

VCXO " G "

CMOS

Thru-Hole

SMD

1.8 V

3.3 V

Min.

Max.

2.5 V

5.0 V

1.25 MHz

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, [  $T_A = +25^\circ\text{C}$ ,  $V_{DD} =$  at specified voltage, Load : 15 pF ]

Model	" G " series					
Output Wave Form	CMOS					
Type	SMD Type					Thru - Hole Type
Pads / Pins	4 pads		6 pads		4 pins	
Models ( Dimensions ) , Unit : mm	<b>G324</b> ( 3.2 * 2.5 * 1.0 )	<b>G534</b> ( 5.0 * 3.2 * 1.2 )	<b>G326</b> ( 3.2 * 2.5 * 1.0 )		<b>G14</b> ( 20.2 * 12.8 * 6.0 )	
	<b>G42</b> ( 11.4 * 9.6 * 2.5 )	<b>G43</b> ( 11.4 * 9.6 * 3.0 )	<b>G536</b> ( 5.0 * 3.5 * 1.2 )		<b>G8</b> ( 12.8 * 12.8 * 5.5 )	
	<b>G576</b> ( 7.0 * 5.0 * 1.8 )					
Input Voltage ( $V_{DD}$ )	$V_{DD} = +1.8\text{V} \pm 5\%$		$V_{DD} = +2.5\text{V} \pm 5\%$		$V_{DD} = +3.3\text{V} \pm 5\%$	
Frequency Range	16.0 MHz ~ 50.0 MHz		1.25 MHz ~ 50.0 MHz		1.25 MHz ~ 50.0 MHz	
Initial Freq. Accuracy ( at 25 °C )	with $V_c = 0.9\text{V} \pm 0.15\text{V}$		with $V_c = 1.25\text{V} \pm 0.2\text{V}$		with $V_c = 1.65\text{V} \pm 0.2\text{V}$	
Output Logic High " 1 "	1.62 V ( min. )		2.25 V ( min. )		2.97 V ( min. )	
Output Logic Low " 0 "	0.183 V ( max. )		0.25 V ( max. )		0.33 V ( max. )	
Frequency Deviation Range	Standard : $\pm 80$ ppm ( min. )		Standard : $\pm 80$ ppm ( min. )		Standard : $\pm 80$ ppm ( min. ) ; $\pm 200$ ppm ( min. ) available	
Control Voltage Center	0.9 $V_{DC}$		1.25 $V_{DC}$		1.65 $V_{DC}$	
Control Voltage Range	0.0V to 1.8V		0.25 V to 2.25 V		0.3V to 3.0V	
Frequency Stability Codes	Frequency Stability over Operating Temperature Range		$\pm 25$ ppm	$\pm 50$ ppm	$\pm 100$ ppm	If non-standard please enter the desired stability after the " C " or " I " For example : " C20 " : $\pm 20$ ppm over $-10^\circ\text{C}$ to $+70^\circ\text{C}$ ; " I30 " : $\pm 30$ ppm over $-40^\circ\text{C}$ to $+85^\circ\text{C}$
	Commercial " C " ( $-10^\circ\text{C}$ to $+70^\circ\text{C}$ )		A	B	C	
	Industrial " I " ( $-40^\circ\text{C}$ to $+85^\circ\text{C}$ )		D	E	F	
Output Load	15 pF					
Rise Time ( $T_r$ ) / Fall Time ( $T_f$ )	6 nSec.(max.) ; 4 nSec.(typical) . Measured between 10% to 90% of wave form ( $CL=15\text{pF}$ )					
Duty Cycle	50% $\pm$ 10% (standard) , 50% $\pm$ 5% ( optional, add " - S " as suffix to part number )					
Integrated Phase Jitter	1 ps max. ( 12 KHz to 20 MHz ) .					
Phase Noise [ typical of 27.0 MHz ] [ at 3.3V ]	10 Hz	100 Hz	1k Hz	10K Hz	100K Hz	1 MHz
	-40 dBc/Hz	-104 dBc/Hz	-132 dBc/Hz	-147 dBc/Hz	-152 dBc/Hz	-150 dBc/Hz
Start-up Time ( $T_s$ )	10 mSec. (max.)					
Current Consumption	10 ~ 45 mA ( Frequency dependent). For 27 MHz: 10 mA typical at $+3.3 V_{DD}$ and 20 mA typical. at $5.0 V_{DD}$ .					
Linearity	6% typical ; 10% max.					
Modulation Bandwidth	10 KHz min. Measured at -3 dB					
Input Impedance	5 M $\Omega$ typical					
Slope Polarity (Transfer Function)	Monotonic and Positive : Increasing control voltage always increases output frequency ,					
Aging	$\pm 3$ ppm per year (max.)					
OE Control	70% of $V_{DD}$ min. is applied to output enable . ; Output enable time : 2 ms max.					
	30% of $V_{DD}$ max. to disable output ( high impedance ) . ; Output disable time : 100 ns max.					

