

GPQN

PECL  
Differential

0.6 ps  
RMS Jitter

SMD

2.5 V

3.3 V

Min.  
10 MHz

Max.  
1,500 MHz

Features

Mercury's Low Jitter Differential VCXO, with low current consumption ( 54 mA for LVPECL 622.080 MHz at 3.3V ) & an integrated phase jitter performance of 0.6 ps RMS. Gaining its precision frequency control market position by providing engineers with few-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, high frequency, fundamental crystal and a noisy PLL multiplier circuit.



General specifications , at Ta=+25°C

Model		GPQN									
Available Frequency Range	10 ~ 1,500 MHz										
Supply Voltage V <sub>DD</sub> ( code )	+ 2.5 V <sub>DD</sub> ± 5 % ( voltage code ' 25 ' )					+ 3.3 V <sub>DD</sub> ± 5 % ( voltage code ' 33 ' )					
Current with Output Disable	16 mA typical										
Current Consumption (V <sub>DD</sub> = + 2.5 V)	100 MHz : 46 mA	250 MHz : 48 mA	500 MHz : 53 mA	750 MHz : 56 mA	1,000 MHz : 60 mA	1,350 MHz : 65 mA					
Current Consumption (V <sub>DD</sub> = + 3.3 V)	100 MHz : 50 mA	250 MHz : 55 mA	500 MHz : 60 mA	750 MHz : 64 mA	1,000 MHz : 68 mA	1,350 MHz : 72 mA					
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 ; " I20 " ± 20 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 Logic " High " , " 1 "	V <sub>DD</sub> - 1.03 ( min. ) , V <sub>DD</sub> - 0.6 ( max. )			Output Logic " Low " , " 0 "			V <sub>DD</sub> - 1.85 ( min. ) , V <sub>DD</sub> - 1.6 ( max. )				
Load	RL = 50 Ω to (V <sub>DD</sub> -2.0V). See test circuit below.			Rise Time / Fall Time			0.5 ns. ( max. ) [ 20% ↔ 80% waveform ]				
Duty Cycle	50 % ± 5%			Aging at Ta = +25°C			± 5 ppm max. for first year at 25°C				
Start-up Time	10 m sec. ( max. )			Storage Temperature			-55°C to + 150°C				
SSB Phase Noise [ dBc / Hz ( typical ) ]	Offset	77.76	122.88	125	156.25	212.5	491.52	622.08	1000	1250	
	10 Hz	-74	-68	-69	-67	-53	-56	-51	-46	-32	
	100 Hz	-104	-98	-97	-92	-86	-87	-77	-80	-68	
	1 KHz	-121	-114	-114	-112	-109	-101	-99	-96	-94	
	10 KHz	-130	-123	-124	-121	-118	-110	-109	-105	-103	
	100 KHz	-134	-127	-129	-124	-121	-113	-114	-108	-105	
	1 MHz	-140	-138	-136	-136	-133	-125	-121	-116	-117	
10 MHz	-157	-155	-154	-153	-151	-143	-141	-135	-136		
Phase Jitter ( 12KHz ~ 20 MHz, RMS) unit : ps.	0.5	0.6	0.5	0.6	0.6	0.6	0.5	0.7	0.6		
<b>Control Voltage Function on Pad 1</b>											
Supply Voltage ( V <sub>DD</sub> )	V <sub>DD</sub> = +2.5 V ; Vcon Center = +1.25V					V <sub>DD</sub> = +3.3 V ; Vcon Center = +1.65V					
Vcontrol Range	+ 0.2V ~ +2.3V					+ 0.3V ~ +3.0V					
Frequency Pulling Range	± 80 ppm ( min. )					± 80 ppm ( min. )					
Absolute Voltage	Up to ± 200 ppm ( min. ) is also available. Please contact Mercury.										
Linearity	± 5% typical. ±10% ( max. )			Input Impedance			1 MΩ typical				
Transfer Function	Positive Transfer			Bandwidth			10 KHz min. Measured at -3 dB				
<b>Output Enable Function</b>											
OE Control on Pad 2	70% of V <sub>DD</sub> ( min. ) to enable output. ( Open connection prohibit ) 30% of V <sub>DD</sub> ( max. ) to disable output.										
Output Enable Time / Disable Time	200 ns. Max. / 50 ns. Max.										

