

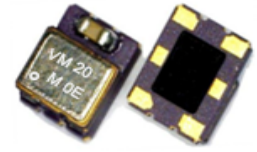


TCXO			VCTCXO			Min.	Max.
MQF _ T	MQF _ P	MQF _ D	VMQF _ T	VMQF _ P	VMQF _ D	10	1,500
CMOS	PECL	LVDS	CMOS	PECL	LVDS	MHz	MHz

Features

**1.5 pS Phase Jitter ( typical )**

The (V)MQF326T , (V)MQF326P and (V)MQF326D Series are members of Mercury's Q-Family Quick-Turn Temperature Compensated oscillators that can be delivered within days. With low current consumption (44 mA for PECL 212.500 MHz at 3.3V) and an integrated phase jitter performance of 1.0 pS RMS, they have gained its precision frequency control market position by providing engineers with next-day samples for prototypes and low cost, fast delivery for volume production ( ± 2.5 ppm over -30°C to +85°C ) .



General specifications , at Ta=+25°C

Model	(V)MQF326T	(V)MQF326P	(V)MQF326D					
<b>Output Logic</b>	<b>CMOS</b>	<b>PECL</b>	<b>LVDS</b>					
Supply Voltage V <sub>DD</sub> ( code )	+ 2.5 V ± 5% ( voltage code " 25 " ) + 3.3 V ± 5% ( voltage code " 33 " )	+ 2.5 V ± 5% ( voltage code " 25 " ) + 3.3 V ± 5% ( voltage code " 33 " )	+ 2.5 V ± 5% ( voltage code " 25 " ) + 3.3 V ± 5% ( voltage code " 33 " )					
Available Frequency Range	10 ~ 250 MHz	10 ~ 1,500 MHz	10 ~ 1,500 MHz					
Output Load	15 pF	50 Ω into V <sub>cc</sub> - 2V or Thevenin equivalent	100 Ω					
Output Logic " High " , " 1 "	90 % V <sub>DD</sub>	V <sub>DD</sub> - 1.03 ( min. ) , V <sub>DD</sub> - 0.6 ( max. )	1.4 V ( Typ. ) , 1.6 V ( max. )					
Output Logic " Low " , " 0 "	10 % V <sub>DD</sub>	V <sub>DD</sub> - 1.85 ( min. ) , V <sub>DD</sub> - 1.6 ( max. )	1.1 V ( Typ. ) , 0.9 V ( min. )					
( V <sub>DD</sub> = + 2.5V )	50 MHz : 24 mA	156 MHz : 36 mA	156 MHz : 22 mA					
Current Consumption ( max. )	125 MHz : 28 mA	600 MHz : 40 mA	600 MHz : 28 mA					
	200 MHz : 30 mA	1,000 MHz : 50 mA	1,000 MHz : 34 mA					
( V <sub>DD</sub> = + 3.3V )	50 MHz : 26 mA	156 MHz : 40 mA	156 MHz : 25 mA					
Current Consumption ( max. )	125 MHz : 30mA	600 MHz : 45 mA	600 MHz : 30 mA					
	200 MHz : 34 mA	1,000 MHz : 52 mA	1,000 MHz : 36 mA					
Current with Output Disabled	18 mA ( Typ. )	18 mA ( Typ. )	18 mA ( Typ. )					
Rise Time / Fall Time	1.5 nsec. ( Typ. ) , 3.0 nsec. ( max. ) Tr / Tf : 10% → 90% waveform	0.2 nsec. ( Typ. ) , 0.5 nsec. ( max. ) Tr / Tf : 20% → 80% waveform	0.2 nsec. ( Typ. ) , 0.4 nsec. ( max. ) Tr / Tf : 20% → 80% waveform					
Initial Calibration Tolerance	±1.0 ppm ( max. ) at +25°C±2°C ( at the shipment )							
Frequency Stability Codes	Temperature ( refer to +25°C )	± 2.5 ppm over -30°C to +85°C ( default for Quick - Turn ) ± 1.0 ppm over -40°C to +85°C ( available )						
	Aging at Ta = +25°C	± 2.0 ppm ( max. ) first year ; ± 10 ppm ( max. ) over 10 years						
	Voltage Change	± 0.2 ppm ( max. ) , for a ±5% input voltage change.						
	Load Change	± 0.2 ppm ( max. ) , for a ±10% load condition change.						
	Reflow	± 1.0 ppm ( max. ) , 1 reflow and measured 24 hours afterwards.						
Duty Cycle	50 % ± 5%							
Start-up Time	5 msec. ( max. )							
Storage Temperature	-55°C to + 150°C							
RMS Jitter [ 12 kHz ~ 20 MHz ]	1.5 psec ( typ. )							
Phase Noise [ dBc / Hz ( typ. ) ]	Offset	10 Hz	100 Hz	1K Hz	10K Hz	100K Hz	1M Hz	10M Hz
	156.250 MHz	-65	-92	-108	-114	-117	-139	-147
	212.500 MHz	-61	-90	-106	-110	-112	-133	-142
	312.500 MHz	-51	-79	-97	-102	-103	-125	-134
Storage Temperature	-55°C to + 150°C							

