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Общество с ограниченной ответственностью

«Научно-производственное предприятие «Техно-ПАРК»

(ООО «НПП «Техно-ПАРК»)

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Технические характеристики генератора

Производитель: Mercury Electronic Ind Co., Ltd.

Поставщик: ООО «НПП «Техно-ПАРК»

Научно-производственное предприятие ООО «НПП «Техно-ПАРК» разрабатывает и поставляет полосно-пропускающие радиочастотные фильтры на поверхностных акустических волнах (ПАВ) и устройства на их основе.

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Frequency Switchable Crystal Oscillators [10 ~ 1,500 MHz]

HCTQF
CMOS waveform

HCPQF
PECL Differential

HCDQF
LVDS Differential

Q family
F series

Frequency Switchable

SMD

2.5 V **3.3 V**

Min.
10 MHz

Max.
1,500 MHz

Features

1.5 pS Phase Jitter (typical)

Mercury's Q-Family crystal oscillators that can be delivered in days
Low current consumption (44 mA for PECL 622.080 MHz at 3.3V) and an integrated phase jitter performance of 1.5 pS RMS. Gaining its precision frequency control market position by providing engineers with *next-day* samples for prototypes.



General specifications , at Ta = + 25°C

Model	HCTQF		HCPQF		HCDQF	
Output Logic	CMOS		PECL		LVDS	
Supply Voltage V _{DD} (code)	+ 2.5 V ± 5% (voltage code " 25 ") + 3.3 V ± 5% (voltage code " 33 ")		+ 2.5 V ± 5% (voltage code " 25 ") + 3.3 V ± 5% (voltage code " 33 ")		+ 2.5 V ± 5% (voltage code " 25 ") + 3.3 V ± 5% (voltage code " 33 ")	
Available Frequency Range	10 ~ 250 MHz		10 ~ 1,500 MHz		10 ~ 1,500 MHz	
Output Load	15 pF		50 Ω into V _{CC} - 2V or Thevenin equivalent		100 Ω between output and complimentary output	
Output Logic " High " , " 1 "	90 % V _{DD}		V _{DD} - 1.03 (min.) , V _{DD} - 0.6 (max.)		1.4 V (Typ.) , 1.6 V (max.)	
Output Logic " Low " , " 0 "	10 % V _{DD}		V _{DD} - 1.85 (min.) , V _{DD} - 1.6 (max.)		1.1 V (Typ.) , 0.9 V (min.)	
Current Consumption (V _{DD} = + 2.5 V)	100 MHz : 30 mA ; 250 MHz : 40 mA		400 MHz : 40 mA ; 600 MHz : 45 mA 1,000 MHz : 50 mA ; 1,500 MHz : 55 mA		400 MHz : 30 mA ; 600 MHz : 30 mA 1,000 MHz : 35 mA ; 1,500 MHz : 35 mA	
Current with Output Disable	18 mA (Typ.)		18 mA (Typ.)		18 mA (Typ.)	
Current Consumption (V _{DD} = + 3.3 V)	100 MHz : 35 mA ; 250 MHz : 40 mA		400 MHz : 45 mA ; 600 MHz : 45 mA 1,000 MHz : 50 mA ; 1,500 MHz : 60 mA		400 MHz : 30 mA ; 600 MHz : 30 mA 1,000 MHz : 35 mA ; 1,500 MHz : 40 mA	
Rise Time / Fall Time	10.0 nsec. (max.) Tr / Tf : 10% ↔ 90% waveform		0.5 nsec. (max.) Tr / Tf : 20% ↔ 80% waveform		0.4 nsec. (max.) Tr / Tf : 20% ↔ 80% waveform	
RMS Jitter [12 kHz ~ 20 MHz]	1.5 psec. (typ.)					
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 ; " 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		
Duty Cycle	50 % ± 5%					
Start-up Time	10 msec. (max.)					
Aging at Ta = +25°C	± 5 ppm (max.) for first year					
Storage Temperature	-55°C to + 150°C					
Output Enable Function						
Output Enable / Disable Function	70% of V _{DD} (min.) to enable output. (Open connection prohibit.) 30% of V _{DD} (max.) to disable output					
Output Enable Time / Disable Time	200 nsec. (max.) / 50 nsec. (max.)					
Frequency Selection Function on Pad 2						
Frequency Selection (FSEL)	When FSEL = 0 (0 V or GND) , Output frequency is Freq.1 (f 1) When FSEL = 1 (V _{DD}) , Output frequency is Freq.2 (f 2)				Default FSEL pin has internal pull-up resistor	
FSEL on Pad 2	70% of V _{DD} (min.) For FSEL = 1 , Output frequency is Freq.2 (f 2) 30% of V _{DD} (max.) For FSEL = 0 , Output frequency is Freq.1 (f 1)					

