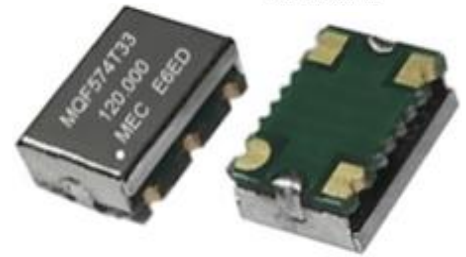


QM574T and **QVM574T** are QuikXO™ (quick-turn delivery) versions of the MQ574 (a TCXO) and VMQ574 (a VCTCXO) series, respectively. QuikXO™ products, either standard or custom frequencies are produced and shipped from California USA in 3 to 5 days and available at Mercury eCommerce. They are 7.0x5.0x2.5 mm SMD, the supply voltage can be either 2.5 V or 3.3 V, CMOS output logics and frequency up to 250 MHz. The 0.8 ~ 1.6 ps typical phase jitter and lower current consumption (25 mA typical for 250 MHz at 3.3 V) compared to competitions make the series ideal for multimedia, Ethernet, and networking applications.

QUIKXO™
MERCURY
QUICK-TURN OSCILLATORS



Relevant Categories:

- For lower cost with regular lead time, please refer to the non- QuikXO™ equivalent the **MQ574T** and the **VMQ574T** series
- For lower phase noise and phase jitter (0.6 p. sec. typical), please refer to **MQN574T** and **VMQN574T** series.
- For smaller footprint, 3.2 x 2.5 x 1.6 mm 6-pad SMD, with the same electrical performance, please refer to the **MQF326T**, and the **VMQF326T** series.

General Specifications: at Ta= +25°C

Output Logic Type	CMOS (code "T")	
TCXO Models	QM574TT25	QM574TT33
VCTCXO Models	QVM574TT25	QVM574TT33
Frequency Range	10 ~ 250 MHz	10 ~ 250 MHz
Supply Voltage (V _{DD})	+2.5 V ±5% Code "25"	+3.3 V ±5% Code "33"
Current Consumption; typical	25 MHz: 17 mA 45 MHz: 20 mA 50 MHz: 21 mA 125 MHz: 24 mA 250 MHz: 25 mA	10 MHz: 21 mA 50 MHz: 24 mA 77 MHz: 25 mA 125 MHz: 29 mA 250 MHz: 34 mA
Load; typical	15 pF	
Output High Voltage; V _{OH}	90% V _{DD} min.	
Output Low Voltage; V _{OL}	10% V _{DD} max.	
Rise / Fall Time (Tr; Tf)	1.5 nS. Typ.; 3.0 nS. max. (10% ↔ 90% waveform)	
Frequency Stability vs	Operating Temperature	±2.0 ppm over -40 to +85°C. Spec. code: "2.0A".
		±2.5 ppm over -30 to +85°C. Spec. code: "2.5B".
	Custom specification: The 2.0A or 2.5B is replaced with a control number assigned by Mercury.	
	Voltage Change	±0.2 ppm max. for a ±5% input voltage change
Load Change	±0.2 ppm max. for a ±10% load condition change	



