

VCXO " G "

CMOS

Thru-Hole

SMD

1.8 V

3.3 V

Min.

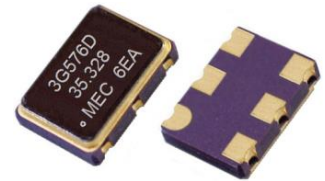
Max.

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 , [ TA = +25°C , V<sub>DD</sub>= 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 * 3.2 * 1.2 )		<b>G8</b> ( 12.8 * 12.8 * 5.5 )		
	<b>G576</b> ( 7.0 * 5.0 * 1.7 )						
Input Voltage ( V <sub>DD</sub> )	V <sub>DD</sub> = +1.8V $\pm$ 5%	V <sub>DD</sub> = +2.5V $\pm$ 5%	V <sub>DD</sub> = +3.3V $\pm$ 5%		V <sub>DD</sub> = +5.0V $\pm$ 10%		
Frequency Range	16.0 MHz ~ 50.0 MHz	1.25 MHz ~ 50.0 MHz	1.25 MHz ~ 50.0 MHz		1.25 MHz ~ 50.0 MHz		
Initial Freq. Accuracy ( at 25 °C )	with V <sub>c</sub> = 0.9V $\pm$ 0.15V		with V <sub>c</sub> = 1.25V $\pm$ 0.2V		with V <sub>c</sub> = 1.65V $\pm$ 0.2V		
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 <sub>DC</sub>		1.25 V <sub>DC</sub>		1.65 V <sub>DC</sub>		
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°C to +70°C ; " I30 " : $\pm$ 30 ppm over -40°C to +85°C	
	Commercial " C " ( -10°C to +70°C )		A	B	C		
	Industrial " I " ( -40°C to +85°C )		D	E	F		
Output Load	15 pF						
Rise Time ( Tr ) / Fall Time ( Tf )	6 n sec.( max. ) ; 4 n sec.( typical ) . Measured between 10% to 90% of wave form ( CL=15pF )						
Duty Cycle	50% $\pm$ 10% ( standard ) , 50% $\pm$ 5% ( optional, add " - S " as suffix to part number )						
Integrated Phase Jitter	1.0 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 ( Ts )	10 m sec. ( max. )						
Current Consumption	10 ~ 45 mA ( Frequency dependent ) . For 27 MHz: 10 mA typical at +3.3 V <sub>DD</sub> and 20 mA typical at 5.0 V <sub>DD</sub> .						
Linearity	6% typical ; 10% max.						
Modulation Bandwidth	10 KHz min. Measured at -3 dB						
Input Impedance	5 MΩ typical						
Slope Polarity ( Transfer Function )	Monotonic and Positive : Increasing control voltage always increases output frequency ,						
Aging	$\pm$ 3 ppm per year ( max. )						
Output Enable / Disable Function	Enable	When 70% min. of V <sub>DD</sub> to Enable Output. ; Enable time : 2 ms max.					
	Disable	When 30% max. of V <sub>DD</sub> to Disable Output. ; Disable time : 100 ns max.					

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

<p>[ G324 ]</p> <p>Top view dimensions: 3.2±0.2, 2.5±0.2, 0.7±0.1, 0.9±0.1, 2.2, 1.0±0.1</p> <p>Side view dimensions: 1.0±0.1</p> <p>Pad layout dimensions: 1.2, 1.75, 2.2, 1.0</p> <p>Pad Connections :                  Pad 1 : Control Voltage                  Pad 2 : Ground                  Pad 3 : Output                  Pad 4 : Supply Voltage</p>	<p>[ G326 ]</p> <p>Top view dimensions: 3.2±0.2, 2.5±0.2, 0.6, 1.0±0.1, 0.8±0.1, 1.2, 0.1±0.1</p> <p>Side view dimensions: 1.0±0.1</p> <p>Pad layout dimensions: 0.9, 1.1, 2.4, 0.5±0.1</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>Top view dimensions: 5.0±0.1, 3.2±0.1, 1.2±0.1, 1.0±0.1, 2.54, 1.2±0.1</p> <p>Side view dimensions: 1.2±0.1, 1.0±0.1</p> <p>Pad layout dimensions: 1.6, 2.5, 2.54, 1.5</p> <p>Pad Connections :                  Pad 1 : Control Voltage                  Pad 2 : Ground                  Pad 3 : Output                  Pad 4 : Supply Voltage</p>	<p>[ G536 ]</p> <p>Top view dimensions: 5.0±0.1, 3.2±0.1, 1.2±0.1, 1.0±0.1, 2.54, 0.64, 0.9, 0.1±0.1</p> <p>Side view dimensions: 1.2±0.1, 1.0±0.1</p> <p>Pad layout dimensions: 0.9, 1.3, 2.54, 2.5</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>Top view dimensions: 7.0±0.2, 5.0±0.2, 1.7±0.1, 1.4±0.1, 2.6 typ., 5.08, 1.2±0.1</p> <p>Side view dimensions: 1.7±0.1, 2.6 typ.</p> <p>Pad layout dimensions: 5.08, 2.0, 4.2, 2.54, 1.8</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>Top view dimensions: 9.6±0.2, 11.4±0.2, 1.3±0.1, 7.0±0.1, 5.08, 1.4±0.1, 1.0±0.1</p> <p>Side view dimensions: 0.7, 3.0±0.2, 0.6</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>Top view dimensions: 20.2±0.2, 12.8±0.2, 18.3, 10.7, 7.6±0.1, 10.7±0.1, 5.3±0.1, 15.2±0.1, 8, 14</p> <p>Side view dimensions: 6.0±0.2, 6.3 max., 0.8, Ø 0.45</p> <p>Pin layout dimensions: 10.7±0.1, 7.6±0.1, 5.3±0.1, 15.2±0.1, 8, 14</p> <p>Pin Connections :                  Pin 1 : Control Voltage                  Pin 7 : Ground                  Pin 8 : Output                  Pin 14 : Supply voltage</p> <p>4-Ø1.8 glass stand-off</p>	<p>[ G8 ]</p> <p>Top view dimensions: 12.8±0.2, 12.8±0.2, 10.8, 10.8, 7.6±0.1, 7.6±0.1, 8, 5</p> <p>Side view dimensions: 5.5±0.2, 6.3 max., 0.8, Ø 0.45</p> <p>Pin layout dimensions: 7.6±0.1, 7.6±0.1, 8, 5</p> <p>Pin Connections :                  Pin 1 : Control Voltage                  Pin 4 : Ground                  Pin 5 : Output                  Pin 8 : Supply voltage</p> <p>3-Ø1.6 glass stand-off</p>

