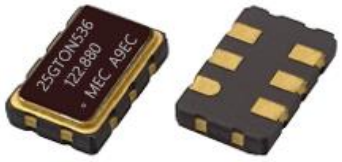
Low Jitter Voltage Controlled Crystal Oscillators — CMOS output

GTQN	GPQN	GDQN	0.6 ps RMS Jitter	SMD	2.5 V / 3.3 V	Min. 50 MHz	Max. 1,500 MHz
CMOS waveform	**PECL** Differential	**LVDS** Differential					

Features

- Output frequency range : 150 MHz to 1500 MHz
- Low RMS Jitter 0.6 ps typical (12kHz to 20MHz)
- Package size : 3.2x2.5mm , 5.0x3.2mm , 7.0x5.0mm
- If you need lower rms jitter, please refer to the "G_JF" series (150 fsec typ. @ 12kHz to 20MHz)



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

Model	GTQN	GPQN	GDQN
Output Logic	**CMOS**	**PECL**	**LVDS**
Supply Voltage V_{DD} (code)	+ 2.5 V ± 5% (voltage code " 25 ")	+ 2.5 V ± 5% (voltage code " 25 ")	+ 2.5 V ± 5% (voltage code " 25 ")
	+ 3.3 V ± 5% (voltage code " 33 ")	+ 3.3 V ± 5% (voltage code " 33 ")	+ 3.3 V ± 5% (voltage code " 33 ")
Available Frequency Range	50 ~ 250 MHz	10 ~ 1,500 MHz	10 ~ 1,500 MHz
Output Load	15 pF	RL = 50 Ω to (VDD-2.0V). See test circuit below.	100 Ω between OUT and OUTN
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 with Output Disable	16 mA (typ.)	16 mA (typ.)	16 mA (typ.)
Current Consumption (V_{DD} = + 3.3V)	10 ~ 50 MHz : 30 mA	10 ~ 250 MHz : 50 mA	10 ~ 250 MHz : 30 mA
	51 ~ 150 MHz : 38 mA	251 ~ 750 MHz : 55 mA	251 ~ 750 MHz : 34 mA
	151 ~ 250 MHz : 48 mA	751 ~ 1,500 MHz : 60 mA	751 ~ 1,500 MHz : 40 mA
Rise Time / Fall Time	1.0 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
Duty Cycle	50 % ± 5%		
Start-up Time	10 m sec. (max.)		
Aging at Ta = +25°C	± 5 ppm (max.) for first year		
Storage Temperature	-55°C to + 150°C		

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*	

RMS Jitter [12 kHz ~ 20 MHz]	0.6 psec (typ.)

Phase Noise [dBc / Hz (typ.)]	Offset	10 Hz	100 Hz	1 KHz	10 KHz	100 KHz	1 MHz	10 MHz
	125 MHz	-63	-94	-113	-122	-126	-137	-156
	212.5 MHz	-55	-85	-108	-117	-120	-132	-156

Control Voltage Function on Pad 1		
Supply Voltage	V_{DD} = +2.5 V ; Vcon Center = +1.25V	V_{DD} = +3.3 V ; Vcon Center = +1.65V
Vcontrol Range	+ 0.25V ~ +2.25V	+ 0.3V ~ +3.0V
Frequency Pulling Range	± 80 ppm (min.)	± 80 ppm (min.)
	Up to ± 200 ppm (min.) is also available. Please contact Mercury.	
Linearity	5% (typ.) ; 10% (max.)	
Transfer Function	Positive Transfer	
Input Impedance	1 MΩ (typ.)	
Bandwidth	10 KHz (min.) Measured at -3 dB	

Output Enable Function on Pad 2	
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 nsec. (max.) / 50 nsec.(max.)

Voltage Controlled Crystal Oscillators [VCXO]

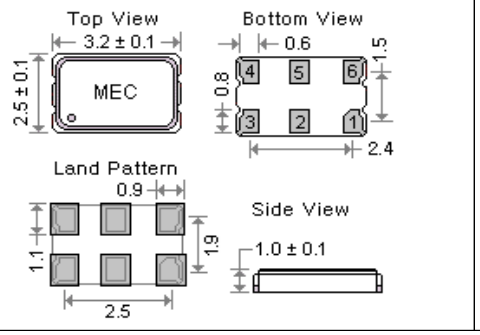
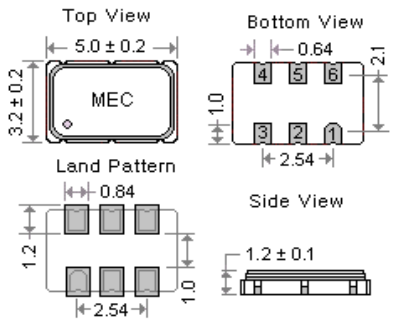
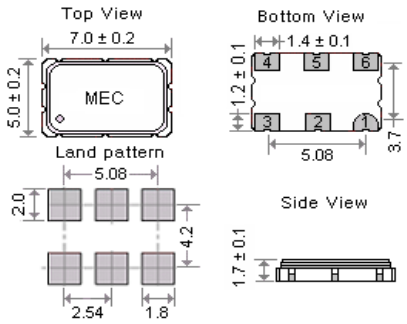
GTQN	GPQN	GDQN	Q family			
CMOS waveform	**PECL** Differential	**LVDS** Differential	N series	SMD	2.5 V	3.3 V

