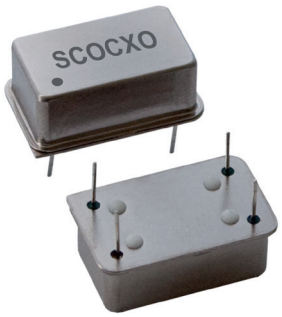
MICRO CRYSTAL SWITZERLAND

SCOCXO HCMOS Output

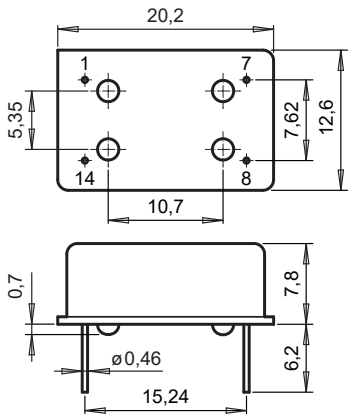
High Stability OCXO – up to 120 MHz



RoHS COMPLIANT

DIMENSIONS

Package:



Pin Out:

pin 1 V_C
pin 7 GND
pin 8 F_{OUT}
pin 14 V_{DD}

Case is connected to GND (pin 7)

All dimensions in mm typical

APPLICATIONS

Instrumentation
Digital Switching
Radio Transceiver
Airborne Equipment
Telecom Transmission
Battery Operated Systems
Sonet / SDH / DWDM / FDM/36 / WIMAX

DESCRIPTION

The SCOCXO is an Oven Controlled Quartz Crystal Oscillator with HCMOS Output that incorporates a custom circuit and an XTAL operating under vacuum, in a hermetically sealed DIL-14 metal package.

FEATURES

High stability and low aging.
Very fast warm up.
Low power consumption.
Operates in fundamental mode.
High shock and vibration resistant.
RoHS-compliant.

ELECTRICAL CHARACTERISTICS AT 25°C

Frequency versus temperature A: 0 to +60°C B: -20 to +70°C C: -40 to +85°C E: -55 to +85°C	ΔF/F	see table 1 (without air flow)		
Frequency long term aging	ΔF/F	< 40 MHz	≥ 40 MHz	ppm
long term aging 10 years		< ±2.5	< ±4	
long term aging 1st year 1)		≤ ±0.3	≤ ±1	
Minimum frequency control range by V_C or R_C see table 3	ΔF/F	< 40 MHz	≥ 40 MHz	ppm
		≥ ±2.5	≥ ±4	
Supply voltage	V_{DD}	3.3 / 5.0		V
Input current	I_{DD}	see table 2		mA
Output signal		HCMOS compatible		
F_{OUT} duty cycle @ $V_{DD}/2$ (min./max.)	δ_{FOUT}	40 / 60		%
Rise & fall time (load = 15 pF)	t_r / t_f	≤ 7		ns
Output level V_{OL} / V_{OH}		< 0.4 / > V_{DD} -0.5		V
Start-up time	t_{START}	< 5		ms
Capacitive load min. / max.	C_L	3 / 47		pF
Frequency stability versus load change of ±10%	ΔF/F	< 40 MHz	≥ 40 MHz	ppb
		≤ ±10	≤ ±30	
Warm-up time within ±0.1 ppm at +25°C	V_{DD}	3.3	5.0	V
	t	≤ 120	≤ 60	s
Stability versus V_{DD}	ΔF/F	< ±0.1		ppm

1) After 30 days operating

ELECTRICAL CHARACTERISTICS AT 25°C (continuation)

Short term stability (Allan deviation) at T = 0.1 to 30 s 0.05 ppb typical at T = 1 s		σ	< 0.1	ppb
Phase noise typical: Standard version (Blank)			10 MHz	100 MHz	
Static conditions, BW = 1 Hz	10 Hz 100 Hz 1 kHz 10 kHz 100 kHz	L	-100 -130 -140 -145 -145	-80 -110 -130 -140 -140	dBc/ Hz
Phase noise typical: Low phase noise version (H)			10 MHz	100 MHz	
Static conditions, BW = 1 Hz	10 Hz 100 Hz 1 kHz 10 kHz 100 kHz	L	-105 -135 -150 -160 -160	-90 -120 -140 -150 -155	dBc/ Hz

