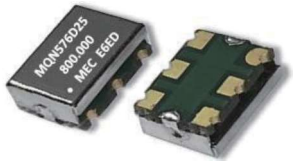
Temperature Compensated Crystal Oscillators [TCXO " M " and VCTCXO " VM "]

TCXO			VCTCXO			N series	SMD	2.5 V	3.3 V	Min.	Max.
MQN _ T	MQN _ P	MQN _ D	VMQN _ T	VMQN _ P	VMQN _ D						
CMOS	LVPECL	LVDS	CMOS	LVPECL	LVDS					10 MHz	1,500 MHz

Features

0.8 pS Phase Jitter (typical)

The (V)MQN___T , (V)MQN___P and (V)MQN___D 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 LVPECL 212.500 MHz at 3.3V) and an integrated phase jitter performance of 0.8 pS RMS, they have gained its precision frequency control market position by providing engineers with few-day samples for prototypes and low cost, fast delivery for volume production .



General specifications , at Ta=+25°C , CL=15pF

Model	(V)MQN574T , (V)MQN576T	(V)MQN576P	(V)MQN576D
Output Logic	LVCMOS / LVTTL	LVPECL	LVDS
Supply Voltage V_{DD} (code)	+ 2.5 V_{DD} ± 5% (voltage code " 25 ")	+ 2.5 V_{DD} ± 5% (voltage code " 25 ")	+ 2.5 V_{DD} ± 5% (voltage code " 25 ")
	+ 3.3 V_{DD} ± 5% (voltage code " 33 ")	+ 3.3 V_{DD} ± 5% (voltage code " 33 ")	+ 3.3 V_{DD} ± 5% (voltage code " 33 ")
Available Frequency Range	10 ~ 250 MHz	10 ~ 1,500 MHz	10 ~ 1,500 MHz
Load	15 pF	50 Ω into Vcc - 2V or Thevenin equiralent	100 Ω
Output Logic " High " , " 1 "	90 % V_{DD}	V_{DD} - 1.03 (min.) , V_{DD} - 0.6 (max.)	1.4 V Typical , 1.6 V max.
Output Logic " Low " , " 0 "	10 % V_{DD}	V_{DD} - 1.85 (min.) , V_{DD} - 1.6 (max.)	1.1 V Typical , 0.9 V min.
(V_{DD} = + 2.5V) Current Consumption All values are typical and over the operating temperatures.	50 MHz : 24 mA	156 MHz : 36 mA	156 MHz : 22 mA
	125 MHz : 28 mA	600 MHz : 40 mA	600 MHz : 28 mA
	200 MHz : 30 mA	800 MHz : 46 mA	800 MHz : 30 mA
		1,000 MHz : 50 mA	1,000 MHz : 34 mA
(V_{DD} = + 3.3V) Current Consumption All values are typical and over the operating temperatures.	50 MHz : 26 mA	156 MHz : 40 mA	156 MHz : 25 mA
	125 MHz : 30mA	600 MHz : 45 mA	600 MHz : 30 mA
	200 MHz : 34 mA	800 MHz : 48 mA	800 MHz : 32 mA
		1,000 MHz : 52 mA	1,000 MHz : 36 mA
Current with Output Disabled	18 mA (typical)	18 mA (typical)	18 mA (typical)
Rise Time / Fall Time	1.5 nS. (Typical) , 3.0 nS. (max.) Tr / Tf : 10% ↔ 90% waveform	0.2 nS. (Typical) , 0.5 nS. (max.) Tr / Tf : 20% ↔ 80% waveform	0.2 nS. (Typical) , 0.4 nS. (max.) Tr / Tf : 20% ↔ 80% waveform
Initial Calibration Tolerance	±2.0 ppm. max. at +25°C±2°C. (upon shipment)		
Frequency Stability Codes	Temperature (ref to +25°C)	± 2.5 ppm over -30°C to +85°C (default)	
		± 1.0 ppm over -40°C to +85°C (available)	
	Aging	± 1.0 ppm max . , per year at 25°C	
	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 m sec. (max.)		
Aging at Ta = +25°C	± 2 ppm max. first year at 25°C ; ± 10 ppm max. over 10 years		
Storage Temperature	-55°C to + 150°C		