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	Aging at Ta = +25°C	±2 ppm max. first-year; ±10 ppm max. over 10 years						
	Reflow	±1.0 ppm max., one reflow and measured 24 hours afterward.						
Initial Calibration Tolerance (Initial Frequency Accuracy)	±1.0 ppm typical; ±2.0 ppm. max. at +25°C±2°C.							
Duty Cycle	50% ±5%. At 50% V _{DD} .							
Current with Output Disabled	18 mA typical							
Start-up Time	5 m. sec. max.							
Output Enable Time	200 ns max.							
Output Disable Time	50 ns max.							
Single Side-band Phase Noise (dBc / Hz; typical)	Frequency (MHz)	16	25	49.152	50	54	156.250	
	Supply Voltage	3.3	3.3	3.3	3.3	3.3	3.3	
	Offset	10 Hz	-92	-88	-85	-80	-77	-63
		100 Hz	-116	-109	-108	-103	-106	-91
		1 kHz	-131	-125	-121	-117	-119	-109
		10 kHz	-139	-132	-126	-124	-125	-115
		100 kHz	-140	-134	-127	-127	-126	-116
		1 MHz	-158	-151	-146	-145	-145	-137
		5 MHz	-163	-157	-154	-148	-153	-147
		10 MHz	-	-	-157	-150	-157	-150
20 MHz	-	-	-160	-152	-160	-155		
Integrated Phase Jitter, RMS 12 kHz to 20 MHz; picosecond		0.76	0.9	1.0	1.1	1.1	1.1	
Control Voltage Function on Pad 1 (VCTXOs only)								
Control Voltage (V_{control})	V _{control} center and range: +1.5 V ± 1.0 V. For both 2.5 V _{DD} and 3.3 V _{DD}							
Frequency Pulling Range	High pull: +8 ppm min. for V _{control} from 1.5 V to +2.5V Low pull: -8 ppm min. for V _{control} from 0.5 V to +1.5V							
Linearity	±5% typical. ±10% max.							
Transfer Function	Positive Transfer							
Input Impedance	500 KΩ min.							
Bandwidth	10 kHz min. Measured at -3 dB.							
Tri-State function on Pad 2								
Output Enable (OE) Control	70% of V _{DD} (min.) to enable output. CMOS level. Do not leave this pin floating. If no connection is desired, please contact Mercury.							
	30% of V _{DD} (max.) to disable the output. Output is high impedance.							
Output Enable Time	200 n. sec. max.							
Output Disable Time	50 n. sec. max.							

Absolute Maximum Rating:

Input Voltage	-0.5 V to $V_{DD} + 0.5$ V
Output Voltage	-0.5 V to $V_{DD} + 0.5$ V
Positive Supply Voltage	4.2 V
Electrostatic Discharge (ESD)	Human Body Model (HBM): Exceeds 2000 V. Class 2 per MIL-STD-1686C
	Machine Model (MM): Exceeds 120 V. Class M2 per MIL-STD-1686C. Note: Power, ground, and outputs are 200 V.
	Charged-Device Model (CDM): Exceeds 2000 V. Class C6 per MIL-STD-1686C

Environmental Performance Specifications

Green Requirement	RoHS compliant, Pb (lead) free per EU Directive 2002/95/EC 6/6 (2002/95/EC) and WEEE (2002/96/EC). Free of halide, cadmium, hexavalent chromium, lead, mercury, PBB's, and PBDE's.
Moisture Sensitivity Level	Level 2 per IPC/JEDEC J-STD-020D.1
Storage temperature range	-55 to +125°C
Humidity	85% RH, 85°C, 48 hours
Fine Leak / Gross Leak	MIL-Std-883, method 1014, condition A / MIL-Std-883, method 1014, condition C
Solderability	MIL-STD-202F method 208E
Reflow	260°C for 10 sec. 2X.
Vibration	MIL-STD-202F method 204, 35G, 50 to 2000 Hz
Shock	MIL-STD-202F method 213B, test condition. E, 1000GG ½ sine wave
Resistance to Solvent	MIL-STD-202, method 215
Temperature Cycling	MIL-STD-883, method 1010
Pad Surface Finish	Gold (0.3 um to 1.0 um) over nickel (1.27 um to 8.89 um)

Part Number Format and Examples:

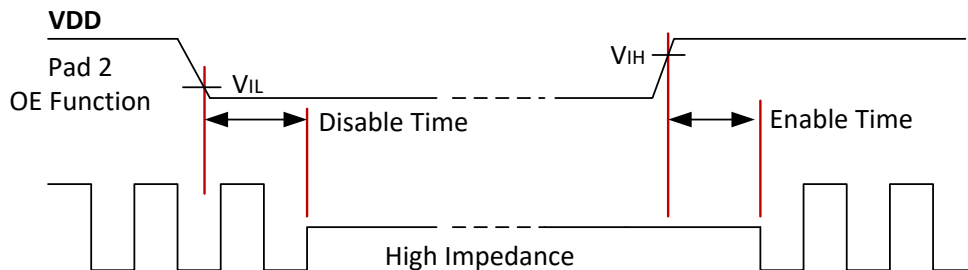
Example 1: QVMQF574T33-2.0A-125.000;

Example 2: QMQF574T25-2.5B-148.500;

