TCXO 8410
Temperature Compensated Crystal Oscillator

Product Description

The 8410 TCXO is a crystal oscillator whose frequency drift due to operating temperature variation is reduced by means of an analog electronic compensation network.

The output of the 8410 has been designed using the latest low-power HCMOS technology making this device ideal for portable applications. LSTTL, Open-collector or Sine wave outputs are also available to keep the compatibility with existing layouts.

On-board voltage regulation allows the TCXO to be powered from most common DC supplies and no significant changes are observed with load variations.

Discrete Surface Mounted Devices (SMD) are used in the oscillator circuit to enhance phase noise characteristics.

A low aging resistance welded crystal resonator associated with programmable dividers offers a unique combination of performance and versatility. The 8410 offers frequencies from 1 to 40 MHz and we aim to extend this range to 70 MHz.

Furthermore, a standard compact enclosure has been used whose dimensions comply with most current market requirements.

Features

- Frequency stability of ± 0.5 ppm over 0° to +60°C and ± 1ppm over -20° to +70°C.
- Any power supply from + 4.75 to + 13.2 Volts
- Low current drain : typically 5 mA
- HCMOS, LSTTL or Open-collector outputs
- Wide operating temperature range up to -40° to +85°C

Benefits

- Compatible with most requirements of civilian and military systems
- Eliminates the need for front-end DC/DC converter
- Ideal for man-pack / battery operated systems
- Easily interfaces with many different circuits
- Suitable for use in severe environmental conditions

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Technical Specification

TCXO 8410

(maximum values given at +25°C, unless otherwise noted)

Ordering models	**8410-X-Y-Z / Frequency (MHz)**
Frequency range	1 to 70 MHz
Standard frequencies	4.096 / 4.194304 / 5 / 8.192 / 10 / 13 / 16.384
Operating temperature range	Up to - 40°C to +85°C (see table 8410-X on page 3)
Frequency stability (Δf/f)	
Long term stability	< ± 1 ppm / first year and < ± 0.5 ppm / following years
Over temperature range	± 0.5 to ± 5 ppm (see table 8410-X on page 3)
Versus supply voltage changes	< ± 0.1 ppm / Volt
Versus load changes (12 to 50 pF at 10 MHz) (10 to 15 pF >25 MHz)	< ± 0.2 ppm
Electronic frequency control	> ± 5 ppm (see table 8410-Y on page 3)
Output specification	
Compatibility	HCMOS , LSTTL , Open-collector or Sine (see 8410-Z on page 3)
High/low level // load	>3.5 V <0.5V HCMOS 15pF or 2 TTL / / Sine 50 Ohms ± 10% 0 dBm ± 2 dB
Symmetry (at Vo = 2.5 V)	40 / 60% (45 / 55% for Fo < 8 MHz)
Rise/Fall time (10% / 90%, 12pF)	< 10 ns
Open-collector f_{max} < 15 MHz (Vcc = +3 to + 15 Volts)	Vcsat < +0.5 V at Ic < 10 mA Vcsat < +0.3 V at Ic < 5 mA
Phase noise (Bw = 1Hz) typical at 5 MHz **1 Hz** **10 Hz** **100 Hz** **1000 Hz**	- 50 dBc - 80 dBc - 110 dBc - 120 dBc
Power Supply	
Input voltage range (DC)	Any voltage between + 4.75 and + 13.2 Volts
Current (no load)	HCMOS : <7mA (f < 20 MHz) < 30 mA / Sine : <20mA (f < 20 MHz)<40mA
Environment	
Storage temperature	- 40°C to +85°C (-55°C to +100°C on request)
Vibration	MIL-STD 202, method 204, condition A (10 to 500 Hz / 10 g)
Shock	MIL-STD 202, method 213 B, condition J
Pressure	MIL-STD 202, method 105 C, condition B (down to 11.7 KN / m^2)
Humidity	95%, no condensation
Size (L x W x H)	36.1 x 27.2 x 10.2 mm according to IEC reference CO 08 A
Weight	20 g
Outline and electrical connections	see drawing on page 4

In accordance with our policy of continuous development and improvement, we reserve the right to modify the design or the specifications of our products without prior notice

Technical Specification

Reference Tables for Ordering Models : 8410-X-Y-Z / Frequ. (MHz)

Table 8410 - X Stability over temperature range

Ordering cross-reference (X)	A	B	1	3	5	7
Specification	Standard		Options			
Temperature range	0° / +60°C	-20° / +70°C	0° / +60°C	-30° / +70°C	-30° / +85°C	-40° / +85°C
Stability over temperature range	< ±1 ppm	< ±1 ppm	< ±0.5 ppm	< ±2 ppm	< ±3 ppm	< ±5 ppm

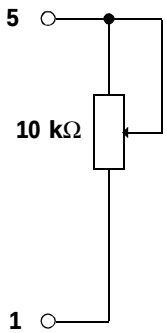
Table 8410 - Y Frequency control

Ordering cross-reference (Y)	R1	R3	V5
Specification	Standard	Options	
Means of frequency adjustment	External resistor		External Voltage control
Adjustment control	0 to 10 kΩ	0 to 10 kΩ	0 to 5 Volts
Pulling range	> ± 5 ppm		
Transfer function	Positive		
Linearity	Not applicable		± 10 % Typ.

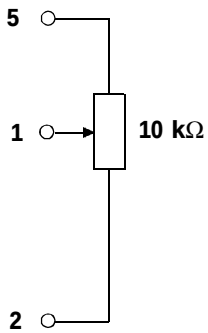
Table 8410 - Z Output characteristics

Ordering cross-reference (Z)	H	T	O	S
Specification	Standard	Options		
Output characteristic	Comp. HC-MOS	Comp. LSTTL	Open-collector	Sine wave

R1



R3



Pin-out connections

1 : Vc input

2 : V ref out (do not connect)

3 : + Power supply

4 : Output

5 : GND

Ordering Information

Example:

TCXO 8410 - B - R1 - H / 5 MHz

Type

Model

Stability over temperature range (code X)

B: ± 1 ppm over -20°C to +70°C

Frequency control (code Y)

R1: by external resistor (0 to 10kΩ)

Output level (code Z)

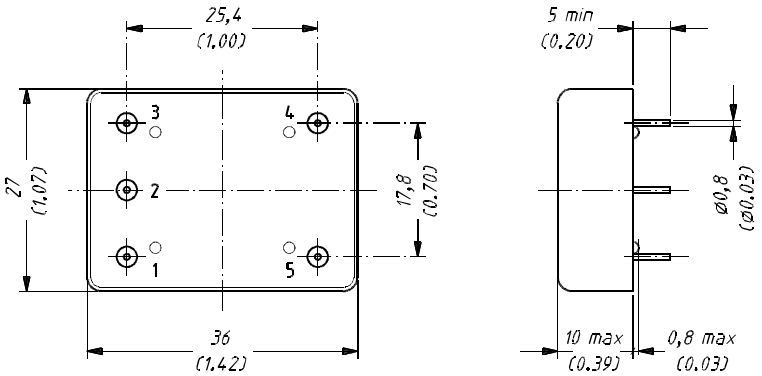
H: HCMOS output

Nominal frequency output

5 MHz

Applications

- Mobile communications
- Military and radio navigation man-pack and hand-held systems
- Cellular / paging transceiver stations: BCS, BTS
- Frequency synthesizers
- Industrial / Scientific / Military test and measurement equipment
- High density modem links
- Clock timing and signal regeneration for Civilian / Military digital telecommunications equipment: Switching, MUX, PABX, DACS



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