

VCXO " G "

CMOS

Thru-Hole

SMD

1.8 V

3.3 V

Min.

1.25 MHz

Max.

50.0 MHz

Unlike regular clock oscillators that have a fixed output frequency, the output frequency of VCXOs

(also known as " frequency modulators ") can be tuned $\pm 50 \sim \pm 200$ ppm up or down

from the nominal frequency, by varying the control voltage on the voltage control pin.

A varactor and a voltage variable capacitance tuning diode, is used to achieve this function.

Applications include (PLL) phase lock loop, SONET / ATM, set -top boxes, MPEG,

audio -video modulations, video game consoles and HDTV sets, ONET, 10GbE, Fibre Channel,

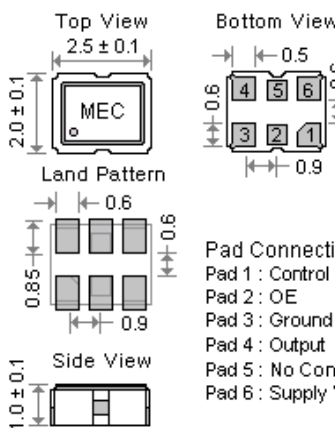
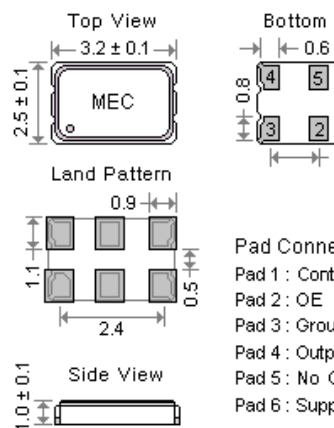
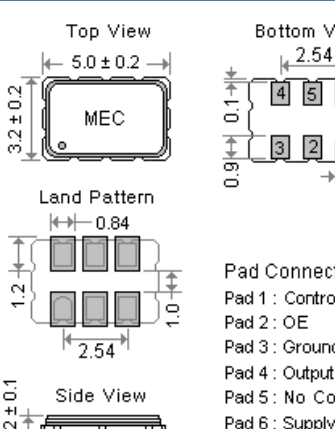
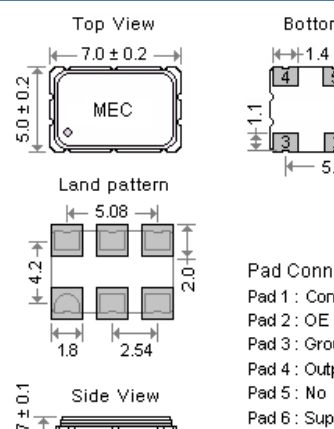
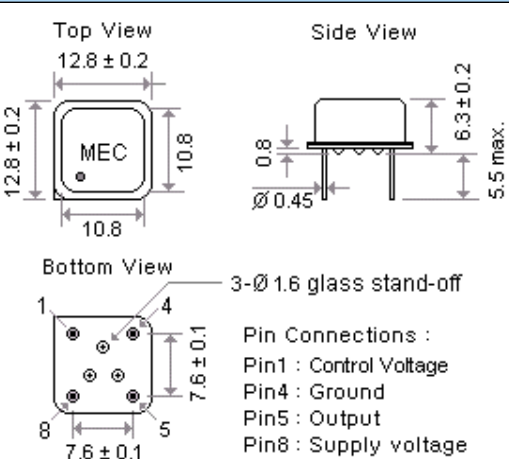
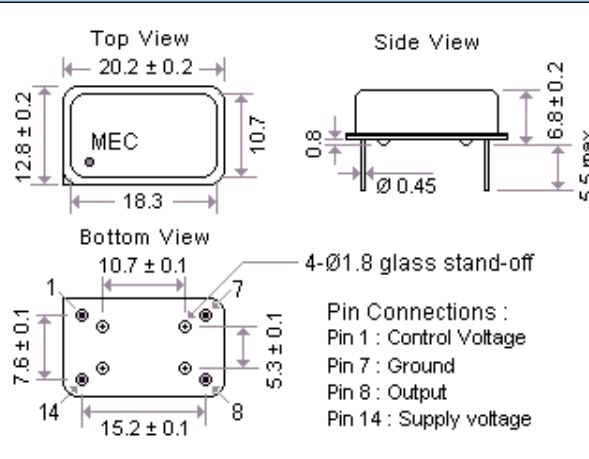
wireless repeaters, transponders, HDTV, FPGAs, data acquisition.



