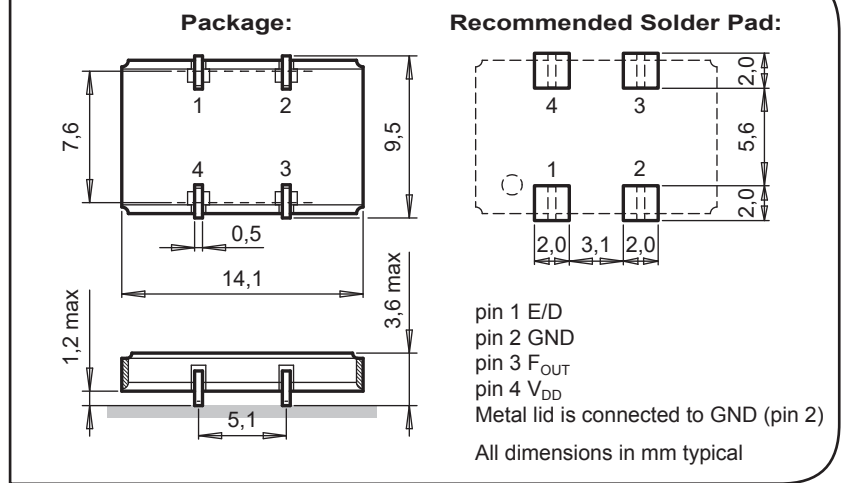


DIMENSIONS



APPLICATIONS

- Security / Safety
- Avionics / Aerospace
- Remote Control / Telemetry
- Microprocessor and FPGA Clocks
- Test and Measurement Equipment
- Wired and Wireless Communications

DESCRIPTION

The MCSO is a High Frequency SMD Oscillator that incorporates an integrated HCMOS circuit together with an XTAL. It operates under vacuum in a hermetically sealed ceramic package with metal lid.

FEATURES

- Outstanding hermetic sealing with gold-tin preform.
- High stability and low aging guaranteed by hermetic sealing.
- Very fast start-up.
- Wide temperature range.
- Operates in fundamental mode.
- High shock and vibration resistant.
- 100% Pb-free, RoHS-compliant.

ELECTRICAL CHARACTERISTICS AT 25°C

Overall frequency stability over temperature range	¹⁾		
Standard version	²⁾	$\Delta F/F$	ppm
T version	³⁾		$\leq \pm 100$ $\leq \pm 50$
Supply voltage $\pm 10\%$	^{4) 5)}	V _{DD}	2.5 / 3.3 / 5.0 V
Input current		I _{DD}	See I _{DD} table
Output signal			HCMOS compatible
F _{OUT} duty cycle @ V _{DD} /2 (min./max.)		δ_{FOUT}	40 / 60 %
Rise & fall time, ≤ 20 MHz (C _L = 15 pF, 20% to 80% V _{DD})		t _r / t _f	≤ 7 ns
Rise & fall time, > 20 MHz (C _L = 15 pF, 10% to 90% V _{DD})		t _r / t _f	≤ 3 ns
Output level V _{OL} / V _{OH}			$< 0.4 / > V_{DD} - 0.5$ V
Start-up time typ. / max.		t _{START}	1 / 5 ms
Capacitive load min. / max.		C _L	3 / 47 pF

- 1) Including adjustment at +25°C, V_{DD} variations $\pm 5\%$ and C_L variations min. to max.
- 2) Including long term aging 10 years
- 3) Including long term aging 1 year
- 4) A 47 nF decoupling capacitor has to be connected between V_{DD} and GND
- 5) 5.0 V version not available for low jitter version (F)

INPUT CURRENT: I_{DD} (no load)

Frequency	≤ 10 MHz	≤ 20 MHz	> 20 to 225 MHz
V _{DD} = 2.5 V (W)	< 2 mA	< 3 mA	< 25 mA
V _{DD} = 3.3 V (V)	< 4 mA	< 5 mA	< 30 mA
V _{DD} = 5.0 V (Blank)	< 6 mA	< 7 mA	< 40 mA

V_{DD} = 5.0 V not available for low jitter version (F)

STANDARD FREQUENCIES

Frequencies			
1.0000 MHz	3.6864 MHz	4.0000 MHz	8.0000 MHz
10.0000 MHz	12.0000 MHz	12.8000 MHz	14.7456 MHz
16.0000 MHz	20.0000 MHz	24.0000 MHz	40.0000 MHz
48.0000 MHz	80.0000 MHz	120.0000 MHz	160.0000 MHz
Other frequencies from 10 kHz to 225 MHz on request			

ENABLE/DISABLE E/D, OPTION 1

Input level V _{IL} / V _{IH}		< 0.3 V _{DD} / > 0.7 V _{DD}	V
Reaction time	t	< 1	μs

Pin 1 E/D	Pin 3 F _{OUT}
V _{IH} or open	Output enabled
V _{IL}	Output disabled (Hi-Z)

No E/D function before V_{DD} is set.
E/D option not available for F < 500 kHz.

ENVIRONMENTAL CHARACTERISTICS

	Conditions
Storage temperature range	-65 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 2

Reflow per IPC/JEDEC J-STD-020C	260°C / 20 - 40 s
Package	Ceramic
Metal Lid	Kovar
Terminations (Option 2)	SnAgCu solder dipped J-Leads (J/L)
	Au plated J-Leads (GJ/L)
	Au plated pads (Blank)

ORDERING INFORMATION

MCSO	F	H	V	T	C	40.000 MHz	E/D	GJ/L	XXX				
<p>F = Low jitter * Blank = Standard</p> <p>Frequency range H > 20 MHz Blank ≤ 20 MHz</p> <p>Supply voltage W = V_{DD} = 2.5 V V = V_{DD} = 3.3 V Blank = V_{DD} = 5.0 V **</p> <p>Frequency stability T = ±50 ppm Blank = ±100 ppm</p> <p>Temperature range A = 0 to +70°C B = -40 to +85°C C = -55 to +125°C X = Custom</p>						<p>Frequency</p> <p>Option 1 E/D = Enable/Disable *** Blank = No function</p> <p>Option 2 J/L = SnAgCu solder dipped J-Leads GJ/L = Au plated J-Leads Blank = Au plated pads</p> <p>Customer specification N°</p>							
<p>* One-sigma jitter for low jitter version (F): t_{RMS} < 2 ps for F ≤ 20 MHz t_{RMS} < 10 ps for F > 20 MHz</p> <p>** 5.0 V version not available for low jitter version (F)</p> <p>*** E/D option not available for F < 500 kHz</p>													
<p>A unique part number will be generated for each product specification, i.e:</p> <table border="1"> <tr> <td>20xxxx-PP00</td> <td>≥250 pcs (in 24 mm tape on 13" reel)</td> </tr> <tr> <td>20xxxx-EA00</td> <td>yyy pcs (in ESD plastic tray)</td> </tr> </table>										20xxxx-PP00	≥250 pcs (in 24 mm tape on 13" reel)	20xxxx-EA00	yyy pcs (in ESD plastic tray)
20xxxx-PP00	≥250 pcs (in 24 mm tape on 13" reel)												
20xxxx-EA00	yyy pcs (in ESD plastic tray)												

All specifications subject to change without notice.



A COMPANY OF THE SWATCH GROUP

Micro Crystal AG
Muehlestrasse 14
CH-2540 Grenchen
Switzerland

Phone +41 32 655 82 82
sales@microcrystal.com
www.microcrystal.com