

High Frequency Ultra-low Jitter Crystal Oscillators [Quick - turn Clock Oscillators , 150 ~ 2,100 MHz]

H_JF

CMOS / Differential

150 fsec typical Phase Jitter

SMD

1.8 V

2.5 V

3.3 V

Min.
150 MHz

Max.
2,100 MHz

Features

H_JF series (8 pads), a member of Mercury QuikXO™ quick-turn clock oscillators, features CMOS, PECL, LVDS, CML or HCSL output logics and Ultra-low RMS phase jitter (157 fsec for 250 MHz at 3.3V, 12 KHz to 20 MHz). Operating voltages are 1.8V, 2.5V or 3.3V. Applications include networking wireless infrastructure, high resolution audio and video, high-speed data converters and storage area networks. Differential outputs (LVPECL, LVDS, HCSL, CML) up to 2.1 GHz is also available. Short lead time, for both standard and custom frequencies.



General specifications , at Ta=+25°C

Model	HTJF	HPJF	HDJF	HCJF	HQJF
Output Logic	CMOS	PECL	LVDS	HCSL	CML
Supply Voltage	+ 1.8 V _{DD} ± 5%	--	+ 1.8 V _{DD} ± 5% (*)	+ 1.8 V _{DD} ± 5%	+ 1.8 V _{DD} ± 5%
	+ 2.5 V _{DD} ± 10%	+ 2.5 V _{DD} ± 10%	+ 2.5 V _{DD} ± 10%	+ 2.5 V _{DD} ± 10%	+ 2.5 V _{DD} ± 10%
	+ 3.3 V _{DD} ± 10%	+ 3.3 V _{DD} ± 10%	+ 3.3 V _{DD} ± 10%	+ 3.3 V _{DD} ± 10%	+ 3.3 V _{DD} ± 10%
Available Frequency Range	150 ~ 250 MHz	150 ~ 2,100 MHz	150 ~ 2,100 MHz	150 ~ 700 MHz	150 ~ 2,100 MHz
Load	15pF	50 Ω into V _{DD} - 2V or Thevenin equivalent	100 Ω between OUT - OUTN	50 Ω to GND	50 Ω to V _{DD}
Output Logic " High " , " 1 "	90% V _{DD} min.	V _{DD} - 1.165 V min. V _{DD} - 0.8 V max.	V _{DD} : 1.4V Typical V _{DD} : 1.6 V max.	V _{DD} : 0.66V min V _{DD} : 1.15 V max.	V _{DD} - 0.085V min. V _{DD} = max.
Output Logic " Low " , " 0 "	10% V _{DD} max.	V _{DD} - 2.0 V min. V _{DD} - 1.55 V max.	V _{DD} : 1.1 V Typical V _{DD} : 0.9 V min.	V _{DD} : 0.0V min. V _{DD} : 0.15V max.	V _{DD} - 0.6V min. V _{DD} - 0.32V max.
Output Voltage Swing	---	595 mV min. 930 mV max.	250 mV min. 450 mV max.	620 mV min. 780 mV max.	200 mV min. 600 mV typ.
Current Consumption (V _{DD} = + 3.3 V)	75 mA typ. 90 mA max.	100 mA typ. 120 mA max.	75 mA typ. 90 mA max.	94 mA typ. 115 mA max.	70 mA typ. 85 mA max.
Current with Output Disabled	62 mA typical	99 mA typical	74 mA typical	93 mA typical	69 mA typical
Rise Time / Fall Time	5.0 nS max. (10% to 90% Waveform)	0.4 nS max. (20% to 80% Waveform)	0.4 nS max. (20% to 80% Waveform)	0.4 nS max. (20% to 80% Waveform)	0.4 nS max. (20% to 80% Waveform)
RMS Phase Jitter (typical) (12 KHz to 20 MHz)	156.250 MHz : 159 fs ; 491.520 MHz : 155 fs ; 644.530 MHz : 151 fs ; 1,480 MHz : 147 fs ; 2,000 MHz : 163 fs				
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 . For example : " C20 " ± 20 ppm over -10°C to +70°C ; " I40 " ± 40 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	
Duty Cycle	50 % ± 5%				
Start-up Time	5 m sec (typ.) ; 10 m sec. (max.)				
Aging at Ta = +25°C	+ 3 ppm max. for first year at 25°C ; ± 2 ppm max. per year thereafter				
Storage Temperature	-55°C to + 150°C				
Output Enable Function					
Output Enable / Disable Function	80% of V _{DD} (min.) to enable output.				
	20% of V _{DD} (max.) to disable output.				
Output Enable / Disable Time	2.5 ms max. / 10 us max.				