General Specifications of " G " series , [TA = +25°C , V_{DD}= at specified voltage , Load : 15 pF]

Model	" G " series						
Output Waveform	CMOS						
Type	SMD Type					Thru - Hole Type	
Pads / Pins	6 pads					4 pins	
Models (Dimensions) , Unit : mm	G226 (2.5 * 2.0 * 1.0)		G576 (7.0 * 5.0 * 1.7)			G8 (12.8 * 12.8 * 6.3)	
	G326 (3.2 * 2.5 * 1.0)		G536 (5.0 * 3.2 * 1.2)			G14 (20.2 * 12.8 * 6.8)	
Supply Voltage (V _{DD})	+1.8V ± 5%			+3.3V ± 10%			
Frequency Range	16.0 MHz ~ 50.0 MHz			1.25 MHz ~ 50.0 MHz			
Initial Freq. Accuracy (at 25 °C)	with Vc = 0.9V			with Vc = 1.65V			
Output Logic High " 1 "	1.62 V (min.)			2.97 V (min.)			
Output Logic Low " 0 "	0.18 V (max.)			0.33 V (max.)			
Frequency Deviation Range	Standard : ± 80 ppm (min.)			Standard : ± 80 ppm (min.)			
Control Voltage Center and Range	0.9 V ± 0.9 V			1.65 V ± 1.35 V			
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 " F " For example : " C20 " : ± 20 ppm over -20°C to +70°C ; " F30 " : ± 30 ppm over -40°C to +85°C	
	Commercial (-20°C to +70°C)		A	B	C		
	Industrial (-40°C to +85°C)		D	E	F		
Output Load		15 pF					
Rise Time (Tr) / Fall Time (Tf)		4 nsec.(typ.) ; 6 nsec.(max.) Measured between 10% to 90% of waveform					
Duty Cycle		50% ± 10% (standard) , 50% ± 5% (optional, add " - S " as suffix to part number)					
RMS Jitter (12 KHz to 20 MHz)		1.0 psec (max.)					
Phase Noise	Offset	10 Hz	100 Hz	1K Hz	10K Hz	100K Hz	1 MHz
[27MHz , 3.3V]	dBc/Hz (typ.)	-40 dBc/Hz	-104 dBc/Hz	-132 dBc/Hz	-147 dBc/Hz	-152 dBc/Hz	-150 dBc/Hz
Start-up Time		10 msec. (max.)					
Current Consumption		10 ~ 45 mA (Frequency dependent). For 27 MHz: 10 mA (typ.) at +3.3 V _{DD}					
Linearity		6% (typ.) ; 10% (max.)					
Modulation Bandwidth		10 KHz (min.) Measured at -3 dB					
Input Impedance		5 MΩ (typ.)					
Slope Polarity (Transfer Function)		Monotonic and Positive : Increasing control voltage always increases output frequency ,					
Storage Temperature		-55°C to +125°C					
Aging at Ta = +25°C		± 3 ppm per year (max.)					
Output Enable / Disable Function		Enable	When 70% (min.) of V _{DD} to Enable Output. ; Enable time : 2 msec (max.)				
		Disable	When 30% (max.) of V _{DD} to Disable Output. ; Disable time : 100 nsec (max.)				