Part Number Format and Example

Example : 3GPQN576 - E - 100N - 622.080

3	GPQN	576	-	E	-	100N	-	622.080
Supply Voltage " **3** " for 3.3V " **25** " for 2.5V	GTQN : CMOS GPQN : PECL GDQN : LVDS	Package Size " **576** " : 7.0 * 5.0 mm " **536** " : 5.0 * 3.2 mm " **326** " : 3.2 * 2.5 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)

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

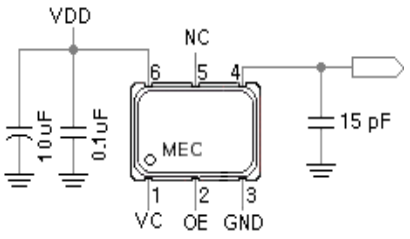
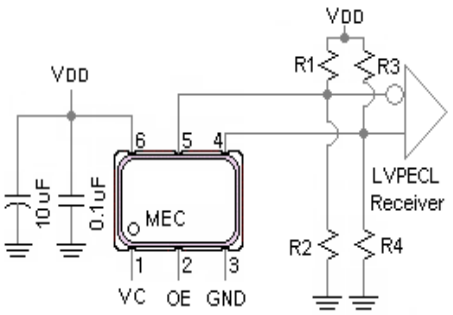
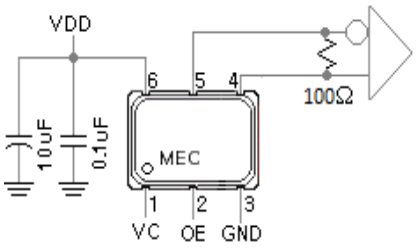
G_QN326	G_QN536	G_QN576
		

Pad Connections :

Pad 1 : VCXO ; **Pad 2 :** OE: High Enable ; **Pad 3 :** Ground

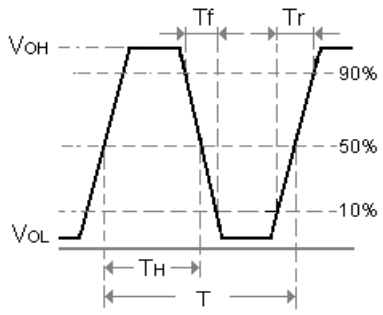
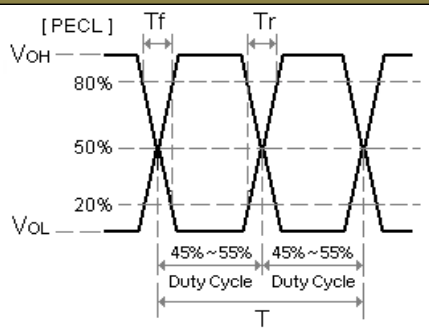
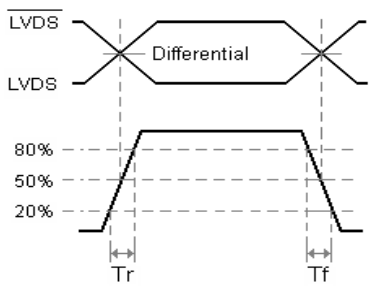
Pad 4 : [CMOS : Output , PECL or LVDS : Differential] ; **Pad 5** : [CMOS : NC , PECL or LVDS : Complementary] ; **Pad 6** : Supply Voltage

