

Low Jitter Differential Crystal Oscillators

LVDS Differential

HDQN — —

LVDS
Differential

0.6 pS
Phase Jitter

SMD

2.5 V

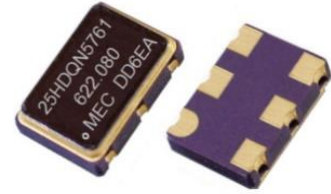
3.3 V

Min.
150 MHz

Max.
1,500 MHz

Features

Low current consumption (24 mA for LVDS 622.080 MHz at 3.3V) and an integrated phase jitter performance of 0.6 pS RMS. Gaining its precision frequency control market position by providing engineers with next-day samples for prototypes and low cost, fast delivery for volume production. The perfect solution to replace traditional XO's & VCXO's that use a more expensive, highfrequency, fundamental crystal and a noisy PLL multiplier circuit.



General specifications , at Ta=+25°C

Output Logic		LVDS Differential						
Model		HDQN						
Package (dimensions) unit : mm		HDQN 3261 (3.2 * 2.5 * 1.0)	HDQN 5361 (5.0 * 3.2 * 1.2)			HDQN 5761 (7.0 * 5.0 * 1.7)		
Supply Voltage (V _{DD})		+2.5 V ± 5%				+3.3 V ± 10%		
Available Frequency Range	min.	150 MHz						
	max.	1,500 MHz						
Current Consumption		750 MHz : 24 mA (max.) ; 1,000 MHz : 26 mA (max.) ; 1,350 MHz : 28 mA (max.) 750 MHz : 59 mA (max.) ; 1,000 MHz : 62 mA (max.) ; 1,350 MHz : 68 mA (max.)						
Rise Time / Fall Time		0.2 nsec. (typ.) , 0.5 nsec. (max.) [20% ↔ 80% of the waveform]						
Output Logic " High " , " 1 "		1.4 V (typ.) ; 1.6 V (max.) , R _L = 100 Ω ,						
Output Logic " Low " , " 0 "		0.9 V (min.) ; 1.1 V (typ.) , R _L = 100 Ω						
Output Voltage Swing		250 mV (min.) , 350 mV (typ.) , 450 mV (max.) , R _L = 100 Ω						
Output Load		100 Ω between output and complimentary output						
Start-up Time		5.0 msec. (typ.) , 10 msec. (max.)						
Duty Cycle		50% ± 5%						
Storage Temperature		-55°C to + 150°C						
Aging at Ta = +25°C		± 3 ppm (max.) first year ; ± 2 ppm (max.) per year thereafter						
RMS Jitter (12 KHz to 20 MHz)		0.6 psec (typ.)						
SSB Phase Noise [dBc / Hz (typ.)]	Offset	10 Hz	100 Hz	1 KHz	10 KHz	100 KHz	1 MHz	10 MHz
	156.250 MHz	-67	-92	-112	-121	-124	-136	-153
	622.08 MHz	-51	-77	-99	-109	-114	-121	-141
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				
Output Enable / Disable Function	Enable	When 70% (min.) of V _{DD} to Enable Output. Enable time : 200 nsec. (max.)						
	Disable	When 30% (max.) of V _{DD} to Disable Output. Disable current : 16 mA (max.) , Disable time : 50 nsec. (max.)						

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Crystal Oscillators

HTQN	HPQN	HDQN	Q family	SMD	2.5 V	3.3 V
CMOS waveform	PECL Differential	LVDS Differential	N series			

Part Number Format and Example

	[1]	[2]	[3]		[4]		[5]
	Supply Voltage	Holder Type	1 or 2	-	Frequency Stability	-	Center Frequency
Example	(1) 25	HPQN576	2	-	D	-	622.080
	(2) 3	HPQN326	1	-	A	-	100.000

Ex (1) : **25HPQN5762 - D - 622.080** [+2.5V , H_ 576 type , PECL output , QN series ,OE on pad # 2 , ±25 ppm from -40°C to 85°C , 622.080MHz]

Ex (2) : **3HPQN3261 - A - 100.000** [+3.3V , H_ 326 type , PECL output , QN series ,OE on pad # 1 , ±25 ppm from -10°C to 70°C , 100.000MHz]