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

[G226]	[G326]
 Top View 2.5 ± 0.1 2.0 ± 0.1 MEC Bottom View 0.5 0.6 0.9 0.6 Land Pattern 0.6 0.85 0.9 0.6 Side View 1.0 ± 0.1 Pad Connections : Pad 1 : Control Voltage Pad 2 : OE Pad 3 : Ground Pad 4 : Output Pad 5 : No Connection Pad 6 : Supply Voltage	 Top View 3.2 ± 0.1 2.5 ± 0.1 MEC Bottom View 0.6 1.2 1.5 0.8 Land Pattern 0.9 1.1 2.4 0.5 1.0 ± 0.1 Side View 1.0 ± 0.1 Pad Connections : Pad 1 : Control Voltage Pad 2 : OE Pad 3 : Ground Pad 4 : Output Pad 5 : No Connection Pad 6 : Supply Voltage
[G536]	[G576]
 Top View 5.0 ± 0.2 3.2 ± 0.2 MEC Bottom View 2.54 2.1 0.64 0.9 0.1 Land Pattern 0.84 1.2 2.54 1.0 Side View 1.2 ± 0.1 Pad Connections : Pad 1 : Control Voltage Pad 2 : OE Pad 3 : Ground Pad 4 : Output Pad 5 : No Connection Pad 6 : Supply Voltage	 Top View 7.0 ± 0.2 5.0 ± 0.2 MEC Bottom View 1.4 3.7 5.08 1.1 Land pattern 5.08 4.2 1.8 2.54 2.0 1.7 ± 0.1 Side View 1.7 ± 0.1 Pad Connections : Pad 1 : Control Voltage Pad 2 : OE Pad 3 : Ground Pad 4 : Output Pad 5 : No Connection Pad 6 : Supply Voltage
[G8]	[G14]
 Top View 12.8 ± 0.2 12.8 ± 0.2 MEC 10.8 10.8 Side View 6.3 ± 0.2 0.8 Ø 0.45 5.5 max. Bottom View 3-Ø1.6 glass stand-off 7.6 ± 0.1 7.6 ± 0.1 1 4 5 8 Pin Connections : Pin1 : Control Voltage Pin4 : Ground Pin5 : Output Pin8 : Supply voltage	 Top View 20.2 ± 0.2 12.8 ± 0.2 MEC 18.3 10.7 Side View 6.8 ± 0.2 0.8 Ø 0.45 5.5 max. Bottom View 4-Ø1.8 glass stand-off 10.7 ± 0.1 15.2 ± 0.1 7.6 ± 0.1 5.3 ± 0.1 1 7 14 8 Pin Connections : Pin 1 : Control Voltage Pin 7 : Ground Pin 8 : Output Pin 14 : Supply voltage

Part Number Format and Examples

[1]	[2]		[3]		[4]	[5]		[6]
Supply Voltage	Holder Type	-	Frequency Stability	-	Pulling Range	Range Code	-	Center Frequency

Examples	(1)	18	G14	-	B	-	100	N	-	35.328
	(2)	3	G576	-	D	-	80	T	-	27.000

Ex (1) : **18G14 - B - 100N - 35.328** [+1.8V , full size 4 pin Dip type , $\pm 50\text{ppm}$ (-20°C to 70°C) , pulling : $\pm 100\text{ ppm}$ (min.) , 35.328 MHz]

Ex (2) : **3G576 - D - 80T - 27.000** [+3.3V , G576 type , $\pm 25\text{ppm}$ (-40°C to 85°C) , pulling : $\pm 80\text{ ppm}$ (typ.) , 27.000 MHz]

[1]	Supply voltage , " 18 " for +1.8V ; " 3 " for +3.3V	
[2]	Holder Type	
[3]	$-20^{\circ}\text{C} \sim 70^{\circ}\text{C}$	" A " $\pm 25\text{ppm}$; " B " $\pm 50\text{ppm}$; " C " $\pm 100\text{ppm}$;
		If non-standard please enter the desired stability after " C " , for example " C15 " : represents $\pm 15\text{ppm}$ over -20 to $+70^{\circ}\text{C}$
	$-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$	" D " $\pm 25\text{ppm}$; " E " $\pm 50\text{ppm}$; " F " $\pm 100\text{ppm}$;
		If non-standard please enter the desired stability after " F " , for example " F20 " : represents $\pm 20\text{ppm}$ over -40 to $+85^{\circ}\text{C}$
[4]	Frequency Pulling Range	3.3V From $\pm 30\text{ppm} \sim \pm 150\text{ppm}$, control Voltage range : 0.3V $\sim$ 3.0 ; control voltage center : $\pm 1.65\text{ V}$
		5.0V From $\pm 70\text{ppm} \sim \pm 200\text{ppm}$, control Voltage range : 0.5V $\sim$ 4.5V ; control voltage center : $\pm 2.5\text{ V}$
[5]	Pulling Range Code	" M " stands for maximum ; " N " stands for minimum ; " T " stands for typical (tolerance is $\pm 20\%$)
[6]	Center Frequency in MHz	