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

GPQN326	GPQN536	GPQN576
Pad Connections		
<p>Pad 1 : VCXO ; Pad 2 : OE: High Enable ; Pad 3 : Ground Pad 4 : Differential ; Pad 5 : Complementary ; Pad 6 : Supply Voltage</p>		

<b>GTQN</b>	<b>GPQN</b>	<b>GDQN</b>	<b>Q</b> family	<b>SMD</b>	<b>2.5 V</b>	<b>3.3 V</b>
CMOS waveform	PECL Differential	LVDS Differential	<b>N</b> series			

### Part Number Format and Example

Example : 3GPQN576 - E - 100N - 622.080

3	GPQN	576	-	E	-	100N	-	622.08
Supply Voltage "3" for 3.3V "25" for 2.5V	GTQN : CMOS GPQN : PECL GDQN : LVDS	Package Size "576" : 7x5 mm "536" : 5x3.2 mm		Frequency Stability Code "E" : ± 50 ppm over -40 to +85°C Other frequency stabilities are available.		±100 ppm ( min.) frequency pulling range		Frequency ( MHz )

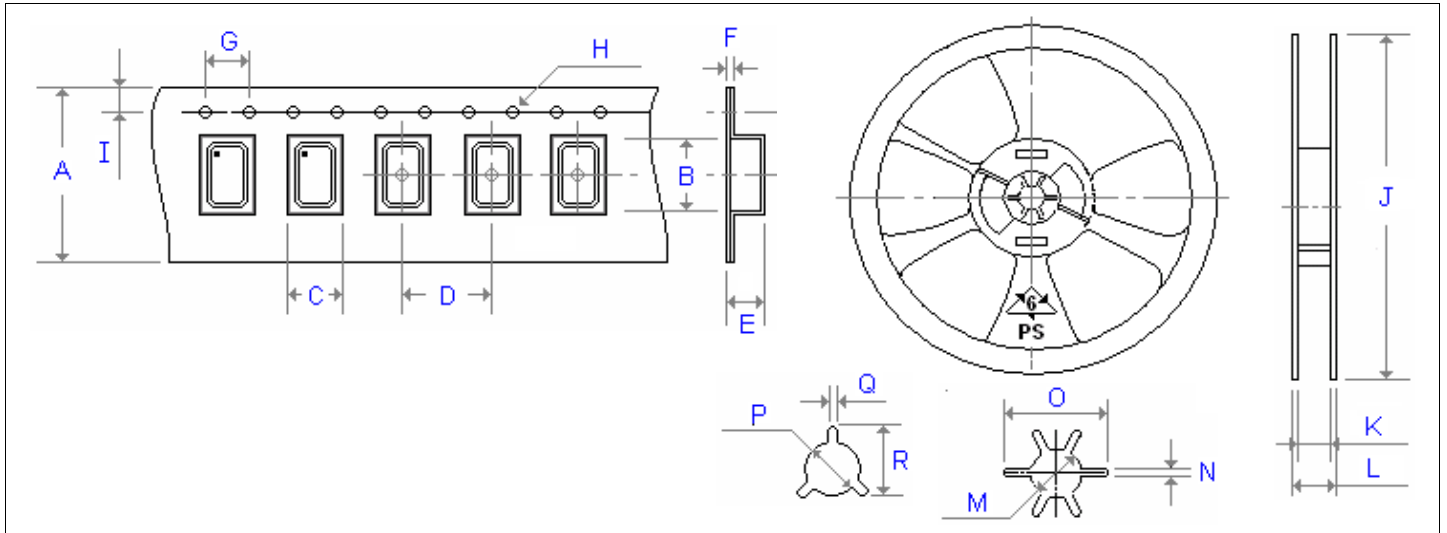
### Test Circuits and Output Waveforms

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

# Emboss Taping and Reel Specifications

[ VCXO ]