Control Voltage Function on Pad 1		Output Enable Function on pad 2	
Control Voltage Center and Range	+1.5V ± 1.0V for both V <sub>DD</sub> = 2.5V and 3.3V	OE Control on Pad 2	70% of V <sub>DD</sub> (min.) to enable output. (Open connection prohibit.)
Frequency Pulling Range	± 8 ppm ( min. )		30% of V <sub>DD</sub> (max.) to disable output.
Linearity	± 1 % ( typ. ) ± 10% ( max. )		
Transfer Function	Positive Transfer	Output Enable Time / Disable Time	200 nsec. ( max. ) / 50 nsec. ( max. )
Absolute Voltage	4.0 V ( max. )		
Input Impedance	770 KΩ ( typ. )		

# Temperature Compensated Crystal Oscillators [ TCXO " M " and VCTCXO " VM " ]

TCXO			VCTCXO			F series	SMD	2.5 V	3.3 V	Min. 10 MHz	Max. 1,500 MHz
MQF _ T	MQF _ P	MQF _ D	VMQF _ T	VMQF _ P	VMQF _ D						
CMOS	PECL	LVDS	CMOS	PECL	LVDS						

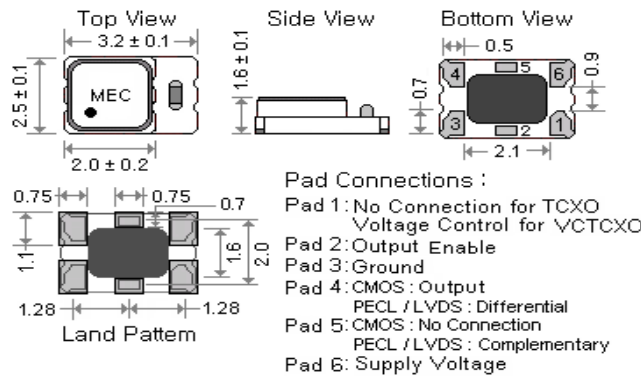
## Part Number Format and Example

Example : VMQF326D33 - 622.080 - 2.0 / -40+85

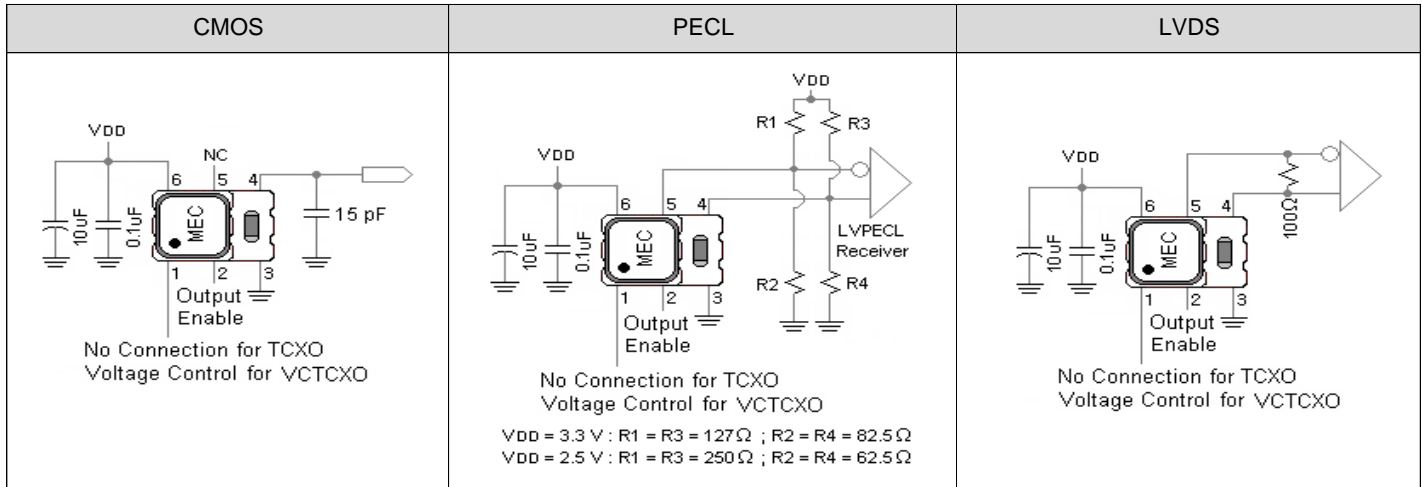
VMQF	326	D	33	-	622.080	-	2.0	/	-40+85
Hold Type	Package	T : CMOS	Supply Voltage						Operating
" MQF " : TCXO	" 326 "	P : PECL	" 33 " for 3.3V	-	Center Freq. ( MHz )	-	Freq. Stability	/	Temperature
" VMQF " : VCTCXO	( 3.2 * 2.5 mm )	D : LVDS	" 25 " for 2.5V						Range