Mercury www.mercury-crystal.com

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Part Number Format and Example

Example : 3HPJF5781-E-644.530

3	H	P	JF578	1	-	E	-	644.530
Voltage Code : "3" for 3.3V "25" for 2.5V "18" for 1.8V	"H" : for Crystal Oscillators	Output Logic Code "T" : COMS "P" : LVPECL "D" : LVDS "C" : HCSL "Q" : CML	"JF" : Product Series "578" : Package code 7.0 x 5.0 _ 8 Pad "538" : Package code 5.0 x 3.2 _ 8 Pad	OE function "1" : OE on Pad1 Note1		Freq. Stability Code "E" : ±50 ppm over -40 to +85°C Other frequency stabilities are available.		Frequency (MHz)

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

H_JF538	H_JF578
Pad 1 : OE Pad 2 : NC Pad 3 : Ground Pad 4 : Output Pad 5 : Complementary Output Pad 6 : Supply Voltage Pad 7 : Do not connect Pad 8 : Do not connect	Pad 1 : OE Pad 2 : NC Pad 3 : Ground Pad 4 : Output Pad 5 : Complementary Output Pad 6 : Supply Voltage Pad 7 : Do not connect Pad 8 : Do not connect
CMOS Test Circuits	HCSL Test Circuits
CML Test Circuits	LVPECL Test Circuits
	V_{DD} = 3.3V ; R1 = R3 = 127 Ω ; R2 = R4 = 82.5 Ω V_{DD} = 2.5V ; R1 = R3 = 250 Ω ; R2 = R4 = 62.5 Ω
LVDS Test Circuits for 2.5V and 3.3V	LVDS Test Circuits for 1.8V only (*)
	V_{DD} = 1.8V ; R1 = R3 = 50Ω ; R2 = R4 = 50Ω V_{ocm} = 1.2V