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Frequency Switchable Crystal Oscillators [10 ~ 1,500 MHz]

HCTQF	HCPQF	HCDQF	Q family	Frequency Switchable	SMD	2.5 V	3.3 V	Min.	Max.
CMOS waveform	PECL Differential	LVDS Differential	F series					10 MHz	1,500 MHz

Part Number Format and Example

Example : 3HCTQF576 - E - 30.000 / 120.000

3	HCTQN	576	-	E	-	30	/	120
Supply Voltage " 3 " for 3.3V " 25 " for 2.5V	HCTQF : CMOS HCPQF : PECL HCDQF : LVDS	Package Size " 576 " : 7 x 5 mm " 536 " : 5 x 3.2 mm " 326 " : 3 x 2.5 mm	-	Frequency Stability Code " E " : ±50 ppm over -40 to +85°C. Other frequency stabilities are available.	-	Custom Frequency 1 FSEL = 0 (MHz)	/	Custom Frequency 2 FSEL = 1 (MHz)

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

HC_QF326	HC_QF536	HC_QF576

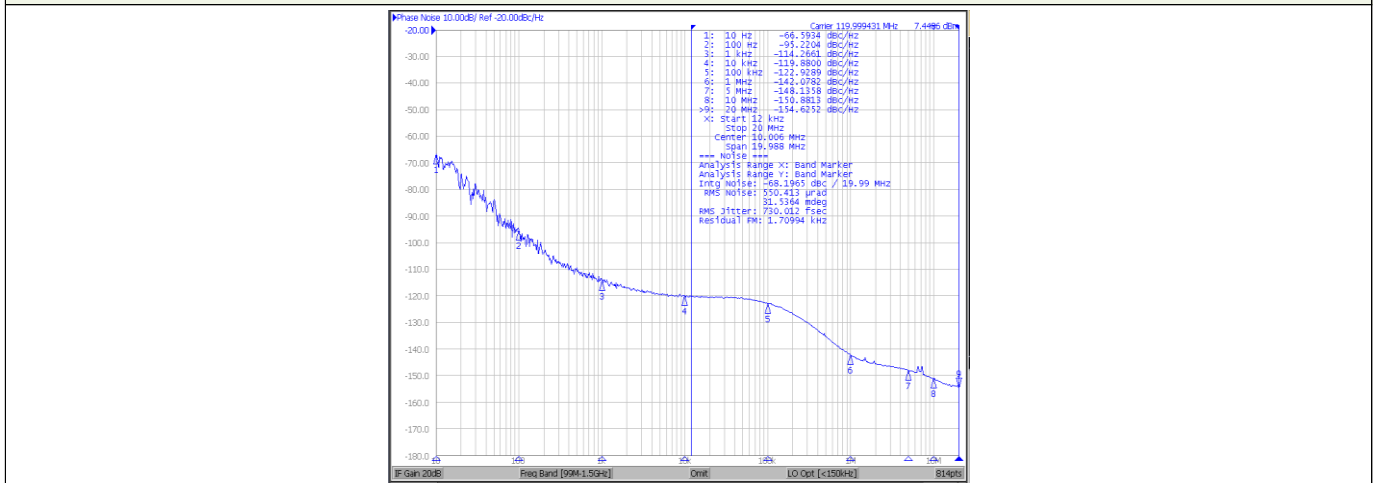
Pad Connections

Pad 1 : OE ; **Pad 2** : Frequency Selection [FSEL = 0 (f1) , FSEL = 1 (f2)] ; **Pad 3** : Ground

Pad 4 : [CMOS : Output , PECL or LVDS : Differential] ; **Pad 5** : [CMOS : NC , PECL or LVDS : Complementary] ; **Pad 6** : Supply Voltage