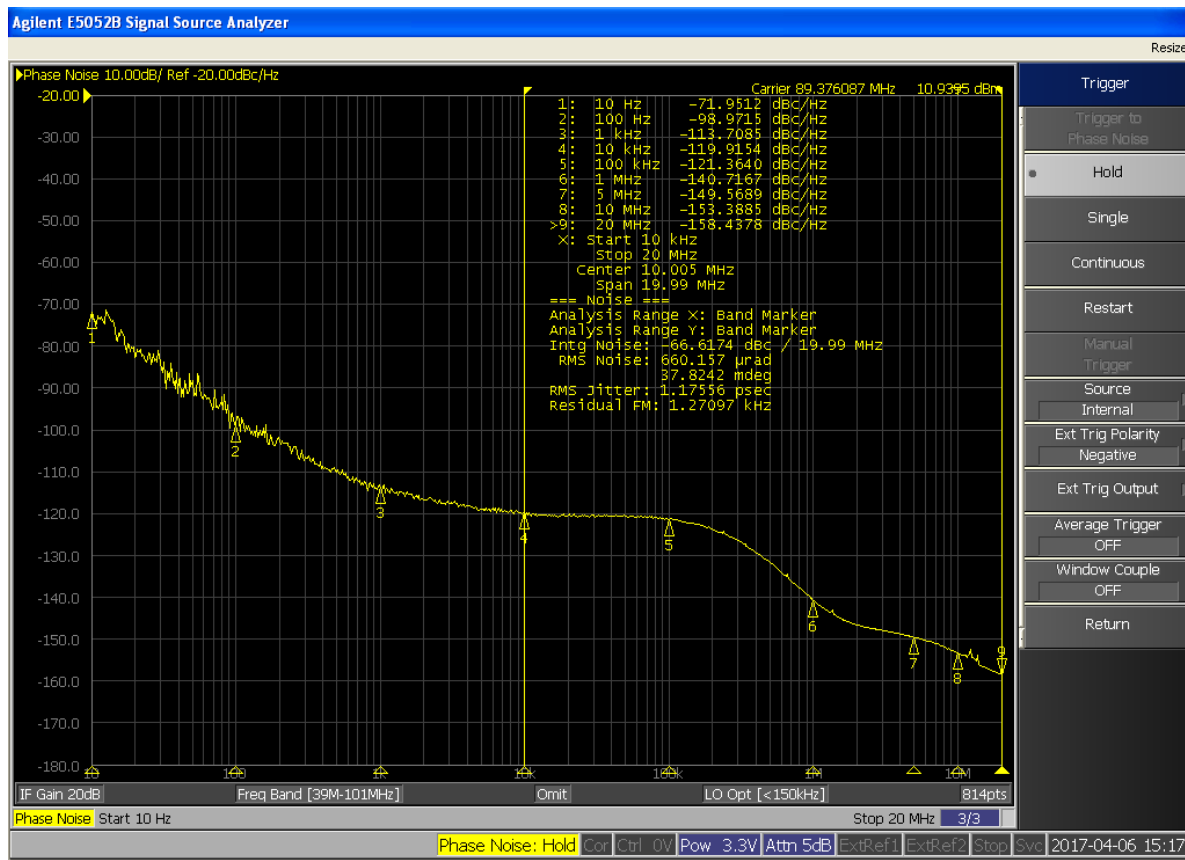
Example 3: QMQF574T33-xxxx-155.520

QVMQF	574	T	33	-	2.0A	-	125.000
QMQF	574	T	25	-	2.5B	-	148.500
QMQF	574	T	33	-	xxxxx	-	155.520
Product Series "QMQF": TCXO "QVMQF": VCTCXO	Package Code "574": 7.0x5.0x2.5 mm 4-pad SMD	Output Logic "T": CMOS	Supply Voltage "33" for 3.3V "25" for 2.5V	-	"2.5B": The freq. stability is ± 2.5 ppm over -30 to +85°C "2.0A": The freq. stability is ± 2.0 ppm over -40 to +85°C "xxxxx": Custom frequency stability. A control number assigned by Mercury.	-	The nominal Frequency in MHz. 3 places or more after the decimal.

Output OE Function on pad 2 Note: Do not leave this pad floating. If “no-connection” is desired, please contact Mercury.

