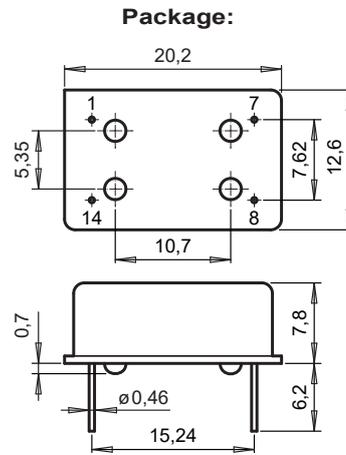


OCXO HCMOS Output

Standard OCXO – up to 54 MHz



DIMENSIONS



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 OCXO 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	$\Delta F/F$	see table 1 (without air flow)		
Frequency long term aging long term aging 10 years long term aging 1 st year	$\Delta F/F$	< 40 MHz < ±3 ≤ ±0.5	≥ 40 MHz < ±4 ≤ ±1	ppm
Minimum frequency control range by V_C or R_C see table 3	$\Delta F/F$	< 40 MHz ≥ ±3	≥ 40 MHz ≥ ±4	ppm
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%	$\Delta F/F$	< 40 MHz ≤ ±10	≥ 40 MHz ≤ ±30	ppb
Warm-up time within ±0.1 ppm at +25°C	V_{DD} t	3.3 ≤ 120	5.0 ≤ 60	V s
Stability versus V_{DD}	$\Delta F/F$	< ±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	< 0.5	ppb
Phase noise typical at 10 MHz: Static conditions, 10 Hz BW = 1 Hz 100 Hz 1 kHz 10 kHz 100 kHz	L	-100 -130 -140 -145 -145	dBc/ Hz

TABLE 1: $\Delta F/F$, $V_{DD} = 3.3 V$

Operating Temperature range	$V_{DD} = 3.3 V \pm 0.15 V$	
	Standard (Blank)	High stability version (T)
A = 0 to +60°C	$\leq \pm 200$ ppb	$\leq \pm 75$ ppb
B = -20 to +70°C	$\leq \pm 300$ ppb	$\leq \pm 150$ ppb
C = -40 to +85°C	$\leq \pm 500$ ppb	$\leq \pm 250$ ppb

TABLE 1: $\Delta F/F$, $V_{DD} = 5.0 V$

Operating Temperature range	$V_{DD} = 5.0 V \pm 0.2 V$	
	Standard (Blank)	High stability version (T)
A = 0 to +60°C	$\leq \pm 200$ ppb	$\leq \pm 75$ ppb
B = -20 to +70°C	$\leq \pm 300$ ppb	$\leq \pm 150$ ppb
C = -40 to +85°C	$\leq \pm 500$ ppb	$\leq \pm 250$ ppb
E = -55 to +85°C	$\leq \pm 700$ ppb	$\leq \pm 300$ 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 $Z_{VC} > 47$ k Ω)	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 $Z_{VC} > 4.7$ k Ω)	0 to 10 k Ω	0 to 10 k Ω
Slope polarity	Positive	
No frequency control (YA or YB)	Pin V_C has to be connected to GND	

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
52.0000 MHz	54.0000 MHz		
Other frequencies from 10 kHz to 54 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

OCXO	W	T	-	C	V3	20.000 MHz	D2	XXX
Supply voltage W = $V_{DD} = 3.3\text{ V}$ V = $V_{DD} = 5.0\text{ V}$					Frequency Option 1 D2 = SMD (formed leads) Blank = THD (Standard)			
Frequency stability T = High stability Blank = Standard					Customer specification N°			
Temperature range A = 0 to +60°C B = -20 to +70°C C = -40 to +85°C E = -55 to +85°C * X = Custom					* E version is only available at 5.0 V version (V)			
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 $\leq \pm 1.0$ ppm YB = Internal accuracy $\leq \pm 0.5$ ppm Y = Custom								
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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