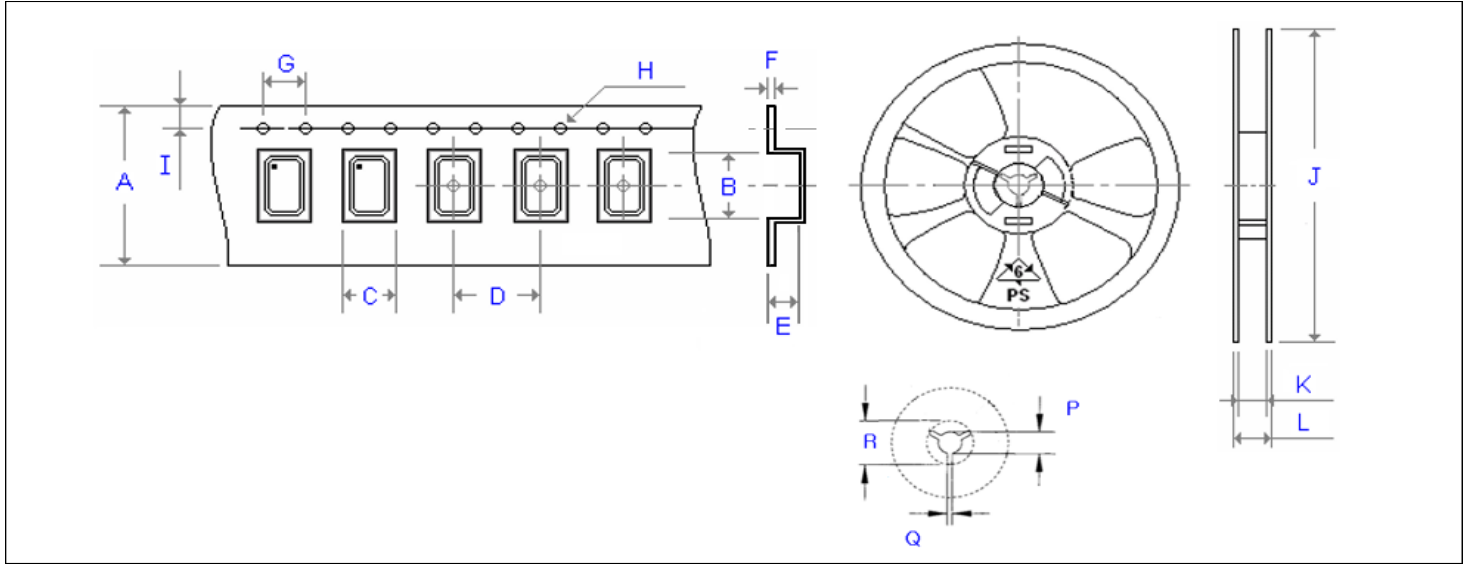
CMOS	PECL	LVDS
	<p style="text-align: center;"> $V_{DD} = 3.3V ; R1 = R3 = 127 \Omega ; R2 = R4 = 82.5 \Omega$ $V_{DD} = 2.5V ; R1 = R3 = 250 \Omega ; R2 = R4 = 62.5 \Omega$ </p>	

Phase Noise and Phase Jitter Data 3HCTQF576-E-30.000/120.000 (typical) , $V_{DD}=+3.3V$, FSEL=1 (3.3V)



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	0.32	4.00	Ø 1.50	1.75	1000
SWO	16.00	7.20	5.40	8.00	1.80	0.32	4.00	Ø 1.50	1.75	1000
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	0.32	4.00	Ø 1.50	1.75	1000
H_JF328	8.00	3.40	2.70	4.00	1.40	0.25	4.00	Ø 1.50	1.75	3000
H_JF538	12.00	5.30	3.60	8.00	1.40	0.30	4.00	Ø 1.50	1.75	1000
H_JF578	16.00	7.30	5.30	8.00	1.90	0.32	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) ±2mm

	J	K	L	P	Q	R	pcs / reel
H21	180.00	9.00	12.000	13.00	2.50	20.20	3000
H_22	180.00	8.40	11.400	13.00	2.50	20.20	3000
H_32	180.00	9.00	12.000	13.00	2.50	20.20	3000
H_53	180.00	13.00	16.000	13.00	2.50	20.20	1000
H_57	180.00	17.20	19.300	13.00	2.50	20.20	1000
SWO	180.00	17.20	19.300	13.00	2.50	20.20	1000
H_226	180.00	8.40	11.400	13.00	2.50	20.20	3000
H_326	180.00	9.00	12.000	13.00	2.50	20.20	3000
H_536	180.00	13.00	16.000	13.00	2.50	20.20	1000
H_576	180.00	17.20	19.300	13.00	2.50	20.20	1000
H_JF328	180.00	8.00	12.000	13.00	2.50	20.20	3000
H_JF538	180.00	13.00	16.000	13.00	2.50	20.20	1000
H_JF578	180.00	17.20	19.300	13.00	2.50	20.20	1000
H_43	330.00	24.50	29.100	13.00	2.50	20.20	500

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