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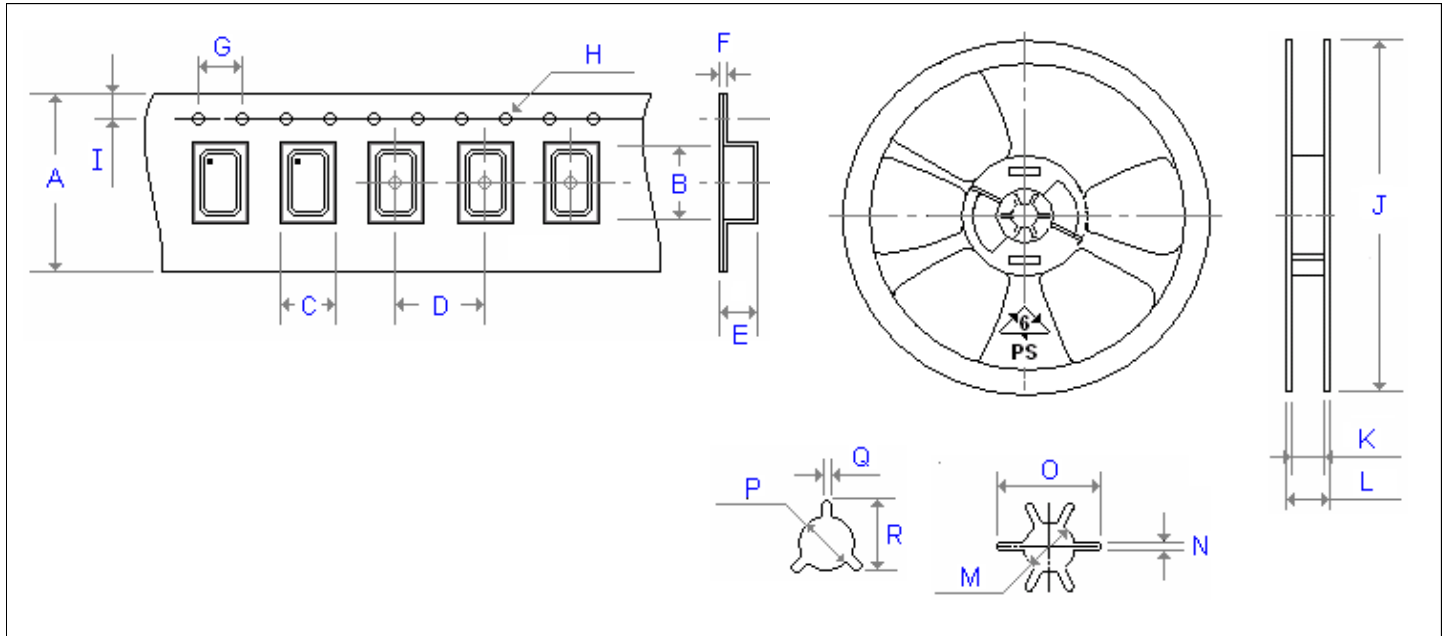
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Emboss Taping and Reel Specifications

[Crystal Oscillator Units]



Carrier Type Dimensions (unit : mm)

	A	B	C	D	E	F	G	H	I	pcs / reel
H_22	8.0	2.8	2.3	4.0	1.1	0.3	4.0	Ø 1.50	1.75	3000
H_32	8.0	3.4	2.7	4.0	1.4	0.3	4.0	Ø 1.50	1.75	3000
H_53	12.0	5.3	3.6	8.0	1.4	0.3	4.0	Ø 1.55	1.75	1000
H_57	16.0	7.3	5.3	8.0	1.9	0.3	4.0	Ø 1.55	1.75	1000
SWO	16.0	7.2	5.4	8.0	1.8	0.3	4.0	Ø 1.55	1.75	1000
H_576	16.0	7.2	5.4	8.0	1.8	0.3	4.0	Ø 1.55	1.75	1000
HP_576	16.0	7.2	5.4	8.0	1.8	0.3	4.0	Ø 1.55	1.75	1000
HD_576	16.0	7.2	5.4	8.0	1.8	0.3	4.0	Ø 1.55	1.75	1000
H_42	24.0	12.4	10.3	16.0	5.1	0.3	4.0	Ø 1.55	1.75	500
H_43	24.0	12.4	10.3	16.0	5.1	0.3	4.0	Ø 1.55	1.75	500

Reel Dimensions (unit : mm)

	J	K	L	M	N	O	P	Q	R	pcs / reel
H_22	180.0	9.0	12.0	-	-	-	13.2	2.1	-	3000
H_32	180.0	9.0	12.0	-	-	-	13.2	2.1	-	3000
H_53	180.0	13.0	16.0	-	-	-	13.2	2.5	-	1000
H_57	180.0	17.2	19.3	-	-	-	13.3	2.2	22.0	1000
SWO	180.0	17.2	19.3	-	-	-	13.3	2.2	22.0	1000
H_576	180.0	17.2	19.3	-	-	-	13.3	2.2	22.0	1000
HP_576	180.0	17.2	19.3	-	-	-	13.3	2.2	22.0	1000
HD_576	180.0	17.2	19.3	-	-	-	13.3	2.2	22.0	1000
H_42	330.0	30.0	25.0	-	-	-	13.4	2.5	19.5	500
H_43	330.0	30.0	25.0	-	-	-	13.4	2.5	19.5	500