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

### [ (V)MQF326T ] , [ (V)MQF326P ] , [ (V)MQF326D ]



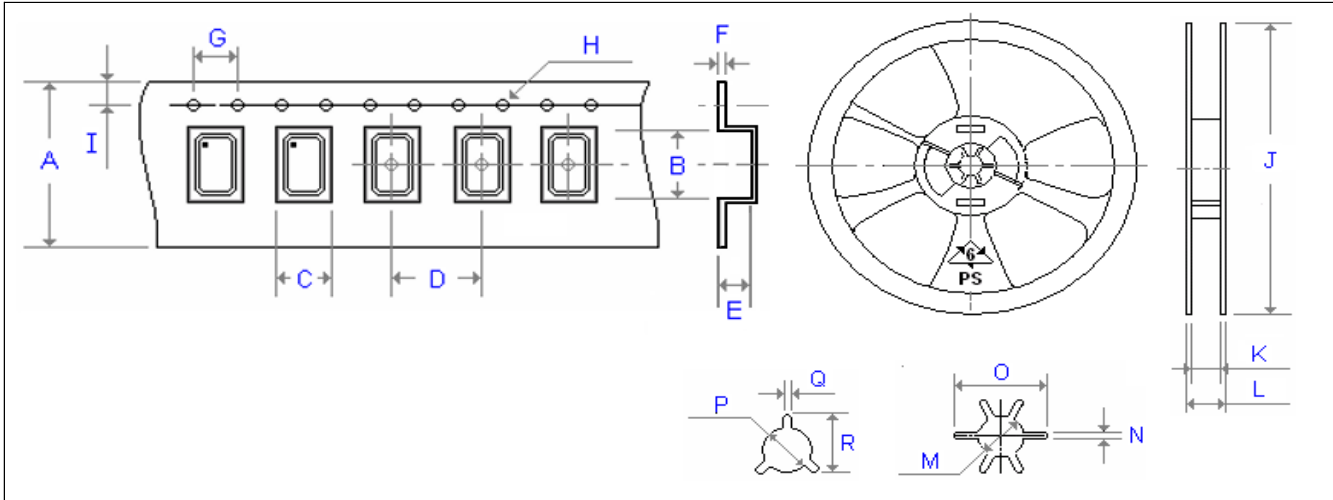
## Test Circuits and Output Waveforms



## 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_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	11.8	10.0	16.0	5.0	0.3	4.0	∅ 1.50	1.75	500
G_43	24.0	11.8	10.0	16.0	5.0	0.3	4.0	∅ 1.55	1.75	500
G_62	24.0	11.8	10.0	16.0	5.0	0.3	4.0	∅ 1.55	1.75	500
G_63	24.0	11.8	10.0	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	∅ 1.50	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	11.8	10.0	16.0	5.0	0.3	4.0	∅ 1.50	1.75	500
(V)M_43	24.0	11.8	10.0	16.0	5.0	0.3	4.0	∅ 1.50	1.75	500
(V)M_62	24.0	11.8	10.0	16.0	5.0	0.3	4.0	∅ 1.50	1.75	500
(V)M_63	24.0	11.8	10.0	16.0	5.0	0.3	4.0	∅ 1.50	1.75	500

Reel Dimensions ( unit : mm ) ±2mm

	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	24.5	29.1	13.0	2.2	17.3	500
G_43	330.0	24.5	29.1	13.0	2.2	17.3	500
G_62	330.0	24.5	29.1	13.0	2.2	17.3	500
G_63	330.0	24.5	29.1	13.0	2.2	17.3	500
(V)M_22	178.00	8.40	11.40	13.0	2.5	20.5	3000
(V)M_32	180.0	9.0	12.0	13.2	2.1	-	3000
(V)MQ_326	180.0	13.0	16.0	13.2	2.5	-	3000
(V)M_53	180.0	13.0	16.0	13.2	2.5	-	1000
(V)M_57	180.0	17.2	19.3	13.3	2.2	22.0	500
(V)M_42	330.0	24.5	29.1	13.0	2.2	17.3	500
(V)M_43	330.0	24.5	29.1	13.0	2.2	17.3	500
(V)M_62	330.0	24.5	29.1	13.0	2.2	17.3	500
(V)M_63	330.0	24.5	29.1	13.0	2.2	17.3	500