TABLE 1: ΔF/F, V_{DD} = 3.3 V

Operating Temperature range	V_{DD} = 3.3 V ±0.15 V	
	Standard (Blank)	High stability version (T)
A = 0 to +60°C	≤ ±75 ppb	≤ ±50 ppb
B = -20 to +70°C	≤ ±150 ppb	≤ ±75 ppb
C = -40 to +85°C	≤ ±250 ppb	≤ ±100 ppb

TABLE 1: ΔF/F, V_{DD} = 5.0 V

Operating Temperature range	V_{DD} = 5.0 V ±0.2 V	
	Standard (Blank)	High stability version (T)
A = 0 to +60°C	≤ ±50 ppb	≤ ±25 ppb
B = -20 to +70°C	≤ ±100 ppb	≤ ±50 ppb
C = -40 to +85°C	≤ ±150 ppb	≤ ±100 ppb
E = -55 to +85°C	≤ ±400 ppb	≤ ±200 ppb

TABLE 2: I_{DD} (load typ. C_L = 15 pF)

Temperature	V_{DD} = 3.3 V	V_{DD} = 5.0 V
+25°C	≤ 120 mA	≤ 80 mA
-20°C	≤ 170 mA	≤ 120 mA
Start-up current at +25°C / duration	≤ 350 mA / 30 s	≤ 300 mA / 10 s

TABLE 3: Input pin 1 V_C

Frequency adjustment control	V_{DD} = 3.3 V	V_{DD} = 5.0 V
Control voltage range V_C (V3 or V5) (input impedance Z_{VC} > 47 kΩ)	0 to 3.3 V	0.5 to 5.0 V
Control resistor range (R1) R_C between pin V_C and GND (input impedance Z_{VC} > -4.7 kΩ)	0 to 10 kΩ	0 to 10 kΩ
Slope polarity	Positive	
No frequency control (YA or YB)	Pin V_C has to be connected to GND	

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STANDARD FREQUENCIES

Frequencies			
10.0000 MHz	12.0000 MHz	12.8000 MHz	14.7456 MHz
16.0000 MHz	20.0000 MHz	26.0000 MHz	40.0000 MHz
50.0000 MHz	52.0000 MHz	54.0000 MHz	100.0000 MHz
120.0000 MHz			
Other frequencies from 10 kHz to 120 MHz on request			

ENVIRONMENTAL CHARACTERISTICS

	Conditions
Storage temperature range	–55 to +125°C
Shock resistance (survival)	5000 g, 0.3 ms, ½ sine
Vibration resistance (survival)	20 g / 10 – 2000 Hz

TERMINATIONS AND PROCESSING, OPTION 1

Pins soldering	+235°C / 10 s max. +260°C / 5 s max.
Package	Metal DIL-14 / 4 pins
Terminations (Option 1) (see Application Manual)	SMD, formed leads (D2)
	THD, Standard (Blank)

ORDERING INFORMATION

SCOCXO H W T – C V3 20.000 MHz D2 XXX

Phase noise
H = Low phase noise
Blank = Standard

Supply voltage
W = V_{DD} = 3.3 V
V = V_{DD} = 5.0 V

Frequency stability
T = High stability
Blank = Standard

Temperature range
A = 0 to +60°C
B = -20 to +70°C
C = -40 to +85°C
E = -55 to +85°C *
X = Custom

Frequency control
R1 = R_C = 0 to 10 kΩ
V3 = V_C = 0 to 3.3 V
V5 = V_C = 0.5 to 5.0 V
YA = Internal accuracy ≤ ±1.0 ppm
YB = Internal accuracy ≤ ±0.5 ppm
Y = Custom

Frequency

Option 1
D2 = SMD (formed leads)
Blank = THD (Standard)

Customer specification N°

* E version is only available at 5.0 V version (V)

A unique part number will be generated for each product specification, i.e:	
20xxxx-EA00	yyy pcs (in ESD plastic tray)

All specifications subject to change without notice.

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Version 16.0/11.2021