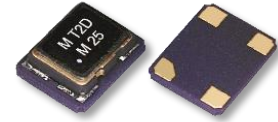


Temperature Compensated Crystal Oscillators [TCXO " M "]	CMOS Output
CMOS Wave Output Code " T " [SMD Type]	

TCXO	M_1T	Output Enable / Disable	-40 to +85 °C	CMOS	SMD	15pF	1.8 V	2.5 V	3.3 V	Min. 9.5 MHz	Max. 60 MHz
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Features

- Wide frequency range : [9.5 MHz ~ 60.0 MHz]
- Frequency stability as tight as ± 2.5 ppm over -40°C to 85°C
- Frequency stability as tight as ± 5.0 ppm over -40°C to 105°C (available)



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

Output Waveform	Square wave [CMOS] . Waveform code is " T "		
Type	M211T	M221T	M321T
Package (Size)	2.05 x 1.65 x 0.70 mm	2.5 x 2.0 x 0.8 mm	3.2 x 2.5 x 1.2 mm
Frequency Range	10.0 ~ 52.0 MHz	9.5 ~ 60.0 MHz	9.5 ~ 60.0 MHz

Output Waveform	Adapter Board Type	
Type	M531T-AB	M571T-AB
Package (Size)	5.0 x 3.2 x 1.3 mm	7.0 x 5.0 x 1.4 mm
Frequency Range	9.5 ~ 60.0 MHz	9.5 ~ 60.0 MHz

Supply Voltage Range		+ 1.8 V (code is " 18 ")	+ 2.5 V (code is " 25 ")	+ 3.3 V (code is " 33 ")		
Current Consumption		6 mA (max.)	7 mA (max.)	8 mA (max.)		
Standard Frequency [MHz]		12.000 , 20.000 , 24.000 , 25.000 , 26.000 , 40.000 , 50.000 , 60.000				
Initial Calibration Tolerance		± 2.0 ppm (max.) at +25°C ± 2°C. after reflow				
Frequency Stability		± 2.5 ppm	± 5.0 ppm	± 10.0 ppm	X : not available	
Frequency Stability vs Temperature	- 40°C to + 85°C	○	○	○	△ : please contact us	
	- 40°C to + 105°C	△	△	○	○ : available	
Frequency Stability	vs Aging at Ta= + 25°C	± 1.0 ppm (max.) , per year				
	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 .				
Output Logic High " 1 "		V _{DD} of 80% (min.)				
Output Logic Low " 0 "		V _{DD} of 20% (max.)				
Rise Time and fall time		10.0 nsec. (max.) ; 10% ↔ 90% of the waveform				
Duty Cycle		50 % ± 5 %				
Start-Up Time.		5.0 msec. (max.)				
Output Load		15 pF				
Output Enable / Disable Function on Pad1 (Don't use in the OPEN condition)		V _{DD} of 80% (min.) to enable output				
		V _{DD} of 20% (max.) to disable output				
RMS Jitter (12KHz ~ 20MHz)		0.3 psec (typ.) , 1.0 psec (max.)				
Phase Noise Offset / dBc / Hz [typ.]	50MHz as example	10 Hz	100 Hz	1 KHz	10 KHz	100 KHz
		-85 dBc / Hz	-111 dBc / Hz	-133 dBc / Hz	-149 dBc / Hz	-154 dBc / Hz
Storage Temperature		-55°C to +125°C				

Temperature Compensated Crystal Oscillators [TCXO " M "]

CMOS Wave Output Code " T " [SMD Type]

Part Number Format and Exmple

	[1]	[2]	[3]	[4]	-	[5]	-	[6]	/	[7]	-	[8]
	Holder Type	Enable/Disable Function	Output Wave	Supply Voltage		Center Frequency		Frequency Stability		Operating Temp. Range		Adapter Board
Examples	(1) M32	1	T	33	-	40.000	-	5.0	/	-40+105		
	(2) M57	1	T	33	-	10.000	-	2.5	/	-40+85	-	AB

