

GTQN

CMOS waveform

GPQN

PECL Differential

GDQN

LVDS Differential

0.6 ps
RMS Jitter

SMD

2.5 V 3.3 V

Min.

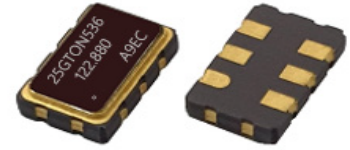
50 MHz

Max.

1,500 MHz

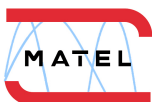
Features

Matel'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, high-frequency, fundamental crystal and a noisy PLL multiplier circuit.



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.)			0.5 nsec. (max.)			0.4 nsec. (max.)		
	Tr / Tf : 10% □ 90% waveform			Tr / Tf : 20% □ 80% waveform			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		± 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			
	Over Operating Temperature Range								
	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	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	622.080
Supply Voltage	GTQN : CMOS	Package Size	Frequency Stability Code " E " :	±100 ppm (min.)	Frequency
" 3 " for 3.3V	GPQN : PECL	" 576 " : 7.0 * 5.0 mm	± 50 ppm over -40 to +85°C.	- frequency pulling range.	(MHz)
" 25 " for 2.5V	GDQN : LVDS	" 536 " : 5.0 * 3.2 mm	Other frequency stabilities are available.		
		" 326 " : 3.2 * 2.5 mm			

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

G_QN326	G_QN536	G_QN576

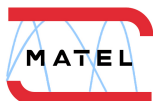
Pad Connections :

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
	<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>	
CMOS Output Waveform	PECL Output Waveform	LVDS Output Waveform



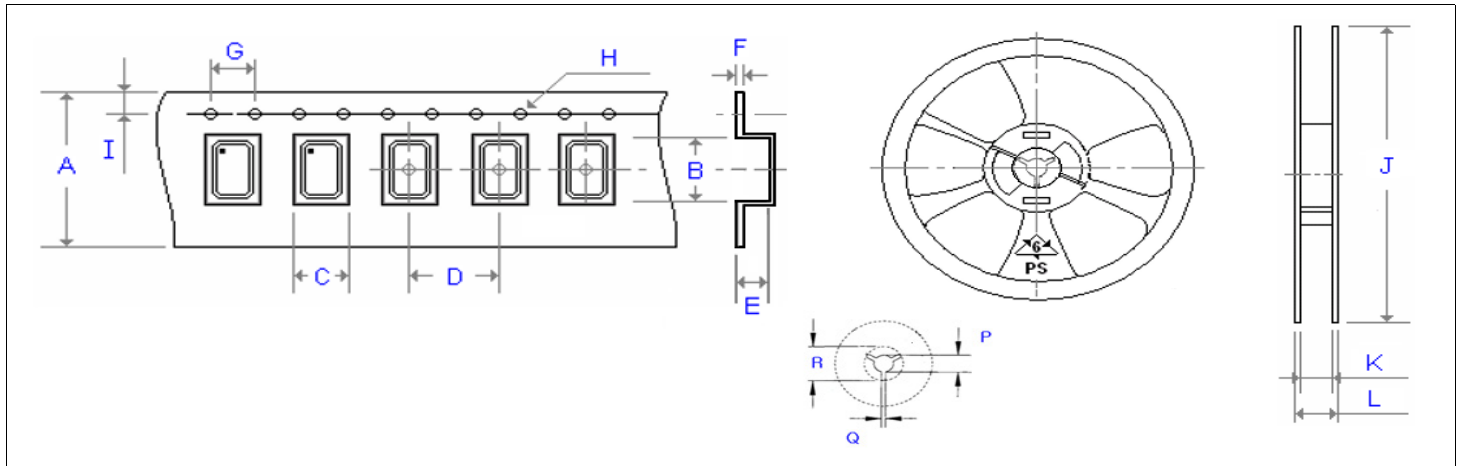
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Emboss Taping and Reel Specifications

[VCXO]

[(VC)TCXO]

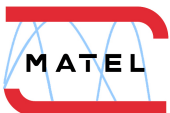


Carrier Type Dimensions (unit : mm) ±0.3mm

	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	∅ 1.50	1.75	3000
G_326	8.00	3.40	2.70	4.00	1.40	0.25	4.00	∅ 1.50	1.75	3000
G_534	12.00	5.30	3.60	8.00	1.40	0.30	4.00	∅ 1.50	1.75	1000
G_576	16.00	7.30	5.30	8.00	1.90	0.32	4.00	∅ 1.50	1.75	1000
G_43	24.00	11.80	10.00	16.00	5.00	0.30	4.00	∅ 1.50	1.75	500
G_63	24.00	11.80	10.00	16.00	5.00	0.30	4.00	∅ 1.50	1.75	500
G_JF538	12.00	5.30	3.60	8.00	1.40	0.30	4.00	∅ 1.50	1.75	1000
G_JF578	16.00	7.30	5.30	8.00	1.90	0.32	4.00	∅ 1.50	1.75	1000
(V)M21	8.00	2.30	1.90	4.00	0.90	0.25	4.00	∅ 1.50	1.75	3000
ME21	8.00	2.30	1.50	4.00	1.35	0.25	4.00	∅ 1.50	1.75	3000
(V)M22	8.00	2.80	2.25	4.00	1.10	0.30	4.00	∅ 1.50	1.75	3000
(V)M_32	8.00	3.71	2.80	4.00	1.75	0.25	4.00	∅ 1.50	1.75	3000
(V)MQ_326	12.00	3.60	2.90	4.00	1.70	0.30	4.00	∅ 1.50	1.75	3000
(V)M_53	12.00	5.30	3.60	8.00	1.40	0.30	4.00	∅ 1.50	1.75	1000
(V)M_57(2)	16.00	7.40	5.50	8.00	2.80	0.35	4.00	∅ 1.50	1.75	500
(V)M_43 (63)	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
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_534	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_43	330.00	24.50	29.10	13.00	2.50	20.20	500
G_63	330.00	24.50	29.10	13.00	2.50	20.20	500
G_JF538	180.00	13.00	16.00	13.00	2.50	20.20	1000
G_JF578	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)MQ_326	180.00	13.00	16.00	13.00	2.50	20.20	3000
(V)M_53	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



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