

Crystal Oscillators [Programmable Quick Turn]

HTF --

**Quick - Turn
Clock Oscillators**

SMD

CMOS

1.8 V

2.5 V

3.3 V

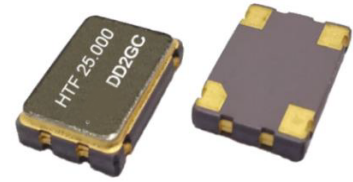
**Min.
1.0 MHz**

**Max.
200 MHz**

Features

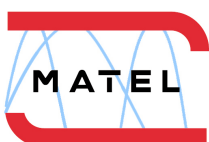
- Short lead time. From 1 day to 1 week
- Low jitter , RMS jitter is 0.9 ps typical
- Custom frequencies can easily be configured
- 1.8V, 2.5V or 3.3V supply voltages.

0.9 ps Phase Jitter (typical)



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.)				28 mA (typ.)				30 mA (typ.)	
	30 mA (max.)				35 mA (max.)				40 mA (max.)	
Rise Time (Tr) / Fall Time (Tf)	2.0 ns (typ.)				1.4 ns (typ.)				1.1 ns (typ.)	
	10% ↔ 90% Waveform		5.0 ns (max.)		3.0 ns (max.)				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=+25°C	± 3 ppm (max.) first year ; ± 2 ppm (max.) per year thereafter									
SSB Phase Noise	Offset dBc/Hz	10 Hz	100 Hz	1 kHz	10 kHz	100 kHz	1 MHz	10 MHz		
		125.000 MHz @ 3.3 V	-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.)								



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**Min.
1.0 MHz**

**Max.
200 MHz**

Part Number Format and Examples

0.9 ps Phase Jitter (typical)

	[1]	[2]	-	[3]	[4]	-	[5]	-	[6]		
	Supply Voltage	Holder Type	-	Frequency Stability	T	-	Center Frequency	-	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

<p style="text-align: center;">HTF21</p>	<p style="text-align: center;">HTF22</p>
<p style="text-align: center;">HTF32</p>	<p style="text-align: center;">HTF53</p>
<p style="text-align: center;">HTF57</p>	

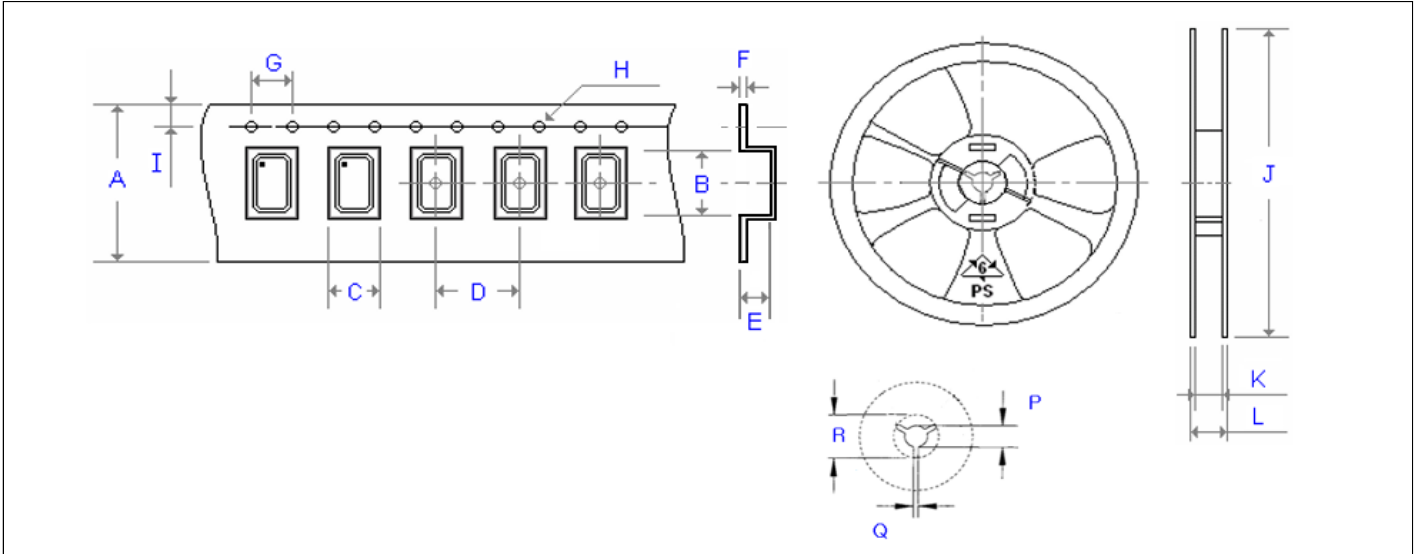


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Emboss Taping and Reel Specifications

[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



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