

GDQN

LVDS
Differential

0.6 ps
RMS Jitter

SMD

2.5 V

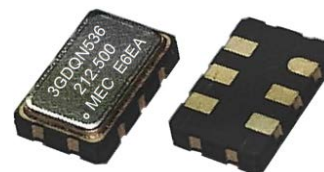
3.3 V

Min.
10 MHz

Max.
1,500 MHz

Features

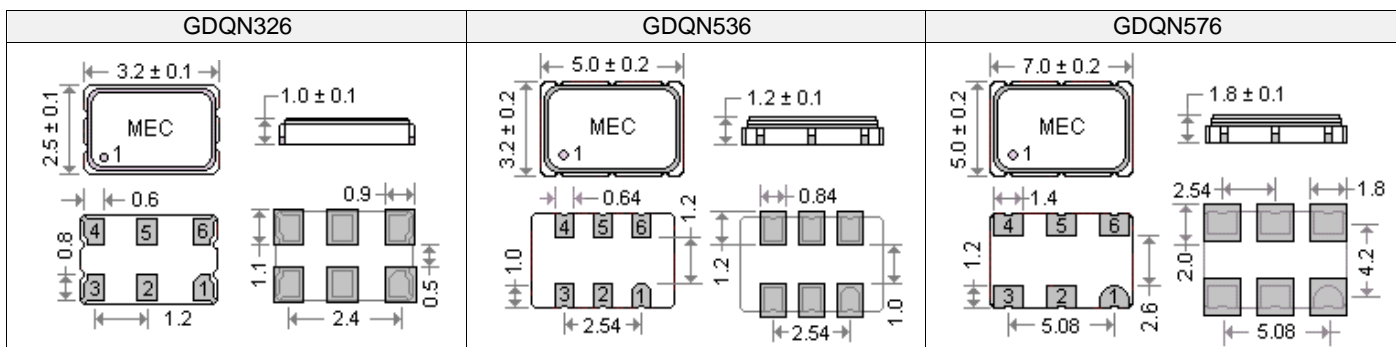
Mercury's Low Jitter Differential VCXO, with low current consumption (22 mA for LVDS 622.080 MHz at 3.3V) & an integrated phase jitter performance of 0.6pS RMS. Gaining its precision frequency control market position by providing engineers with few days samples for prototypes and low cost, fast delivery 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

Model	GDQN									
Available Frequency Range	10 ~ 1,500 MHz									
Supply Voltage V _{DD} (code)	+ 2.5 V _{DD} ± 5 % (voltage code ' 25 ')					+ 3.3 V _{DD} ± 5 % (voltage code ' 33 ')				
Current with Output Disable	16 mA typical									
Current Consumption (V _{DD} = +2.5 V)	100 MHz : 16 mA	250 MHz : 18 mA	500 MHz : 21 mA	750 MHz : 22 mA	1,000 MHz : 24 mA	1,350 MHz : 26 mA				
Current Consumption (V _{DD} = +3.3 V)	100 MHz : 25 mA	250 MHz : 30 mA	500 MHz : 35 mA	750 MHz : 39 mA	1,000 MHz : 43 mA	1,350 MHz : 47 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 "	1.4 V typical ; 1.6 V max.			Output Logic " Low " , " 0 "			0.9 V min. ; 1.1 V typical.			
Load	100 Ω between output and complimentary output			Rise Time / Fall Time			0.4 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	
Control Voltage Function on Pad 1										
Supply Voltage (V _{DD})	V _{DD} = +2.5 V ; Vcon Center = +1.25V					V _{DD} = +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.									
Absolute Voltage	2.8 V max. for 2.5V V _{DD} ; 4.0 V max. for 3.3V V _{DD}									
Linearity	± 5% typical. ±10% (max.)			Input Impedance			1 MΩ typical			
Transfer Function	Positive Transfer			Bandwidth			10 KHz min. Measured at -3 dB			
Output Enable Function										
OE Control on Pad 2	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 ns. Max. / 50 ns. Max.									

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



Pad Connections

Pad 1 : VCXO ; Pad 2 : OE: High Enable ; Pad 3 : Ground
Pad 4 : Differential ; Pad 5 : Complementary ; Pad 6 : Supply Voltage

GTQN	GPQN	GDQN	Q family	SMD	2.5 V	3.3 V
CMOS waveform	PECL Differential	LVDS Differential	N 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)

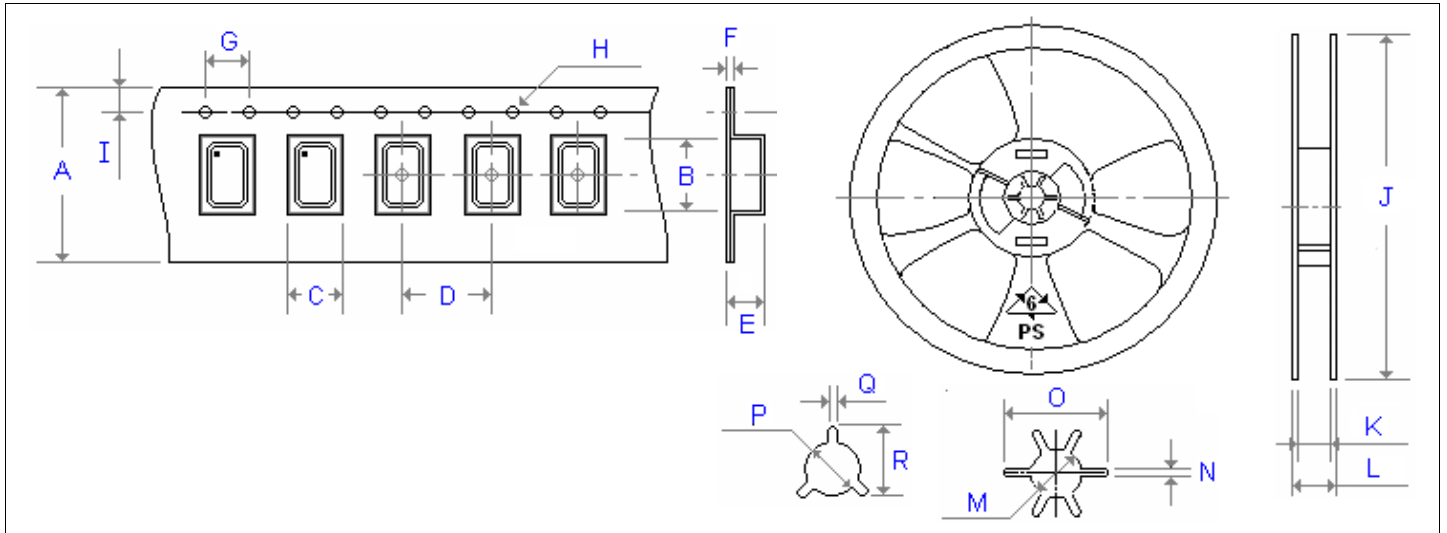
Test Circuits and Output Waveforms

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

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