Ex (1) : M321T33 - 40.000 - 5.0 / -40+105 [TCXO , 3225 SMD package , OE on pad1 , CMOS output , 3.3V , 40.000MHz , ±5.0ppm from -40°C to 105°C]

Ex (2) : M571T33 - 10.000 - 2.5 / -40+85 - AB [TCXO , 7050 SMD package , OE on pad1 , CMOS output , 3.3V , 10.000MHz , ±2.5ppm from -40°C to 85°C , Adapter Board]

[1]	Holder Type " M " stands for TCXO
[2]	Enable / Disable Function on pad1 , ex M321 --- OE on pad1
[3]	" T " stands for Square Wave ex : M321T --- TCXO , 3225 SMD package , CMOS output
[4]	Supply voltage , " 18 " stands for +1.8V ; " 25 " stands for +2.5V ; " 33 " stands for +3.3V
[5]	Center Frequency in MHz
[6]	Frequency stability in ± ppm ; ex 1 : ± 2.5ppm --- 2.5 , ex 2 : ± 5.0ppm --- 5.0
[7]	Operating temperature range in °C ex 1 : -40 °C to 105°C ----- -40+105 ; ex 2 : -40 °C to 85°C ----- -40+85
[8]	Adapter Board Type ----- AB

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

[M211T]	[M221T]
[M321T]	

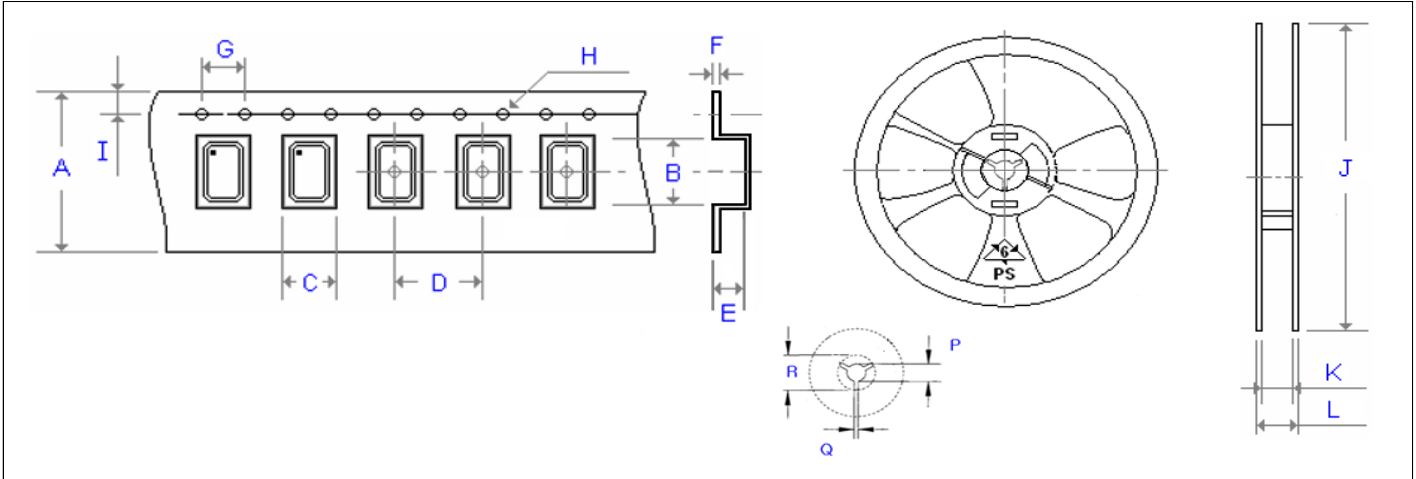
Outline Dimensions (Unit : mm) , Adapter Board Type

[M531T __ AB]	[M571T __ AB]

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