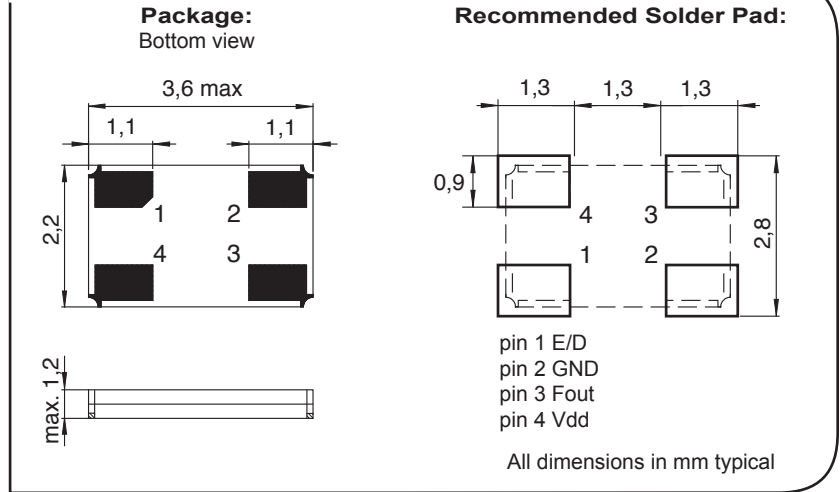




**DIMENSIONS**



- SMT Clock oscillator in ceramic package
- Fundamental quartz mode frequency
- High shock and vibration resistance
- Wide temperature range
- Low aging
- Ultra low internal MSL
- Very fast start-up
- Excellent solderability
- Swiss made quality
- Customer specification on request

**DESCRIPTION:**

This SMD oscillator in ceramic package has been specially designed for surface mount using infrared, vapor phase or epoxy techniques.

**APPLICATIONS:**

- Avionics
- Airbone equipments
- Remote control
- Security application
- Radio Transceiver
- Microprocessor clocks

The MCSO6's are supplied on trays (208 pcs / tray)  
For pick-and-place equipment, the parts are available in 12mm tapes with 250 parts min  
1000 parts min

**ELECTRICAL CHARACTERISTICS AT +25°C**

<b>Frequency stability</b> Over temperature range (see ordering info) Including: adjustment at +25°C long term aging 10 years over supply voltage ±5% over load min to max	$\Delta F/F$	$\leq \pm 100$	ppm
<b>Frequency stability version T</b> Over temperature range (see ordering info) Including: adjustment at +25°C long term aging 1 year over supply voltage ±5% over load min to max	$\Delta F/F$	$\leq \pm 50$	ppm
Supply voltage ± 5% 1)* Version 1.2V available on request	Vdd	1.8 / 2.5 / 3.3	V
Input current	Idd	see table 1	
Output signal		HC-MOS compatible	
Symmetry at Vdd/2		40 / 60	%
Rise & fall time For F=32.768 kHz rise & fall time ≤ 150ns (load 15pf 20% to 80%)		≤7	ns
Level "0" & "1"		<0.4>Vdd-0.5	V
Start-up time	t	<5	ms
Load min / max		3/47	pF
Jitter ≤ 20MHz one sigma		< 2rms	ps
Jitter > 20MHz one sigma		< 10rms	ps

\* 1) C = 47nF ceramic must be connected between GND & Vdd

**TABLE 1: Idd  
(Without load)**

Frequency	F=32 kHz	F=< 10MHz	≤ 20MHz	>20 to 155MHz
W=Vdd = 2.5V	< 300µA	< 2mA	< 3mA	< 25mA
V=Vdd = 3.3V	< 1mA	< 4mA	< 5mA	< 30mA

**STANDARD FREQUENCIES:**

Frequency «MHz»						
4	8	10	12	16	20	24
40	50	60				
Other frequencies from 10 kHz up to 155 MHz on request						

**ENVIRONMENTAL CHARACTERISTICS:**

Storage temp. range	-65 to +125°C
Vibration resistance (survival)	10 to 2000Hz / 50g
Shocks resistance (survival)	5000g / 0.3ms / ½ sine

**TERMINATIONS AND PROCESSING:**

Reflow soldering	+260°C / 10s max
Package	Ceramic 3.2 x 2.5 x 1.2mm
Lids standard (blank) Lids on request (K)	Ceramic Kovar
Terminations option T3 on request	with tinned Ag/Cu/Sn
Reaction time < 1µs E/D option 1 on request	Pin 1 open → Pin 3 Clock H → Clock L → Low

- No power E/D function (pin 1) before Vdd is setting on
- E/D option on request (very low consumption in disable mode).

**PRODUCT DESCRIPTION AND ORDERING INFORMATION:**

**MCSO6F K V T - C 48MHz E/D T3 XXX**

K = Kovar lids  
blank = Ceramic lids

Z = VDD 1.8V  
W = Vdd 2.5V  
V = Vdd 3.3V

T = ±50ppm  
blank = ±100ppm

A = 0 to +70°C  
B = -40 to +85°C  
C = -55 to +125°C  
X = custom

Frequency

option 1 E/D enable / disable

option 2 blank Au plated  
T3 = tinned

customer spec N°

A unique part number will be generated for each product specification  
20xxxx-EA00 xxx pcs (in ESD plastic tray)  
200xxx-ML00 xxx pcs (in tape & reel, any quantity)

All specifications subject to change without notice.



Micro Crystal AG  
Mühlestrasse 14  
CH-2540 Grenchen  
Switzerland

Tel. +41 32 655 82 82  
Fax +41 32 655 82 83  
sales@microcrystal.com  
www.microcrystal.com