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

TCXO	VCTCXO	KHz range	CMOS	SMD	15pF	3.3V	32.768 KHz
M _ T	VM _ T						

Features

- Wide frequency range : [32.768 KHz]
- Frequency stability as tight as ± 0.5 ppm over 0 °C to 50 °C
- Frequency stability as tight as ± 1.0 ppm over -40°C to 85°C

General specifications of all available packages , at Ta=+25°C , CL=15pF

Output Waveform		Square Wave [CMOS] . Waveform Wode is " T "						
Suggested Package (Size)	Type	SMD						
	Demensions	**(V)M572T** (7.0 x 5.0 x 2.3 mm)						
Frequency Range		32.768 KHz [From KHz with divider. mA current consumption.]						
Supply Voltage V_{DD} (code)		+3.3 V ± 5% (voltage code is " 33 ")						
Output Logic Levels	Logic High " 1 "	2.97 V_{DD} (min.)						
	Logic Low " 0 "	0.33 V_{DD} (max.)						
Current Consumption. (max.) (Over operating temperature range .)		8.0 mA (max.) for 32.768 KHz at +3.3V						
Initial Calibration Tolerance		< ± 2.0 ppm at +25°C ± 2°C.						
Frequency Stability (ppm)		± 0.5 ppm	± 1.0 ppm	± 1.5 ppm	± 2.0 ppm	± 2.5 ppm	± 3.0 ppm	○ : available △ : contact us X : not available
Frequency Stability vs Temperature (examples)	0°C to 50°C	○	○	○	○	○	○	
	-10°C to 60°C	△	○	○	○	○	○	
	-20°C to 70°C	X	○	○	○	○	○	
	-30°C to 75°C	X	○	○	○	○	○	
	-30°C to 85°C	X	○	○	○	○	○	
	-40°C to 85°C	X	△	○	○	○	○	
Frequency Stability	vs Aging at Ta = +25°C	± 1.0 ppm / year (max.)						
	vs Voltage Change	± 0.3 ppm (max.) , for a ±5% input voltage change .						
	vs Load Change	± 0.3 ppm (max.) , for a ±10% load condition change .						
	vs Reflow (SMD type)	± 1.0 ppm (max.) , 1 reflow and measured 24 hours afterwards .						
Rise and Fall Time		10.0 nsec. (max.) Measured at 20% ↔ 80% of the waveform						
Electrical Frequency Tuning (EFC) by external Control Voltage	Control Voltage Center	1.5 V ± 1.0 V (3.3V)						
	Frequency Deviation Range	± 5.0 ppm (min.)						
	Slope Polarity (Transfer Function	Positive slope. Positive voltage for positive frequency shift.						
		Input Impedance : 1.0M Ω (min.)	Modulation Bandwidth : 3 KHz (min.)	Linearity : ± 10 % (max.)				
Start-Up Time.		5.0 msec. (typ.) , 10.0 msec. (max.) (reach 90% amplitude and at+25°C±2°C)						
Duty Cycle		50 % ± 5%						
Output Load		15 pF						
Storage Temperature		-40°C to +85°C or -55°C to +125°C (package dependent)						

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

CMOS Wave Output Code " T "

Part Number Format and Example

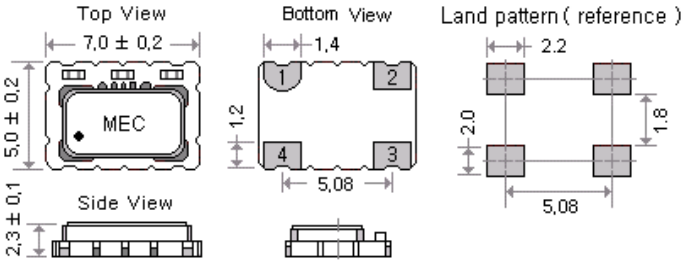
[1]	[2]	[3]	-	[4]	-	[5]	/	[6]
Holder Type	Output Wave	Supply Voltage		Center Frequency		Frequency Stability		Operating Temp. Range
Examples	M572	T	33	-	32.768K	-	1.5	/	-30+85

Ex : M572T33 - 32.768K - 1.5 / -30+85 [TCXO , M572 type , CMOS output , 3.3V , 32.768KHz , ±1.5ppm from -30°C to 85°C]

[1]	Holder Type
	" M " stands for TCXO , " VM " stands for VCTCXO
[2]	" T " stands for Square Wave
	ex : M572T --- TCXO , M572 pcakage , CMOS output
[3]	Supply voltage , " 33 " stands for +3.3V
[4]	Center Frequency in KHz
[5]	Frequency stability in ± _ ppm ; ex : ± 1.5ppm --- 1.5
[6]	Operating temperature range in °C
	ex : -30 °C to 85°C ----- -30+85

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

[(V) M572T_ _]

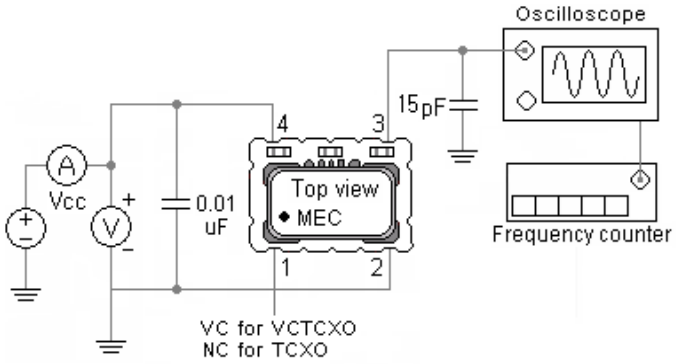


Pad Connections :