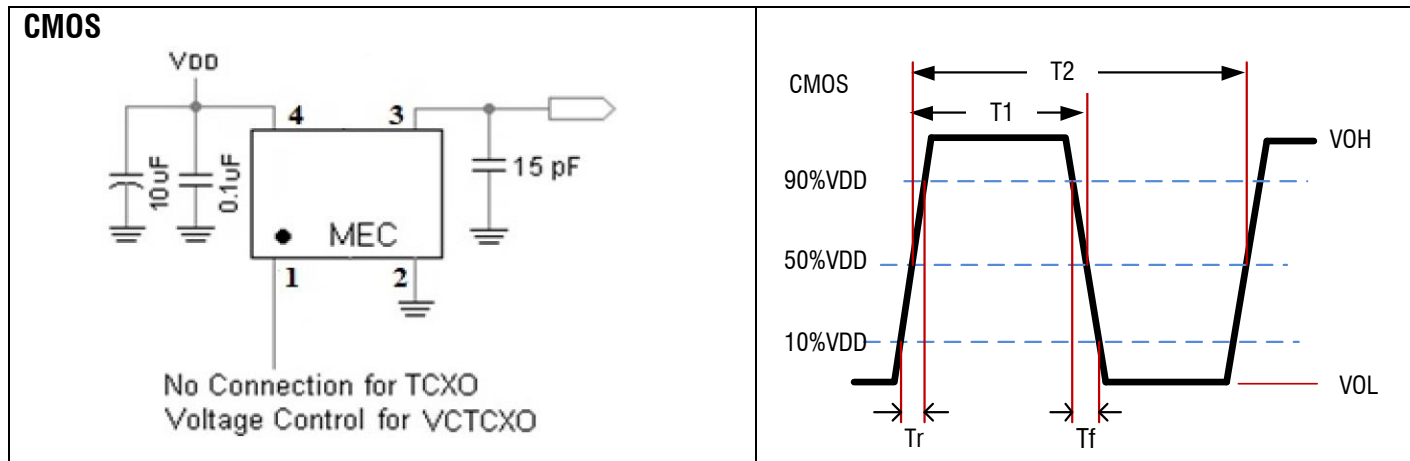


Phase Noise Plot of QMQF574T33-89.376 MHz, VDD = +3.3V, CMOS



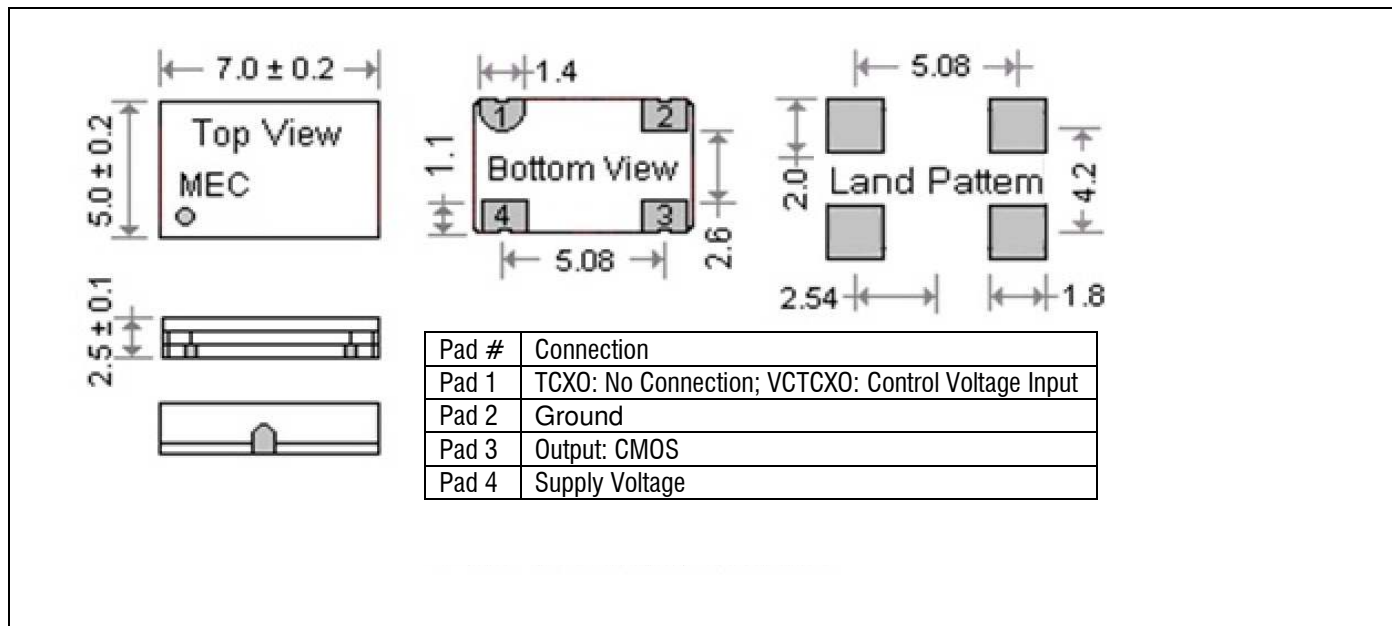
Test Circuits and Output Waveforms

Duty cycle = $\left(\frac{T1}{T2}\right) * 100\%$. Measured at 50% VDD

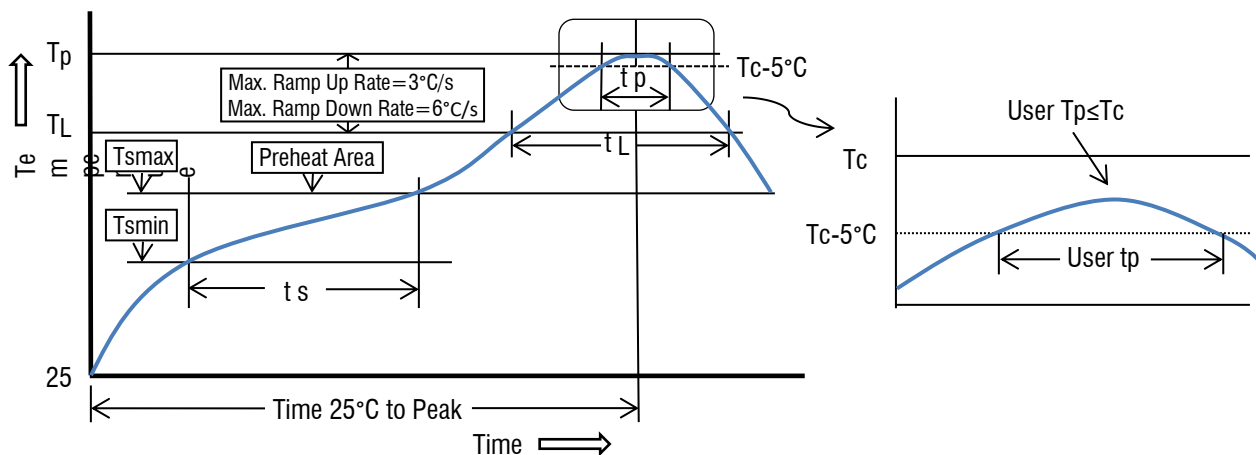


Package Dimensions and Recommended Solder Pad Layout

unit: (mm)



Recommended Solder Reflow Profile (per IPC/JEDEC J-STD-020D.1)



Profile Feature	Sn-Pb Eutectic Assembly	Pb-free Assembly
Preheat/Soak		
- Temperature min. (Ts min.)	100°C	150°C
- Temperature max. (Ts max.)	150°C	200°C
- Time (ts) (Ts min. to Ts max.)	60 to 120 seconds	60 to 180 seconds
Ramp-up rate (TL to Tp)	3°C / sec. max.	3°C / sec. max.
Liquidous temperature (TL)	183°C	217°C
Time (tL) maintained above TL	60 to 150 seconds	60 to 150 seconds
Peak package body temperature (Tp)	235°C	260°C
Time (Tp) within 5°C of the classification temperature Tc	10 to 30 seconds	20 to 40 seconds
Ramp-down rate (Tp to TL)	6°C / second max.	6°C / second max.
Time 25°C to peak temperature	6 minutes max.	8 minutes max.

All temperatures refer to the topside of the package, measured on the package body surface.