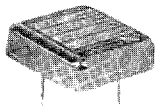
Low Cost Moderate Stability TCXOs



	TTL, CMOS, Sine **CO-251 SERIES** *widest range of options*	TTL **CO-231 SERIES** *Lowest price*	TTL **CO-532 SERIES** *Smallest size; DIP pin configuration*	CMOS **CO-236 SERIES**
FREQUENCY	50 kHz to 20 MHz	12 kHz-20 MHz	32 kHz-20 MHz	300 Hz-15 MHz
STABILITY Temperature				
(Temp. Range **A**) +15°C to +35°C:	**CO-251A57:** $\pm 5 \times 10^{-7}$ **CO-251A27:** $\pm 2 \times 10^{-7}$	**CO-231A57:** $\pm 5 \times 10^{-7}$	**CO-532A57:** $\pm 5 \times 10^{-7}$	**CO-236A57:** $\pm 5 \times 10^{-7}$
(Temp. Range **B**) 0°C to +50°C:	**CO-251B16:** $\pm 1 \times 10^{-6}$	**CO-231B16:** $\pm 1 \times 10^{-6}$	**CO-532B16:** $\pm 1 \times 10^{-6}$	**CO-236B16:** $\pm 1 \times 10^{-6}$
(Temp. Range **C**) 0°C to +70°C:	**CO-251C36:** $\pm 3 \times 10^{-6}$	**CO-231C36:** $\pm 3 \times 10^{-6}$	**CO-532C36:** $\pm 3 \times 10^{-6}$	**CO-236C36:** $\pm 3 \times 10^{-6}$
(Temp. Range **D**) −20°C to +70°C:	**CO-251D56:** $\pm 5 \times 10^{-6}$	**CO-231D56:** $\pm 5 \times 10^{-6}$	**CO-532D56:** $\pm 5 \times 10^{-6}$	**CO-236D56:** $\pm 5 \times 10^{-6}$
(Temp. Range **E**) −40°C to +75°C:	**CO-251E15:** $\pm 1 \times 10^{-6}$	**CO-231E15:** $\pm 1 \times 10^{-6}$	**CO-532E15:** $\pm 1 \times 10^{-6}$	**CO-236E15:** $\pm 1 \times 10^{-6}$
(Temp. Range **F**) −55°C to +85°C:	**CO-251F25:** $\pm 2 \times 10^{-6}$	**CO-231F25:** $\pm 2 \times 10^{-6}$	**CO-532F25:** $\pm 2 \times 10^{-6}$	**CO-236F25:** $\pm 2 \times 10^{-6}$
Aging Rate	≤5 MHz: 5×10^{-7}/year >5 MHz: 1×10^{-6}/year	1×10^{-6}/year		
Short Term (Allan Variance)	1×10^{-9} per second under constant conditions			
Frequency vs Supply	1×10^{-7} per percent change in supply voltage			
OUTPUT / SUPPLY	**Output level** / **Supply ±5%** Standard: TTL; 200 kHz to 20 MHz / +5 Vdc Options: CMOS; 50 kHz to 15 MHz / +5 Vdc HCMOS; 50 kHz to 20 MHz / +5 Vdc +7 dBm/50Ω 1 MHz to 20 MHz / +15 Vdc *Option **"R"**: +13 dBm/50Ω 1 MHz to 20 MHz / +15 Vdc For sine below 1 MHz see model CO-281T-4Y	Output: TTL compatible (drives 10 TTL loads) Supply: +5 Vdc ±5%		Output: CMOS compatible Supply: +12 Vdc ±5% (9-15) Vdc optional
Current	Sine: <15 mA (as low as 4 mA available) CMOS: <15 mA (as low as 3 mA available) TTL/HCMOS: *<30 mA (as low as 6 mA available) *For TTL below 3 MHz, current may increase due to TTL dividers	4-20 MHz: <30 mA <4 MHz: 40-80 mA	8-20 MHz: <30 mA ≤8 MHz: 40-80 mA	3-80 mA depending upon frequency
FREQUENCY ADJUSTMENT Mechanical	settable to 1×10^{-7}	settable to 1×10^{-6}		
Electronic Tuning Option	**Option "V"**: Nominal range with 0 to 5V control input is 3×10^{-6} total (wider deviation available)	Not available in these models—see VCXO section for voltage controlled clock oscillators		
SIZE/CONFIGURATION (See drawings on page 39)	2" x 2" x 3/4" (51 x 51 x 19 mm) sealed metal case rf connector optional; see configurations on next page	1 1/2" x 1 1/2" x 1/2" (38 x 38 x 13 mm) pcb mount Housed in metal can with epoxy base	1" x 1" x .38" (26 x 26 x 10 mm) DIP compatible pin configuration metal can with metalized base	1 1/2" x 1 1/2" x 1/2" (38 x 38 x 13 mm) pcb mount housed in metal can with epoxy base
ENVIRONMENTAL	See page 98 for environmental specifications and screen test option.			
HOW TO ORDER	See page 39			

