

# Crystal Oscillators [ Programmable Quick Turn ]



**HTF** \_ \_

**SMD**

**CMOS**

**1.8 V**

**2.5 V**

**3.3 V**

**Min.**

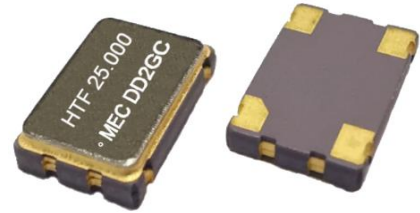
**1.0 MHz**

**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.



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 <sub>DD</sub> )		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 "I" represents .			
	Commercial ( -10°C to +70°C )		A	B	C	For example :			
	Industrial ( -40°C to +85°C )		D	E	F	"C20" ± 20 ppm over -10°C to +70°C ; "I30" ± 30 ppm over -40°C to +85°C			
Output Logic " High " , " 1 "		V <sub>DD</sub> - 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	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 <sub>DD</sub> ( min. ) to Enable.							
		30% of V <sub>DD</sub> ( 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 ]



<b>HTF</b> _ _ _	<b>SMD</b>	<b>CMOS</b>	<b>1.8 V</b>	<b>2.5 V</b>	<b>3.3 V</b>	<b>Min.</b> 1.0 MHz	<b>Max.</b> 200 MHz
------------------	------------	-------------	--------------	--------------	--------------	------------------------	------------------------

## Part Number Format and Examples

	[ 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 @ -10°C to +70°C , E/D , 25.000MHz , Power Down Mode ]  
 Ex (2) : 25HTF53 - C30T - 100.000 - OE [ 2.5V , HTF53 type , ±30ppm @ -10°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 ]

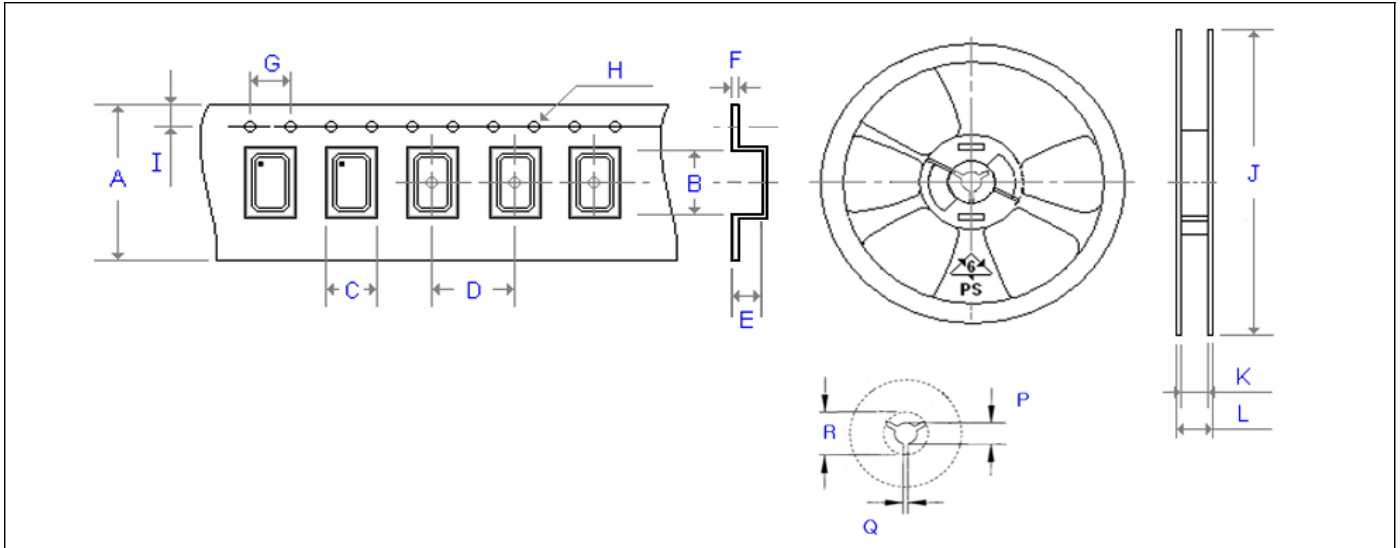
[1]	Supply voltage , " 18 " for +1.8V ; " 25 " for +2.5V ; " 3 " for +3.3V
[2]	Holder Type
[3]	-10°C ~ 70 °C " A " ± 25ppm ; " B " ± 50ppm ; " C " ± 100ppm ; If non-standard please enter the desired stability after " C " , example " C15 " : represents ±15ppm over -10 to +70°C
	-40°C ~ 85 °C " D " ± 25ppm ; " E " ± 50ppm ; " F " ± 100ppm ; If non-standard please enter the desired stability after " I " , example " I30 " : 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;"><b>HTF21</b></p>	<p style="text-align: center;"><b>HTF22</b></p>
<p style="text-align: center;"><b>HTF32</b></p>	<p style="text-align: center;"><b>HTF53</b></p>
<p style="text-align: center;"><b>HTF57</b></p>	