### Part Number Format and Examples

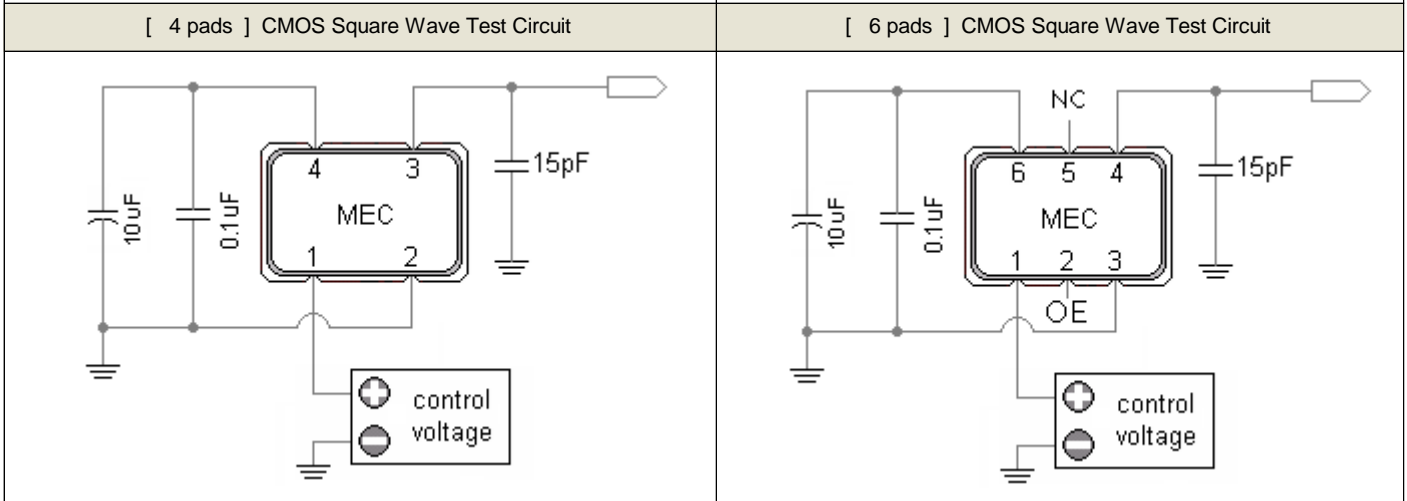
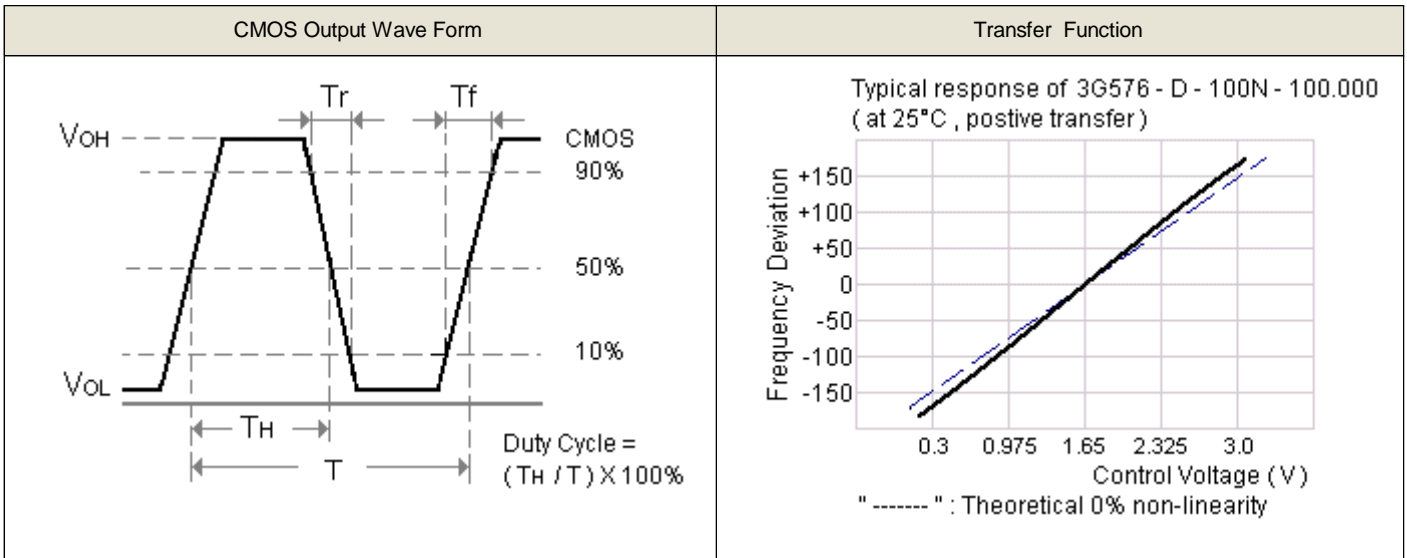
[ 1 ]	[ 2 ]	[ 3 ]	[ 4 ]	[ 5 ]	[ 6 ]
Supply Voltage	Holder Type	Frequency Stability	Pulling Range	Range Code	Center Frequency