[ ( VC )TCXO ]



Carrier Type Dimensions ( unit : mm )

	A	B	C	D	E	F	G	H	I	pcs / reel
G_324 ( 6 )	8.0	3.4	2.7	4.0	1.4	0.3	4.0	∅ 1.50	1.75	3000
G_534	12.0	5.3	3.6	8.0	1.4	0.3	4.0	∅ 1.55	1.75	1000
G_576	16.0	7.3	5.3	8.0	1.9	0.3	4.0	∅ 1.55	1.75	1000
G_42	24.0	12.4	10.3	16.0	5.0	0.3	4.0	∅ 1.55	1.75	500
G_43	24.0	12.4	10.3	16.0	5.0	0.3	4.0	∅ 1.55	1.75	500
G_62	24.0	12.4	10.3	16.0	5.0	0.3	4.0	∅ 1.55	1.75	500
G_63	24.0	12.4	10.3	16.0	5.0	0.3	4.0	∅ 1.55	1.75	500
(V)M_22	8.0	2.8	2.3	4.0	1.1	0.3	4.0	∅ 1.50	1.75	3000
(V)M_32	8.0	3.4	2.7	4.0	1.4	0.3	4.0	∅ 1.50	1.75	3000
(V)MQ_326	12.0	3.6	2.9	4.0	1.7	0.3	4.0	∅ 1.55	1.75	3000
(V)M_53	12.0	5.3	3.6	8.0	1.4	0.3	4.0	∅ 1.55	1.75	1000
(V)M_57	16.0	7.4	5.5	8.0	2.8	0.4	4.0	∅ 1.50	1.75	500
(V)M_42	24.0	12.4	10.3	16.0	5.0	0.3	4.0	∅ 1.55	1.75	500
(V)M_43	24.0	12.4	10.3	16.0	5.0	0.3	4.0	∅ 1.55	1.75	500
(V)M_62	24.0	12.4	10.3	16.0	5.0	0.3	4.0	∅ 1.55	1.75	500
(V)M_63	24.0	12.4	10.3	16.0	5.0	0.3	4.0	∅ 1.55	1.75	500

Reel Dimensions ( unit : mm )

	J	K	L	P	Q	R	pcs / reel
G_324 ( 6 )	180.0	9.0	12.0	13.2	2.1	-	3000
G_534	180.0	13.0	16.0	13.2	2.5	-	1000
G_576	180.0	17.2	19.3	13.3	2.2	22.0	1000
G_42	330.0	30.0	25.0	13.4	2.5	19.5	500
G_43	330.0	30.0	25.0	13.4	2.5	19.5	500
G_62	330.0	30.0	25.0	13.4	2.5	19.5	500
G_63	330.0	30.0	25.0	13.4	2.5	19.5	500
(V)M_22	180.0	9.0	12.0	13.2	2.1	-	3000
(V)M_32	180.0	9.0	12.0	13.2	2.1	-	3000
(V)MQ_326	180.0	9.0	12.0	13.2	2.1	-	3000
(V)M_53	180.0	13.0	16.0	13.2	2.5	19.5	1000
(V)M_57	180.0	17.2	19.3	13.3	2.2	22.0	500
(V)M_42	330.0	30.0	25.0	13.4	2.5	19.5	500
(V)M_43	330.0	30.0	25.0	13.4	2.5	19.5	500
(V)M_62	330.0	30.0	25.0	13.4	2.5	19.5	500
(V)M_63	330.0	30.0	25.0	13.4	2.5	19.5	500

Mercury [www.mercury-crystal.com](http://www.mercury-crystal.com)

■Taiwan : Tel: (+886)-2-2406-2779 / sales-tw@mercury-crystal.com

■USA : Tel: (+1)-909-466-0427 / sales-us@mercury-crystal.com

■China : Tel: (+86)-512-5763-8100 / sales-cn@mercury-crystal.com