Pad 1 : NC - - - TCXO ; Vcon - - - VCTCXO

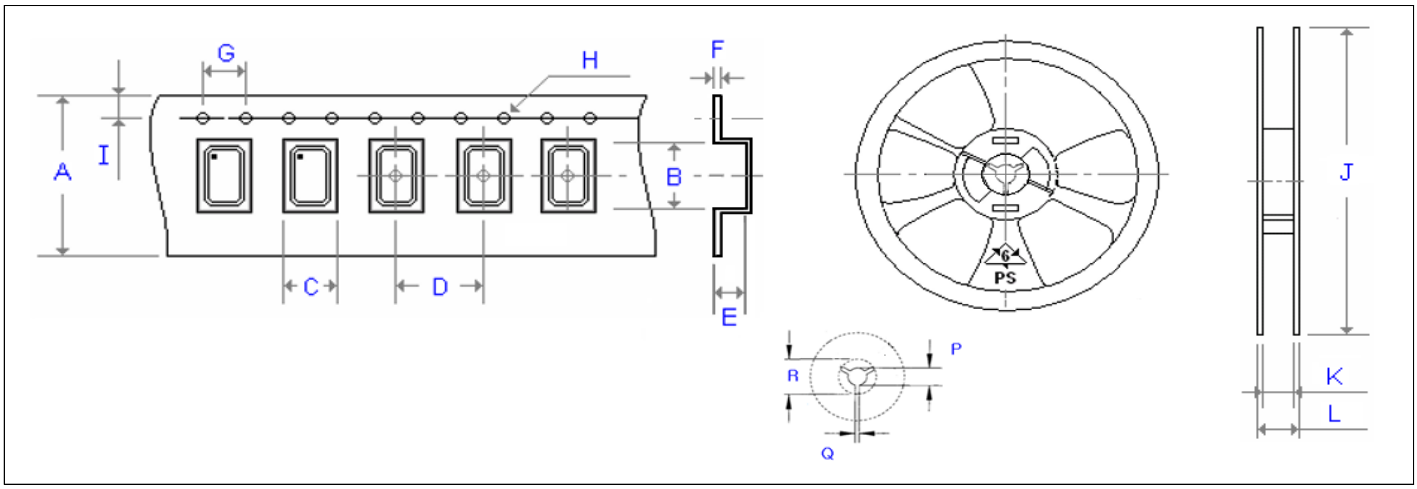
Pad 2 : Ground ; Pad 3 : Output , Pad 4 : Supply Voltage

(VC)TCXO with CMOS output wave test Circuit



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_226	8.00	2.80	2.25	4.00	1.10	0.30	4.00	Ø 1.50	1.75	3000
G_326	8.00	3.40	2.70	4.00	1.40	0.25	4.00	Ø 1.50	1.75	3000
G_536	12.00	5.30	3.60	8.00	1.40	0.30	4.00	Ø 1.50	1.75	1000
G_576	16.00	7.30	5.30	8.00	1.90	0.30	4.00	Ø 1.50	1.75	1000
G_538	12.00	5.40	3.60	8.00	1.70	0.30	4.00	Ø 1.50	1.75	1000
G_578	16.00	7.30	5.30	8.00	1.90	0.30	4.00	Ø 1.50	1.75	1000
(V)M21	8.00	2.30	1.90	4.00	0.90	0.25	4.00	Ø 1.50	1.75	3000
ME21	8.00	2.30	1.50	4.00	1.35	0.25	4.00	Ø 1.50	1.75	3000
(V)M22	8.00	2.80	2.25	4.00	1.10	0.30	4.00	Ø 1.50	1.75	3000
(V)M_32	8.00	3.71	2.80	4.00	1.75	0.25	4.00	Ø 1.50	1.75	3000
(V)M_326	12.00	3.60	2.90	4.00	1.70	0.30	4.00	Ø 1.50	1.75	1000
(V)M_53	12.00	5.30	3.60	8.00	1.40	0.30	4.00	Ø 1.50	1.75	1000
(V)M_538	12.00	5.40	3.60	8.00	1.70	0.30	4.00	Ø 1.50	1.75	1000
(V)M_57(2)	16.00	7.40	5.50	8.00	2.80	0.35	4.00	Ø 1.50	1.75	500
(V)M_43 (63)	24.00	11.80	10.00	16.00	5.00	0.30	4.00	Ø 1.50	1.75	500

Reel Dimensions (unit : mm) +2.0 / -0.0mm

	J	K	L	P	Q	R	pcs / reel
G_226	180.00	9.00	12.00	13.20	2.10	-	3000
G_326	180.00	9.00	12.00	13.20	2.10	-	3000
G_536	180.00	13.00	16.00	13.20	2.50	-	1000
G_576	180.00	17.20	19.30	13.30	2.20	22.00	1000
G_538	180.00	13.00	16.00	13.20	2.50	-	1000
G_578	180.00	17.20	19.30	13.30	2.20	22.00	1000
(V)M21	180.00	9.00	12.00	13.20	2.10	-	3000
ME21	180.00	9.00	12.00	13.20	2.10	-	3000
(V)M22	180.00	9.00	12.00	13.20	2.10	-	3000
(V)M_32	180.00	9.00	12.00	13.20	2.10	-	3000
(V)M_326	180.00	13.00	16.00	13.20	2.50	-	1000
(V)M_53	180.00	13.00	16.00	13.20	2.50	-	1000
(V)M_538	180.00	13.00	16.00	13.20	2.50	-	1000
(V)M_57(2)	180.00	17.20	19.30	13.30	2.20	22.00	500
(V)M_43 (63)	330.00	24.50	29.10	13.00	2.20	17.30	500