### 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)	5	G14	-	B	-	100	N	-	35.328
	(2)	3	G576	-	D	-	80	T	-	27.000

Ex (1) : **5G14 - B - 100N - 35.328** [ +5.0V , full size 4 pin Dip type , ±50ppm ( -10°C to 70°C ) , pulling : ±100 ppm ( min. ) , 35.328 MHz ]

Ex (1) : **3G576 - D - 80T - 27.000** [ +3.3V , G\_576 type , ±25ppm ( -40°C to 85°C ) , pulling : ±80 ppm ( typical ) , 27.000 MHz ]

[ 1 ]	Supply voltage , " 18 " for +1.8V ; " 25 " for +2.5V ; " 3 " for +3.3V ; " 5 " for +5.0V	
[ 2 ]	Holder Type	
[ 3 ]	-10°C ~ 70 °C	" A " ± 25ppm ; " B " ± 50ppm ; " C " ± 100ppm ; If non-standard please enter the desired stability after " C " ,for example " C15 " : represents ±15ppm over -10 to +70°C
	-40°C ~ 85 °C	" D " ± 25ppm ; " E " ± 50ppm ; " F " ± 100ppm ; If non-standard please enter the desired stability after " I " ,for example " I20 " : represents ±20ppm over -40 to +85°C
[ 4 ]	Frequency Pulling Range	3.3V From ±30ppm ~ ±150ppm , control Voltage range : 0.3V ~ 3.0 ; control voltage center : ± 1.65 V
		5.0V From ±70ppm ~ ±200ppm , control Voltage range : 0.5V ~ 4.5V ; control voltage center : ± 2.5 V
[ 5 ]	Pulling Range Code	" M " stands for maximum ; " N " stands for minimum ; " T " stands for typical ( tolerance is ± 20% )
[ 6 ]	Center Frequency in MHz	

CMOS Output Wave Form	Transfer Function
	<p>Typical response of 3G576 - D - 100N - 100.000 ( at 25°C , positive transfer )</p> <p>" - - - - - " : Theoretical 0% non-linearity</p>

[ 4 pads ] CMOS Square Wave Test Circuit	[ 6 pads ] CMOS Square Wave Test Circuit

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

<p>[ G324 ]</p> <p>Pad Connections :          Pad 1 : Control Voltage          Pad 2 : Ground          Pad 3 : Output          Pad 4 : Supply Voltage</p>	<p>[ G326 ]</p> <p>Pad Connections :          Pad 1 : Control Voltage          Pad 2 : OE          Pad 3 : Ground          Pad 4 : Output          Pad 5 : No Connection          Pad 6 : Supply Voltage</p>
<p>[ G534 ]</p> <p>Pad Connections :          Pad 1 : Control Voltage          Pad 2 : Ground          Pad 3 : Output          Pad 4 : Supply Voltage</p>	<p>[ G536 ]</p> <p>Pad Connections :          Pad 1 : Control Voltage          Pad 2 : OE          Pad 3 : Ground          Pad 4 : Output          Pad 5 : No Connection          Pad 6 : Supply Voltage</p>
<p>[ G576 ]</p> <p>Pad Connections :          Pad 1 : Control Voltage          Pad 2 : OE          Pad 3 : Ground          Pad 4 : Output          Pad 5 : No Connection          Pad 6 : Supply Voltage</p>	<p>[ G43 ]</p> <p>Pad Connections :          Pad 1 : Control Voltage ( rounded pad )          Pad 2 : Ground          Pad 3 : Output          Pad 4 : Supply voltage</p>
<p>[ G14 ]</p> <p>Pin Connections :          Pin 1 : Control Voltage          Pin 7 : Ground          Pin 8 : Output          Pin 14 : Supply voltage</p>	<p>[ G8 ]</p> <p>Pin Connections :          Pin 1 : Control Voltage          Pin 4 : Ground          Pin 5 : Output          Pin 8 : Supply voltage</p>