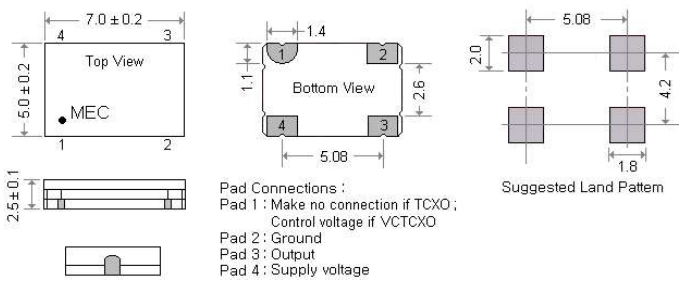
SSB Phase Noise [dBc / Hz (typical)]	Offset	10 Hz	100 Hz	1K Hz	10K Hz	100K Hz	1M Hz	10M Hz	Phase Jitter (12KHz ~ 20 MHz)
	125 MHz	-51	-93	-111	-123	-125	-135	-155	0.73 pS
	212.5 MHz	-42	-87	-105	-115	-118	-130	-151	0.85 pS
	312.5 MHz	-49	-88	-107	-111	-114	-124	-147	0.88 pS

Control Voltage Function on Pad 1	
Control Voltage Center and Range	+1.5V ± 1.0V for both V_{DD} = 2.5V and 3.3V
Frequency Pulling Range	± 8 ppm min.
Linearity	± 1 % typical. ± 10% max.
Transfer Function	Positive Transfer
Absolute Voltage	4.0 V max.
Input Impedance	770 KΩ typical.
Harmonics	-5.0 dBc max.

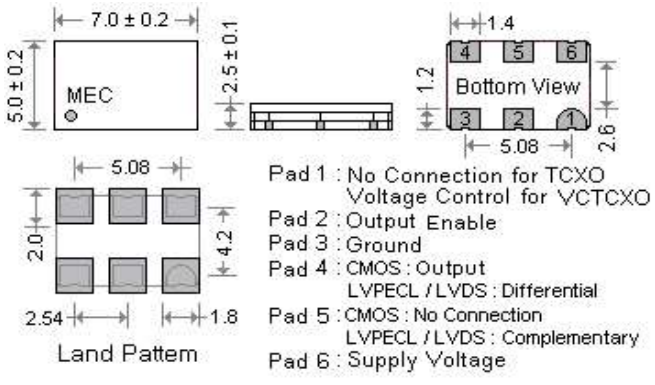
Output Enable Function on pad 2	
OE Control on Pad 2	70% of V_{DD} (min.) to enable output. (Open connection prohibit.)
	30% of V_{DD} (max.) to disable output (high impedance).
Ouput Enable Time / Disable Time	200 nS. Max. / 50 nS. Max.
Integrated Phase Jitter	0.8 pS typical (12 KHz to 20 MHz)
	< 150 fS (1.875 KHz to 20 MHz)

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

[MQN574T]



[MQN576T] , [MQN576P] , [MQN576D]