[1]	Supply voltage , " 2.5 " for +2.5V ; " 3 " for +3.3V	
[2]	Holder Type	
[3]	" 1 " : OE function on pad # 1 , " 2 " : OE function on pad # 2	
[4]	-10°C ~ 70 °C	" A " ± 25ppm ; " B " ± 50ppm ; " C " ± 100ppm ; If non-standard please enter the desired stability after " C " , for 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 " , for example " I30 " : represents ± 30ppm over -40 to +85°C
[5]	Frequency in MHz	

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

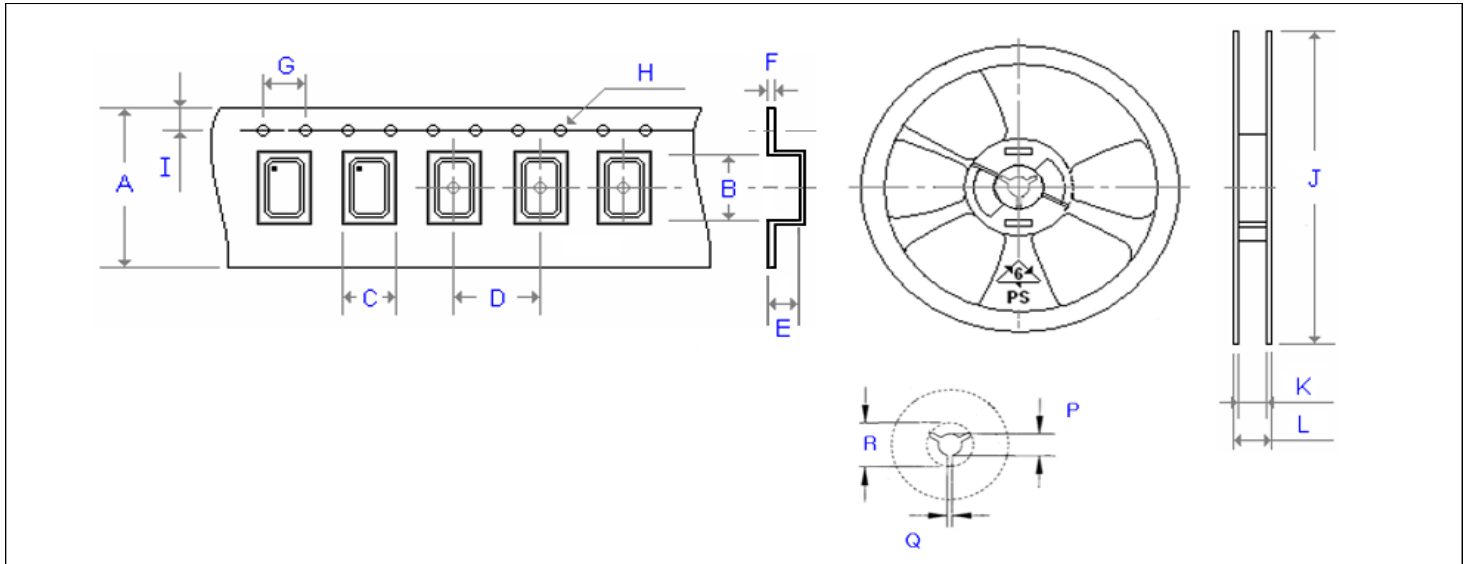
<p style="text-align: center;">[H_QN326]</p>	<p style="text-align: center;">[H_QN536]</p>
<p style="text-align: center;">LVPECL Test Circuit</p> <p>$V_{DD} = 3.3V ; R1 = R3 = 127 \Omega ; R2 = R4 = 82.5 \Omega$ $V_{DD} = 2.5V ; R1 = R3 = 250 \Omega ; R2 = R4 = 62.5 \Omega$</p>	<p style="text-align: center;">[H_QN576]</p>
<p style="text-align: center;">LVPECL Test Circuit</p>	<p style="text-align: center;">LVDS Test Circuit</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	∅ 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_JF328	8.00	3.40	2.70	4.00	1.40	0.25	4.00	∅ 1.50	1.75	3000
H_JF538	12.00	5.30	3.60	8.00	1.40	0.30	4.00	∅ 1.50	1.75	1000
H_JF578	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	12.000	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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