# 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	∅ 1.50	1.75	3000
H_22	8.00	2.80	2.25	4.00	1.10	0.30	4.00	∅ 1.50	1.75	3000
H_32	8.00	3.40	2.70	4.00	1.40	0.25	4.00	∅ 1.50	1.75	3000
H_53	12.00	5.30	3.60	8.00	1.40	0.30	4.00	∅ 1.50	1.75	1000
H_57	16.00	7.30	5.30	8.00	1.90	0.32	4.00	∅ 1.50	1.75	1000
SWO	16.00	7.20	5.40	8.00	1.80	0.32	4.00	∅ 1.50	1.75	1000
H_226	8.00	2.80	2.25	4.00	1.10	0.30	4.00	∅ 1.50	1.75	3000
H_326	8.00	3.40	2.70	4.00	1.40	0.25	4.00	∅ 1.50	1.75	3000
H_536	12.00	5.30	3.60	8.00	1.40	0.30	4.00	∅ 1.50	1.75	1000
H_576	16.00	7.30	5.30	8.00	1.90	0.32	4.00	∅ 1.50	1.75	1000
H_328	8.00	3.40	2.70	4.00	1.40	0.25	4.00	∅ 1.50	1.75	3000
H_538	12.00	5.40	3.60	8.00	1.70	0.30	4.00	∅ 1.50	1.75	1000
H_578	16.00	7.30	5.30	8.00	1.90	0.32	4.00	∅ 1.50	1.75	1000
H_43	24.00	11.80	10.00	16.00	5.00	0.30	4.00	∅ 1.50	1.75	500

Reel Dimensions ( unit : mm ) ±2mm

	J	K	L	P	Q	R	pcs / reel
H21	180.00	9.00	12.00	13.00	2.50	20.20	3000
H_22	180.00	8.40	11.40	13.00	2.50	20.20	3000
H_32	180.00	9.00	12.00	13.00	2.50	20.20	3000
H_53	180.00	13.00	16.00	13.00	2.50	20.20	1000
H_57	180.00	17.20	19.30	13.00	2.50	20.20	1000
SWO	180.00	17.20	19.30	13.00	2.50	20.20	1000
H_226	180.00	8.40	11.40	13.00	2.50	20.20	3000
H_326	180.00	9.00	12.00	13.00	2.50	20.20	3000
H_536	180.00	13.00	16.00	13.00	2.50	20.20	1000
H_576	180.00	17.20	19.30	13.00	2.50	20.20	1000
H_328	180.00	8.00	12.00	13.00	2.50	20.20	3000
H_538	180.00	13.00	16.00	13.00	2.50	20.20	1000
H_578	180.00	17.20	19.30	13.00	2.50	20.20	1000
H_43	330.00	24.50	29.10	13.00	2.50	20.20	500