30	5.30	8.00	1.90	0.30	4.00	Ø 1.50	1.75	1000
H _ 328	8.00	3.40	2.70	4.00	1.40	0.25	4.00	Ø 1.50	1.75	3000
H _ 538	12.00	5.40	3.60	8.00	1.70	0.30	4.00	Ø 1.50	1.75	1000
H _ 578	16.00	7.30	5.30	8.00	1.90	0.30	4.00	Ø 1.50	1.75	1000
H_43	24.00	11.80	10.00	16.00	5.00	0.30	4.00	Ø 1.50	1.75	500

Reel Dimensions (unit : mm) +2.0 / -0.0mm

	J	K	L	P	Q	R	pcs / reel
H21	180.00	9.00	12.00	13.20	2.10	-	3000
H_22	180.00	9.00	12.00	13.20	2.10	-	3000
H_32	180.00	9.00	12.00	13.20	2.10	-	3000
H_53	180.00	13.00	16.00	13.20	2.50	-	1000
H_57	180.00	17.20	19.30	13.30	2.20	22.00	1000
SWO	180.00	17.20	19.30	13.30	2.20	22.00	1000
H _ 216	178.00	8.40	11.40	13.30	2.50	20.50	3000
H _ 226	180.00	8.40	11.40	13.20	2.10	-	3000
H _ 326	180.00	9.00	12.00	13.20	2.10	-	3000
H _ 536	180.00	13.00	16.00	13.20	2.50	-	1000
H _ 576	180.00	17.20	19.30	13.30	2.20	22.00	1000
H _ 328	180.00	8.00	12.00	13.20	2.10	-	3000
H _ 538	180.00	13.00	16.00	13.20	2.50	-	1000
H _ 578	180.00	17.20	19.30	13.30	2.20	22.00	1000
H_43	330.00	24.50	29.10	13.00	2.20	17.30	500