

GTQN \_ \_

CMOS Output

0.6 ps RMS Jitter

SMD

2.5 V

3.3 V

Min.  
50 MHz

Max.  
250 MHz

Features

Mercury's Low Jitter Differential VCXOs, with a low current consumption (22 mA for CMOS 100 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 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, highfrequency, fundamental crystal and a noisy PLL multiplier circuit.



General specifications, at Ta=+25°C, CL=15pF

Model	GTQN					
Available Frequency Range	50 ~ 250 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)	50 MHz : 18 mA	100 MHz : 22 mA	150 MHz : 24 mA	200 MHz : 28 mA	245 MHz : 31 mA	
Current Consumption (V <sub>DD</sub> = +3.3 V)	50 MHz : 20 mA	100 MHz : 24 mA	150 MHz : 28 mA	200 MHz : 33 mA	245 MHz : 37 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"	90% V <sub>DD</sub>			Output Logic "Low", "0"		10% V <sub>DD</sub>
Load	15 pF			Rise Time / Fall Time		10.0 ns. (max.) [ 10% ↔ 90% 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
	10 Hz	-74	-68	-69	-67	-53
	100 Hz	-104	-98	-97	-92	-86
	1 KHz	-121	-114	-114	-112	-109
	10 KHz	-130	-123	-124	-121	-118
	100 KHz	-134	-127	-129	-124	-121
	1 MHz	-140	-138	-136	-136	-133
10 MHz	-157	-155	-154	-153	-151	
Phase Jitter (12KHz ~ 20 MHz, RMS) unit : ps.	0.5	0.6	0.5	0.6	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 ± 80 ppm (min.)			+ 0.3V ~ +3.0V ± 80 ppm (min.)		
Frequency Pulling Range	Up to ± 200 ppm (min.) is also available. Please contact Mercury. ±80 ppm min. / ±200 ppm min. (available)					
Absolute Voltage	2.8 V max. for 2.5V V <sub>DD</sub> ; 4.0 V max. for 3.3V V <sub>DD</sub>					
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

GTQN326	GTQN536	GTQN576
Pad Connections		
<p>Pad 1 : VCXO ; Pad 2 : OE ; Pad 3 : Ground                  Pad 4 : [ CMOS : Output , LVPECL or LVDS : Differential ] ; Pad 5 : No Connection ; Pad 6 : Supply Voltage</p>		

# Voltage Controlled Crystal Oscillators [ VCXO ]

**GTQN**

CMOS waveform

**GPQN**

PECL Differential

**GDQN**

LVDS Differential

**Q** family

**N** series

**SMD**

**2.5 V**

**3.3 V**

## 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