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 , G576 type , ±25ppm ( -40°C to 85°C ) , pulling : ±80 ppm ( typical ) , 27.000 MHz ]

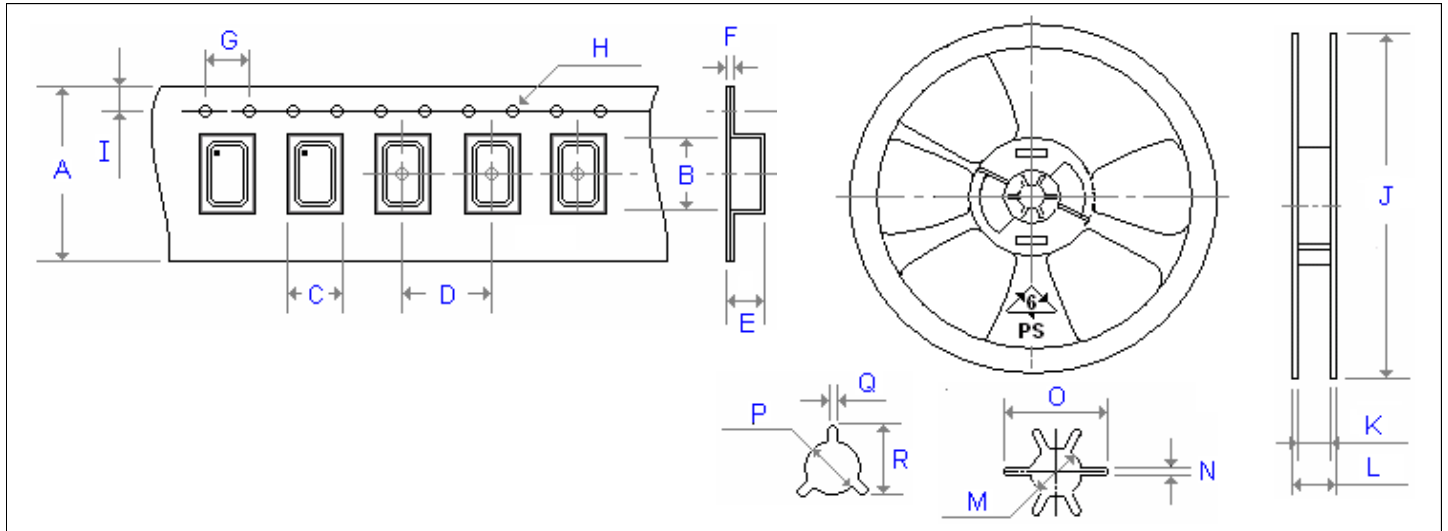
[ 1 ]	Supply voltage , " 18 " for +1.8V ; " 25 " for +2.5V ; " 3 " for +3.3V ; " 5 " for +5.0V	
[ 2 ]	Holder Type	
[ 3 ]	-10°C ~ 70 °C	" A " ± 25ppm ; " B " ± 50ppm ; " C " ± 100ppm ; If non-standard please enter the desired stability after " C " ,for example " C15 " : represents ±15ppm over -10 to +70°C
	-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 ]	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	



## 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