ORDERING METHOD

For example, a 10 MHz TCXO with stability of ±1 x 10^{-6} over 0°C to +50°C and standard TTL output is CO-251B16 at 10 MHz

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- Basic Series CO-251/231/532/236
- Temp. Range (e.g. "B")
- Stability over Temp.(e.g. 16)
- Frequency
- *VCXO option (**V**)
- *Input/output option (**R**)

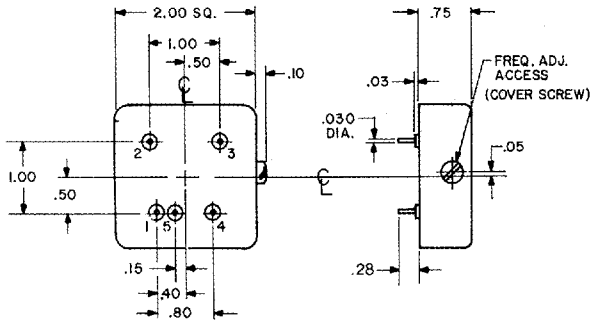
NOTE: If none of our standard models with coded options meet your specific needs, please detail the differences from our closest standard model (e.g. CO-251B16 except 12 Vdc supply and +7dBm/50Ω output).

*Leave blank if option is not desired

OUTLINE/INSTALLATION DRAWINGS

CO-251 SERIES

pcb mount (standard)

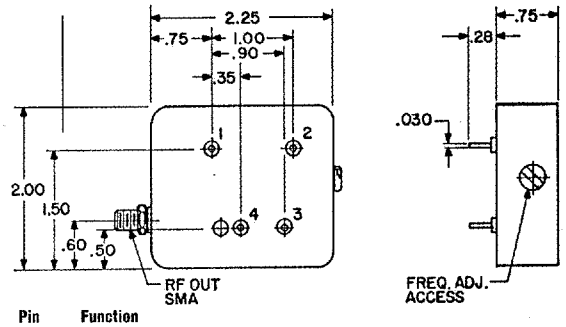


Pin	WITH SINGLE SUPPLY		WITH SEPARATE TTL SUPPLY	
	No "V" Option	"V" Option	No "V" Option	"V" Option
1	Output	Output	Output	Output
2	Supply (+)	Supply (+)	Supply (+)	Supply (+)
3	0 Volt/case	0 Volt/case	*0 Volt/case	*0 Volt/case
4	0 Volt/case	VCXO in	+5V	VCXO in
5	*rf return	*rf return	*rf return	+5 Vdc

*Internally connected (except pin 5 is not internally connected with sine output in CO-251 series).

RF Connector options

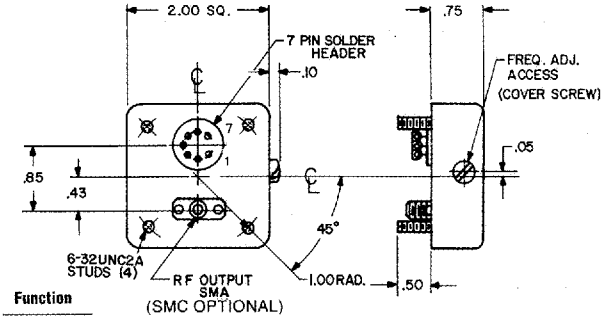
Option **SW** (SMA connector on side)



Pin	Function
1	Supply (+)
2	0 volts, case
*3	Case
4	Case

*In units with electronic tuning ("V option), control voltage is applied from pin 3 to pin 2.

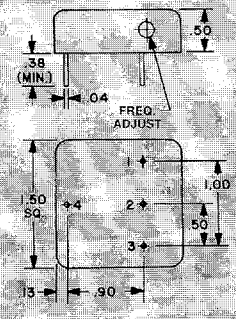
Option W (SMA connector on base)



Pin	Function
1	Supply (+)
2	N/C
3	0 volts, case
4	N/C
5	Case
6	N/C
*7	N/C

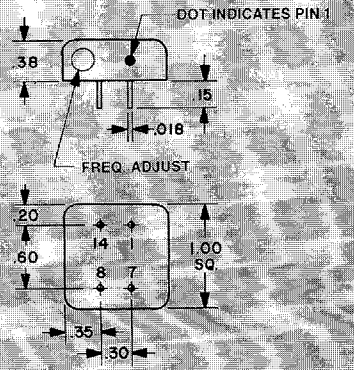
* In units with electronic tuning ("V option), control voltage is applied from pin 7 to pin 3.

CO-231 SERIES
CO-236 SERIES



Pin	Function
1	0 volts, Case
2	Case
3	Supply (+)
4	Output

CO-532 SERIES



Pin	Function
1	Case
7	0 volts, Case
8	Output
14	+5 Vdc

Markings do not appear on oscillators; they are for reference only. Dimensions are in inches. Case dimension tolerances are ± .02"