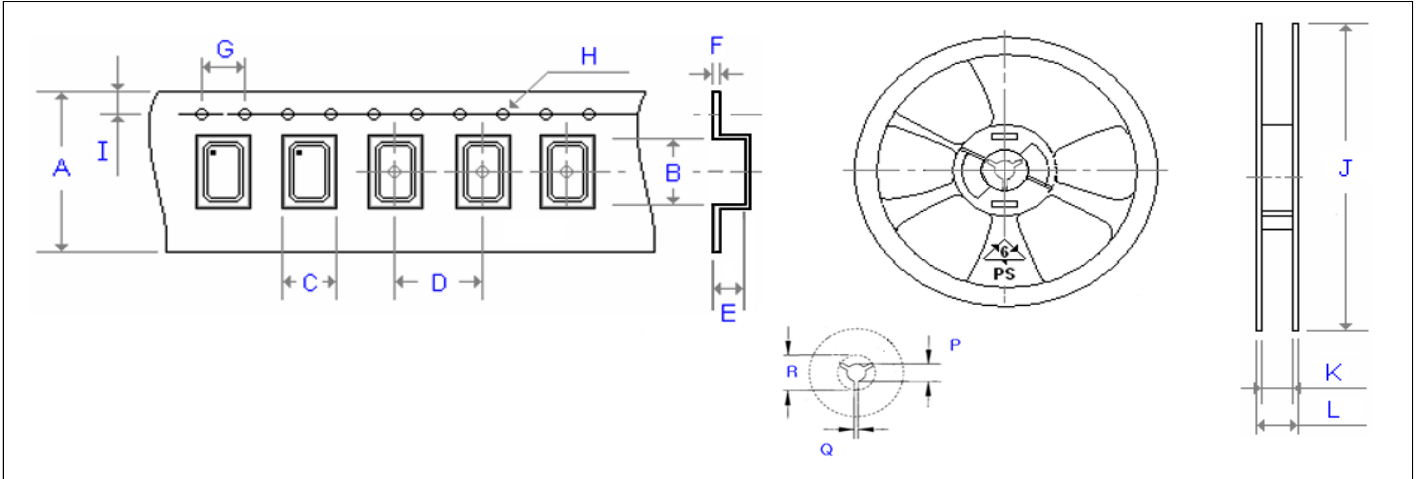
CMOS Output Waveform	Transfer Function
CMOS 90% 50% 10% Duty Cycle = $(T_H / T) \times 100\%$	Typical response of 3G576 - D - 100N - 100.000 (at 25°C , positive transfer) Frequency Deviation Control Voltage (V) " - - - - - " : Theoretical 0% non-linearity

[Thru - Hole Type] CMOS Square Wave Test Circuit	[SMD 6 pads] CMOS Square Wave Test Circuit
VDD 10uF 0.1uF 15pF MEC control voltage	VDD 10uF 0.1uF 15pF MEC control voltage

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	0.30	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	0.30	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) +2.0 / -0.0mm

	J	K	L	P	Q	R	pcs / reel
G_226	180.00	9.00	12.00	13.20	2.10	-	3000
G_326	180.00	9.00	12.00	13.20	2.10	-	3000
G_536	180.00	13.00	16.00	13.20	2.50	-	1000
G_576	180.00	17.20	19.30	13.30	2.20	22.00	1000
G_538	180.00	13.00	16.00	13.20	2.50	-	1000
G_578	180.00	17.20	19.30	13.30	2.20	22.00	1000
(V)M21	180.00	9.00	12.00	13.20	2.10	-	3000
ME21	180.00	9.00	12.00	13.20	2.10	-	3000
(V)M22	180.00	9.00	12.00	13.20	2.10	-	3000
(V)M_32	180.00	9.00	12.00	13.20	2.10	-	3000
(V)M_326	180.00	13.00	16.00	13.20	2.50	-	1000
(V)M_53	180.00	13.00	16.00	13.20	2.50	-	1000
(V)M_538	180.00	13.00	16.00	13.20	2.50	-	1000
(V)M_57(2)	180.00	17.20	19.30	13.30	2.20	22.00	500
(V)M_43 (63)	330.00	24.50	29.10	13.00	2.20	17.30	500