Test Circuits and Output Waveforms

CMOS Test Circuit	**PECL** Test Circuit	**LVDS** Test Circuit
		

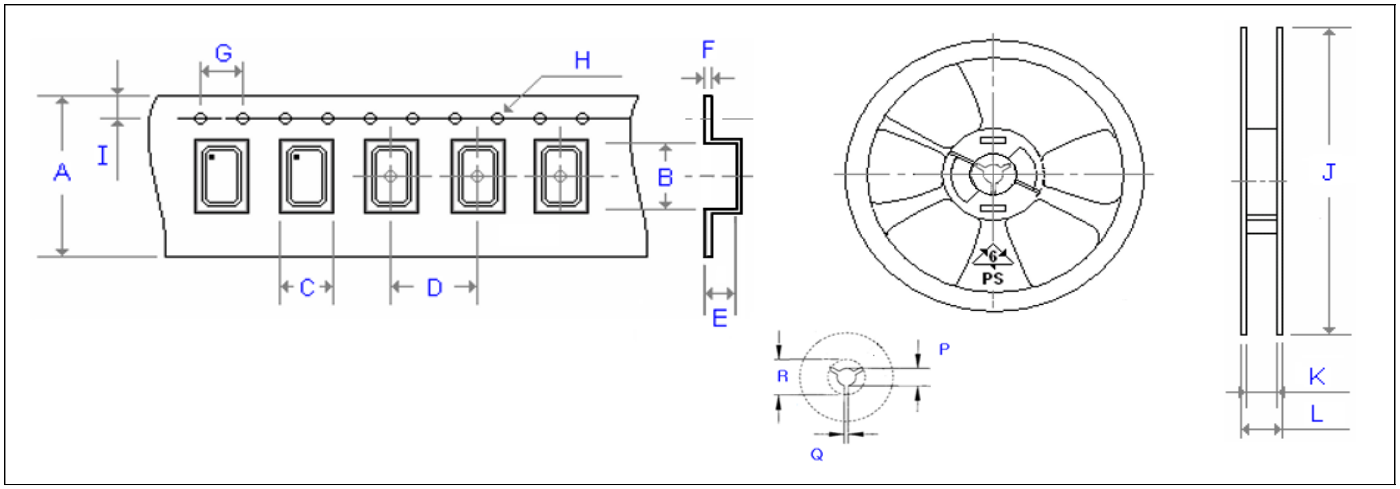
V_{DD} = 3.3V ; R1 = R3 = 127 Ω ; R2 = R4 = 82.5 Ω

V_{DD} = 2.5V ; R1 = R3 = 250 Ω ; R2 = R4 = 62.5 Ω

CMOS Output Waveform	**PECL** Output Waveform	**LVDS** Output Waveform
		

Emboss Taping and Reel Specifications

[VCXO]	[(VC)TCXO]



Carrier Type Dimensions (unit : mm) ±0.3mm

	A	B	C	D	E	F	G	H	I	pcs / reel
G_226	8.00	2.80	2.25	4.00	1.10	0.30	4.00	Ø 1.50	1.75	3000
G_326	8.00	3.40	2.70	4.00	1.40	0.25	4.00	Ø 1.50	1.75	3000
G_536	12.00	5.30	3.60	8.00	1.40	0.30	4.00	Ø 1.50	1.75	1000
G_576	16.00	7.30	5.30	8.00	1.90	0.32	4.00	Ø 1.50	1.75	1000
G_538	12.00	5.40	3.60	8.00	1.70	0.30	4.00	Ø 1.50	1.75	1000
G_578	16.00	7.30	5.30	8.00	1.90	0.32	4.00	Ø 1.50	1.75	1000
(V)M21	8.00	2.30	1.90	4.00	0.90	0.25	4.00	Ø 1.50	1.75	3000
ME21	8.00	2.30	1.50	4.00	1.35	0.25	4.00	Ø 1.50	1.75	3000
(V)M22	8.00	2.80	2.25	4.00	1.10	0.30	4.00	Ø 1.50	1.75	3000
(V)M_32	8.00	3.71	2.80	4.00	1.75	0.25	4.00	Ø 1.50	1.75	3000
(V)M_326	12.00	3.60	2.90	4.00	1.70	0.30	4.00	Ø 1.50	1.75	1000
(V)M_53	12.00	5.30	3.60	8.00	1.40	0.30	4.00	Ø 1.50	1.75	1000
(V)M_538	12.00	5.40	3.60	8.00	1.70	0.30	4.00	Ø 1.50	1.75	1000
(V)M_57(2)	16.00	7.40	5.50	8.00	2.80	0.35	4.00	Ø 1.50	1.75	500
(V)M_43 (63)	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
G_226	180.00	8.40	11.40	13.00	2.50	20.20	3000
G_326	180.00	9.00	12.00	13.00	2.50	20.20	3000
G_536	180.00	13.00	16.00	13.00	2.50	20.20	1000
G_576	180.00	17.20	19.30	13.00	2.50	20.20	1000
G_538	180.00	13.00	16.00	13.00	2.50	20.20	1000
G_578	180.00	17.20	19.30	13.00	2.50	20.20	1000
(V)M21	180.00	8.40	11.40	13.00	2.50	20.20	3000
ME21	180.00	9.00	12.00	13.00	2.50	20.20	3000
(V)M22	180.00	8.40	11.40	13.00	2.50	20.20	3000
(V)M_32	180.00	9.00	11.40	13.00	2.50	20.20	3000
(V)M_326	180.00	13.00	16.00	13.00	2.50	20.20	1000
(V)M_53	180.00	13.00	16.00	13.00	2.50	20.20	1000
(V)M_538	180.00	13.00	16.00	13.00	2.50	20.20	1000
(V)M_57(2)	180.00	17.20	19.30	13.00	2.50	20.20	500
(V)M_43 (63)	330.00	24.50	29.10	13.00	2.50	20.20	500