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

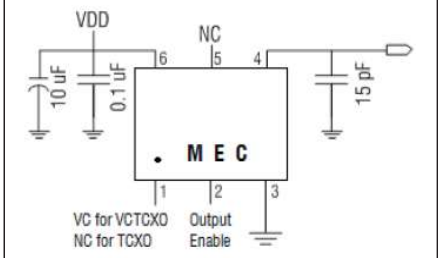
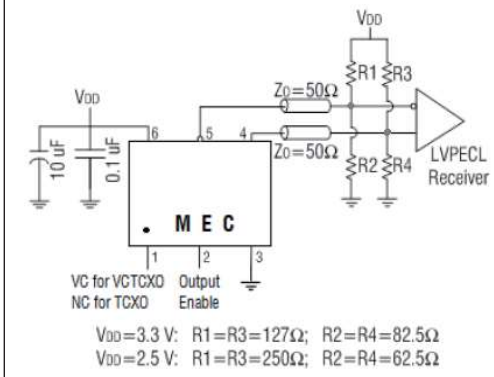
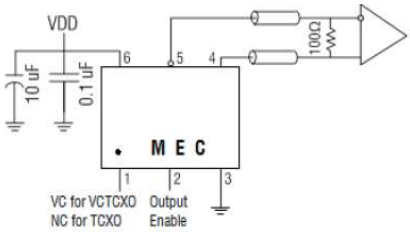
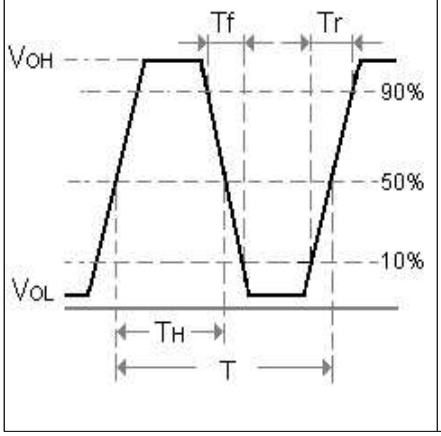
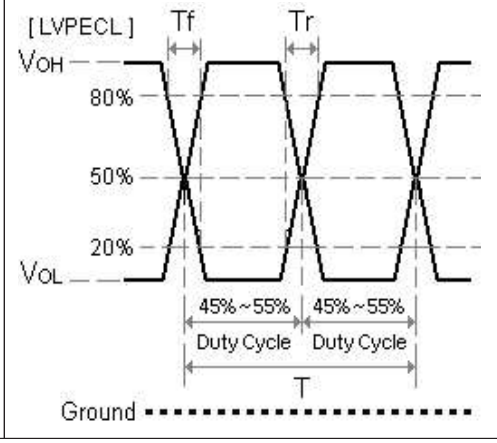
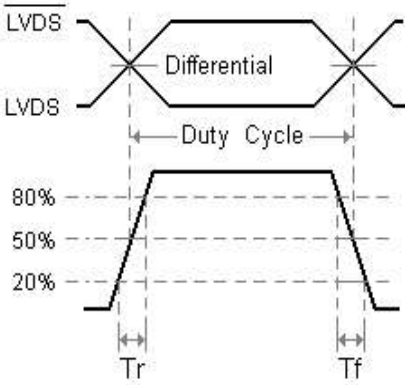
TCXO			VCTCXO							
MQN _ T	MQN _ P	MQN _ D	VMQN _ T	VMQN _ P	VMQN _ D	N series	SMD	2.5 V	3.3 V	Min. 10 MHz / Max. 1,500 MHz
CMOS	LVPECL	LVDS	CMOS	LVPECL	LVDS					

Part Number Format and Example

Example : 1.VMQN574T33 - 120.000 - 2.5 / -40+85
2.VMQN576P33 - 120.000 - 2.5 / -40+85

VMQN	574	T	33	-	120.000	-	2.5	/	-40+85
Hold Type " MQN " : TCXO " VMQN " : VCTCXO	Package " 574 " 4pad (5.0 * 7.0 mm)	T : CMOS	Supply Voltage " 33 " for 3.3V " 25 " for 2.5V		Center Freq. (MHz)		Freq. Stability		Operating Temperature Range
VMQN	576	P	33	-	120.000	-	2.5	/	-40+85
Hold Type " MQN " : TCXO " VMQN " : VCTCXO	Package " 576 " 6pad (5.0 * 7.0 mm)	T : CMOS P : LVPECL D : LVDS	Supply Voltage " 33 " for 3.3V " 25 " for 2.5V		Center Freq. (MHz)		Freq. Stability		Operating Temperature Range

Test Circuits and Output Waveforms

CMOS	LVPECL	LVDS
		
		

Output OE Function on pad 2